



# Clinical Connect

Fostering a culture of innovation and excellence

Pulmonology Special

## Breathe Easy

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**INSPIRATION**

## Message



**Mr Anil Vinayak**  
Group COO  
Fortis Healthcare Limited

It is heartening to note that Clinical Connect, the Newsletter of Fortis Clinician fraternity has become a prized publication within a short time. Borne out of deliberations at the Fortis Medical Council - the apex body of Fortis Clinical Governance, Clinical Connect showcases the amazing clinical work being done across the network. Each edition of Clinical Connect is dedicated to a clinical specialty and is a much-awaited publication, with the number and quality of articles bearing testimony to the exceptional

clinical acumen available at Fortis.

Fortis boasts of some of the finest Respiratory Medicine specialists having national and global recognition. This specialty came into the limelight during the COVID pandemic where our clinical teams displayed exemplary courage during tough times, and this issue of Clinical Connect is dedicated to them.

I take this opportunity to thank the authors, Editorial Board, and everyone who has contributed in creating and nurturing Clinical Connect.





## Message



**Dr Digambar Behera**  
Director- Pulmonary Medicine  
Fortis Hospital, Mohali

### Fortis- Leading the Way

The Clinical Connect is a unique effort by the Fortis Healthcare team to provide a platform for dissemination of new information and progresses made in different fields and specialties of Health sciences. The current issue of the clinical connect is dedicated to the Specialty of Pulmonary, Critical Care and Sleep Medicine. The specialty has undergone dramatic changes over the years and the scope of Pulmonology has widened in its dimensions and there is an explosion of knowledge and there is a wide array of diagnostics and therapeutics that has occurred over the years.

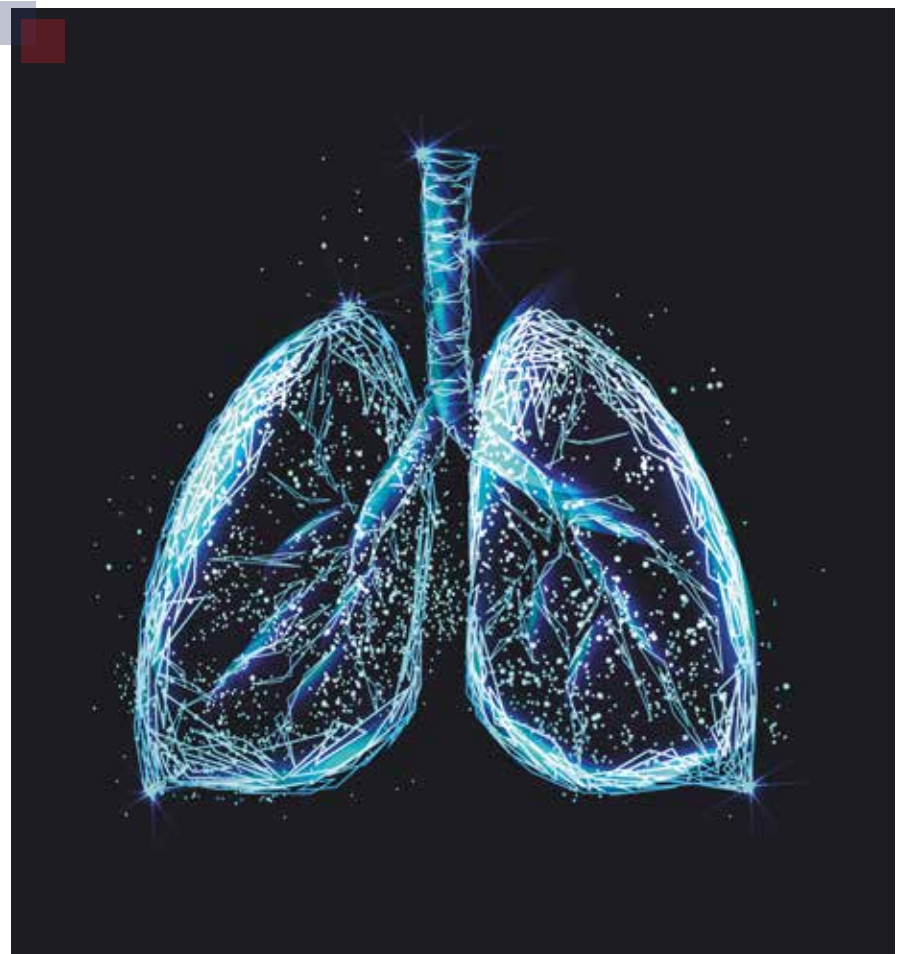
In earlier times the teaching, training and primary care in Chest Medicine was mainly TB centric, but now the focus is on non-TB diseases and diagnostics. Although, the country has made tremendous efforts to control TB, other non-tubercular lung diseases like COPD, Bronchial Asthma, ILD, air pollution, sleep disorders particularly OSA, and occupational diseases have taken the main stage; Critical care, interventional pulmonology and sleep medicine are some of the newer additions to the specialty and

therapeutic modalities. In the arena of Interventional Pulmonology, FOB, EBUS guided FNAC, cryo-biopsy, TBLB, Thoracoscopy & airway stenting etc. are some of the important areas of diagnostics which are now part of the larger arena of the discipline. Bronchial thermoplasty, polysomnography and oscillometry are some of the newer additions to the field. Lung cancer care is now taken up as a special area of the specialty.

Pulmonary medicine itself has become a super specialty with DM courses being introduced in many medical institutions and universities and in fact, this is now one of the most sought-after branches. While the country is aiming to end-TB by 2025, five years ahead of the global strategy, the specialty is playing an

important role in this goal, particularly to fulfil the dream of our Prime Minister. However, many young pulmonologists are showing scanty interest in Tuberculosis while they are more interested in other non-TB areas. The focus should not be diverted.

Lung transplant is another area of current demand and necessity, and the Fortis group of hospitals is trying hard to fulfil this requirement for a good number of chronic respiratory diseases that need this form of therapy. The team of experienced respiratory physicians working for this group of hospitals are few of the best and mature clinicians and researchers. Fortis is proud of them for the quality of care they are delivering in this discipline.



## Message



**Dr Mrinal Sircar**  
 Director and Head -  
 Pulmonology and Critical Care  
 Fortis Hospital, Noida

### Pulmonology – An Evolution or Revolution?

According to a report in Lancet Global Health 32% of the global chronic respiratory disease burden will be from India although it has only 17.8% of the global population. Pulmonologists all over India are in the forefront of meeting up to the challenges. However, we stand on the shoulders of many predecessors. First a brief look at the history of Pulmonology.

#### History of Pulmonology:

Ibn Nafis, a Damascus physician, described the flow of blood through the lungs in 1242 and in 1628 William Harvey gave a more detailed description. Joseph Priestly discovered the presence of oxygen in air (1774) and Antoine Lavoisier coined the name Oxygen (1778) and defined its role in respiration.

René Laënnec invented the stethoscope in 1816 and is considered by many to be the Father of Pulmonary Medicine. He described lung sounds in normal and diseased lungs. In 1804 he observed different pathological manifestation of Tuberculosis (then called phthisis) after autopsies.

Robert Koch in 1882 discovered

*Mycobacterium tuberculosis*, and he also enunciated the Koch's postulates, the criteria for establishing the cause of an infectious disease.

Röntgen's discovered X-rays in 1895 and paved the way for the diagnosis of tuberculosis and documentation of its pulmonary manifestations. Calmette and Guérin developed the BCG vaccine in 1921. Selman Waksman discovered streptomycin in 1949 and Ferebee in 1957 demonstrated effectiveness of INH against TB.

In 1910, August and Marie Krogh definitively showed that exchange of oxygen and carbon dioxide, known to occur in the lungs since the beginning of the 19<sup>th</sup> century, occurs by the process of diffusion.

In 1952, Bjorn Ibsen created the first Intensive Care Unit (ICU) in the world in Copenhagen to treat poliomyelitis. They used tracheotomy and an endotracheal tube, through which teams of medical students pumped oxygen-enriched air by squeezing a recoiling bags till recovery of spontaneous breathing.

Although some measurements of lung volumes had been done as early as 17<sup>th</sup> century, in June of 1927, Roy Wesley Scott applied for a patent for the "Apparatus for Measuring the Vital Capacity of the Lungs." The patent was granted on November 18, 1930. Scott later collaborated with the McKesson Company to produce the McKesson-Scott Vital Capacity Apparatus. John Hutchinson developed a device in 1944 that he called spirometer, combining the Latin words for "breath" and "measure".

Gustav Killian, known as the father of bronchoscopy, removed a pork bone from a farmer's airway in 1876. In 1904 Chevalier Jackson developed a direct ocular mechanism consisting of an illumination and suction tubing attached to a rigid bronchoscope.

Edwin Broyles (1940) developed a forward viewing optical telescope, Paul H. Holinger developed bronchoscopic photography (1947), Neel and Sanderson developed endobronchial cryotherapy (1981), Laforet (1976) first used CO2 laser in the trachea, and Hooper and Jackson (1985) developed endobronchial electrosurgery. The potential of fiberoptic imaging in bronchoscopy was first recognized by Shigeto Ikeda (1962), the first prototype was developed in 1964 and the first modern-day fiberoptic bronchoscope in 1966 comprising over 15,000 glass fibers. Olympus first came out with its model in 1970 with better imaging capabilities as well as ease of handling. The first video bronchoscope was developed by Asahi Pentax Corporation in 1967. Howard Anderson developed the technique of transbronchial biopsy. Eduardo Schieppati (1958) conceptualized transbronchial needle (TBNA) biopsy that was further developed by Oho and colleagues. Ko-Pen in 1978 obtained the first clinical TBNA specimen.

Heinrich Becker conceptualised endobronchial ultrasound to guide sampling (EBUS). Hurter and Hanrath first reported the usefulness of a radial probe EBUS (RP-EBUS) for central and parenchymal lesions in 1992. Pedersen and colleagues (1996) first described the usefulness of endoscopic ultrasound guided sampling mediastinal lesions. Kazuhiro Yasufuku and colleagues (2003) first demonstrated the high diagnostic yield of the convex probe EBUS (CP-EBUS) in sampling mediastinal lesions.

First stent implantation was accomplished by Trendelenburg and Bond for the treatment of central < (1965) designed the first T-tube with an external side limb made of silicone. J. F. Dumon subsequently introduced a dedicated tracheobronchial prosthesis in 1987.

In the late 1800s: Mechanical ventilators and the first iron lung are invented. The administration of continuous oxygen was used for the first time to treat pneumonia. The first infant was treated using extracorporeal membrane oxygenation (ECMO) in 1995.

In 1963, the first lung transplant was performed in USA.

### Landmarks of Pulmonology in India

The Indian perspective of pulmonary function tests was first presented to the Indian Science Congress in 1929 (Indian J Physiol Pharmacol 2005; 49 (3) : 257–270 ) by Major General SL Bhatia of the IMS, the then Professor of Physiology and Medicine and the Dean, Grant Medical College, Bombay.

In October 1933 E H Evans (a student of Chevalier Jackson) published first cases of bronchoscopy in India (Ind Med Gaz 1933; 68(10):567-569). A rigid bronchoscope was used.

The National TB Programme was launched by the Government of India in 1961. The revised National TB Control Programme was established in 1993. Eighteen States have committed to ending TB by 2025!

In the mid-1970s Dr F E Udwardia set up the first Respiratory ICUs at Breach Candy Hospital (a private hospital) and BD Petit Parsee General Hospital (a community hospital) in Mumbai.

The first polysomnography machine was installed in the pulmonary medicine department in Safdarjung Hospital in New Delhi by D J C Suri in 1995 to launch sleep medicine in India.

In 1999, Dr KM Cherian performed the first double-lung transplantation and combined heart–lung transplantation (HLT) in India. In 2011, single lung transplantation (SLT) was first performed in Global Hospital in Chennai. A total of 339 isolated lung transplants and combined 102 HLT have been done in India until March 2021. PGI

Chandigarh was the first Government hospital to do a lung transplant in 2019. Apollo Hospitals, Chennai, reported a 76.2% 3-year survival following isolated lung transplants in 2020 patients, while Gleneagles Hospital, Chennai reported 78% one-year survival in lung transplant patients.

Recognised Pulmonology certifications started only in 1947 with Diploma in Tubercular Diseases (TDD) at Vallabhbai Patel chest Institute (VPCI), New Delhi followed by DTCD in 1960 at VPCI, MD at King Georges Medical College, Lucknow in 1950s, DNB (Respiratory Medicine) in 1983, DM (Pulmonology and Critical Care) at PGI Chandigarh in 1989, DM (Pulmonary Medicine) at Amrita Institute in 2010 and DM (Pulmonology, Critical Care and sleep Medicine) in 2012 at AIIMS, New Delhi.

### Challenges for Indian Pulmonology

Pulmonologists have to treat both infectious and non-infectious patients. We have the problems of developing countries coexisting with that of developed ones.

A total number of incident TB patients (new and relapse) notified during 2021 were 19,33,381 as opposed to that of 16,28,161 in 2020.

WHO estimates that in the year 2030, 7 million tobacco-related deaths will occur in low-income countries. More than 1 million adults die each year in India due to tobacco use accounting for 9.5% of overall deaths.

In India, lung cancer accounts for 5.9% of all cancers and 8.1% of all cancer-related deaths. The prevalence of smoking in patients with lung cancer is nearly 80%. Total annual incidence of lung cancers is 67,795. It is estimated that air pollution kills 24 lakh people in India in a year and pollution-related deaths have increased by 7% between 2015 to 2019.

An estimated 7% of population above 30 years of age in India have

COPD (doi: 10.7189/jogh.11.04038). Severe asthma is prevalent in 1.59%, 1.60% and 1.16% in the 6–7 years, 13–14 years and adults (doi:10.1183/23120541.00528-2021).

The prevalence of obstructive sleep apnoea is about 9.3% to 13.7% (Indian J Med Res 2010 Feb;131:171-5 and doi: 10.1016/j.sleep.2008.08.011) in India.

COVID-19 pandemic has been a big challenge. Till 24<sup>th</sup> Oct a total of 44644076 cases were diagnosed in India although at present only 23193 cases are active. This was despite a total of 2195641807 vaccine doses administered to the population.

### Conclusion

The field of Pulmonology has evolved from managing tuberculosis, smoking related lung disorders including COPD and cancers and occupational lung diseases. Today it has expanded to include physiological evaluations including pulmonary function testing, imaging, diagnostics including bronchoscopy and pleuroscopy, allergy testing, critical care and sleep medicine and interventional procedures including bronchoscopy along with electrocautery, laser, cryotherapy, argon plasma etc. Therapeutics today including thoracic oncology, use of target therapies for diseases like asthma with biologicals, bronchial thermal vapour ablation, bronchial thermoplasty etc. Only a total of 1323 post graduate trainee positions are available per year in India. Pulmonologists combined their pulmonology and critical care expertise to meet the COVID-19 challenge and became a much sought after specialty. Pulmonology has become a focus for growth in all medical organisations. A field that evolved from managing tuberculosis in India has evolved into a true super specialty. Indeed a revolution over 75 years post independence!





**MESSAGE FROM  
THE EDITORIAL  
BOARD**



## Message



**Dr Narayan Pendse**  
Vice President  
Medical Strategy and Operations

The global burden of disease due to lung disorders, chronic obstructive lung disease (COPD), and lower respiratory tract infections, has historically been significant especially in lower- and middle-income countries. The FIRS Global Impact of Respiratory disease report shows an estimate 3.2 million people die each year, making COPD the third leading cause of death worldwide. Globally affecting 262 million people, Asthma is one of the most common non-communicable diseases. Every one in four cancer related deaths are due to lung cancer. Pneumonia is considered leading cause of mortality accounting for more than 2.4 million deaths every year. Till May 31 2022, severe acute respiratory syndrome coronavirus (SARS-COV-2) disease led to 6.9 million reported deaths and 17.2 million estimated deaths.

Despite this, the concept of lung health hasn't been given its due, and it's only the emergence of COVID-19 pandemic that has brought the importance of Respiratory Medicine and lung health in the limelight. From the identification of the first case in late 2019, COVID cases spiralled at an alarming pace, thus creating an

unparalleled global havoc.

It was Pulmonologists who were at the forefront of the fight against this scourge – leading the teams in care delivery, community health, research, knowledge seeking and innovation. It's a matter of pride that the Pulmonology fraternity of Fortis did a truly amazing job at managing COVID – conducting endless consultations, managing and guiding patients and healthcare workers, understanding and adapting to the rapidly changing virus behaviour and disease pathophysiology, maintaining mental and physical health of self and staff – all this during moments of tremendous stress and anxiety.

This edition of Clinical Connect presents Fortis' recent work in the field of Pulmonology in line with the theme of World Lung Day, 2022 - "Lung Health for All".

Happy Reading!

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**PULMONOLOGY  
SPECIALTY COUNCIL**

## Pulmonology Specialty Council



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**NEW HORIZONS**

## Role of Cryotherapy in Interventional Pulmonology



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Cryotherapy is the use of extreme cold to destroy tissues or to obtain biopsy. This has a long history of medical uses.

### Mechanism of Action

When tissue is exposed to extremes of cold, cell death is induced by several mechanisms: extra and intracellular ice crystals damage organelles and cause transcellular fluid shifts, local vasoconstriction and thrombosis cause ischemia, and potential immune mediated cell death occurs. Ice crystal formation



**Dr Siddharth Anand**  
Attending Consultant - Pulmonology  
Fortis Hospital, Noida

results in immediate and direct cell injury, whereas vascular and immunologic phenomena cause delayed cell death. It is important to note that the cryo-sensitivity of a tissue depends on its intracellular water content and vascularity. Fat, cartilage, nerve sheath, connective tissue, and fibrosis are known to be cryo-resistant, whereas tumour, granulation tissue, skin, mucous membranes, nerves, and endothelium are cryo-sensitive.

### History

The cryoprobe was initially devised for neurosurgical applications; rapidly freezing a region of interest allowed surgeons to anticipate potential neurological consequences before irreversibly lesioning brain tissue. It was first used on an endobronchial tumour in 1968 by Gage, who used a rigid applicator known as a cryoprobe. The use of cryotherapy became more widespread with the advent of the flexible cryoprobe in 1994. In the early 2000s, more robust flexible cryoprobes allowed for the development of cryo-adhesion or cryo-recanalization. Transbronchial cryo-biopsy, which employs this same basic concept, was developed in the

late 2000s.

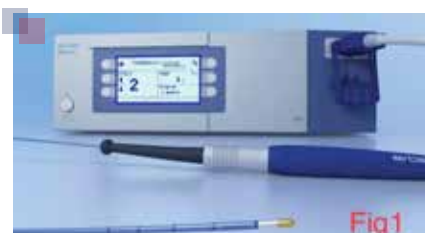
### Physics of Cryotherapy

Cryoprobe-based therapy is based on the Joule–Thomson physical principle whereby a liquefied gas under pressure that exits through a small orifice undergoes rapid conversion to gaseous form and expansion. This liquid–gas conversion is accompanied by a dramatic temperature drop that is transmitted to the cryoprobe tip. Tissue damage occurs when the cryoprobe is brought into contact with the target tissue due to rapid fall in their temperature.

### Equipment

There are two main components to a cryoprobe-based system: a cryogen, the liquefied gas under high pressure used to create the freezing temperatures, and the cryo-machine or cryosurgery device.

Nitrous oxide is the most widely used cryogen at present owing to its ability to achieve temperatures lower than  $-40$  C. Other commonly used cryogen is  $\text{CO}_2$  and liquid nitrogen. Cryomachines (Figure1) consists of a cryoprobe (which has a chamber at its tip for ingress and egress of gas to allow for rapid tip cooling), a transfer line to connect the cryoprobe to the liquefied gas container (which holds the cryogen), and a console to regulate the flow of cryogen via the transfer line. Flexible cryoprobes are available in 2.4mm 1.9 mm and 1.1 mm diameter



**Figure 1**  
Title: Cryomachine with cryoprobe

### Technique and General Considerations

Patient selection, pre-procedure assessment, investigations and anesthesia/sedation planning for cryotherapy are same as for any bronchoscopy. Decisions regarding use of rigid versus flexible bronchoscope, and conscious sedation versus general anesthesia, should be individualized according to the resources available and the institutional practices.

### Indications

- **Cryoablation:** Application of alternating freezing and thawing cycles to tissue with a cryoprobe via a flexible bronchoscope to induced delayed (days to weeks) of cellular necrosis and tissue destruction.
- **Cryorecanalization (or cryodebridement):** Debulking of exophytic tumour usually in the central airways with repeated cryo-adhesive freezing and removal of chunks of tumour with the aim of establishment of immediate airway patency.
- **Cryotherapy:** Low-grade airway malignancies (e.g. carcinoid) can be treated with bronchoscopic application of cryotherapy in nonsurgical candidates.
- **Cryoextraction:** Application of cryo-adhesion to foreign bodies containing water, blood clots and tough inspissated secretions etc. to extract them.
- **Endobronchial cryobiopsy:** It is used for biopsy from endobronchial mass lesions.
- **Transbronchial cryobiopsy:** It is used to obtain tissues from the lung parenchyma and distal airways (e.g. diffuse parenchymal lung diseases) either blindly or fluoroscopy assisted or pulmonary nodules guided by radial EBUS or navigation systems.

We present some examples of the above techniques from our cases.

### Case 1: Endobronchial Cryobiopsy: (Recurrence of Leydig cell tumor detected in the cryobiopsy specimen)

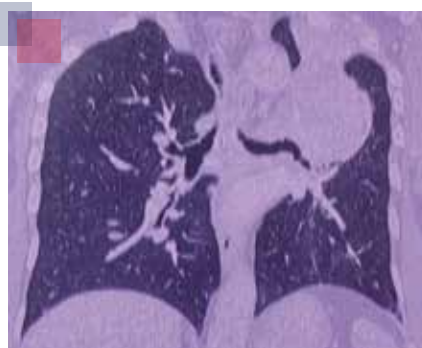
A 72 year old male patient presented with gradually progressive shortness of breath since last 6 months and scanty haemoptysis since the last 20 days. The Chest x-ray showed left upper homogenous opacity (Figure 2a). Contrast enhanced CT (Figure 2b) and PET (Figure 2c) showed FDG avid left upper lobe mass, encasing the left pulmonary artery with a thrombus in the left pulmonary vein. He was a known case of Leydig cell carcinoma of testes and had undergone high orchidectomy in 2014.

Bronchoscopy revealed a lobulated mass, occluding the left upper lobe bronchus (Figure 2d), with prominent blood vessels on the surface, that were bleeding on touch. The patient was intubated and a bronchoscope reintroduced done through the

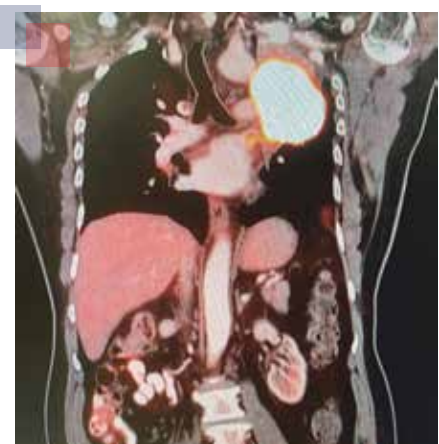
endotracheal tube. Initially the electrocautery forceps were used to coagulate and take endobronchial biopsies. Then further endobronchial sampling was done using the cryoprobe 1.9 mm. Patient was extubated after the procedure. Histology of electrocautery forceps biopsy specimens were not diagnostic (crush artefacts and charring) while cryobiopsy specimens showed tumour tissue infiltrating the alveoli, composed of polygonal cells with abundant cytoplasm with nuclei showing moderate anisonucleosis, compatible with metastasis from Leydig cell tumour of testis on IHC in a known case (Figure 2e).



**Figure 2a: Chest x-ray showing left upper lobe lung mass**



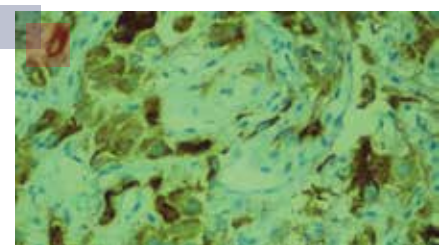
**Figure 2b: Left upper lobe lung mass compressing the left main bronchus**



**Figure 2c: PET CT showing FDG avid left upper lobe mass**



**Figure 2d: Left upper lobe endobronchial mass**



**Figure 2e: Atypical polygonal cells highlighted by inhibin stain. s/o Leydig cell tumour (Sex chord stromal cell tumour)**

### Case 2: Transbronchial Lung Cryobiopsy (TBLC)

A 60 years old lady presented with fever and productive cough since 10 days. The patient was hypoxic. Her chest CT showed bilateral multifocal areas of ground glass opacities (Figure 3a). She did not improve with a course of antibiotics and tests for COVID-19 and influenza were negative.

Flexible bronchoscopy and TBLC was done with a 1.1mm cryoprobe using a sheath after intubating the patient. To prevent bleeding a Fogarty's catheter was deployed (Figure 3b and c). Conventional transbronchial lung forceps biopsies (TBLB) were also obtained from the right lower lobe.

Bronchoalveolar lavage revealed no organisms. Conventional TBLB did not contribute to the definitive

diagnosis while TBLC specimens that were bigger were suggestive of cryptogenic organising pneumonia (Figure 3d). Patient was started on corticosteroids with rapid relief in symptoms.

### Case 3: Cryoextraction of intrabronchial blood clots

A 36 years old Ethiopian patient underwent aortic and mitral valve replacement with tricuspid valve repair. He developed left lung collapse on the 10<sup>th</sup> post operative day (Figure 4a). Bronchoscopy revealed endobronchial clots causing

complete obstruction of the left main bronchus. Suctioning and bronchoscopic suctioning were not useful. Two rounds of clot removal were done with the help of cryoprobe (1.9mm) (Figure 4b). After clot removal the left lung opened up (Figure 4c) and weaning from mechanical ventilation could be initiated.

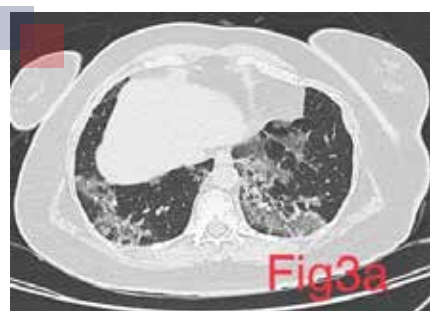


Figure 3a: CT Chest showing Bilateral lower lobe patchy ground glass opacities



Figure 3c: Transbronchial Lung cryobiopsy procedure with cryoprobe and Fogarty's balloon catheter in place

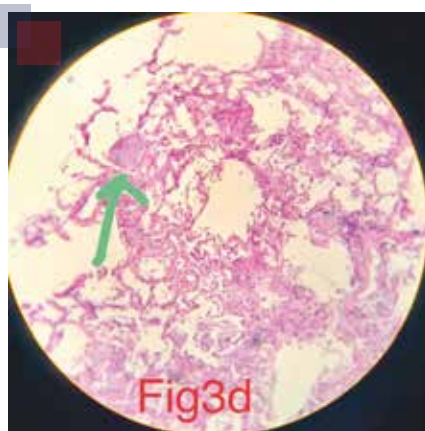


Figure 3d: Histopathology photomicrograph of cryobiopsy sample showing expanded intra alveolar septae with fibrosis and inflammation along with intra-alveolar fibroblastic plug s/o organising pneumonia



Figure 3b: Inflated Fogarty's balloon catheter during the Transbronchial Lung cryobiopsy procedure



Figure 4a: Chest x-ray showing complete left lung collapse



Figure 4b: Endobronchial blood clot removal using cryoprobe



Figure 4c: Post clot removal chest x-ray



**Case 4: Immediate recanalization of trachea with combined use of cryotherapy and Electrocautery**

A 42 years old male presented with dyspnoea, productive cough since 3 months with 10 kg loss of weight in last two months. The chest CECT showed an intratracheal growth (Figure 5a). A check bronchoscopy revealed a pedunculated mass 2 cm proximal to carina and 2.5 cm in vertical depth obliterating 90% of the tracheal lumen. PET CT showed FDG uptake and was suggestive of

malignant nature (Figure 5b). Bronchoscope was negotiated ahead of mass and showed patent bilateral tracheobronchial tree.

A second bronchoscopy was done after intubating the patient. Tracheal tumour debulking was done by cryodebridement using a 2.4 mm cryoprobe and an electrocautery probe was used to control bleeding and for partial tumour clearance. The luminal patency was achieved in one session with 80% reversal of the luminal

obstruction. The patient improved symptomatically after the procedure. The histological diagnosis was adenoid cystic carcinoma (Figure 5c and d). Further treatment was done by the oncologists.

Cryotherapy modalities are a versatile and very useful addition to a bronchoscopists armamentarium. The key to successful clinical use is careful case selection for the procedure planned to be adopted.



Figure 5a: CT chest showing intratracheal mass in lower end of trachea causing critical airway narrowing



Figure 5b: PET scan image showing FDG avid lesion in lower end of trachea

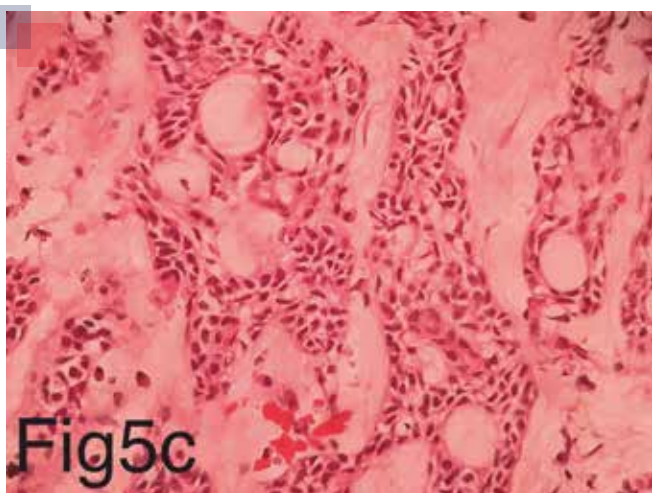


Figure 5c: Higher magnification shows cells possess hyperchromatic angulated nuclei and clear cytoplasm

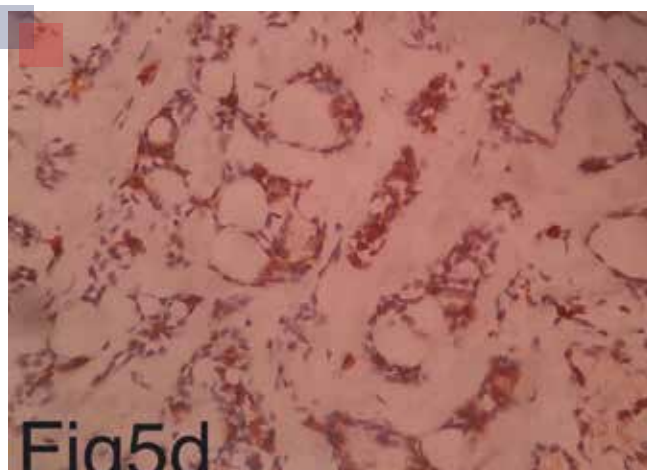


Figure 5d: IHC showing CD117 is positive in tumour cells- Diagnosis consistent with low grade Adenoid cystic carcinoma

# The Effect of Mobile Phone use on Sleep

Source: *Indian Journal of Medical Research: Mar-Apr 2022 - Volume 155 - Issue 3&4 - p 380-386 doi: 10.4103/ijmr.ijmr\_2221\_21*

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## ABSTRACT

### Background & Objectives

Several studies have been conducted globally to assess the impact of usage of mobile phones on quality and duration of sleep as also on day time sleepiness. The objective of the present study was to assess the effect of mobile phone usage on the quality and composition of sleep in a sample from Indian population.

### Methods

The study was conducted at two tertiary care hospitals in North India from July 2014 to September 2019. A total of 566 participants were recruited in this study from both the centres. Sleep quality was assessed with the help of the Pittsburgh Sleep

Quality Index (PSQI) questionnaire. Subsequently, actigraphy was done in 96 participants and polysomnography in 95 participants.

### Results

Of the 566 participants, 128 (22.61%) had PSQI  $\geq 5$ , reflecting poor sleep quality. A higher use of mobile phone was significantly associated with a poor sleep quality as a component of PSQI questionnaire ( $P=0.01$ ) and higher overall PSQI score ( $P=0.01$ ). The latency from sleep onset to N2 and N3 sleep stages was significantly shorter in

participants having a higher mobile phone usage as compared to those with a lower usage [Median (range): 13.5 min (1.5-109) vs. 6.5 min (0-89);  $P=0.02$ ] and [Median (range): 49 min (8.5-220.5) vs. 28.75 min (0-141);  $P=0.03$ ], respectively.

### Interpretation & conclusions

This study focused on the maladaptive changes brought on by mobile phone usage on sleep. More studies with larger sample sizes need to be done that may serve to confirm the hypothesis generating findings of our study.



## Radial EBUS Guided Cryobiopsy of Peripheral Lung Lesions with Flexible Bronchoscopy without using Guide Sheath

To Cite the article : Goel MK, Kumar A, Maitra G, Singh B, Ahlawat S, Jain P, Garg N, Verma RK. Radial EBUS-Guided Cryobiopsy of Peripheral Lung Lesions With Flexible Bronchoscopy Without Using Guide-Sheath. *J Bronchology Interv Pulmonol.* 2021 Jul 1;28(3):184-191. doi:10.1097/LBR.0000000000000768. PMID: 33828049.



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### Background

A guide-sheath (GS) is conventionally used as a conduit for biopsy forceps under the guidance of radial endobronchial ultrasound (REBUS) for sampling the peripheral pulmonary

lesions (PPL). As compared to forceps, the cryoprobe has the advantage of obtaining larger samples. There is a paucity of literature on the use of cryobiopsy for PPL. We evaluated the diagnostic yield and safety of the REBUS guided cryobiopsy (REBUS-CB) without using GS for the diagnosis of PPL.

### Methods

We retrospectively analyzed the database of 126 patients with PPL between November 2015 and December 2019. The REBUS-CB was performed using a flexible bronchoscopy without GS. Multidisciplinary consensus diagnostic yield was determined and procedural complications were recorded.

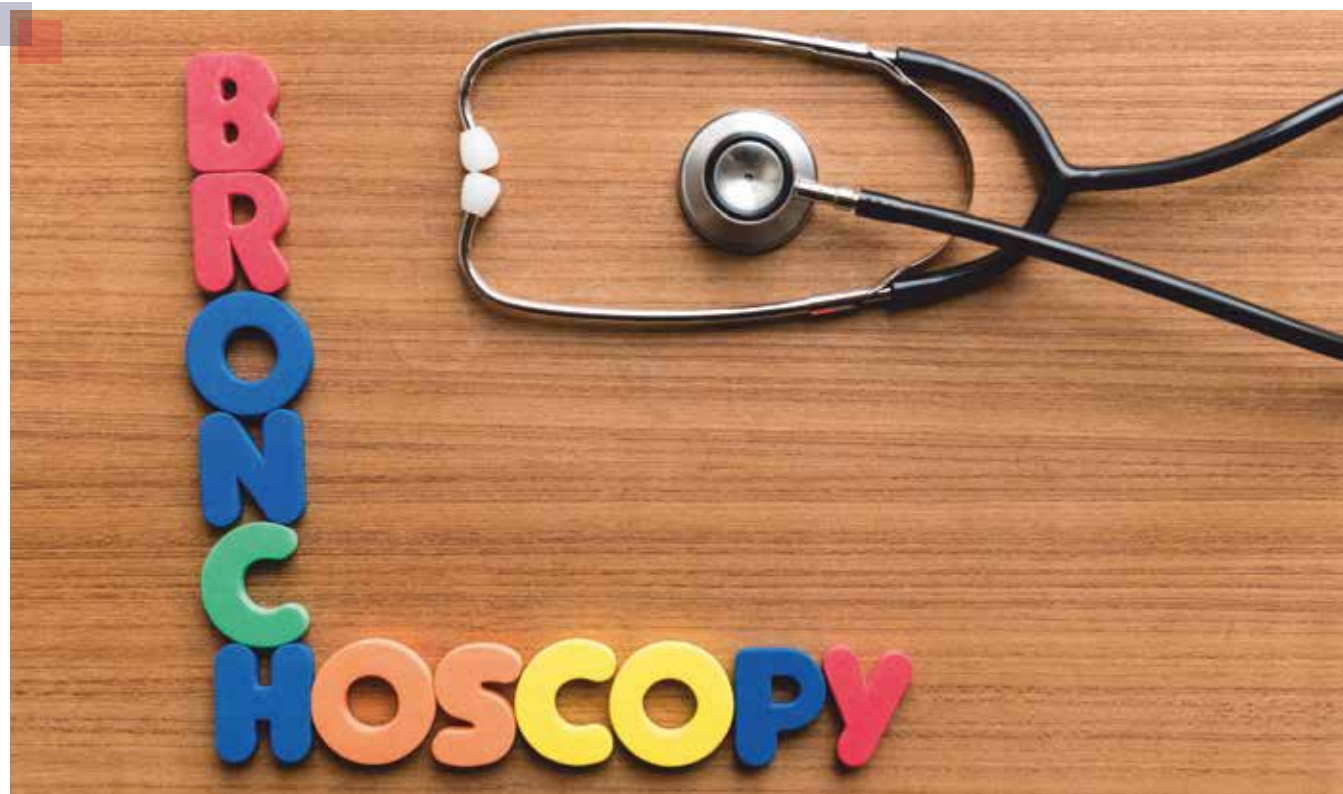
### Results

The histopathological diagnosis by REBUS-CB, which is the primary

objective of the study was obtained in 99 (78.6%) of total 126 cases. Yield was significantly higher in central lesions as compared to adjacent lesions visualized by the REBUS probe (81.4% versus 53.8%,  $P = .021$ ) but not significantly different between large ( $\geq 30$  mm) and small ( $< 30$  mm) lesions (81.6% versus 71.8%,  $P = .214$ ). The average largest diameter of biopsy specimens was 6.9 mm (range 1-12, SD 2.132). We witnessed moderate bleeding in 7 (5.6%) and post procedure hypoxic respiratory failure in 4 (3.2%) cases which could be managed without escalation of care.

### Conclusion

The REBUS guided crybiopsies from peripheral lung lesions are feasible even without using GS and significantly large samples can be obtained.



## Malignant Gastrotracheal Fistula treated by Self-Expandable Metallic Stent: First Case Report from India

Source: *Lung India* 2021;38:93-5.

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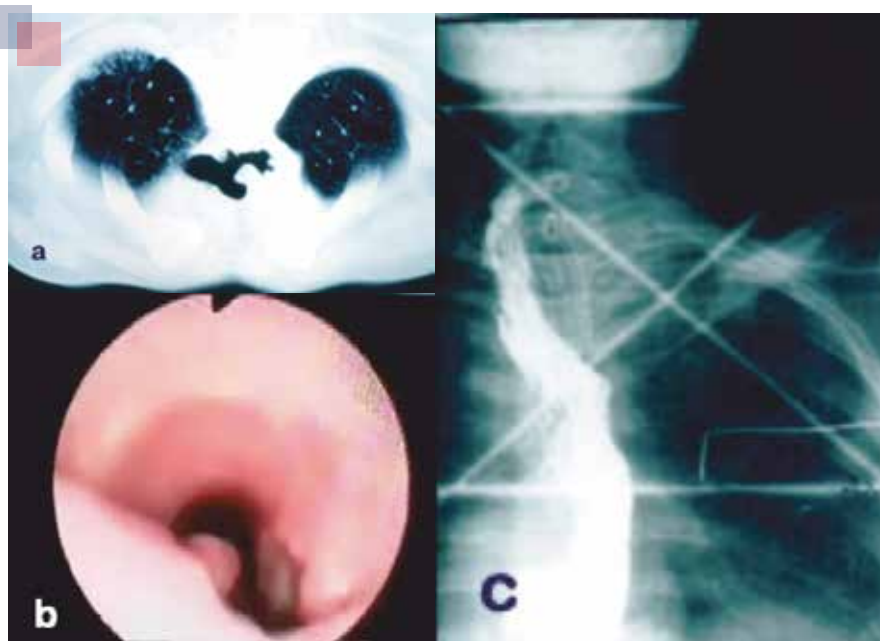
A gastrotracheal fistula (GTF) or gastrobronchial fistula (GBFs), between the tracheobronchial tree and stomach following gastric pull-up surgery, is an extremely rare (0.3-0.5%) complication of esophagectomy.<sup>1</sup> Patients usually present with dyspnoea, acute respiratory distress, aspiration pneumonia or coughing attacks after drinking and eating. This is potentially a life-threatening condition. We describe here a case of malignant gastrotracheal fistula that was successfully treated with a covered self-expanding metallic stent which is being reported first time in India.

A 57-year-old lady had undergone esophagectomy with a gastric pull-up and radiotherapy for esophageal cancer 1 year ago. She presented with progressively increasing coughing, expectoration of liquid and food pieces, choking, and respiratory distress following eating and drinking in the last 3 months. Computed tomography (CT) scanning demonstrated a fistula between the trachea and the residual stomach (Figure 1a). Bronchoscopy confirmed the presence of a fistula in the mid trachea (Figure 1b). The fistula measured 3.5 cm in its length and was located 3.0 cm below the vocal cords and distally 2.5 cm from the carina. The fistula was sealed by deploying a covered self-expanding metallic stent (18 mm × 60 mm; Ultraflex®, Boston Scientific, USA) into the trachea (Figure 1c). Stent

insertion was performed by flexible bronchoscopy under conscious sedation without using fluoroscopic guidance. A follow-up barium swallow study confirmed the successful sealing of the fistula (Figure 1d) with no communication between the trachea and intrathoracic stomach. The patient had complete resolution of his aspiration symptoms and tolerated a diet without any coughing.

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**Figure 1:** (a) Chest CT scan showing a fistula communicating between the trachea and pulled-up intrathoracic stomach. (b) Bronchoscopic view of the fistula and (c) self-expandable metallic stent in trachea

## A Report of Transaortic EBUS-FNA in a High-Risk Patient

To Cite the article: Goel MK, Kumar A, Maitra G, Verma RK, Garg N. A Report of Transaortic EBUS-FNA in a High-risk Patient. *J Bronchology Interv Pulmonol.* 2021 Apr 1;28(2):e20-e23. doi: 10.1097/LBR.0000000000000708. PMID: 33753705.

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Diagnosis of aorto-pulmonary mediastinal lymph nodes at stations 5 and 6 has been challenging due to the risk of vascular complications such as bleeding and difficult anatomical location. Endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA) is a minimally invasive technique for the diagnosis of mediastinal lymphadenopathy. However, the evidence is lacking about the procedural safety of EBUS-TBNA to target the transvascular

lesions. We report here EBUS guided fine needle aspiration through the aorta to sample a station 6 lymph node in a high-risk patient.

A 31-year-old male, known case of chronic kidney graft rejection presented with complaints of fever and significant weight loss for a 1-month duration. He was a known case of celiac disease for many years and had undergone kidney transplant 10 years ago. He was on immunosuppressive therapy which included tacrolimus, mycophenolate sodium and low dose prednisolone. His physical examination was unremarkable. The investigations found that his platelet count of 78000/cmm was

low while the blood urea 64 mg/dL and serum creatinine 2.8 mg/dL were raised. A non-contrast CT scan of the chest revealed an enlarged necrotic lymph node measuring 20 mm in diameter at the station 6 para-aortic location in the mediastinum (Figure 1a & b) and a soft nodular lesion measuring 20 x 8 mm at a sub-pleural location in the left apico-posterior segment (Figure 1c). CT guided FNAC of the sub-pleural lesion revealed only chronic inflammatory cells. Extensive lab and imaging workup were not contributing to establishing the diagnosis. The

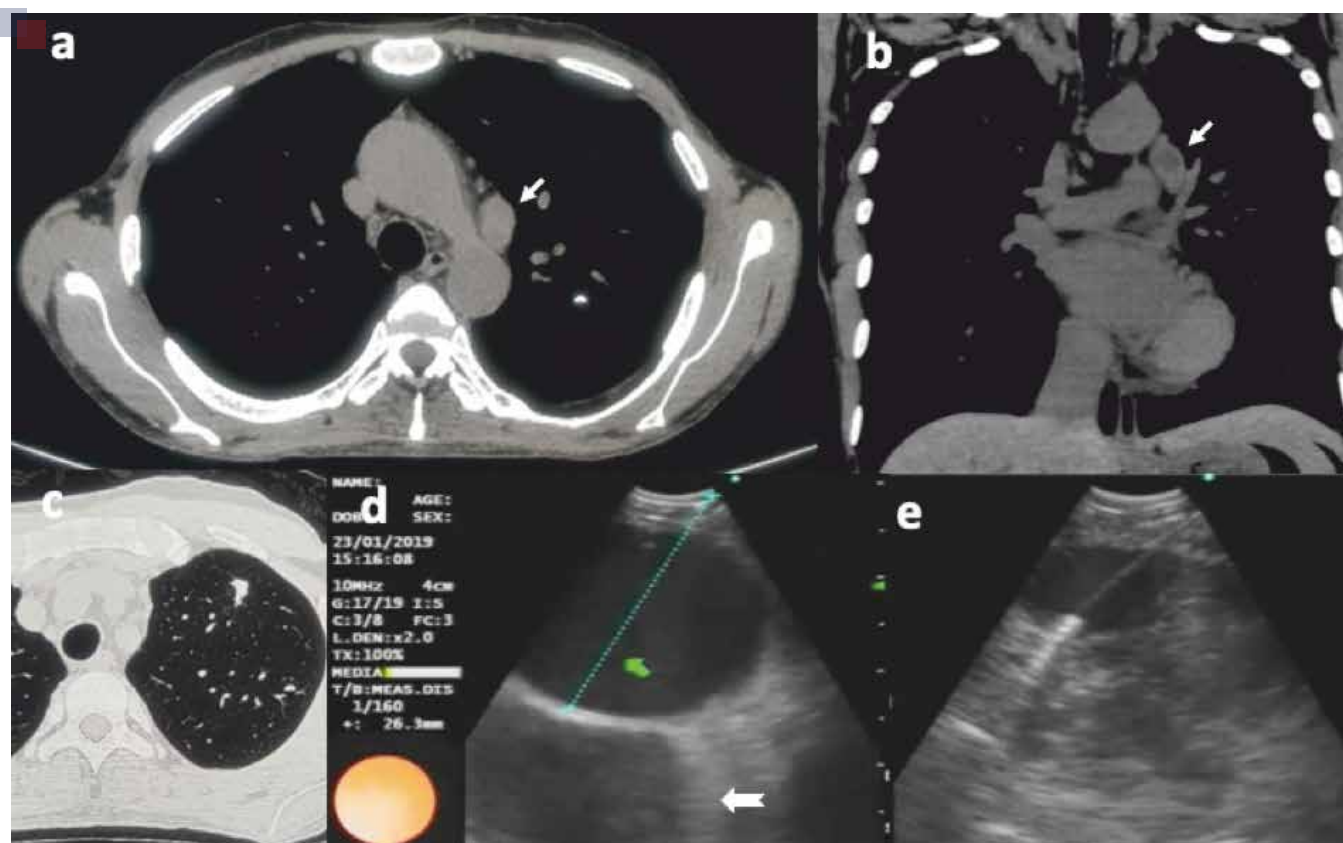


Figure 1: a-c) A non-contrast CT scan of the chest. 1a & b) Mediastinal windows in axial and coronal views reveal an enlarged lymph node (thin arrows) at the para-aortic location showing hypodense area within, suggestive of necrosis. 1c) Lung window in axial section showing a sub-pleural soft nodular lesion in the left apico-posterior segment. 1d) EBUS scanning along the left para-tracheal area shows a large lymph node (notched arrow) at a depth of 26.3 mm across the aorta at the station 6 location. The lymph node is oval in shape, has distinct margins, heterogeneous echogenicity and presence of coagulation necrosis. 1e) EBUS needle is seen passing through the aorta into the target lymph node at station 6.

patient was counseled for a surgical sampling of the lymph node which he declined voluntarily. Eventually, EBUS guided trans-aortic fine-needle aspiration (Transaortic EBUS-FNA) was performed with Olympus BF-UC180F convex probe bronchoscope through laryngeal mask airway (LMA) under general anesthesia. Sequential EBUS scanning enabled the identification of a lymph node at station 6 across the aorta (Figure 1d). A 22-gauge Olympus Vizishot EBUS needle was used to penetrate the needle through its walls into the target lymph node. (Figure 1e). There was no intrabronchial bleeding after the puncture, nor ultrasonographic evidence of arterial wall hematoma. The patient was discharged the same day in good clinical condition.

The final cytology examination of the mediastinal lymph node aspirate showed evidence of necrosis and

was positive for acid-fast bacilli. A diagnosis of tuberculosis of mediastinal lymph node was made and the patient was initiated on anti-tubercular treatment.

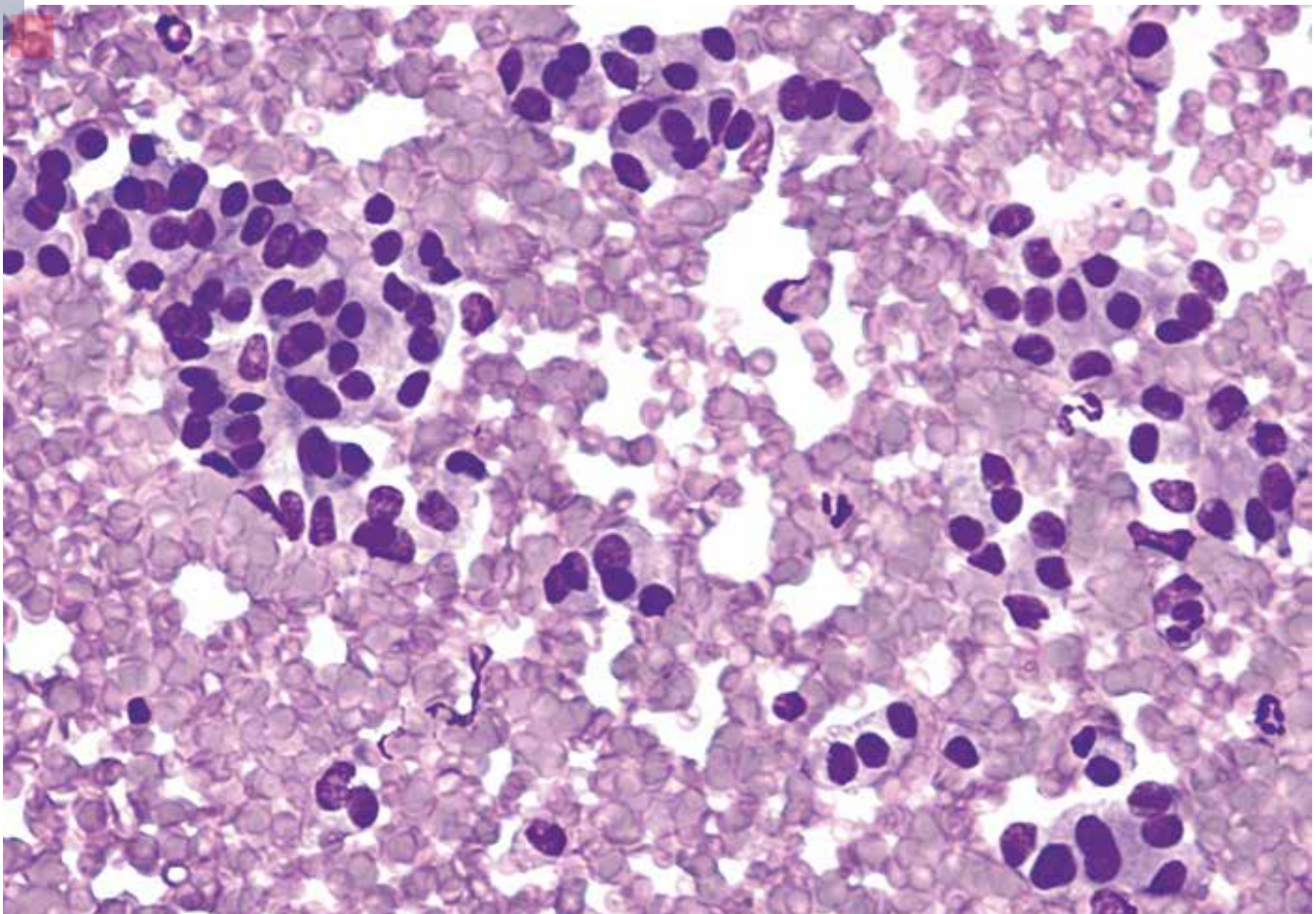
Our literature search found a description of only 2 reports of EBUS guided trans-aortic FNA of the lesions at the station 6. Pattabhiraman<sup>1</sup> reported a case of left lung mass who was taken up for EBUS examination after two attempts of CT guided fine needle aspiration failed to establish the diagnosis. A single trans-aortic pass under ROSE confirmed the diagnosis of squamous cell carcinoma in this patient. Subsequently, Mehta et al<sup>2</sup> reported 2 cases of EBUS guided trans-aortic needle aspiration of prevascular lymph nodes with no complications.

It must be emphasized that this procedure should be performed as a last resort by a skilled operator with

a large EBUS experience with a multi-specialty back up including a cardiothoracic surgeon. Further prospective studies are needed to reinforce safety, and define its place in the diagnostic algorithm of perivascular lesions. But as most lesions are accessible by safer methods, trans-aortic EBUS-TBNA like other trans-vascular procedures is likely to remain restricted to case reports.

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# Safety and Diagnostic Yield of Transbronchial Lung Cryobiopsy by Flexible Bronchoscopy using Laryngeal Mask Airway in 326 Cases: A Single-Center Retrospective Analysis

Source: *Lung India* 2021;38:109-16

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### Background

Intubation with either an endotracheal tube or a rigid bronchoscope is generally preferred to provide airway protection as well as to manage unpredictable complications during transbronchial lung cryobiopsy (TBLC). The laryngeal mask airway has been described as a safe and convenient tool for airway control during bronchoscopy.

### Aims & Objectives

In this study, we evaluated the safety and outcome of using a laryngeal mask airway (LMA) as a conduit for performing TBLC by flexible video bronchoscopy (FB).

**Methods:** We retrospectively analyzed the database of the patients who underwent TBLC between November 2015 and September 2019. The procedure was performed using FB through LMA under general anesthesia. Prophylactic occlusion balloon was routinely used starting January 2017 onwards. Radial endobronchial ultrasound (R-EBUS) guidance was used for TBLC in the localized lung lesions when deemed necessary. Multidisciplinary consensus diagnostic yield was determined and peri-procedural complications were recorded.

### Results

A total of 326 patients were analysed. The overall diagnostic yield was 81.60% (266/326) which included a positive yield of 82.98% (161/194) in

patients with diffuse lung disease and 79.54% (105/132) in patients with localized disease. Serious bleeding complication occurred in 3 (0.92%) cases. Pneumothorax was encountered in 8 (2.45%) cases. A total of 9 (2.76%) cases had at least 1 major complication.

### Conclusion

This study demonstrates that the use of LMA during TBLC by flexible bronchoscopy allows for a convenient port of entry, adequate airway support and effective endoscopic management of intrabronchial haemorrhage especially with the use of occlusion balloon.

### Keywords

Cryobiopsy, Transbronchial biopsy, Interstitial lung disease, R-EBUS.



## Management of Chronic Obstructive Pulmonary Disease: Insights into Patient Profile – Use of Inhaled Corticosteroids/ Long-Acting $\beta_2$ -Agonists/Long-Acting Muscarinic Antagonists

To Cite the article: Kishore N, Maitra S, Sircar M. Management of chronic obstructive pulmonary disease: Insights into patient profile - Use of inhaled corticosteroids/long-acting  $\beta_2$ -Agonists or long-acting  $\beta_2$ -agonists/long-acting muscarinic antagonists. *Indian J Respir Care* 2020;9: 162-70

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The noncommunicable chronic obstructive pulmonary disease (COPD) ranks among the top five leading causes of death worldwide. It is a preventable chronic disease that has become a major public health concern globally,

as well as in India. To improve the pharmacotherapeutic management of COPD and to increase awareness about the prevalence of the disease, the Global Initiative for Chronic Obstructive Lung Disease (GOLD) has updated recommendations for the disease, based on the current clinical evidence. The present GOLD guideline endorses inhaled corticosteroids (ICS) combined with long-acting  $\beta_2$ -agonists (LABA) for a subgroup of patients. The article is an attempt to clearly define patient profiles that stand to benefit from ICS/LABA, LABA/long-acting muscarinic antagonists (LAMA), and ICS/LABA/LAMA combination

therapy based on current clinical evidence. The discussion is presented under the following headings: (i) disease burden worldwide, as well as in India; (ii) clinical symptoms and diagnosis of disease; (iii) risk factors leading to the development of disease; (iv) pharmacotherapeutic agents for COPD; (v) current updated recommendations from GOLD guidelines; (vi) subgroup of patients who can benefit from various combinations of therapeutic agents; and (vii) comparative analysis of clinical studies on various GOLD guideline-suggested combination therapies.

## High-Flow Tracheal Oxygenation: A New Tool for Difficult Weaning

To Cite the article : Ramachandran L, Jha OK, Sircar M. Highflow Tracheal Oxygenation: A New Tool for Difficult Weaning. *Indian J Crit Care Med* 2021; <https://www.ijccm.org/doi/10.5005/ijccm/pdf/10.5005/ij-journals-10071-23724>

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### Abstract

High-flow tracheal oxygenation (HFTO), a modification of high-flow nasal cannula (HFNC), has been used in tracheostomised patients but only rarely for weaning. We present two cases on prolonged mechanical ventilation (PMV) where HFTO assisted weaning.





# Single Ascending Dose Safety, Tolerability, and Pharmacokinetic Study of Econazole in Healthy Volunteers

Source: *Expert Rev Anti Infect Ther.* 2022 Jun;20(6):955-961.  
 doi: 10.1080/14787210.2022.2016392. Epub 2022 Jan 2. PMID: 34913825

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## ABSTRACT

### Introduction

Econazole has been found efficacious

as antitubercular in in vitro and in vivo animal studies. However, limited information is available for its safety and pharmacokinetics in humans. In our present study we have conducted single ascending dose, safety, and pharmacokinetic evaluation in healthy human volunteers with the purpose of enabling translation for tuberculosis.

### Methods

This study was conducted as a single-center, ascending-dose, placebo-controlled, double blind design. Three ascending dose were chosen (250 , 500 , and 1000 mg) to be administered as a single oral dose. The volunteers were screened for potential eligibility. Participants were randomized to receive either Econazole or Placebo in a 6:2 design. Safety assessments and pharmacokinetic evaluations were

carried out for each cohort.

### Results

Econazole was found to be safe at all dose levels. No serious or severe adverse events occurred during the study. The AUC (0-∞) showed a response relationship with a value of  $49 \pm 3.47 \text{ h}^* \mu\text{g/ml}$ ,  $17.86 \pm 8.40 \text{ hr}^* \mu\text{g/ml}$ ,  $35.54 \pm 13.94 \text{ hr}^* \mu\text{g/ml}$  for 250 mg, 500 mg, and 1000 mg, respectively.

### Conclusion

Based on the findings of our study, a dose of 500 mg Econazole, once a day orally was considered as appropriate for further evaluation.



## Lung Isolation During Surgery: The Past, Present and Future



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Lung surgery was once considered messy and nearly impossible to anesthetize in the early 1900s. With time, the anaesthesiologists have progressed to nearly perfecting the art of one lung ventilation (OLV). Today, OLV is used to facilitate surgeries involving the thoracic cavity/ esophagus/ aorta/ mediastinum and heart. Currently, the use of modern polyvinyl endobronchial tube aided bronchoscopic insertion are a matter of routine and has revolutionized surgical ease.

### History

OLV was first conducted by physiologists Eduard Pflüger and Claude Bernard, at the University of Bonn, Germany, who studied gas exchange in dogs using a lung isolation catheter. Wolffberg using this technique introduced endobronchial tubes to isolate the lungs in 1871. Later, Loewy and von Schrotter used this catheter to measure cardiac output while testing

the Fick principle and the Bohr equation. Head in the year 1889 was the first to introduce the prototype of double lumen tube which had a short tracheal canula and a longer endobronchial tube. Gale and Walters in 1932 advanced Head's design and created the prototype for the modern-day double lumen tubes (DLT).

It was in 1950 that physiologist Carlen's from Sweden designed a DLT which was a landmark in thoracic anaesthesia as it paved the way to isolate a lung using only laryngoscopy and auscultation.

But the flaw in the design was the carinal hook which was prone for airway injury. In 1960, Robertshaw modified this by removing the hook



**Figure 1: Carlen's tube**

and using larger lumens.

In the 1980's these red rubber tubes were replaced by polyvinyl chloride which were disposable. These underwent subsequent modifications like the introduction of radiographic markers and low pressure-low volume endobronchial cuffs, which resulted in swifter accurate insertion leading to perfect



**Figure 2: Robertshaw tube - Left**

lung isolation.

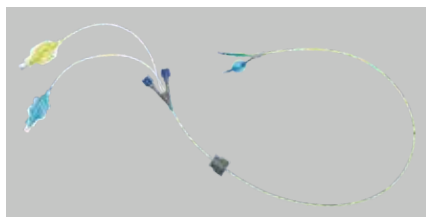
Lung isolation produces a physiology that is akin to a collapsed/ consolidated lung. Intraoperative management of this situation is an art and science by itself. Most experienced anaesthesiologists dread intraoperative hypoxia during OLV more than even a cardiac arrest! Such is the seriousness of conducting this business.

Lung isolation techniques involve the use of double lumen tubes, bronchial blockers or the use of single lumen endobronchial tubes to achieve OLV. Lung isolation is used to prevent soiling of the contralateral lung involving thoracic surgeries. Now its use has expanded to a spectrum of other cases like cardiac, mediastinal, vascular, esophageal and orthopaedic surgeries involving the chest cavity. Endobronchial tubes are used to provide differential lung ventilation for cases involving unilateral lung pathologies.



**Figure 3:  
High Volume Low Pressure Cuffed  
PVC Disposable Endobronchial Tube**

OLV cannot be used in patients unable to tolerate an one lung status. Dependence on bilateral ventilation, intraluminal airway masses (making DLT placement difficult), hemodynamic instability, severe hypoxia, severe COPD, severe pulmonary hypertension are some of the contraindications to the use of OLV.



**Figure 4: Carlen's tube**

**OLV in Cardiac Surgery**

Minimally invasive cardiac surgery (MICS) is performed through a mini-thoracotomy and is widely applied in clinical practice, due to its advantages of reduced postoperative pain, shorter hospital stay, better cosmesis, and quicker resumption of normal activities. Today, MICS encompasses minimally invasive direct coronary artery bypass (MIDCAB), robotic-assisted cardiac surgery, atrial fibrillation (AF) ablation surgery, and minimally invasive approaches to the mitral valve, left and right atria, and aortic valve. Lung isolation plays a major role in all these surgeries and evaluation of patient prior to



**Figure 5: Lung isolation in minimally invasive cardiac surgery**

choosing these surgeries is of paramount importance. Pulmonary function test/ lung diffusion test are some of the tests which guide for feasibility of OLV.

In patients with varying compliance of individual lungs, varying ventilator settings would be required. The same is applicable to patients with intrapulmonary hemorrhage. Differential lung ventilation could be used to harness the full ventilation capacity of the normal lung clubbed with protective ventilation of the diseased lung.

**Future of Lung Isolation**

With lung isolation being performed by less invasive bronchial blockers aided by the use of bronchoscopic vision, the anaesthesiologists have nearly perfected the art of OLV. With more and more surgeries being conducted via the minimal invasive/robotic way, use of OLV is going to be taken for granted by the surgical colleagues. On their part, the anaesthesiologist will have to strive hard to provide long duration of OLV with minimal physiological or mechanical harm to the patients.



**Figure 6: Differential lung ventilation**



**Figure 7: showing nearly normal left lung and hemorrhagic right lung being differentially ventilated by two ventilators.**



**TECHNOLOGY  
AND INNOVATIONS**

## Technological Advances



**Mr Tarun Deep Katyal**  
Deputy General Manager -  
Medical Strategy & Operations Group  
Fortis Corporate Office



**Mr Vipin Kumar Singh**  
Manager - Bio Medical Engineering  
Medical Strategy & Operations Group  
Fortis Corporate Office

**Equipment:**

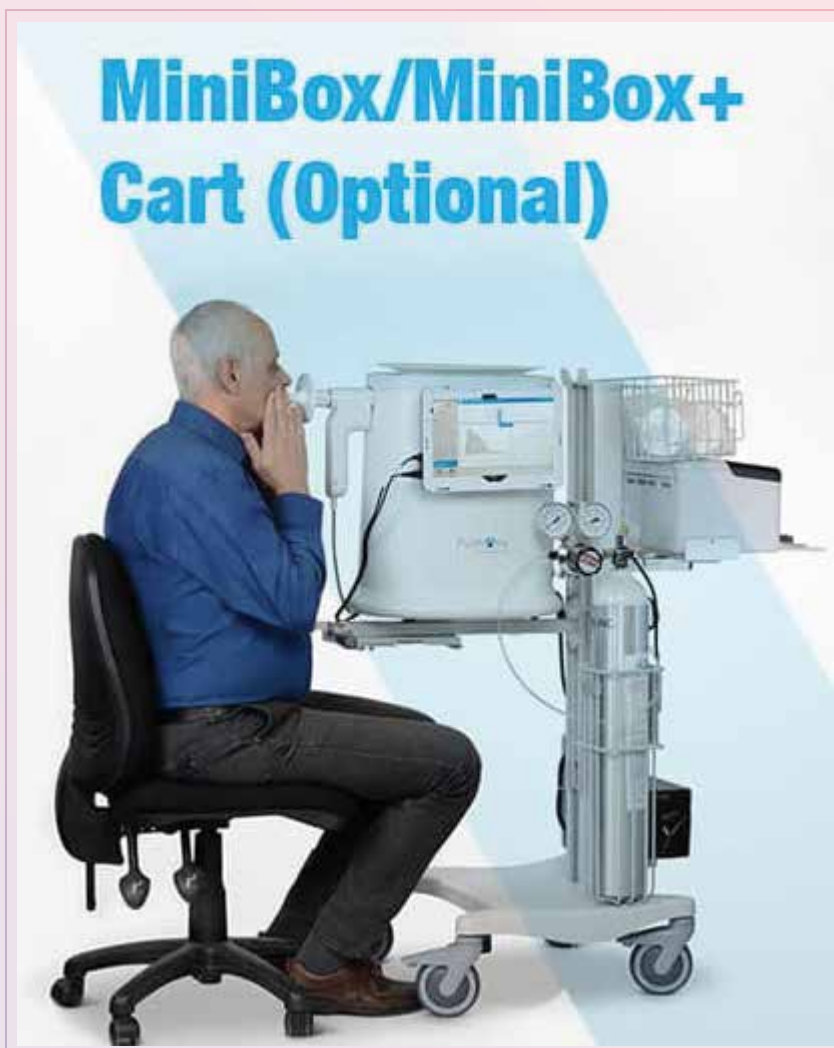
PFT machine with DLCO/LVM

**Make:** Plumone

**Model:** Mini Box +

**Key Features:**

1. State of the Art machine with Latest Technology Patented Technology for measuring Lung Volume without body box using Plethysmography technology.
2. Automatic Measurement and short testing time.
3. Can be used on pediatric patient from the age 5 and above.
4. Self-calibration facility.
5. No sensation of claustrophobia or anxiety associated with being inside a cabin.
6. Mobility and cabinless design enables obese, wheelchair-bound, or bedridden patients to be easily tested.
7. Complies with industry safety guidelines for COVID-19 (ATS/ APCCSDD Task Force, ERS Group 9.1



## Endoscopic Intra-Procedural Aqua Expeller

Sachin Kadam, Sr. Endoscopy Technician of Fortis Hospital, Mulund  
 wins First Prize at CAHOTECH 2022 Hospital Innovation Showcase Competition



Sachin Kadam, our Sr. Endoscopy Technician who is associated with our hospital for 15 years showcased & presented his innovation at the prestigious CAHOTECH 2022. He has named his innovation 'Endoscopic Intra-procedural Aqua Expeller' (EIAE). He has constructed this device from scratch using easily available parts which cost approximately INR 2000. The device

is used during Endoscopic Procedures for flushing the water, which is usually done manually by syringe. With his vast experience and knowledge in this field, he identified the manual method to be tedious which requires extra manpower. He tried and tested many methods, spent a couple of years to finally come up with this device. The device is very handy, user-friendly and is

being appreciated by all the Gastroenterologists who are regularly performing endoscopic procedures at the hospital. This year, at CAHOTECH 22 there were more than 700 entries from across the globe and he definitely paved his way to the finale where he left the audience & judges awestruck.



# DEFINING CONCERNS

# Incidence, Prevalence, and National Burden of Interstitial Lung Diseases in India: Estimates from Two Studies of 3089 Subjects

Source: *PLoS One*. 2022 Jul 21;17(7):e0271665.;<https://pubmed.ncbi.nlm.nih.gov/35862355/>

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## Background and Objective

The epidemiology of interstitial lung diseases (ILDs) in developing

countries remains unknown. The objective of this study was to estimate the incidence, prevalence, and national burden of ILDs in India.

## Methods

Data of consecutive subjects (aged >12 years) with ILDs included in a registry between March 2015 and February 2020 were analyzed retrospectively. The proportion of each ILD subtype was determined. The crude annual incidence and prevalence of ILDs for our region were estimated. Subsequently, the primary estimates of the national annual incident and prevalent burden of ILD and its subtypes were calculated. Alternative estimates for each ILD subtype were calculated using the current and a large, previous Indian study (n = 1,084). Data were analyzed using SPSS version 22 and are presented descriptively.

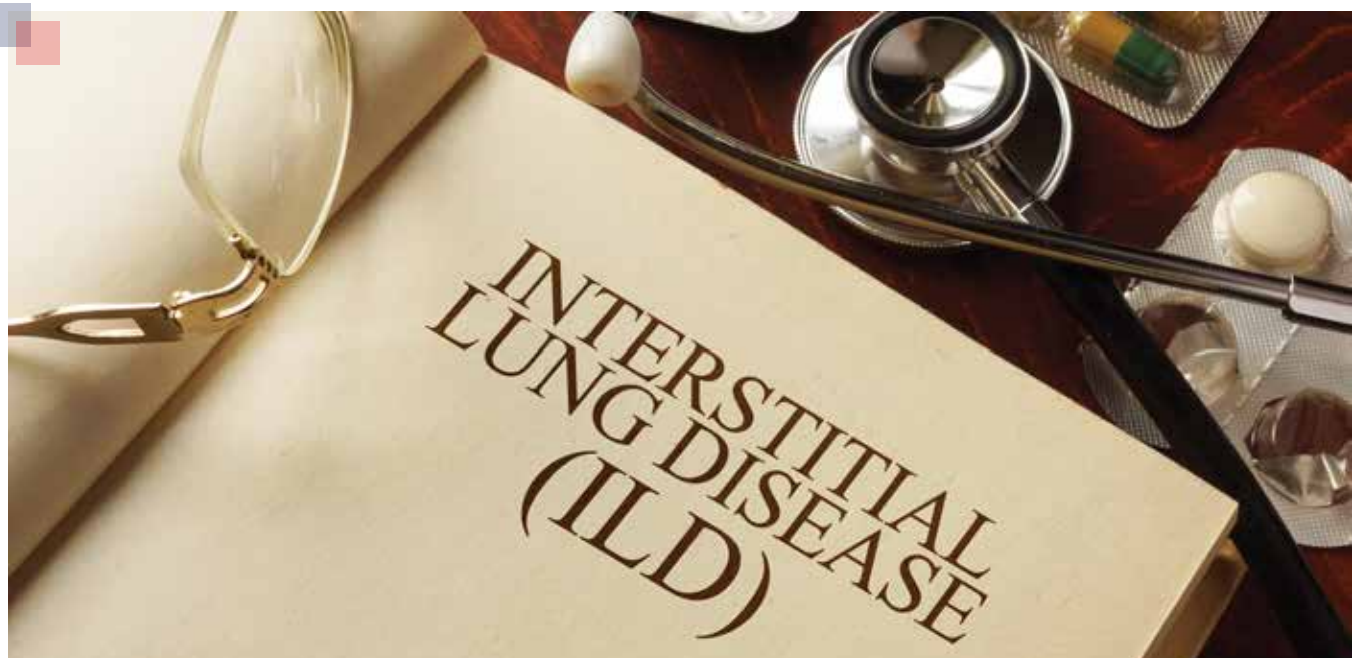
## Results

A total of 2,005 subjects (mean age,

50.7 years; 47% men) were enrolled. Sarcoidosis (37.3%) was the most common ILD subtype followed by connective tissue disease (CTD)-related ILDs (19.3%), idiopathic pulmonary fibrosis (IPF, 17.0%), and hypersensitivity pneumonitis (HP, 14.4%). The crude annual incidence and prevalence of ILDs were 10.1–20.2 and 49.0–98.1, respectively per 100,000 population. The best primary estimates for the crude national burden of all ILDs, sarcoidosis, CTD-ILD, IPF, HP, and other ILDs (in thousands) were 433–867, 213–427, 75–150, 51–102, 54–109, and 39–78. The respective alternative estimates (in thousands) were sarcoidosis, 127–254; CTD-ILD, 81–162; IPF, 46–91; HP, 130–261; other ILDs, 49–98.

## Conclusion

In contrast to developed countries, sarcoidosis and HP are the ILDs with the highest burden in India.





# Intensive Care in India in 2018-2019: The Second Indian Intensive Care Case Mix and Practice Patterns Study (INDICAPS- II)

Source: *Indian J Crit Care Med.* 2021 Oct; 25(10): 1093–1107. doi: 10.5005/ijp-journals-10071-23965

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22.2% of patients received mechanical ventilation (MV) and vasopressors or inotropes (VIs), respectively. On the study days, 1,195 patients (25.6%) were infected and 1,368 patients (29.3%) had sepsis during their ICU stay. ICU mortality was 1,092 out of 4,669 (23.4%), including 737 deaths and 355 terminal discharges (TDs) from ICU. Compliance for process measures related to MV ranged between 62.7 and 85.3%, 11.2 and 47.4% for monitoring delirium, sedation, and analgesia, and 7.7 and 25.3% for inappropriate transfusion of blood products. Only 34.8% of

ICUs routinely used capnography. Large hospitals with 500 beds, closed ICUs, the APACHE II and SOFA scores, medical admissions, the presence of cancer or cirrhosis of the liver, the presence of infection on the study day, and the need for MV or VIs were independent predictors of mortality.

## Conclusions

Hospital size and closed ICUs are independently associated with worse outcomes. The proportion of TDs remains high. There is a scope for improvements in processes of care.

## Background

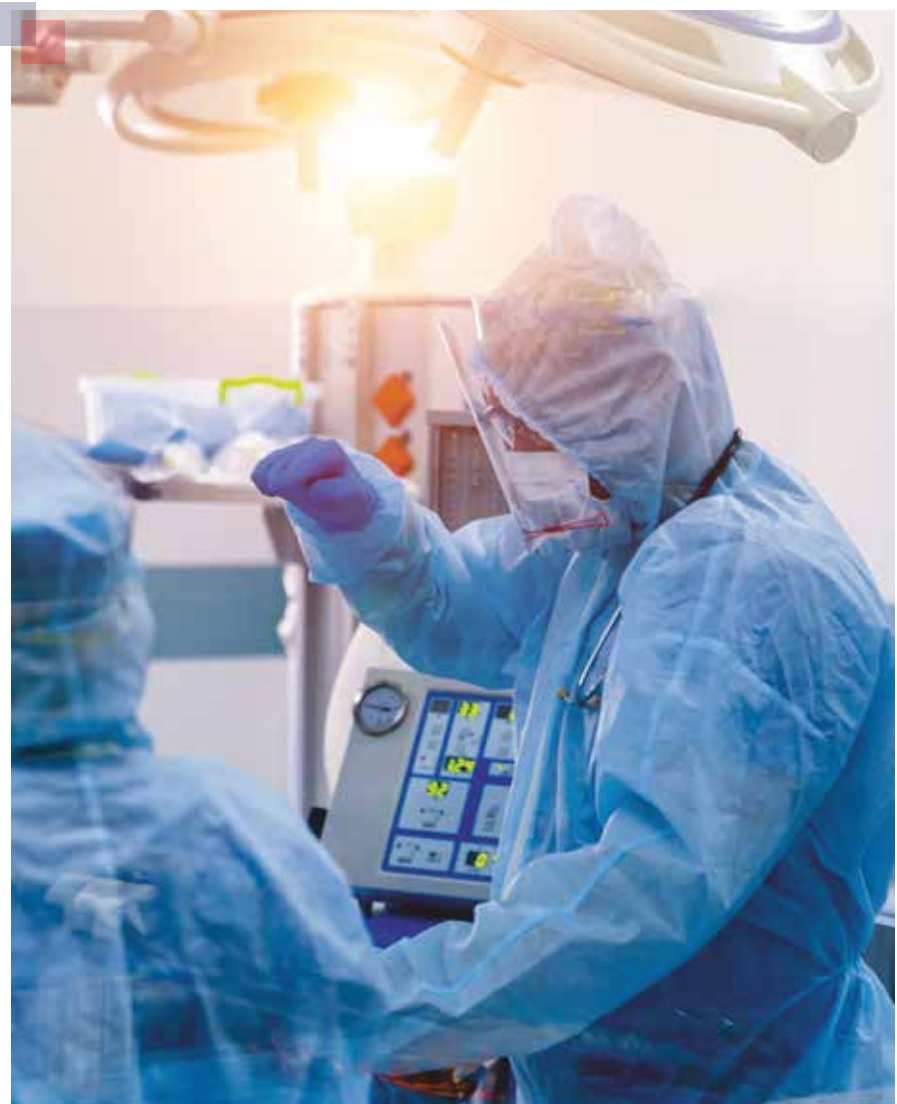
We aimed to study organizational aspects, case mix, and practices in Indian intensive care units (ICUs) from 2018 to 2019, following the Indian Intensive Care Case Mix and Practice Patterns Study (INDICAPS) of 2010-2011.

## Methods

An observational, 4-day point prevalence study was performed between 2018 and 2019. ICU, patient characteristics, and interventions were recorded for 24 hours, and ICU outcomes till 30 days after the study day. Adherence to selected compliance measures was determined. Data were analyzed for 4,669 adult patients from 132 ICUs.

## Results

On the study day, mean age, acute physiology and chronic health evaluation (APACHE II), and sequential organ failure assessment (SOFA) scores were  $56.9 \pm 17.41$  years,  $16.7 \pm 9.8$ , and  $4.4 \pm 3.6$ , respectively. Moreover, 24% and





**THE WAY WE DO  
IT AT FORTIS**

# Feasibility and Impact of Screening for Venous Thromboembolism in Treatment-Naive Lung Cancer Patients-Results of a Prospective Cohort Study

Source: *Indian J Cancer*. 2022 Apr-Jun;59(2):203-211. doi: 10.4103/ijc.IJC\_678\_19.

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## Background

Venous thromboembolism (VTE) in cancer remains underdiagnosed. This prospective study aimed to evaluate the feasibility of screening for VTE in lung cancer (LC) patients. We assess the incidence of VTE, its risk factors, and effects on overall survival (OS).

## Methods

Consecutive treatment-naive LC patients were screened for deep venous thrombosis (DVT) with compression ultrasonography and pulmonary thromboembolism (PTE) with computed tomography pulmonary angiography (CTPA) at diagnosis and after 3 months of treatment. The incidence rate of VTE (DVT and/or PTE) was calculated. Risk factors associated with VTE were assessed using logistic regression analysis. All participants were followed-up to 1 year after enrolment. OS was compared in LC subjects with and without VTE, using

the Cox proportional hazard analysis.

## Results

Around 301 subjects with LC (stages IIIB-IV accounted for 83.1%) were enrolled, of which 16 had VTE (5.3%). The incidence rate of VTE was 90 per 1000 person-years (PY). PTE was asymptomatic in 27.3% of cases while all DVT episodes were symptomatic. The incidence rate of asymptomatic PTE identified during

the screening was 17 per 1000 PY. The median duration from LC diagnosis to the VTE event was 96.5 days. Median OS was significantly less in VTE patients [161 versus 311 days;  $P = 0.007$ ] and death was attributable to VTE in 50%. After adjusting for covariates, VTE (hazard ratio [HR] = 2.1), smoking (HR = 1.7), and Eastern cooperative oncology group performance status  $\geq 2$  (HR = 1.6) were independently associated with poor OS in LC.



# Prospective Cohort Study of Impact of BAL Biofire Filmarray Pneumonia Panel on Microbial Diagnosis and Antibiotic Prescription In ICU

Source: Crit Care 2020 24 (Suppl 1): p446

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Co-Author  
**O Jha, Singh J, Yadav S, Kaur R**

## Introduction

Biofire® Filmarray® multiplex PCR pneumonia panel (BFPCR) can shorten microbial detection time.

## Methods

Six months comparison of time to microbial diagnosis and treatment changes in pneumonia cases, between in-house bronchoalveolar lavage (BAL) stains and cultures and BFPCR done by remote laboratories [Dr. Dangs Lab, New Delhi (Lab 1) and SRL Mumbai (Lab 2)].

## Results

Thirty-four BAL samples obtained

from 32 patients were sent for stains, culture and BFPCR. The mean time to results was less for BFPCR (12.9±14.5 hrs) (3.3±1.1 hrs for Lab 1 and 30.8±9.6 hrs for Lab 2) in comparison to culture (48±5 hrs) (p<0.01). Lab 1 time was less than reporting time of stains (4.0±1.8 hrs; p=0.04).

BFPCR was positive in 31(91.2%) samples and reported higher (p<0.01) yield of microbes (77 vs 25) and bacterial resistances (61 vs. 10) than cultures (figure 1). It was positive for single or multiple microbes in 9(26.5%) and 22 (64.7%) samples respectively. Single or multiple resistance genes were detected in 5(25%) and 20(80%) samples respectively. BFPCR was positive only for bacteria in 13(38.2%), virus in 2(5.9%) and for both in 16(47.1%) cases. Influenza A was found in 10(29.4%) cases. The most common organisms in community and hospital acquired

pneumonia were Streptococcus pneumoniae (4/12) and A. Baumannii (10/22) respectively.

Bacterial cultures were concordant with BFPCR in 11/11 (100%) of positive cases. Decisions to change antibiotics could be taken earlier based on BFPCR (p< 0.001) than if were based solely on cultures – both in culture positive (9.7+14.3 vs 50.03+6.0 hrs) and negative cases (14.7+14.9 vs 48.0+4.3 hrs) where antibiotics would have remained unchanged. Based on BFPCR antibiotics were escalated in 17(50%) patients and teicoplanin (11/19) was most often stopped.

## Conclusion

BAL BFPCR were obtained significantly earlier, identified more organisms and bacterial resistance than culture reports and lead to more frequent and earlier antibiotic changes.

WORLD  
PNEUMONIA  
DAY  
NOVEMBER 12



# Endobronchial Hamartoma Presenting with Obstructive Pneumonia Successfully Treated with Bronchoscopic Electrocautery



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## Introduction

Pulmonary hamartomas are rare lung tumours and constitute ~8% of all benign lung neoplasms. Only 10-20% occur endobronchially while the rest are intraparenchymal. We present an interesting case of endobronchial hamartoma (EH) with obstructive pneumonia successfully treated with bronchoscopic electrocautery without the need for surgical removal.

## Case report

A 56-year-old male, was referred for persistent cough for more than a month despite multiple medications being prescribed for suspected bronchitis. The patient also complained of lower right chest pain, heaviness, breathlessness and weight loss more than 3 kg. He was a diabetic and non-smoker. Chest roentgenogram done earlier was

non-contributory (Figure 1A).

On presentation, he was tachypnoeic, tachycardic with normal oxygen saturation. Chest auscultation revealed rhonchi bilaterally. CECT chest showed hypo-enhancing lesion in the right hilar region with intrabronchial component in bronchus intermedius with calcifications leading to partial obliteration along with patchy consolidation in the basal segments of the right lower lobe and multiple enlarged chest lymph nodes (Figure 1 B,C). His white cell counts and serum total IgE level were significantly raised. The glycosylated hemoglobin and blood sugar were also raised. The patient was managed with insulin, empirical antibiotics, bronchodilators and other supportive treatment.

Flexible bronchoscopy revealed a smooth mass occluding the right intermediate bronchus. A biopsy was taken and the histopathology features were compatible with hamartoma (Figure 1D,E). Patient was subsequently taken for tumour ablation via electrocautery through a flexible bronchoscope under general anaesthesia via a LMA. Almost the majority of the tumour was ablated with achievement of complete airway patency (Figure 2 A,B,C,D). Bronchoalveolar lavage was non-contributory. Pulmonary function test showed moderate obstruction. Check bronchoscopy under local anaesthesia done three days later showed residual tumour pieces which were removed using an electrocautery. The patient subsequently became symptom free and was discharged. Since then, he has been followed up with imaging and bronchoscopies with debridement of residua (Figure 3 A,B,C & Figure 4 A,B). His latest CT done eight months later showed a very small residual lesion with

calcification foci (Figure 4C,D). Bronchoscopy showed small calcified residual lesion (Figure 4E).

## Discussion

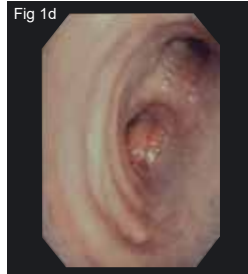
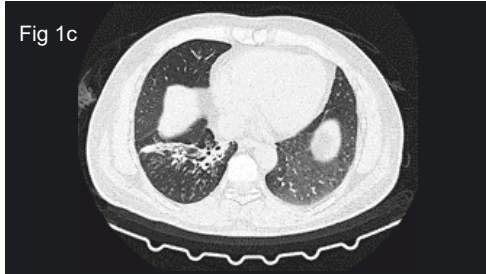
Pulmonary hamartoma is a benign tumour that contains mesenchymal and epithelial elements and originates from the bronchial wall. EH appear more frequently in men with the peak incidence being seen in the fourth and seventh decades of life.

Patients are usually asymptomatic with peripheral parenchymal hamartomas, with incidental discovery on chest imaging obtained for another reason. When located endobronchially, they can cause symptoms due to obstruction. Complications like post obstructive pneumonia and lobar atelectasis can occur, as was seen in our patient.

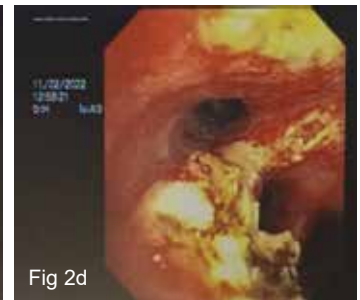
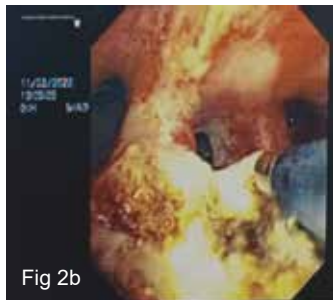
Intraparenchymal hamartoma, shows typical radiographic appearance as a solitary pulmonary nodule that may contain popcorn calcification. EH may be poorly demonstrated or may not be seen at all on chest radiograph as was seen in our patient. It was Chest CT which demonstrated endobronchial lesion.

Earlier treatment in EH was surgical. Now bronchoscopic resection can be a primary treatment option in selected cases. Few articles, only one from India, have reported the successful removal of lesion using bronchoscopy via electrocautery techniques. In our case, we excised the lesion with the bronchoscopic electrocautery. The patient recovered well, became asymptomatic and has remained stable throughout follow-up.

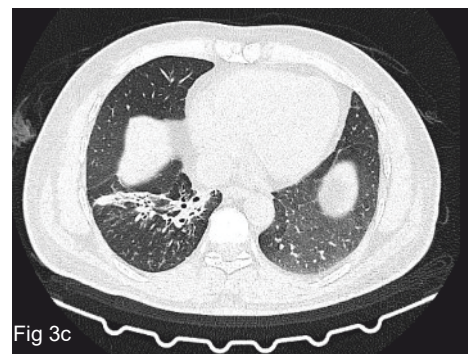
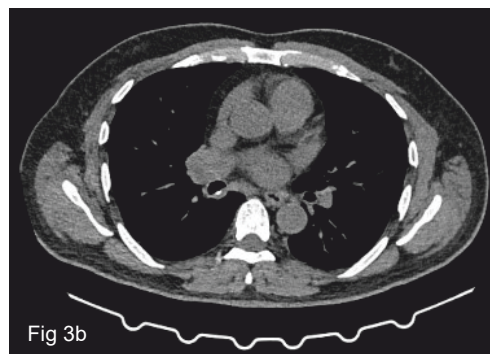
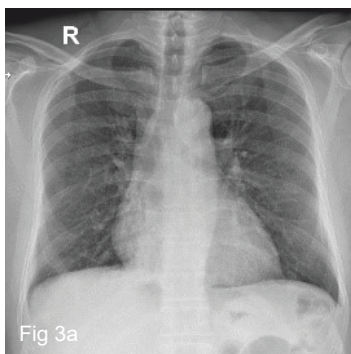
In conclusion, bronchoscopic electrocautery tumour ablation is safe in experienced hands. It should be considered as the primary treatment in selected cases.



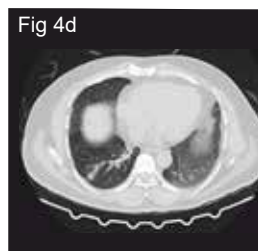
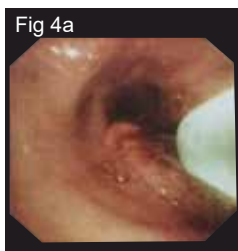
**Figure 1:** Chest Radiograph showed linear opacities Right MZ, LZ Rt parahilar areas (A). CT Chest showed endobronchial lesion with pneumonia (B,C). Bronchoscopy guided biopsy revealed hamartoma (D,E).



**Figure 2:** Bronchoscopic guided electrocautery ablation (A,B). Post ablation residual lesion with complete airway patency (C,D).



**Figure 3:** Chest Imaging done 2 months later showed normal looking radiograph (A) with CT showing small residual lesion and bronchiectatic changes right lower lobe segments (B,C).



**Figure 4:** Bronchoscopy after 5 months showed residual lesion which was removed with electrocautery (A,B). CT Chest done 8 months later showed very small residual lesion with calcification foci and linear fibrotic opacity right posterobasal segment (C,D) followed by bronchoscopy which showed small calcified lesion (E).

# A Retrospective Review of a 2-Year Strong Antimicrobial Stewardship Program in a Tertiary Care Institute in Mumbai

Source: *Indian J Pharmacol.* 2022 Jul-Aug;54(4):253-257. doi: 10.4103/ijp.IJP\_466\_20. PMID: 36204808.



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Co-Author  
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 Vijayanti Kadam, Elizabeth J Mathew**

## ABSTRACT

### Background Information

Many institutes have implemented a strict antimicrobial stewardship (AMS) program in the post antibiotic era.

### Aim

To investigate how the resistance pattern changes after implementation of a stringent AMS programme.

### Methodology

It employs a defined daily dose methodology (DDD). The formulae listed below are used to compute this for two periods: October 2015 to October 2017 (Period 1) and October 2017 to October 2019 (Period 2). DDD = Antibiotics used in total (g) per year. The length of stay was determined using the data from the hospital's information system (HIS). The patterns of resistance to the limited antibiotics are vancomycin, linezolid, tigecycline, and colistin. In both Periods 1 and 2, skin and soft-tissue infections, urinary tract infections, bloodstream infections, and respiratory tract infections were studied in both periods.

### Results

In the year from October 2015 to October 2017, 4569 patients received limited antibiotics out of a total of 14,544 admissions. The average length of stay was 7.48 days in Period 1, however, it was reduced to 3.96 days in Period 2 out of 15,199 patients. In vitro isolate sensitivities to vancomycin, linezolid, tigecycline, and colistin were increased.

### Conclusion

Some of the most common antibiotics were used less frequently. This appears to be linked to a shorter stay in the hospital and increased antibiotic susceptibility.

### Keywords

Antibiotics; antimicrobial stewardship; sensitivity.



## VATS Assisted Mediastinal Mass Excision with Completion Thyroidectomy- A Case Report



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Head and Senior Consultant - Heart & Lung Transplant Programme, CTVS Fortis Hospitals, Vadapalani

53 years old female, a known case of right solitary nodule thyroid had undergone right hemithyroidectomy (2014) diagnosed to be as Hashimoto's thyroiditis; also, a known case of rheumatoid arthritis she presented with complaints of polyarthralgia for a duration of 20 days for which she had been initially evaluated elsewhere.

Patient was further evaluated with CECT-Thorax which showed moderately enhancing solid, cystic lesion noted in superior mediastinum in right para tracheal region, posterior to the SVC causing compression over the SVC arising from the left lobe of thyroid gland. She was evaluated with CECT-Neck which showed large heterogeneously enhancing lobulated hyperdense mass extending from left

side of neck crossing the midline at the suprasternal region into the superior mediastinum involving pre-vascular and right para hilar regions with features suggestive of multinodular goiter. Her CT- guided biopsy showed multinodular goiter. She was advised a VATS assisted mediastinal mass excision with completion thyroidectomy.

On 22/09/2022 under general anesthesia the patient was placed in a supine position with the neck extended, with parts painted and draped. A neck crease incision was made 20 mm above the suprasternal notch from the antero-medial border of the right SCM to the left lateral margin of the left SCM. The platysma was opened, and the strap muscle was separated from the thyroid. The superior inferior pedicle of the left thyroid gland was ligated and divided. The middle thyroid vein was ligated and divided and the thyroid gland was separated from the trachea.

The left thyroid gland was continuous to the suprasternal region and went retrosternal crossing the midline over the trachea and to the right thoracic region. The thyroid gland was divided with a harmonic, leaving the remaining intra thoracic tumor. The wound was closed in layers after hemostasis achieved and drain placing.

Patient was then positioned in the left

lateral position. The parts were painted and draped. A 10mm incision for camera port was made in the 8<sup>th</sup> intercostal space in posterior axillary line and another 5mm incision was made for side instrument port in the 5<sup>th</sup> ICS in the posterior axillary line. The surgiport was inserted in the 6<sup>th</sup> ICS from the anterior axillary line.

### Intra-op Findings

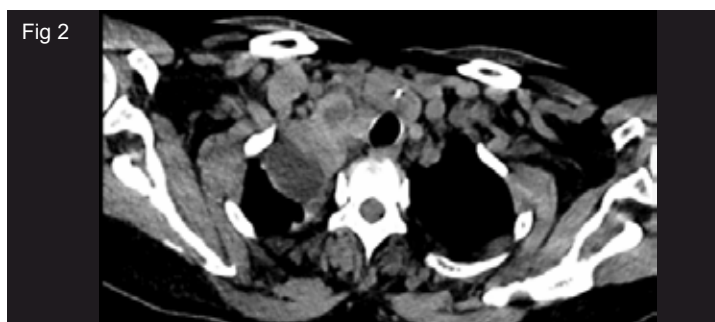
Tumor of size 9X7X6cm was found retro-SVC adherent to the lower right tracheal wall and right bronchus.

By meticulous dissection, the tumor was dissected anteriorly from the SVC, medially from the lower tracheal region and inferiorly from the right bronchus removed. Hemostasis was secured well. The mediastinal pleura was approximated with prolene in the tumor dissected site. A right ICD was placed and thorough wash was given. The tumor was sent for HPE analysis

The patient was weaned off from ventilatory support and extubated after a cuff leak test and connected to face mask oxygen support. Vocal cord movements examined after extubation and were normal. On POD- II, after confirming that there was no air leak, the CTD & right pleural drain were subsequently removed. The chest X-ray post drain removal was normal. The biopsy reports revealed Hashimoto's thyroiditis.



**Figure 1: Mass involving the left lobe of thyroid with calcification**



**Figure 2: Lobulated hyperdense mass lesion Crossing the midline at the retrosternal region entering into the right thorax**





Fig 3

**Figure 3:** The medial border of the tumor compressing over the lower border of the trachea

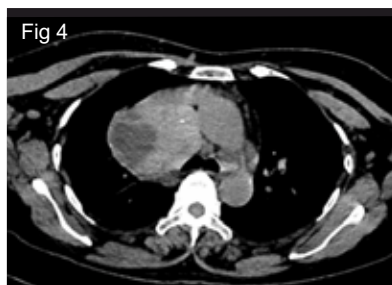


Fig 4

**Figure 4:** The postero-inferior border of the tumor over the superior aspect of the right bronchus

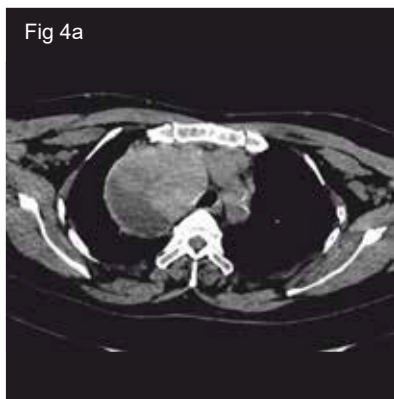


Fig 4a

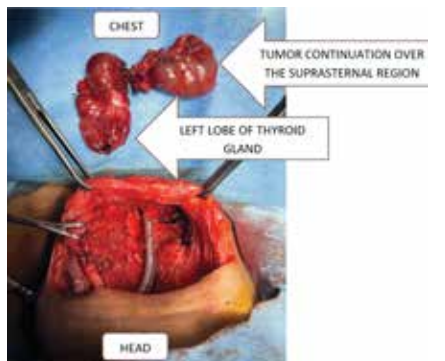
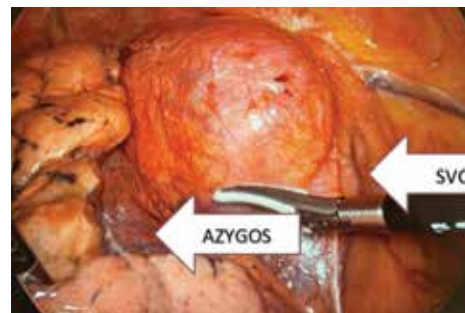


Figure 5



**Figure 6:** Tumor located posterior to SVC superior to the azygos vein



**Figure 7:** Tumor dissected anteriorly from the SVC and inferiorly from the azygos



**Figure 8:** Tumor dissection in the posterior aspect

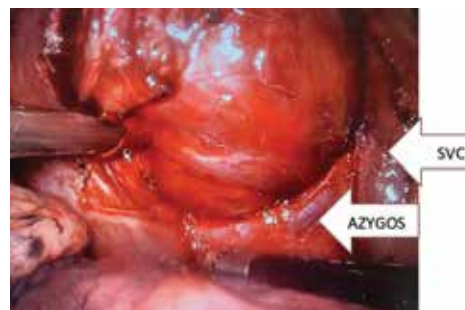


Figure 9

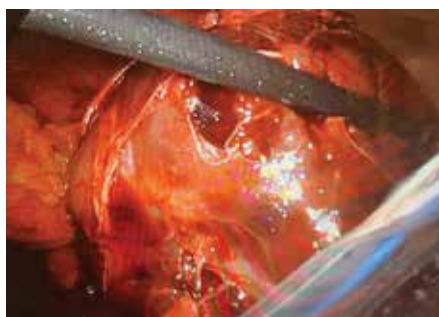
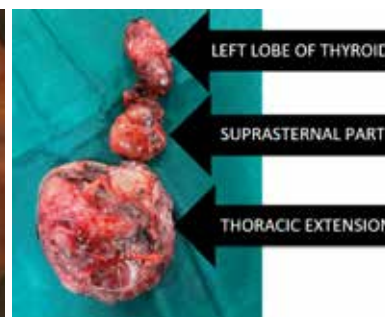


Figure 10



Figure 11



LEFT LOBE OF THYROID  
SUPRASTERNAL PART  
THORACIC EXTENSION

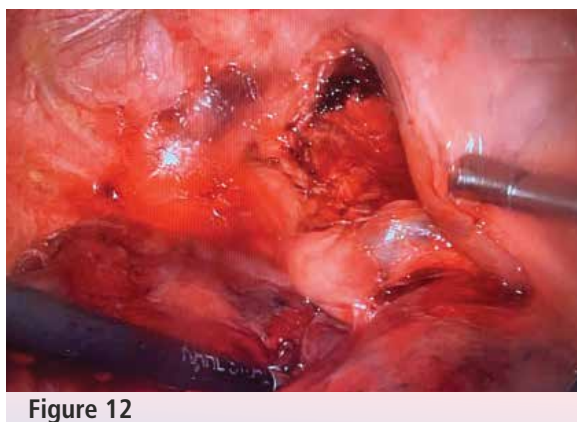
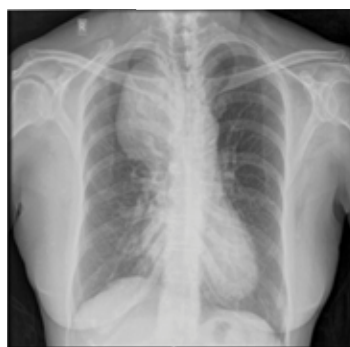


Figure 12



PRE-OP CHEST X-RAY  
Figure 13



POST-OP CHEST X-RAY

# Gallium-68-Pentixafor PET/CT Demonstrating in vivo CXCR4 Receptors' Overexpression in Rare lung Malignancies: Correlation with the Histological and Histochemical Findings

Source: *Journal of Nuclear Medicine Technology* May 2022, *jnmt.122.264141*; DOI: 10.2967/jnmt.122.264141

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sarcomatoid carcinoma and haemangioendothelioma cases respectively. The mean values of SUV max, MFI and % stained cells were highest in haemangioendothelioma. Among 3 patients with lung metastases, the highest SUVmax value of 9.5 was observed in primary sarcoma patient.

## Conclusion

[68Ga] Pentixafor selectively targets the in vivo whole-body disease burden of CXCR4 receptors. This approach thus holds good promise for developing suitable radiotheranostics in lung cancers expressing these targets.

## ABSTRACT

### Objectives

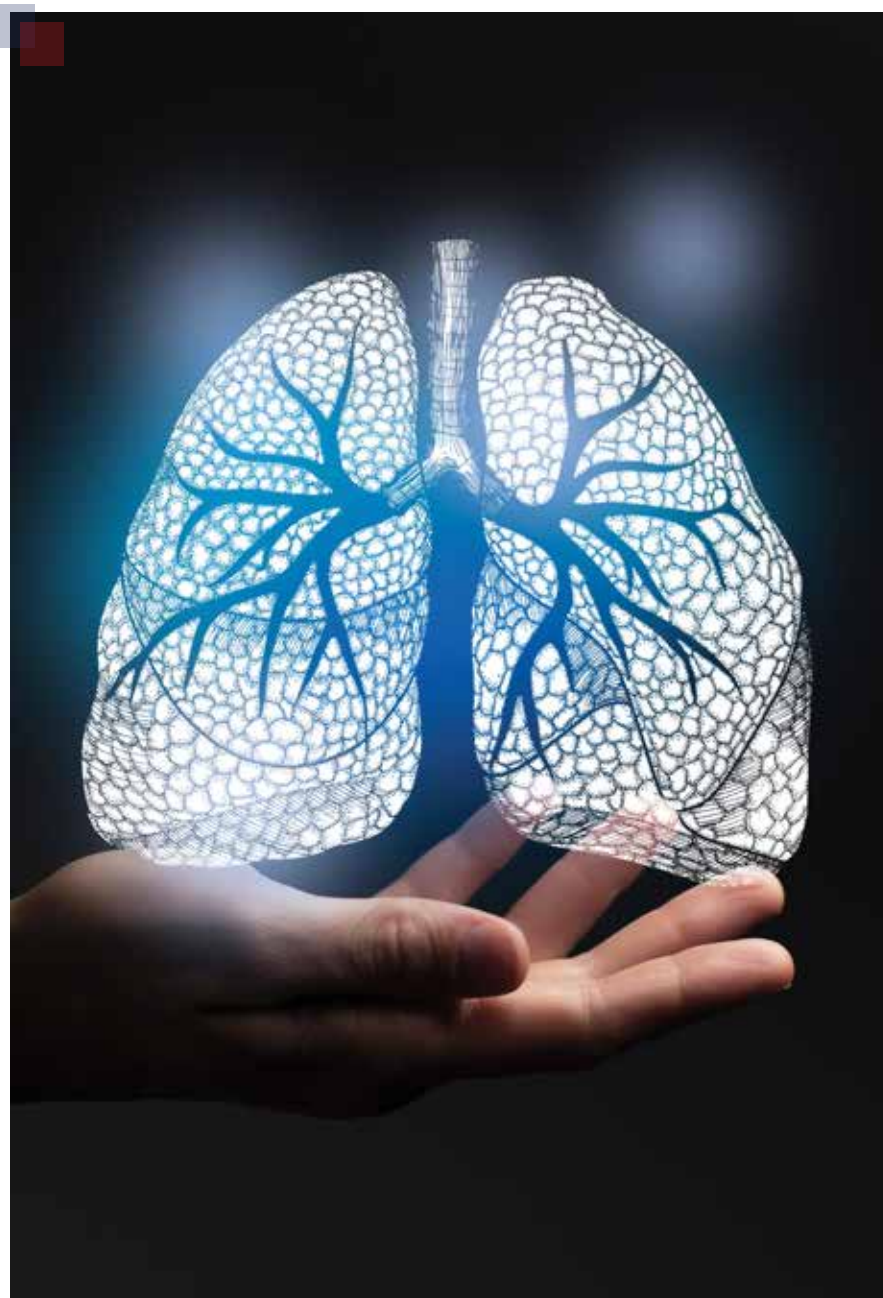
Gallium-68 [68Ga] Pentixafor PET/CT imaging allows non-invasive assessment of CXCR4 expression in various malignancies, but its use in rare lung cancer variants is not reported.

### Methods

[68Ga] Pentixafor PET/CT imaging was performed in 6 patients (3M:3F; mean age=57.0±16.80 years) with suspected lung masses. Whole-body PET/CT images were acquired at 1-h after the i.v. injection of 148.0-185.0 MBq of the tracer. PET/CT images were reconstructed and analysed. The image findings were correlated with histopathological and quantitative (CXCR4-receptors) FACS analysis.

### Results

Histopathological diagnosis of haemangioendothelioma, sarcomatoid carcinoma and hemangiopericytoma was confirmed in 1-patient each. Lung metastasis was diagnosed in the remaining 3/6 patients with primary sarcoma (n = 1), RCC (n = 1) and unknown primary (n = 1). Increased tracer uptake in the primary lung mass with SUV max values of 3.0, 6.3 and 13.0 were noted in hemangiopericytoma,



# Noninvasive Ventilation Assisted Bronchoscopy in High Risk Hypoxemic Patients

Source: *Indian J Crit Care Med* 2019; 23 (8): 363-367. doi: 10.5005/ijp-journals-10071-23219.

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## Background and Aims

Hypoxemic patients undergoing fiber-optic bronchoscopy (FOB) are at risk of worsening of respiratory failure requiring mechanical ventilation due to FOB procedure itself and its complications. As patients with respiratory failure are frequently managed by non-invasive ventilation (NIV); feasibility of FOB through NIV mask has been

evaluated in some studies to avoid intubation. We describe here our own case series.

## Materials and Methods

Clinical data of 28 FOB done through NIV mask in 27 intensive care unit (ICU) patients over 6 years period at our center was collected retrospectively and analysed.

## Results

The study comprises 27 (17 male; 52±21.6 years age) hypoxemic (PaO<sub>2</sub> 71.3±14.2, on NIV and oxygen supplementation) patients. All FOB were done at the bedside, 15 of them were given sedation for the procedure. Twenty four patients had bronchoalveolar lavage (BAL); three underwent bronchial biopsies, four brush cytology and seven transbronchial biopsies. In 10 patients, lung or lobar collapse was reversed. There was no significant change between pre and post

bronchoscopy ABG parameters except for improved post FOB PaO<sub>2</sub> (p = 0.0032) and SpO<sub>2</sub> (p = 0.0046). One patient (3.57%) developed late pneumothorax and 3 patients (10.7%) had bleeding after biopsy. Prior to bronchoscopy 17 (16 BIPAP, 1 CPAP) patients were already on NIV. Two patients required mechanical ventilation 6 hours after FOB due to subsequent clinical deterioration but could be weaned off later. One patient died on third day after FOB from acute myocardial infarction.

## Conclusion

Hypoxemic patients in ICU can safely undergo bedside diagnostic and simple therapeutic bronchoscopy with NIV support while mostly avoiding intubation and with low complication rates.



# Role of Mepolizumab in Severe Allergic Asthma with Vocal Cord Polyp

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## Summary

Interleukin (IL)-5 plays an important role in the development, recruitment, and survival of eosinophils, thereby causing debilitating signs and symptoms associated with severe eosinophilic asthma. Mepolizumab is a humanized monoclonal antibody (mAB) against IL-5 which selectively inhibits eosinophilic inflammation and reduces the number of eosinophils. This reduction is seen in both sputum and blood, resulting in a reduction in exacerbations and in time the need for using systemic steroids. The role of mepolizumab and its effect is still not fully known as there are less real-life studies available. In this paper, we present a case of severe eosinophilic asthma with vocal polyp managed by mepolizumab.

## Key Words

Mepolizumab, severe eosinophilic asthma, vocal cord polyp.

## Background

Asthma is a chronic inflammatory condition involving the airways with varying pathophysiological mechanisms, clinical symptoms, and outcomes. However, about ~10% of asthma patients exhibit a more severe disease process with poor asthma control, frequent severe exacerbations, and accelerated loss of lung function, despite intensive treatment. Patients with severe asthma experience frequent exacerbations and may require daily maintenance oral corticosteroids when maximal inhaled therapy proves insufficient to reduce the risk of exacerbations or to control day-to-day symptoms and is associated with substantial morbidity, mortality, and health-care cost. Severe eosinophilic asthma is a subgroup, as indicated by eosinophil counts of at least 150 cells/uL in blood, or more than 2% in sputum, or both.

Interleukin (IL)-5 is a cytokine responsible for the development, recruitment, and survival of eosinophils, hence causing the symptoms and severe eosinophilic asthma (SEA). Mepolizumab is a humanized monoclonal antibody (mAB) against IL-5 which selectively inhibits eosinophilic inflammation and reduces the amount of eosinophils in both sputum and blood, resulting in a reduction in exacerbations and in the need for treatment with systemic steroids. The role of mepolizumab and its effect is still not fully known as there are less real-life studies available. In this paper, we present a case of SEA with vocal polyp managed by mepolizumab.

## Case Presentation

A male in his mid-70s presented to the clinic with progressive cough and hoarseness of voice since one and a half years.

The cough was dry, progressive not associated with diurnal variation. There was no history of fever or weight loss. A known case of diabetes mellitus, hypertension, and a chronic smoker, he had a mass on the vocal cord for which he has also received a course of radiotherapy in suspicion of malignancy of vocal cords. He was on high-dose oral corticosteroids and bronchodilators. On examination, his vitals were stable, there was a hoarseness of voice with a bilateral wheeze on chest examination. A laryngoscopy was advised to rule out malignancy, which showed a benign polyp on the vocal cord. His serum IgE and Angiotensin Converting Enzyme (ACE) were high along with PFT showing an obstructive pattern. Hence, a diagnosis of severe allergic asthma was made and he was started on Mepolizumab 100 mg subcutaneously once every 4 weeks. Over the period of 4 months, his ACT score improved significantly and FEV1 became normal. The cough and hoarseness of voice also improved and wheezing has stopped. He did not have an acute exacerbation since the beginning of his treatment and had zero ER visits. The vocal cord polyp which was causing the hoarseness has also reduced in size.

The differential diagnosis was:

1. Benign vocal cord polyp with airway obstruction.
2. ILD: HRCT B/L peripheral reticulations.
3. Asthma COPD overlap syndrome (ACOS).

## Discussion

SEA is a distinct phenotype of asthma that is associated with sputum eosinophilia, thickening of the basement membrane zone and often by corticosteroid responsiveness.<sup>[11]</sup> It is associated with more severe exacerbation with poor control, loss of lung function and frequent visits to ER. Despite the use of high dose of corticosteroids and long-acting beta agonists, it is responsible for significant morbidity and mortality adding to the financial burden of asthma.<sup>[12]</sup> The advent of biologics has changed the fate of patients suffering from SEA.

In SIRUS<sup>[13]</sup> (steroid reduction with mepolizumab study) and MENSA<sup>[14]</sup> (mepolizumab as adjunctive therapy in patients with severe asthma) trials the daily dose of oral corticosteroid therapy, along with the symptoms and the need for ER visits decreased significantly. There was a significant improvement in quality of life and slight increase in FEV1 with progressive decrease in eosinophil levels was noted from week 4 to maximal reduction at week 12.

SEA with nasal polyps (NP) is associated with higher blood eosinophilic count which may be explained by local generation of IL-5 in the airways.<sup>[15]</sup> Higher blood eosinophil counts are a predictive biomarker of better response to mepolizumab in SEA,<sup>[14,16]</sup> hence, it has greater benefit in reducing severe exacerbations in patients with SEA plus NP compared to SEA without NP. Mepolizumab, as a systemic therapy, helps with improvement in NP size and health quality of life in patients with of SEA with NP.<sup>[17]</sup> In our case, the decrease in size of the vocal cord polyp along with improvement of SEA is directly associated with the use of mepolizumab.

In conclusion, the effect of mepolizumab on SEA and associated with nasal polyposis has been well documented;

its effect on vocal cord polyps is still unclear and needs further investigation.

## Learning points/Take-home messages

- Mepolizumab has a beneficial role in SEA.
- Mepolizumab helps in significant reversal of airway function and reduction in dose of oral steroids in SEA.
- Use of mepolizumab is not restricted to SEA with upper airway polyps but can also be used for other airway polyposes.

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## Eco-Anxiety- The New Reality



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### Eco-anxiety- The New Reality

Eco-anxiety. It's a term I hadn't come across when I first studied psychiatry, but is now a reality that we can't overlook. As we look out of our windows, the bright winter sun has

been replaced by the dull gloom of noxious smog. But even as conversations about the negative impact of pollution and climate change have begun, we must also recognize the mental health impact that such global changes are resulting in. Broadly speaking, eco-anxiety is a term used to describe the fears and worries around the future of the world and the ecological disasters that may be upon us. In fact, besides the increasing apprehension about climate change, with increasing extreme climate events and migration, the incidence of post-traumatic disorders and other adjustment related conditions are also on the rise.

Covid-19 was a stark reminder that we don't exist in isolation. The actions of one affect all others. We can't simply shut our eyes to what's going on in the world. What affects people in one part of the world

today is going to be knocking at our doorstep tomorrow.

At the same time however, we can't allow the feelings of impending doom to cripple ourselves into inaction. The pandemic also taught us that with our backs to the world, we could come up with some of our greatest medical innovations. It's time now we channelize this eco-anxiety by taking individual and collective responsibility. Awareness of the impact of our actions is the first step. Be empathetic towards the experiences of others. Don't let your sense of self be drawn into the mindlessness of consumerism. Be mindful of what you consume and what you discard - find a sense of purpose and joy beyond materialism. Unplug from your gadgets and instead spend time connecting with nature. At the end of the day, remember, it's #HappyEarthHappyPeople.





# CLINICAL CONVERSATIONS

Case Reports

## Some Endo-Bronchial Foreign Bodies: Need all the Tools



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### Abstract

Foreign bodies are commonly seen in children; we are presenting a case of a male adult with an impacted thumb pin in the left lower lobe bronchus. Extraction required fiberoptic bronchoscopy, failure of which led to thoracotomy with bronchotomy.

### Key words

Foreign body, thumb pin, fiberoptic bronchoscopy, bronchotomy.

### Introduction

Inhalation of foreign bodies are not

uncommon; they occur not only children but adults have also suffered from these accidents. There are lot of commonly occurring endobronchial foreign bodies which need different instruments from fiberoptic to rigid bronchoscope along with the tools for extraction and sometimes even invasive surgeries. A thumb-pin foreign body in our case was impacted and was further complicated with the forceps getting stuck into the sharp end of the pin.

### Case report

A 43-year-old male presented to

Fortis Hospital Mohali after accidental ingestion of a thumb pin while working in his office. The patient came to hospital within few hours of the accident. Patient was not in distress but complained of cough with one episode of streaky hemoptysis, chest discomfort and throat pain. He was a known case of hypertension, for which he was on medical management. Chest X-ray was done which showed a metallic foreign body in the left main bronchus (fig.1). High resolution computed tomography (HRCT) chest was done to look for any trauma



caused by the sharp end of the thumb pin to the airways. HRCT showed (fig.2) a linear metallic foreign body, measuring about 1.8 cm in length, in the left lower lobe bronchus. After baseline investigations, the patient was taken for fiberoptic bronchoscopy under conscious sedation after taking a consent for the procedure. The foreign body was seen with the sharp end towards the scope impacted into the left lower lobe posterior basal segment. Traditional approach with the fiberoptic bronchoscope was chosen along with an alligator biopsy forceps. Once the foreign body was identified (fig.3) an attempt was made to hold it between the jaws of the forceps. The forceps got hold of the sharp end of the thumb pin and an attempt was made to pull it out. However, due to its tight impaction it could not be done. Controlled force was applied to prevent injury to the airway. Unfortunately, the sharp end got stuck to the forceps in such a

manner that after many attempts it could not be released. So now we have a thumb pin, stuck to the biopsy forceps along with the fiberoptic bronchoscope in the left bronchial tree (fig.4).

The thoracic surgeon was called and was asked for his opinion regarding the same. He suggested a thoracotomy followed by a bronchotomy for extraction. The upper end of the biopsy forceps was cut and the bronchoscope was removed, with the forceps hanging out of his mouth the patient was shifted to the operation theatre after obtaining consent and planning for the invasive surgical procedure.

A left postero-lateral thoracotomy was planned with entry planned via the fifth intercostal space. Fine dissection was done around the left mainstem bronchus at hilar level, the bronchus was incised and the foreign body was removed (fig. 5). The incision was closed with interrupted prolene sutures, augmented with a bovine pericardial patch and the chest was closed in layers. On the post-surgery scan two chest tubes were seen in the left pleural cavity, with no evidence of the endobronchial foreign body (fig.6).

The patient was extubated the next day. Both intercostal chest drains were removed in the next 72 hours and the patient was mobilized. Follow up chest x-ray (fig.7) showed a well expanded left lung, free of foreign body.

Patient was discharged on the 7th day of procedure with a follow up in OPD. He was doing well with no complaints and performing his routine daily activities.



Figure 1

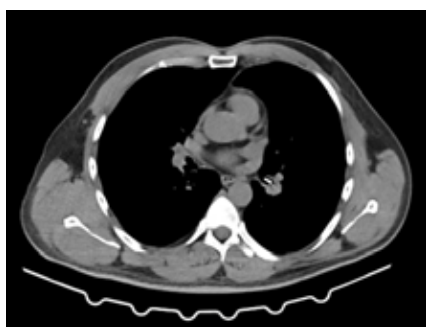


Figure 2



Figure 3



Figure 4



Figure 5



Figure 6

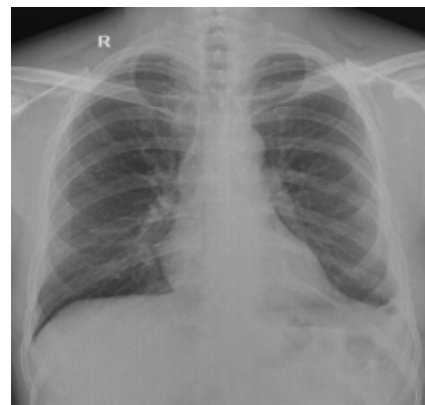


Figure 7

## Discussion

A rigid or flexible bronchoscopy can be performed whenever a foreign body is suspected or confirmed, although the debate for the optimal procedure continues<sup>[1]</sup>. Abundant case series and systemic reviews have recommended fibre optic bronchoscopy as the choice of procedure because it is simple, accessible, also gives much more visual access to the airways. Useful even in patients with cervical injuries and those who are intubated and on mechanical ventilator<sup>[2-10]</sup>

Flexible bronchoscopy is relatively easy and a safer procedure under experienced hands. The procedure is done under local anesthesia to visualize airways, can be opted for extraction of foreign bodies with lower cost, risk and morbidity of secondary invasive procedures like rigid bronchoscopy which are done under general anesthesia<sup>[11,12]</sup>. In few studies success rate of foreign body retrieval through flexible bronchoscope was about 79.1%. Open surgical procedures required was around 3.76% of patients in one and in another case series was needed in more than 10%<sup>[13,14]</sup>.

Forceps are the most utilized and widely used tools for foreign body extraction<sup>[15,16,17]</sup>. There are multiple configurations of teeth and diameters to accommodate objects of varying size and texture, and are best when objects with thin edges needs extraction. Shark tooth, rat tooth, and alligator tips are used for the grasping of coins, plastic objects, and other non crumbly organic foreign bodies such as bones. Rubberized tips are in use for grasping more delicate objects, and even sometimes the sharp objects, additionally gives the benefit of protecting the airway mucosa. Standard cupped forceps used for endobronchial biopsy are not as useful as the previously listed

forceps.

## Conclusion

Foreign body aspiration is uncommon in adults, this makes an individual difficult to develop expertise with the procedure, techniques and the tools. Majority of the foreign bodies can be extracted safely with flexible bronchoscope with the help of baskets and biopsy forceps. At times tools like rigid bronchoscope or invasive surgeries by thoracic surgeon is needed. Hence these foreign body extractions to be done at a centre with advanced tools and trained personnel.

## Declaration of the patient consent

The authors certify that they have obtained all the appropriate patient consent forms. In the form patient has given consent for his images and other clinical information to be reported in this journal. The patient understands that name and initials will not be published and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

## Financial support and sponsorship

Nil.

## Conflicts of Interest

There are no conflicts of interest.

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## A Rare Case of Endobronchial Leiomyoma



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### Background

Leiomyoma accounts for less than 2% of benign pulmonary tumours. Around 1/3rd are endobronchial; with the symptoms resembling asthma or COPD. They are solitary and benign.

**Key Words-** Endobronchial Polyp, Endobronchial Leiomyoma

### Case Report

A 29 years old male, smoker, presented with left parasternal pain and streaky haemoptysis. General physical and systemic examination was normal. The coagulation profile and infective markers were normal. The Chest X-ray showed non homogenous opacity in the left lower lobe. The fiberoptic bronchoscopy done under aseptic precautions showed a polypoid lesion obscuring the left main stem bronchus.

An excision was done. The broncho alveolar lavage was inconclusive. Biopsy showed polypoid fragments covered with

respiratory epithelium and stroma containing circumscribed proliferation of smooth muscle cells, which were arranged in intersecting fascicular pattern devoid of cytological atypia, necrosis or mitotic activity; features were suggestive of endobronchial leiomyoma.

### Discussion

The leiomyoma originates in the airway smooth muscles. It presents in the young as a peripheral or central lesion – polypoidal or pedunculated. It consists of interlacing smooth muscle cells and fibroblasts. It may be difficult to

distinguish on HPE from a leiomyosarcoma, which are characterized by mitotic figures. Benign metastasizing leiomyoma are ER-PR positive pulmonary nodules of smooth muscle, resulting from hematogenous spread of benign uterine leiomyoma, responding to hormonal therapy.

### Conclusion

Endobronchial leiomyoma are rare tumours common in females in their 4<sup>th</sup> decade of life, presenting with features like asthma. Excision biopsy is the treatment of choice.



**Figure 1:**  
Nodule in the left main bronchus



**Figure 2:**  
The Nodule being biopsied.

## Congenital Pulmonary Airway Malformation (CPAM) Disguised as Parainfluenza Pneumonia with Pneumothorax



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distress in the neonatal period and in severe cases hydrops fetalis which is usually fatal. Although spontaneous regression or resolution is also reported. Open fetal resection of CPAM was considered as one of the first clearly beneficial fetal surgeries (Joshua A Blatter, 2020). The majority in the developing countries present with respiratory distress at birth. It may rarely present as recurrent chest infection in childhood or later adulthood (Lujan M, 2002).

We present a case in an infant of 3 months 20 days; the female child presented with cold of four days duration, fever of three days duration and progressive respiratory

### Abstract

Congenital pulmonary airway malformation (CPAM) is the commonest pulmonary malformation usually presents in the neonatal period, very rarely in later life. CT scan chest is usually needed to identify the lesion. Our case presented as tension pneumothorax with pneumonia. Due to persistent respiratory problems we further investigated and did a CT chest, which revealed the lesion.

### Key words

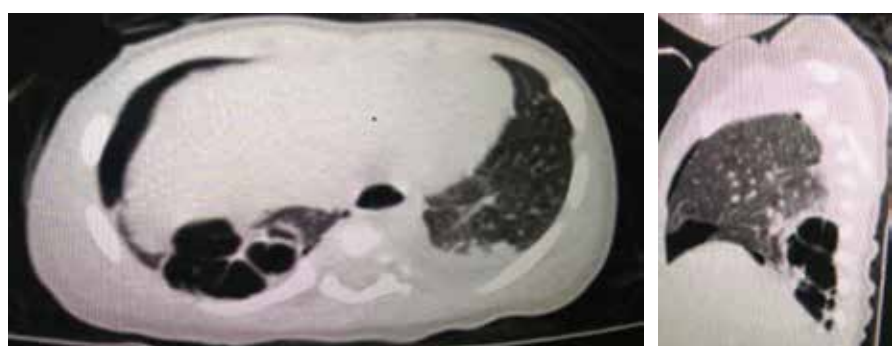
CPAM, Congenital pulmonary airway malformation, Pneumothorax, parainfluenza pneumonia

Congenital pulmonary airway malformation (CPAM), earlier referred to as congenital cystic adenomatoid malformation (CCAM), is due to abnormal branching and hamartomata's growth resulting in cystic and adenomatoid malformation of the terminal respiratory structures. CPAM although rare is the most common congenital lung lesion. CPAM usually appears before 22 weeks of pregnancy and continues to increase in size until around the

26<sup>th</sup> week of gestation. CPAM can cause significant pulmonary hypoplasia causing respiratory



**Figure A: CXR- Shows resolved Pneumothorax with ET and ICDT in situ**



**Figure B & C: CT scan images of CPAM at right lung base**

distress of two days duration. Pre-admission X-ray showed tension pneumothorax on the right side for which immediately a scalp vein needle was inserted with an underwater seal, followed by insertion of a right intercostal drainage tube. The infant was then put on pressure-controlled ventilation. Vasopressor, antibiotics and anti-viral Oseltamivir were added. The viral panel & pneumo-slide was sent for identification of the pneumonia causing agent which showed parainfluenza virus serotype 1-3, the RT PCR was negative for Covid19 and H1N1. The blood culture was sterile.

The infant gradually improved and was weaned off the ventilator, the vasopressor was stopped and the ICDT removed. However, an indistinct heterogeneous opacity in

the right lower lung base merging with the liver shadow was persistent in the repeated X-ray. This prompted a CT Chest followed by CT angiography to be done which revealed large multi-lobulated lesion in the right lower lobe with ill-defined infiltration into the surrounding parenchyma with no evidence of systemic blood supply seen, which was suggestive of CPAM with intercurrent infection or inflammation. Opinion of the paediatric CTVS surgeon was taken. It was planned to electively resect the lesion later. The infant was discharged successfully on 13<sup>th</sup> day of admission.

CPAM is one of the common congenital airway anomalies which usually present as sudden onset progressive respiratory distress, the chest X-ray usually misses the lesion

(Pathak, D.S); a CT chest is needed to pick up the lesion while the CT Angiography is needed to differentiate it from a pulmonary sequestration.

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## Diagnosis By 'Fluke': Pulmonary Paragonimiasis, A Case Report

Published as a case report in 'PULSE': Scientific Newsletter of SRL Diagnostics, June 2022 edition, Issue 26, titled PARAGONIMUS WESTERMANI INFECTION IN THE LUNG: REPORT OF A RARE CASE.



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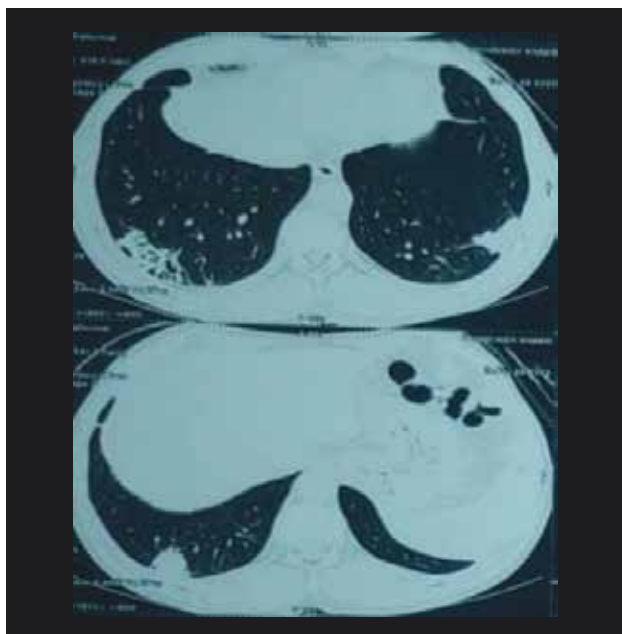
### Abstract

Paragonimiasis is an important food-borne parasitic zoonosis caused by one or more of the trematode species of the genus paragonimus. It is also known as oriental lung fluke infection, endemic hemoptysis or

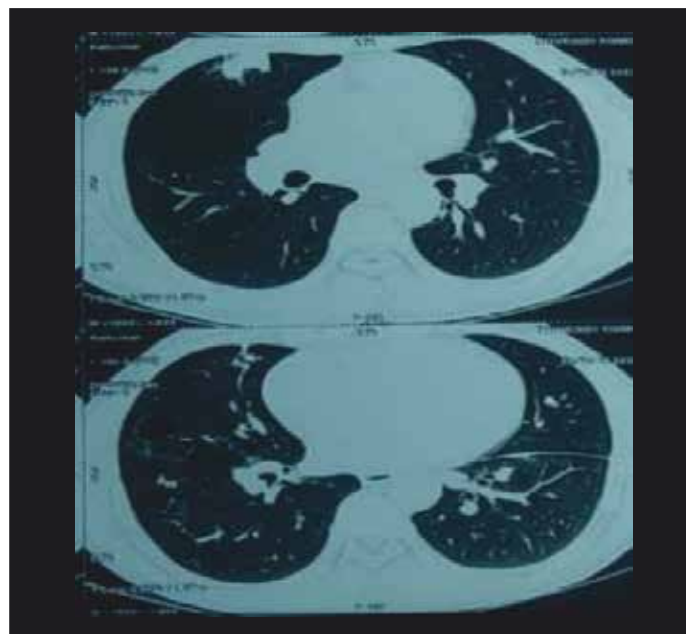
parasitological haemoptysis. It is endemic in many parts of Asia, Africa and South America. In India the first case was reported in 1982 from Manipur. Subsequently, endemic foci of Paragonimus Westermani and Heterotremus have been reported

from Manipur, Nagaland, Arunachal Pradesh, Bengal and Assam.

Human infection primarily results from consumption of raw or undercooked, pickled crabs or other crustaceans harbouring the infective form of the parasite. In India



**Figure 1: HRCT chest showing bilateral lower lobe airspace consolidation**



**Figure 2: HRCT chest showing right upper lobe nodular opacity and right middle lobe pulmonary cyst**

Paragonimiasis often mimics pulmonary tuberculosis.

In this case report we are presenting a case of pulmonary paragonimiasis which was initially thought to be a case of re-activation tuberculosis but later diagnosed as paragonimiasis by tissue biopsy.

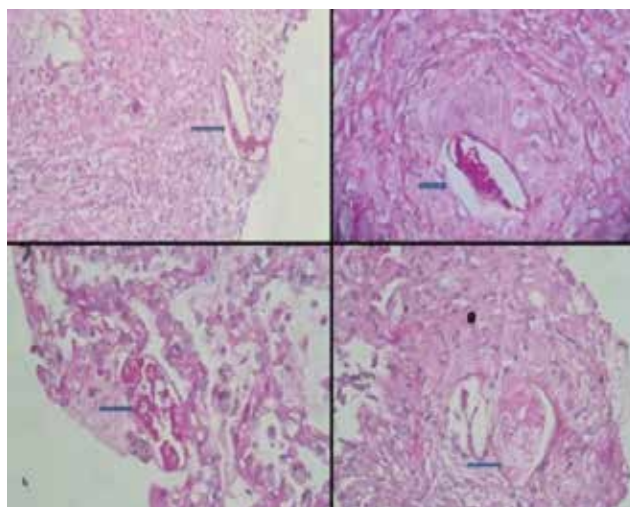
A 34 year old male, chronic smoker, merchant by profession with past history of tuberculosis 14 years back presented to us with hemoptysis for 2 weeks. Each episode was 10-15 ml each, 2-3 times per day. There was no history of fever, shortness of breath, chest pain, and loss of weight or anorexia. His general, physical and systemic examinations were unremarkable. Routine investigations showed normal haemoglobin, platelet and leukocyte differentials. Absolute eosinophil count was not elevated. Coagulation profile, renal function and liver function are within normal limits. Chest X-ray showed non-homogenous airspace opacities in the right mid and lower zones, a nodular opacity on right upper zone along with bilateral lower zone reticulo nodular lesions. His serum IgE level was markedly elevated (17321 Ku/L) but Allergic bronchopulmonary

aspergillosis panel was negative. Sputum was negative for acid fast bacilli. Mantoux was negative. HRCT chest revealed patchy consolidation with adjacent ground glass opacity and centrilobular nodules in the posterior basal segment of bilateral lower lobes and anterior segment of right upper lobe with a pulmonary cyst noted in right middle lobe. Keeping differential diagnosis of pulmonary Koch, malignancy or fungal infection, flexible bronchoscopy and bronchoalveolar lavage was done but results were inconclusive. Patient then underwent a CT-guided biopsy of the right upper lobe lung lesion. Biopsy showed acute inflammatory

exudates with singly lying operculated ellipsoidal brown ova of *Paragonimus Westermani* in the lung interstitium.

A final diagnosis of Pulmonary Paragonimiasis/Lung Fluke was made and we treated our patient with oral praziquantel 25mg/kg /day for 5 days. His hemoptysis subsided gradually and patient became asymptomatic over a period of one week. Follow up chest X-ray done at Manipur showed near complete resolution (film is not available).

We did not have any pre-test probability to arrive at this diagnosis; hence the diagnosis of lung fluke was a chance finding.



**Figure 3: H&E stained sections showing intra parenchymal operculated golden brown *Paragonimus Westermani* ova**



## Prone Position Ventilation in ARDS - The Magic of Applied Physiology



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Invasive mechanical ventilation is the cornerstone treatment of ARDS and is traditionally delivered with the patient in the supine position. There have been many ventilatory strategies, medications and different machines which have been tried to improve the outcomes in ARDS patients. Amongst them only four recommendations have high level of proof, namely, low tidal volume ventilation, plateau pressure limitation, no oscillatory ventilation, and prone position.<sup>1</sup> Prone ventilation is ventilation that is delivered with the patient lying in the prone position. We, hereby, discuss a case where prone ventilation helped the patient in recovering from severe ARDS.

### Case History

A 50-year-old type 2 diabetic patient resident of Kharagpur, West Bengal came to Jaipur. A week later, he was referred to FEHJ from a nearby hospital. He presented with history of fever and cough for three days followed by severe shortness of breath for one day and came with a diagnosis of H1N1 pneumonia.

On initial evaluation in the ICU, he was found to have moderately

severe ARDS. He was intubated and put on invasive mechanical ventilation. He was initially ventilated in the supine position and his P/F ratio was 110 with Lung compliance around 18 ml/cmH<sub>2</sub>O on a PEEP of 12 and FiO<sub>2</sub> of 0.70. He was started on oral Oseltamavir, IV Meropenem, IV Methylprednisolone and other supportive treatment. Due to his moderately severe ARDS, he was started on prone ventilation. He responded well to prone sessions of about 16 - 20 hours. His P/F ratio improved gradually to > 200 with improvement in compliance to about 30 ml/cmH<sub>2</sub>O. After 5 cycles of prone, he started to maintain in supine position, so prone sessions were stopped. He later developed ventilator associated pneumonia with ET cultures growing Carbapenem resistance *Acinetobacter baumannii*. IV Colistin was given, and he responded to the treatment. Later he was extubated on the 9<sup>th</sup> day of ventilation and after 17 days of stay in hospital, he was discharged home in a stable condition.

### Discussion

Prone ventilation is now an easily implementable, commonly used

cost-effective intervention in patients of acute hypoxemic respiratory failure.

Few salient points about the therapy:

### Rationale for usage

Prone position ventilation results in more homogenous ventilation, a more even distribution of lung stress and strain, reduction in ventilator associated lung injury and slow recruitment of the atelectatic lung zones. This leads to overall improvement of chest and lung mechanics with improved V/Q matching. There is also a decrease in the Right ventricular (RV) strain leading to RV unloading. These changes in cardiopulmonary parameters results in improved gas exchange in a physiological manner.<sup>2</sup>

### Indications

There are two primary indications for using prone ventilation in patients with ARDS: the need to improve oxygenation and the potential for prone position to reduce mortality. As per guidelines, prone positioning is indicated in ARDS patients with PaO<sub>2</sub>/FIO<sub>2</sub> ratio <150 mmHg.<sup>1</sup>

### Contraindication

The only absolute contraindication for implementing prone position is an unstable spinal fracture. Relative contraindications include hemodynamic instability, unstable pelvic or long bone fractures, open abdominal wounds and increased intracranial pressure.<sup>2</sup>

### Evidence

Use of mechanical ventilation in the prone position, was first reported in 1970. Early trials persistently demonstrated improved oxygenation but did not demonstrate a mortality benefit. <sup>3</sup>PROSEVA trial published

in 2013, presented strong evidence in favor of prone position ventilation. This study reported that patients receiving prone ventilation in severe ARDS had a reduction in 28-day mortality compared with patients ventilated with low tidal volume in the supine position (16 versus 33 percent; hazard ratio [HR], 0.39; 95% CI, 0.25-0.63) and a 90-day mortality (24 versus 41 percent; HR, 0.44; 95% CI, 0.29-0.67, respectively). The mortality benefit occurred without excess risk of complications.<sup>4</sup>

### Procedure

Prone positioning should be considered in institutions with trained staff and equipment. We use the Sandwich technique. The patient is first padded up by thick cotton layer to avoid pressure injuries and then sandwiched between two layers of sheet with his hands besides his body. His lines and tubes are tightly secured and then he is turned with the help of the sheets. For reverting back to supine, the same technique is used. It requires multiple

staff and the doctor who keeps the airway secure.

### Duration and Number of sessions

Though the optimal duration of prone positioning is unknown, yet prolonged prone ventilation lasting 16 to 20 hours per day is practiced as shown in PROSEVA trial. In this trial, the average number of sessions required were four, but it could be continued for period up to 28 days, if required.<sup>4</sup>

### Care of the Patient

Ventilatory strategy should be continued as before with gradual reduction in FiO<sub>2</sub> and PEEP if the patient is responsive. The patient is kept sedated and sometimes paralyzed during proning. Other usual care, including feeding, should be continued as before. Monitoring of the vitals, airway pressures, end-tidal CO<sub>2</sub>, and others should be done. Staff should be prepared to change the position quickly in case of emergency situations like severe hemodynamic instability and airway

compromise.

### When to consider success

Prone positioning is stopped if there is continued improvement in oxygenation (PaO<sub>2</sub>:FiO<sub>2</sub>≥150 mmHg, FiO<sub>2</sub> ≤0.6, PEEP ≤10 cm H<sub>2</sub>O), maintained for at least four hours, after the end of the last prone session.<sup>4</sup>

### When to consider failure

If there is no change in the patient's gas exchange or lung mechanics, a worsening of gas exchange or cardiovascular status, the patient should be returned to the supine position and alternate strategies for improving oxygenation (e.g., extracorporeal membrane oxygenation) should be pursued.<sup>4</sup>

### Complications

There is an increased need for sedation or paralysis, hypotension or arrhythmias, transient oxygen desaturation, airway obstruction, vomiting, loss of venous access and displacement of the endotracheal

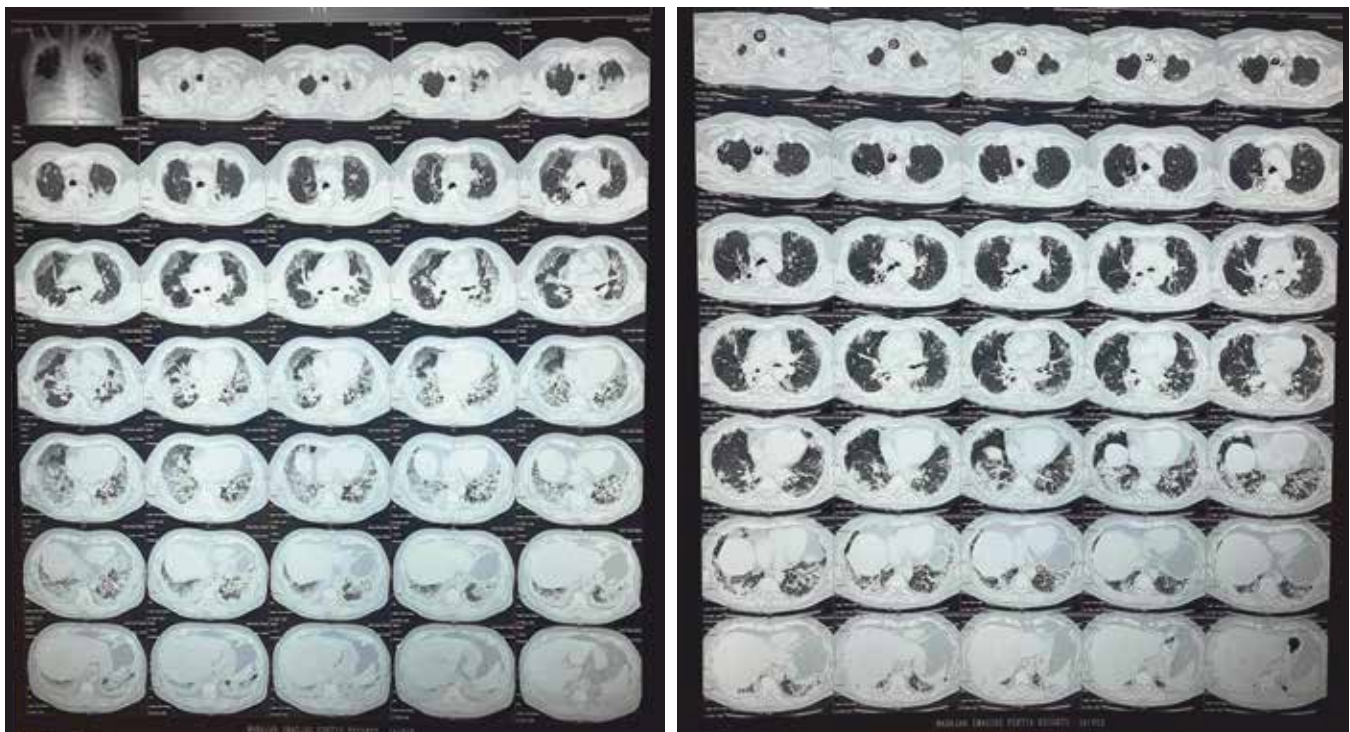


Figure 1 & 2: Comparative HRCT scans of the patient at the time of admission and on 7<sup>th</sup> day of admission. There is reduction in areas of consolidations and ground glass opacities noted with reduction in pleural effusion noted.

tube. Pressure point-related adverse effects such as skin breakdown, dependent facial and ocular edema, and brachial plexus neuropathy have also been reported.<sup>2</sup>

In addition to its more established role, during the ongoing coronavirus disease 2019 (COVID-19) pandemic, considering the physiological advantages provided by this position, prone positioning was implemented in awake, spontaneously breathing, non-intubated patients with acute hypoxemic respiratory failure with encouraging results.<sup>5</sup>

In conclusion, prone position has

now assumed its rightful place in the armamentarium of management of ARDS.

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## Thinking Beyond Infections: A Case Report



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### Introduction

In pulmonology practice, infections are kept on top of the differential diagnosis when the patient is having fever and especially when we are going through this pandemic and where tuberculosis is also rampant. We are presenting an interesting case which looks like infectious disease but it was not related to infectious disease.

### Case Summary

A 46-year-old female resident of Punjab presented to us at Fortis Hospital, Ludhiana with complaints of low-grade intermittent fever for two months with no diurnal variation. It was associated with cough and hemoptysis for two days. Patient complained of sudden severe breathlessness on the day of admission which was not associated with wheezing and change with posture. There was no history of chest pain, palpitation, rhinitis, nasal bleed, joint pains, rash, abdominal symptoms, urinary symptoms or neurological symptoms. There was no significant, past, family or occupational history. Patient had recently taken multiple antibiotics and other supportive treatment for fever.

On examination, the patient was conscious, tachypneic with a heart rate of 120/min, blood pressure of 90/60 mm Hg, a respiratory rate of 33/min, SpO<sub>2</sub> 70% on room air and temperature: was recorded as 98.0o F. Pallor was present.

Systemic examination revealed right sided crepitations on chest examination. There were no other systemic finding.

The patient was admitted in the ICU isolation care with a provisional diagnosis of lower respiratory tract infection and possible pulmonary tuberculosis. The patient was also given non-invasive support with a PEEP of 10 cm. All routine investigations and possible cultures were sent. Blood investigations revealed Hb 6.8 gm%, TLC: 9600 cu mm, Platelets 3.1 lakh, INR 1.23, LFT and RFT were normal. Urine analysis showed RBC 5-8/hpf. ABGA showed hypoxia with a PF ratio of 210. The chest radiograph done showed right sided opacities as shown in Figure 1. Subsequently CECT thorax was done which revealed central right sided ground glass opacities with consolidation with tree in bud appearance as shown in Figures 2&3. The 2D Echocardiography was unremarkable. Patient was managed with IV broad spectrum antibiotics, cough suppressants, antifibrinolytics, one unit of PRBC and other supportive therapy. Differential diagnoses with current information were lower respiratory tract infection, pulmonary Koch's, atypical pneumonia or some other unknown disease.

Day 2: Patient and ABGA showed marginal clinical improvement with PF Ratio of 280 but the chest X-ray showed increased opacities as shown in Figure 4 so bronchoscopy was planned which revealed blood in bronchus intermedius and right

lower lobe bronchus. BAL microbiology was negative for AFB, gram stain, fungal and nocardia. BAL cytology was also inconclusive.

Day 3: The patient became more tachypneic with increased oxygen requirement with PF ratio of 140. The chest X ray also showed progressively increasing opacities. Her creatinine was also rising. Thinking in terms of worsening sepsis, antibiotics were stepped up and anti-fungal treatment were added.

DAY 4: The patient continued to be tachypneic on NIV. After discussion with other team members empirical ATT was started in view of low-grade fever for 2 months, cough with hemoptysis and unilateral disease. Considering alternative possibility of intraalveolar bleed due to autoimmune disease, auto immune profile (ANA, anti-ds DNA, RA factor, C ANCA and P A N C A ) was sent and methylprednisolone 125 mg was also given.

DAY 5: The patient improved clinically, her oxygen requirement was reduced, and chest radiograph also showed decreased opacities as shown in Figure 5. Meanwhile, autoimmune profile showed strongly positive C ANCA (1: 20) so ATT and antifungal therapy were stopped. Complement levels sent were also low. The patient was given steroid pulse of 1 gm daily for three days followed by tapering doses of steroids and cyclophosphamide pulses as per protocol were also given subsequently. Nephrology consult was taken, and renal biopsy was advised but the family refused for the same.

The patient continued to improve clinically with decreased tachypnea and oxygen requirement. Her serial chest radiographs also showed

improvement. The patient was discharged on day 20 in a stable condition on room air. Her chest radiograph on the day of discharge is shown in Figure 6. So our final diagnosis was 'intra alveolar bleed secondary to granulomatosis with polyangitis (wegners granulomatosis)' which presented with history and findings suggestive of lower respiratory tract infection.

Granulomatosis with polyangitis previously known as Wegners Granulomatosis is vasculitis which affects small to medium sized blood

vessels. It affects the upper respiratory tract, the lower respiratory tract and the kidneys. It is an autoimmune cell mediated response to unknown etiology. Upper respiratory tract involvement presents with rhinitis, sinusitis or ear disease. Lower respiratory tract involvement presents as tracheobronchial disease, lung parenchymal disease or alveolar hemorrhage. Chest radiography shows nodules that may be cavitary, reticular markings, ground glass opacities, pleural opacities or findings suggestive of diffuse

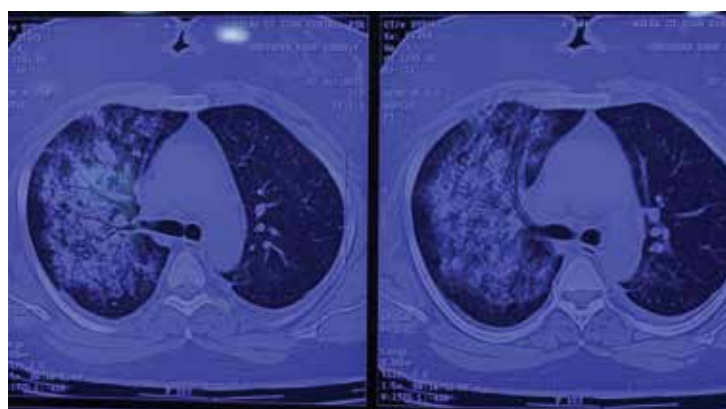
alveolar hemorrhage. Kidney involvement presents as focal /segmental granulomatosis. The treatment is immunosuppression and in life threatening conditions, plasmapheresis may be done.

**Conclusion**

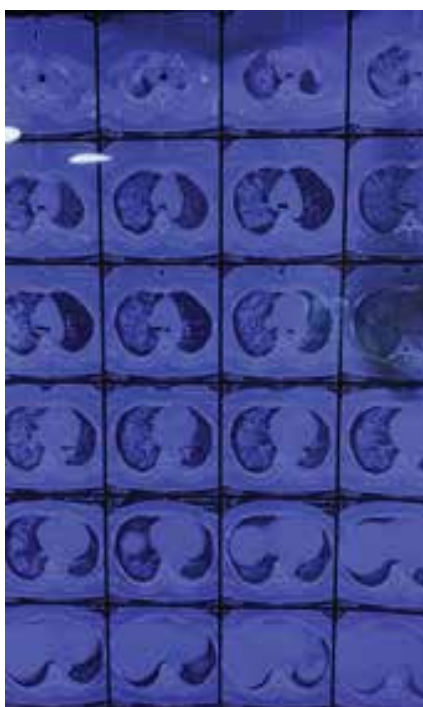
We would like to suggest that in certain cases we need to think beyond infections even in cases of unilateral disease and findings suggestive of infective pathology.



**Figure 1: Chest radiograph showing right side consolidation**



**Figure 3: CT thorax showing central right side Ground glass opacities with consolidation with tree in bud appearance**



**Figure 2: CT Thorax showing central right side Ground glass opacities with consolidation**



**Figure 4: Chest x ray showing increased opacities on right side as compared to previous chest x ray**



**Figure 5: Chest X ray on day 5 showing partial resolution of opacities as compared to day 2 chest X ray**



**Figure 6: On day of discharge there was significant resolution of opacities and chest x ray is near normal**

## A Case of Vanishing Lung Mass Lesion - A Rare Presentation

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### Abstract

Allergic bronchopulmonary aspergillosis (abpa) is a fungal infection of the lung due to a hypersensitivity reaction to aspergillus fumigatus after colonization into the airways. Here we have presented a case of abpa where a large symptomatic lung mass was the presenting manifestation leading to consideration of lung cancer as a differential diagnosis. We can conclude that different radiological presentations are possible in abpa patients. Pulmonary masses are infrequent radiographic manifestation and thus we need to be very vigilant to keep abpa as

differential diagnosis in patients presenting with lung mass like lesion on initial radiologic investigations, who have history of allergic rhinitis or allergic rhinosinusitis.

### Keywords

#aspergillosis, #allergic bronchopulmonary; #asthma; #mass; #fungal infection.

A 48-year-old female presented with chief complaints of central and dull aching chest pain, cough with expectoration (whitish sputum) since 2 months, shortness of breath on exertion since 4 days, loss of weight, 3 to 5 kg in one month. There was history of allergic rhinosinusitis since 20 years, k/c/o hypothyroidism since 5 years, recently diagnosed dyslipidemia and systemic hypertension.

Chest x-ray on admission showed: right perihilar opacity with preserved visualization of the hilar vessels.

Cect chest showed a large heterogeneously enhancing soft tissue density lesion, measuring approximately 71x80x77 mm was seen involving the right hilum and right upper lobe. To evaluate the findings of cect, ct guided biopsy was performed.

Histopathological finding of CT guided biopsy were suggestive of chronic (non-specific) inflammatory Lesion with ill-defined granulomatous

inflammation.

PET CT SCAN was planned because of inconclusive CT guided biopsy report. A PET CT scan was suggestive of FDG avid (suv max:10.2) mitotic/?? infective.

Since the FDG avid lesion was coalescent with right hilar lymph node. Now the next best option available was endobronchial ultrasound guided biopsy with (EBUS +TBNA) to evaluate the findings of PET CT.

EBUS+ TBNA was performed and we found out that tracheobronchial tree was apparently normal.

EBUS guided TBNA was taken from right hilar lymph node station and right upper lobe mass lesion.

But to our surprise, the histopathology report of EBUS plus TBNA guided lung biopsy was suggestive of non-specific lymphadenopathy.



Figure 1



Figure 2

And now we had a diagnostic dilemma.

So we decided to revisit the history of the patient.

As the patient had a history of allergic rhino sinusitis for past 20 years we decided to send S. Total IgE, which came out to be =1935 UI/ml. In view of a highly elevated S.Total IgE, IgE specific for aspergillus and IgG specific for aspergillus were sent and both came to be positive.

The final diagnosis was Allergic Broncho Pulmonary Aspergillosis (ABPA) presenting like a mass lesion.

Treatment of seropositive ABPA was initiated and the patient was put on Tablet Prednisolone 30mg once daily, nasal spray (Fluticasone propionate plus Azelastine) locally, inhaler (LABA plus ICS ) 2 Puffs twice



**Figure 3a:**  
Right Hilar Homogenous Opacity



**Figure 3b:** Near complete resolution of right hilar opacity after treatment with systemic steroids

a day and the medications for hyperthyroidism and dyslipidaemia were continued. The treatment resulted in significant clinical and radiological improvement with vanishing (resolution) of the right hilar opacity/mass like lesion.

**Conclusion**

The present case highlights that ABPA should be considered as a differential diagnosis in a patient presenting as lung mass on initial radiological investigation, especially with a background history of Allergic Rhino sinusitis.



## Pulmonary Cryptococcosis



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A 70 year old diabetic, came to the OPD with no respiratory symptoms but with swelling over the supraclavicular region. FNAC of the lesion did not show any evidence of malignancy or tuberculosis.

Further imaging including a whole body PET revealed a mass like lesion occupying almost 50% of left hemithorax, although the patient did not complain of any breathlessness. The CTVS surgeon excised the mass. The HPE from the tissue was swarming with cryptococcus.

The patient was started with liposomal amphotericin B for three weeks, followed by oral fluconazole 400 mg once daily for three months. The patient got significantly better. The repeat imaging also showed good response to treatment.

Isolated pulmonary cryptococcosis with no CNS involvement is extremely rare in a non-transplant patient, particularly with no respiratory symptoms.

This patient was a learning for us ; we should think of pulmonary cryptococcosis even if the patient is asymptomatic.



**Figure 1: Pulmonology Cryptococcosis**



**Figure 2: Left Supra clavicular Mass**



# Endobronchial Tumor Debulking using Electrocautery Followed by Metallic Y Stent Placement



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## Introduction

Central airway obstruction (CAO) is one of the common causes of morbidity in patients of lung cancers. Metastatic cancer causing central airway obstruction is relatively rare. Usually, this condition (CAO) is difficult to treat and requires the insertion of tracheobronchial stents to establish luminal patency. Lesions that are close to the carina or those that lie in the proximal part of the main bronchus require the insertion of Y shaped airway stents. Before placement of the stent, clearing the airway obstruction (tumor debulking) can be done with the help of different modalities namely electrocautery, cryotherapy and laser.

## Case Presentations

### Case 1

A 56-year-old male patient presented with c/o cough, exertional breathlessness and hemoptysis since one month.

#### *Past History:*

He was operated (Nephrectomy) for Renal cell Carcinoma two years back.

#### *On Evaluation*

The CT chest showed s/o right hilar mass compressing the right main bronchus with mediastinal lymphadenopathy.

Bronchoscopy showed endobronchial growth partially obstructing the right main bronchus. Biopsy was not attempted due to the vascular nature of the growth. Instead, an EBUS TBNA was done.

Histopathology confirmed metastatic RCC.



**Figure 1:**  
 Bronchoscopy Image 1 dt 11/11

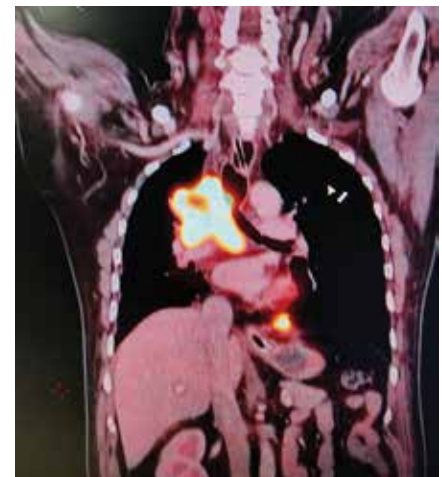
#### *Second Admission*

On his second admission the patient presented with severe breathlessness and cough with low SpO<sub>2</sub>. He was immediately intubated and put on mechanical ventilation.

Check bronchoscopy (1st sitting): showed an endobronchial tumor growth causing critical airway narrowing (approximately 75% of the lumen was obstructed at the

level of the lower trachea and there was 90% occlusion of the right main bronchus)

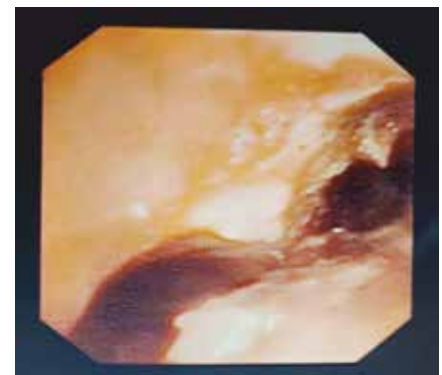
In order to extubate the patient, it was necessary to clear the endobronchial growth.



**Figure 2:** PET CT Image

#### *Second sitting of bronchoscopy*

Bronchoscopic tumor debulking was done with the help of electrocautery.



**Figure 3:**  
 Bronchoscopy Image 1 dt 11/11

#### *Third sitting of bronchoscopy*

Repeat bronchoscopy showed recurrence of growth causing partial obstruction of the right main bronchus suggesting a rapidly growing tumor.

Again the tumor was debulked and an endobronchial Y stent was placed.



Figure 4 :  
Stent photo (bronchoscopic view)

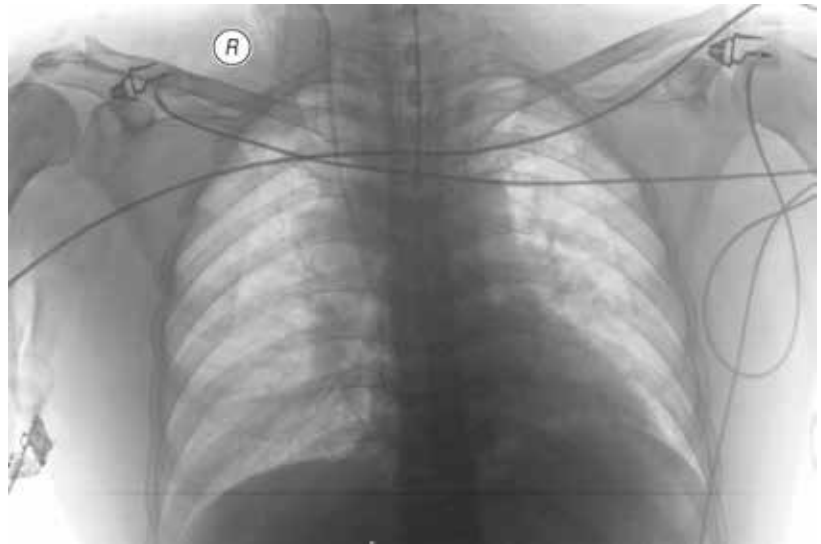


Figure 5 : Chest X-ray post stenting

Gradually the patient was weaned off the ventilator and he was extubated. He was eventually

discharged after 15 days in the hospital. He was started on Tab

Lenvatinib for treatment of RCC by the oncology team

## Case 2

A 49 year old male patient with a recently diagnosed case of squamous cell carcinoma lung presented with c/o fever since 1 month, breathlessness and productive cough.

His CT chest showed a right upper lobe mass infiltrating the right main bronchus and causing compression of the main bronchus.

A check bronchoscopy revealed malignant infiltration involving the carina and the right main bronchus. It was extending 2cm into the right main bronchus causing it's critical narrowing. The right upper lobe opening could not be visualized.

A tracheobronchial Y stent was placed with the long limb in the right main bronchus (as the infiltration was extending 2 cm in the right

main bronchus while the right upper lobe was completely collapsed due to the mass).

Stent insertion was done via flexible bronchoscopy and under conscious sedation. Patient tolerated the procedure well and he had symptomatic relief after the procedure.

The patient became afebrile and was started on chemotherapy by the oncologist.



Figure 1 : CT scan image



Figure 2 : Bronchoscopy image

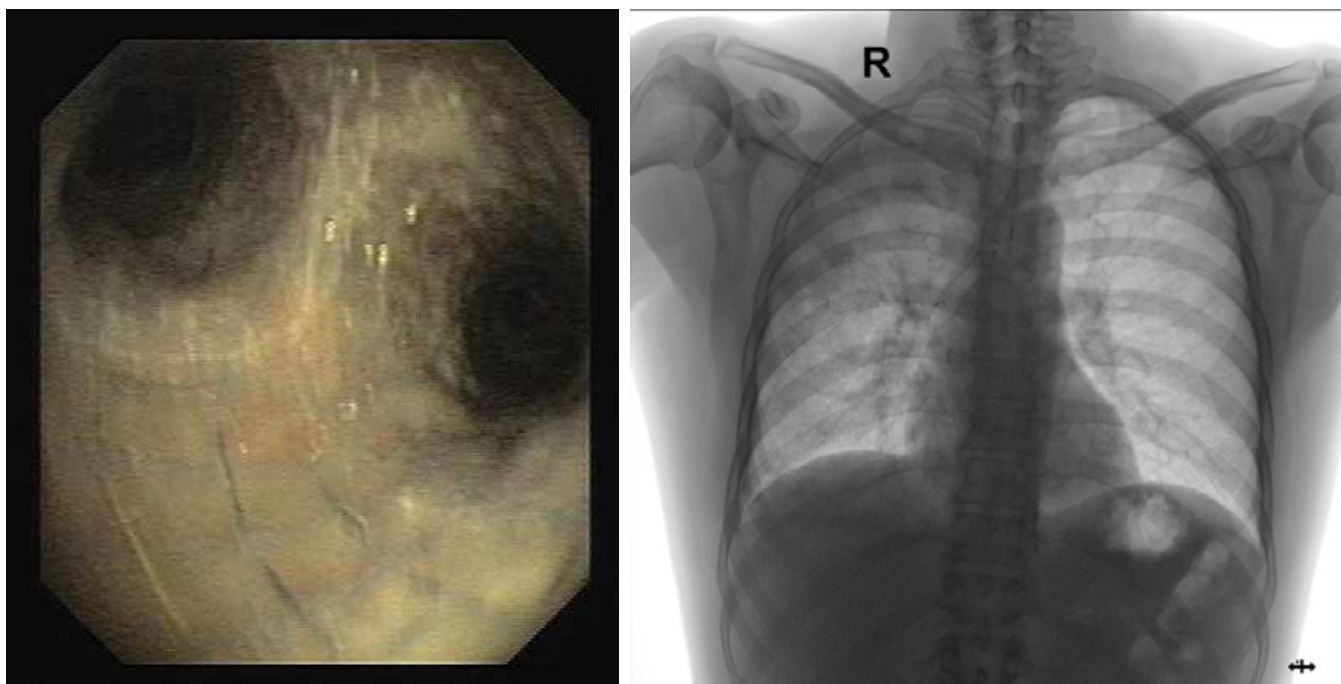


Figure 3: Post stent image

**Discussion**

The placement of a tracheobronchial Y stent via an endotracheal tube is a safe and effective treatment option in the management of central airway obstruction at the level of lower trachea and carina. This gives a rapid resolution of respiratory failure.

Metallic stents are commonly placed in malignant central airway obstruction. It is done in critical (more than 50%) central airway obstruction. Airway stenting is done in either extraluminal or mixed (intraluminal + extraluminal) central airway obstruction. It is also used as a

bridge to definitive therapy in cancer patients whose life expectancy is more than 3 months.

# Notorious Mucor: “A Bite-Kiss on a Cheek”

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## Abstract

Mucormycosis is an aggressive opportunistic fungal infection caused by fungi of Phycomycetes class including Rhizopus species and Mucor species. The pathogen can be present in the environment, on the skin, and in the orifices of the body. There are several types including rhinocerebral, pulmonary, gastrointestinal, cutaneous and disseminated mucormycosis. The spores infect the paranasal sinuses and the nasopharynx, extending to the orbit and brain cavity in persons who have reduced cellular and humoral defenses. During the ongoing COVID-19 pandemic, a surge in the cases of rhino-orbital mucormycosis has become a life-threatening combination. Early diagnosis and intervention is the only way to save the vision and life of the affected patient.

Here we report a 63-year-old lady with history of acute worsening dyspnea and known case of rheumatoid arthritis, Type II DM & hypertension. On prone ventilation protocol for severe acute respiratory distress syndrome on mechanical ventilator, right cheek erythematous lesion was noticed which was thought to develop due to prone

positioning related pressure sore. HRCT revealed confluent ground glass opacities with septal thickening and consolidations in bilateral lung parenchyma. Biopsy of worsened cheek lesion on KOH mount confirmed fungal growth pointing towards our title notorious Mucor- a bite kiss on a cheek.

## Keywords

Infection, Dyspnea, Diabetes

## Introduction

Mucormycosis is an aggressive opportunistic fungal infection caused by fungi of Phycomycetes class including Rhizopus species and Mucor species. The pathogen can be present in the environment, on the skin, and in orifices of the body. There are several types including rhinocerebral, pulmonary, gastrointestinal, cutaneous and disseminated mucormycosis. The spores infect the paranasal sinuses and nasopharynx, extending to the orbit and brain cavity in persons who have reduced cellular and humoral defenses.

## Case Report

A 63-year old female was referred to Fortis hospital Mohali with history of acute worsening dyspnea, mild hemoptysis and elective intubation at a private hospital at Ropar. Patient presented to the private hospital in April 2022 with worsening dyspnea SpO<sub>2</sub> of 64% on room air. High flow nasal cannula (HFNC) for type-1 respiratory failure was initiated. On the next day of her admission she developed hemoptysis and was started on meropenem, Remdesvir and voriconazole, when the chest x-ray (Figure 1) was suggestive of bilateral nodular opacities with diffuse ground glass haze. High resolution computed tomography

chest (HRCT) revealed ground glass opacities, septal thickening and bilateral consolidation in the lung parenchyma. After elective intubation she was shifted to Fortis Hospital, Mohali with a SpO<sub>2</sub> of 65% on FiO<sub>2</sub> 1.0 and BP of 200/100 mm Hg. A known patient of rheumatoid arthritis, hypertension and recently diagnosed Type II DM she was on treatment. Initial investigations at the hospital (Table 1) and review of the clinical history led to the differential diagnosis of diffuse alveolar hemorrhage (DAH) vs AIP as one of the possible diagnosis, the BioFire Filmarray pneumonia plus panel was negative for all pathogens, for which meropenem was continued, IV immunoglobulins were opted for as a choice in comparison to pulse corticosteroids and plasmapheresis for possible DAH. Infusion given for two days, prone protocol as a ventilator strategy was initiated and cotrimoxazole was started as a prophylactic drug of choice.

The autoimmune work up for the patient was positive for Anti Nuclear AB-IFA and negative for p ANCA, c ANCA, Anti MPO, Anti PR3, Anti ENA. She was started on intravenous methylprednisolone 40 mg in twice daily doses was started. Following this the patient showed gradual improvement, in the oxygen requirement, figure (2) chest x-ray improved in comparison and the patient was extubated four days later, HRCT chest figure (3) prior to the extubation showed bilateral nodular opacities and patchy alveolar opacities. The patient maintained SpO<sub>2</sub> on nasal prongs and was switched from intravenous methyl-prednisolone to oral prednisolone 40 mg once daily.

A right cheek erythematous lesion was noticed which was thought to

be attributed to prone positioning related pressure sore and a plastic surgery opinion was sought for the same. An improvement in oxygenation status was noted but the right cheek lesion worsened and became black colored resembling an eschar along with pain in the right eye region figure (4). NCCT PNS was done figure (5, 6 & 7) which suggested right soft tissue edema, right maxillary edema, bilateral mastoiditis. Debridement was done (figure 8), sample smear at 10% & 40% KOH mount showed broad aseptate hyphae with right angle branching (figure 9). Culture and histopathology of both the samples confirmed mucor and a repeat NCCT after daily dressings of 3% Amphotericin-B, multiple debridements and intravenous liposomal amphotericin B showed soft tissue defect over right maxillary, buccal region along with mild left maxillary sinusitis and mild DNS towards the left and right inferior turbinate hypertrophy, figure (10 & 11). Over the next few days the wound started healing, figure (12) and responded well to Amphotericin. All the risk factors which include diabetes, critical illness, corticosteroids, pressure & voriconazole given in the previous hospital contributed to the Mucor. Many cases of cutaneous mucormycosis because of trauma, soiled wounds, extensive soft tissue damage have been reported; however, a pressure sore leading to mucormycosis on the facial region is a rare presentation as per our knowledge and, hence the case is being reported.

### Discussion

Mucormycosis is an angio invasive disease well known for its tissue infarction, necrosis and its aggressive nature<sup>[1]</sup>. The clinical presentation of mucormycosis basically depends on the organ involved or as per localization, such as rhino-orbital-

cerebral (ROCM), cutaneous, pulmonary, renal, gastrointestinal and also disseminated mucormycosis<sup>[2,3]</sup>. Patients who are at an increased risk of acquiring fungal infections like mucormycosis are those suffering from diabetes mellitus, haematological malignancies, on chemotherapeutic drugs, haematopoietic stem cells and solid-organ transplant recipients. Those on immunosuppressive therapies for multiple medical illnesses and patients who are having iron overload due to various reasons also contribute. Peritoneal dialysis is also a common risk factor, extensive skin injuries like burns, human immunodeficiency virus (HIV) infection, and voriconazole therapy can result in the individual acquiring the deadly fungal infection<sup>[2,3,4]</sup>. A considerable number of mucormycosis is seen in immune-competent hosts as well<sup>[5,6,7]</sup>. The mortality rate of mucormycosis in India, is in the range of 28–52%<sup>[5,6,8,10]</sup>. The mortality rate in different clinical forms of mucormycosis reported from India are ROCM (31–49%), pulmonary (61–77%), cutaneous (23–57%), gastrointestinal (67–94%), and disseminated (62–79%) figure (13); these findings are similar to those reported in global data<sup>[2,3]</sup>.

### Conclusion

The exact prevalence of mucormycosis in India is unknown, though the estimated prevalence is much higher than in the developed countries. The possible reason for the high prevalence is the abundant presence of Mucorales in the community and the hospital environment, large number of susceptible hosts especially diabetics, and the neglect for regular health check-up of the Indian population. Though uncontrolled diabetes is a common risk factor in all type of mucormycosis, it is significantly associated with ROCM type.

### Declaration of the patient consent

The authors certify that they have obtained all the appropriate patient consent forms. In the form the patient has given consent for his images and other clinical information to be reported in this journal. The patient understands that name and initials will not be published and due efforts will be made to conceal identity, but anonymity cannot be guaranteed.

### Financial support and sponsorship

Nil.

### Conflicts of interest

There are no conflicts of interest



**Figure 1: Bilateral Nodular Ground glass opacities**



**Figure 2: Bilateral reticulonodular opacities- resolving**



**Figure 3: Bilateral Nodular Patchy alveolar opacities**



**Figure 4: Black colour Eschar like lesion-Right Cheek**



**Figure 5: Right Cheek soft tissue collection**



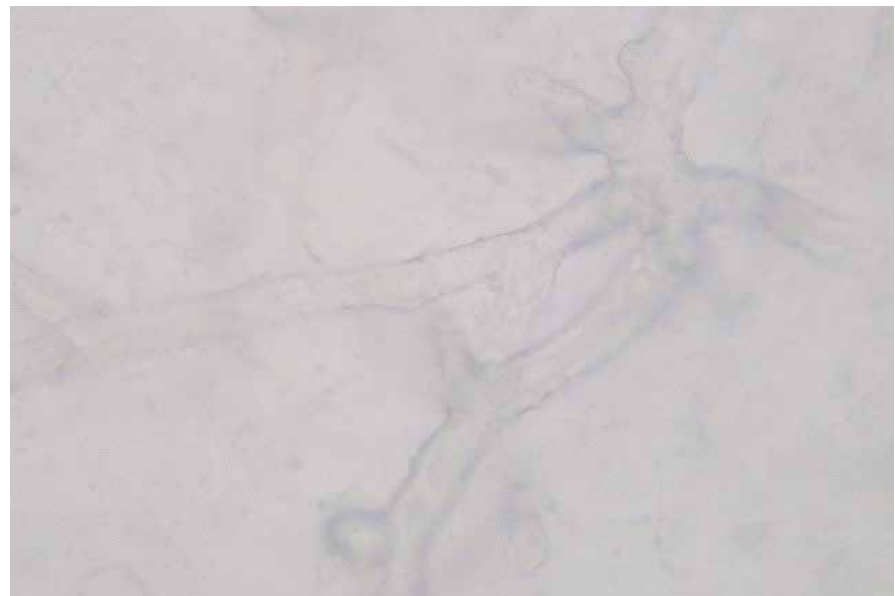
**Figure 6: Right maxillary region soft tissue edema**



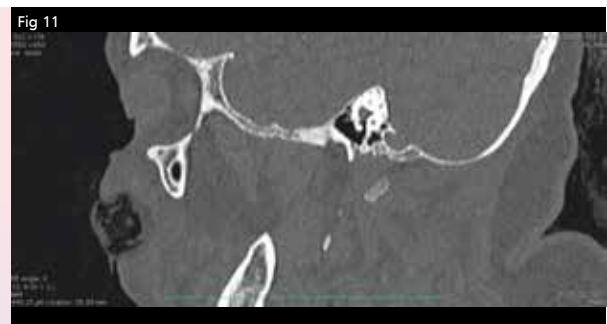
**Figure 8: Post Debridement**

Investigations at Admission to our Hospital			
Hb	9.4	LDH	2158
TLC / N	23.5 / 89	INR	1.81
Platelets	387	D-Dimer	8.41
BUN / S. Creat	45 / 1.6	CRP	281
TSB / DSB	2.54 / 1.18	PCT	19.42
OT / PT	84 / 28	HbA1c	6.8

**Table 1**



**Figure 9: Broad aseptically hyphae with right angle branching (on KOH mount)**



**Figure 10, 11: Right soft tissue defect post debridement and antifungal therapy ongoing**



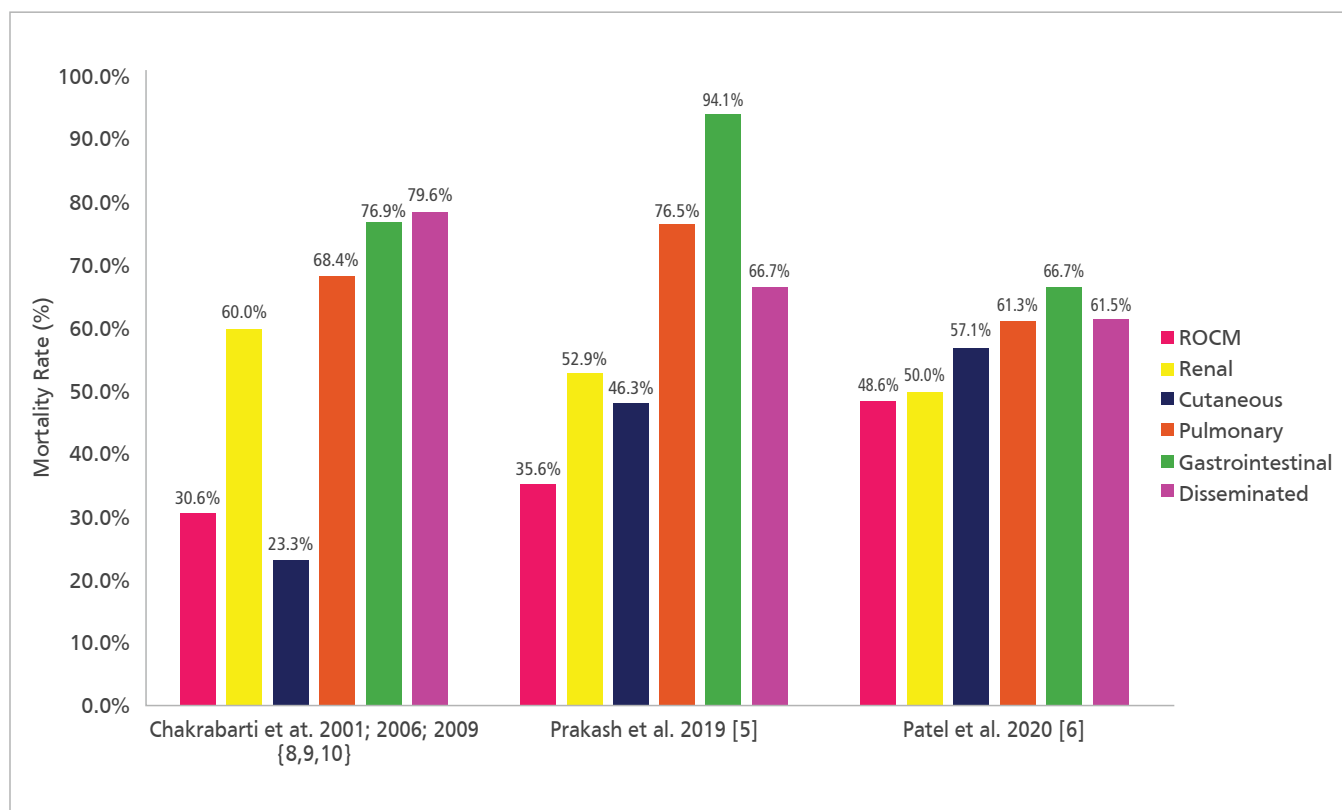
**Figure 12: Healing granulation tissue after multiple debridement**

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**Figure 13: The mortality rate of mucormycosis in India is in the range of 28–52% [5,6,8,10]. The mortality rate in different clinical forms of mucormycosis reported from India are ROCM (31–49%), pulmonary (61–77%), cutaneous (23–57%), gastrointestinal (67–94%), and disseminated (62–79%)**

## A Rare Case of Tuberculosis



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A 70-year old male patient presented to the emergency department with c/o fever, cough, shortness of breath, chest pain, loss of weight and appetite since one month. He is an ex-smoker and alcoholic, retired Air-force personnel. There was no previous history of anti-TB treatment. He is a diabetic, hypertensive and IHD on regular medication.

He was tachypneic, had orthopnea + with a saturation of 70 % on room air. His chest X-ray showed cardiomegaly but no pleural effusion. He was admitted in the ICU and started on broad spectrum antibiotics, NIV, nebulization and other supportive care.

Routine blood investigations showed elevated WBC count, neutrophilia, normal RFT and LFT. Echocardiography showed a large pericardial effusion posteriorly with tamponade and a normal EF. A Cardiology opinion was taken and diuretics were started. Initial pericardiocentesis was not done in view of? Mediastinal mass/

collection. CT chest showed a large pericardial effusion encasing the heart with bilateral pleural effusion (Rt>Lt). An ICD was inserted on the right side. Pleural fluid analysis showed an exudation, lymphocytes 40% and neutrophils 60% with ADA 64. Hence, he was started on empirical ATT along with steroids.

The patient continued to have fever and had a ICD drainage of 250 ml per day. PET CT that was done, showed pneumopericardium effusion, with no lesion elsewhere. A cardiology

review was done. A pericardiocentesis was done and about 500 ml of purulent foul-smelling fluid was aspirated. Analysis of the aspirate was exudative neutrophilic with high ADA (136), AFB smear and GeneXpert negative.

The ATT was continued. Patient was clinically better with no fever spikes; the drain reduced and both ICDs were removed. The patient was discharged with empirical ATT and steroids.





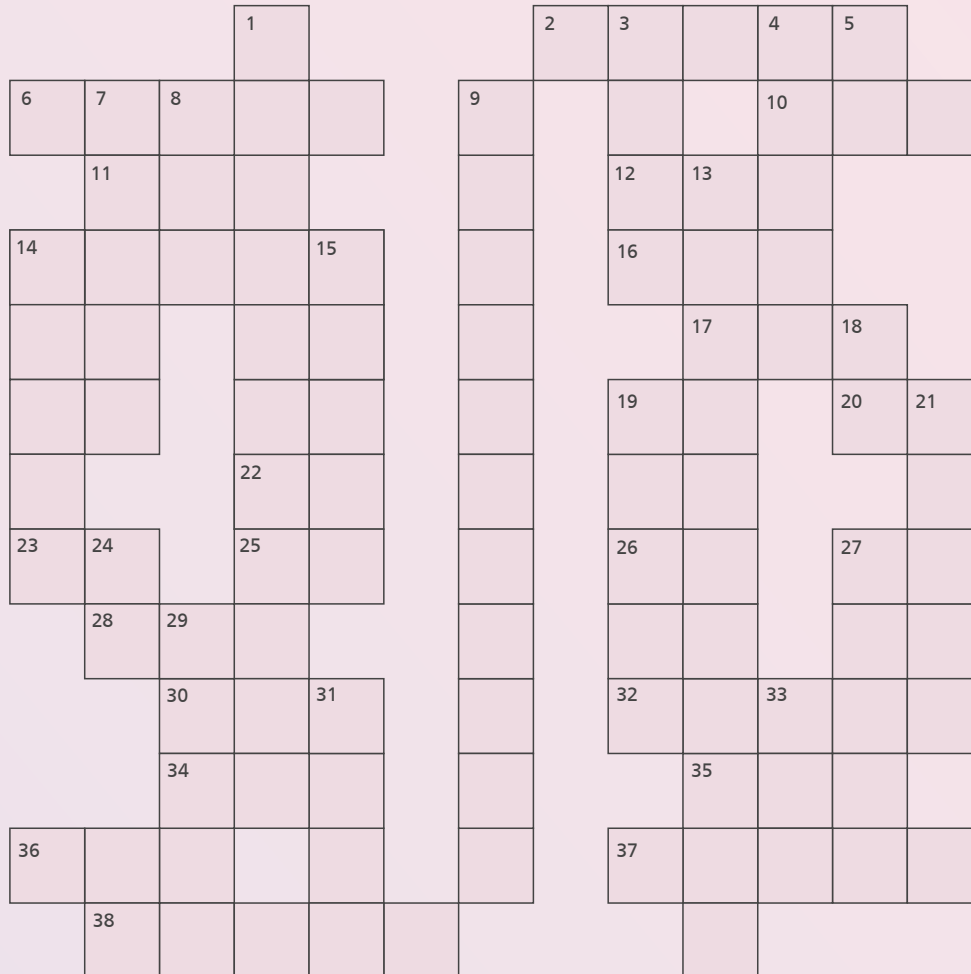
# TRIVIA

## Crossword

Crosswords for this issue shared by:

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### ACROSS

2. Country that reported first case of COVID (5)
6. Doctor's Coat (5)
10. Oral Rehydration Solution (3)
11. COVID affects these circulating cells to alter oxygen transport (3)
12. Continuous intravenous infusion, abr (3)
14. Coronavirus Disease (5)
16. Transnasal Esophagoscopy, abr (3)
17. \_\_\_\_\_ measures number of leucocyte in body (3)
19. Lower extremity, abr (2)
20. Aortic Stenosis, abr (2)
22. Zollinger Ellison (syndrome) abr (2)
23. Sulphydryl group – symbol (2)
25. Covid 19 causes both \_\_\_ TI and LRTI (2)
26. Normal, abr (2)
28. Rifampicin, abr (3)
30. Interatrial septum (3)
32. Doctor's \_\_\_\_\_ is improving in managing COVID infection (5)
34. Glutathione bicarbonate Ringer's Solution, abr (3)
35. Idiopathic hypogonadotropic hypogonadism, abr (3)
36. Bad Cholesterol (3)
37. Country that enforced early lockdown (5)
38. The first corona case was detected in this city (5)

### DOWN

1. Monoclonal antibody used in treating severe corona infection (11)
3. Diagnostic radiological scan for COVID (4)
4. The \_\_\_\_\_ strain COVID 19 is the cause of current pandemic (5)
5. Type of genetic transmission, abr (2)
7. This position may improve oxygenation in severe COVID patient (5)
8. Ribavirin, abr (3)
9. New oral anti-viral drug used in treating COVID patients (11)
13. Cytokine elevated in COVID (11)
14. PM \_\_\_\_\_ fund was created to combat COVID (5)
15. D- \_\_\_\_\_ is elevated in COVID (5)
18. Calcium, abr (2)
19. Affection of this organ may cause hypoxia (5)
21. Loss of \_\_\_\_\_ is an early COVID symptom (5)
24. Heart rate, abr (2)
27. Mumbai and \_\_\_\_\_ have maintained the top-slot in the number of COVID cases (5)
29. Marker for intracellular levels of folate (5)
31. Bacterial small RNA's, abr (4)
33. Ischemic heart disease, abr (3)



**ONCO CONNECT**

## Central Head and Neck Tumor Board

Dated – 22<sup>nd</sup> September 2022

<b>COORDINATORS</b>	<p><b>Dr Hitesh R Singhavi</b> Consultant - Head and Neck Surgeon Fortis Hospital, Mulund</p> <p><b>Dr Harshit Shah</b> Associate Consultant - Head and Neck Surgeon Fortis Hospital, Mulund</p>
<b>CHAIRMAN</b>	<p><b>Dr Anil Heroor</b> Head - Surgical Oncology Fortis Hospital, Mulund</p>
<b>PANELISTS</b>	<p style="text-align: center;"><b>SURGICAL ONCOLOGISTS</b></p> <p><b>Dr B Niranjana Naik</b> Director - Surgical Oncology Fortis Memorial Research Institute, Gurugram</p> <p><b>Dr Prateek Varshney</b> Director Surgical Oncology Fortis Hospital, Shalimar Bagh</p> <p><b>Dr Kapil Kumar</b> Consultant - Surgical Oncology Fortis Hospital, Shalimar Bagh</p> <p><b>Dr Anish Bhatia</b> Associate Consultant - Surgical Oncology Fortis Hospital, Ludhiana</p> <p><b>Dr Prashant Pawar</b> Consultant - Head &amp; Neck, Surgical Oncology Fortis Hospital Mulund</p> <hr/> <p style="text-align: center;"><b>MEDICAL ONCOLOGIST</b></p> <p><b>Dr Uma Dangi</b> Consultant - Medical Oncology Fortis Hospital, Mulund</p> <hr/> <p style="text-align: center;"><b>RADIATION ONCOLOGIST</b></p> <p><b>Dr Pushkar Ingle</b> Consultant - Radiation Oncology Fortis Hospital, Mulund</p>

## Head and Neck Tumor Board Cases



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**Dr Harshit Shah**  
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Fortis Hospital, Mulund

### CASE 1

#### Case History

A 54-year-old male with a good performance index (ECOG-0) with type 2 diabetes and hypertension for

five years was on medication for the same. He complained of a non-healing darkly pigmented growth over the lower alveolus since one year. There was history of excision of the growth which grew back but unfortunately it was never sent for histopathology reporting.

#### On Examination

Extra orally, there was no involvement of the skin over the disease. Patient had good mouth opening of 3 finger (more than 35mm). On intraoral examination, there was a proliferative black pigmented lesion extending from the right second molar to the contralateral lower incisor with pigmented gingiva extending till the contralateral first molar. On neck examination there were no suspicious palpable neck nodes. Incision biopsy was done which suggested mucosal melanoma. PET CECT reported a lesion over the lower alveolus causing subtle erosion of the mandible with no FDG avid neck nodes. Rest of the body had physiological uptake with no distant

metastasis. It was staged as T4a N0 M0. The plan was to do a middle third mandibulectomy with bilateral neck dissection with a tracheostomy and reconstruction with free osteocutaneous free fibular graft.

#### Histopathological Examination

The tumor was 4x3x2cm in size, all margins were greater than 1 cm. It was diagnosed as a malignant melanoma (spindle cell variant). Perineural invasion and lymphovascular emboli were absent, Bone erosion was present. The right neck nodes revealed that one out of 21 nodes was positive for metastasis without perinodal extension while left neck dissection revealed all 22 reactive nodes.

#### Points to Discussed in Tumor Board Team

1. Margins in oral mucosal melanoma (OMM).
2. Indication of radiation in OMM.
3. Indication of chemotherapy in OMM in adjuvant settings.
4. Any experience of use of Indocyanine green in OMM.



Figure 1: Pre-operative Image of Oral Mucosal Melanoma

### Margins in oral mucosal melanoma

According to the NCCN guideline on melanoma of 201

6, lesion with tumor thickness more than 4mm would entail a surgical margin of more than 2cm. However, whether there was any evidence to extrapolate the data for skin melanomas to the oral mucosal melanoma was the point of discussion. Also, there was no evidence to suggest the same in the literature on OMM. The present panel consensus drawn on the treatment of OMM as any oral squamous cell carcinoma termed a 1cm margin as adequate margins.

### Indication of radiation in OMM in adjuvant setting

Oral mucosal melanoma is one of the rare tumors of oral cavity accounting for 0.2 to 8% of all the mucosa melanomas. Therefore, there was no level one evidence to suggest the same. Also literature suggests that OMM are non-radiosensitive tumors thus creating a debate on the indication of radiation adjuvant in the setting of the presence of neck node metastasis. However, review of literature by Mendenhall Mendenhall WM, Amdur RJ, Hinerman RW, Werning JW, Villaret DB, Mendenhall NP. Head and neck mucosal melanoma. *Am J Clin Oncol*. 2005 Dec;28(6):626-30. doi: 10.1097/01.coc.0000170805.14058.d3. PMID: 16317276.

suggested the use of radiation in adjuvant settings. It reported

significant difference in locoregional control as compared to the patient not receiving radiation but without any effect on overall survival which may attribute to hematogenous dissemination. Also consensus of the panelists was in favor of post-operative adjuvant radiotherapy considering the aggressive nature of the disease.

### Indication of chemotherapy in OMM in adjuvant settings

There is no evidence to support the role of chemotherapy in adjuvant setting and also as a single node was positive with no perinodal extension the panelists agreed with only radiation in the adjuvant setting.

## CASE 2

### Case History

A 68-year-old male reported with chief complaints of non-healing ulcer over the lower alveolus for 3 months. He had a history of type 2 diabetes and hypertension for 10 years and was on medication for the same. He had undergone right sided hernioplasty 40 years back with a family history of cancer. The patient was a tobacco (gutkha) chewer since 20 years.

### On Examination

The extraoral skin was free with no asymmetrical facial swelling seen. Intraorally, an ulceroinfiltrative lesion was seen over the lower alveolus extending from the right central incisor to the RMT area, linguallly involving the gingiva, laterally reaching the buccal mucosa and posteriorly up to the retro molar trigone.

Neck examination: Right level 1b and right level 2 nodes were palpable,

mobile and firm. The upper end of the level 2 node could not be palpated. Incisional biopsy revealed well differentiated keratinizing squamous carcinoma.

### Investigation

The patient underwent PET CECT showing enhancing conglomerate mass lesion involving the right level 2 extending up to the skull base with encasement of right IJV showing filling defects up to the jugular bulb. The node abutted the right ICA over angle of 170-degree arterial caliber and opacification was normal.

Patient received 2 cycles of NACT. TPF Regimen (Docetaxel 75 mg/m<sup>2</sup>, Carboplatin 100 mg/m<sup>2</sup>, 5-Fluorouracil 1000mg/m<sup>2</sup>).

The Post- NACT PETCECT scan reported good reduction in size and metabolic activity of lesion in the lower alveolus. As compared to the previous scan, the size of the level 2 node reduced (previously 22 x 18mm to 20 x 18mm) (SUV max- 4.9 to 3.2).

No filling defects were seen in the right IJV in the current study. ICA was completely free from the level 2 node.

### Points Discussed in the Tumor Board Meeting

Surgery versus palliative concurrent chemotherapy and radiotherapy: According to pre-NACT scans, the nodes seemed to be abutting the ICA for more than 180 degree thus was deemed inoperable; the IJV was also opacified. The post NACT scan showed significant reduction in the nodal burden. The ICA was free of node but the upper stump of the IJV could not be visualized.

Amongst the panelists the radiologist was of the opinion that the IJV could be desmoplastic post NACT thus may not be indicative of disease. The panelists agreed with the plan for neck exploration followed by comprehensive neck dissection with right extended segmental mandibulectomy with reconstruction.

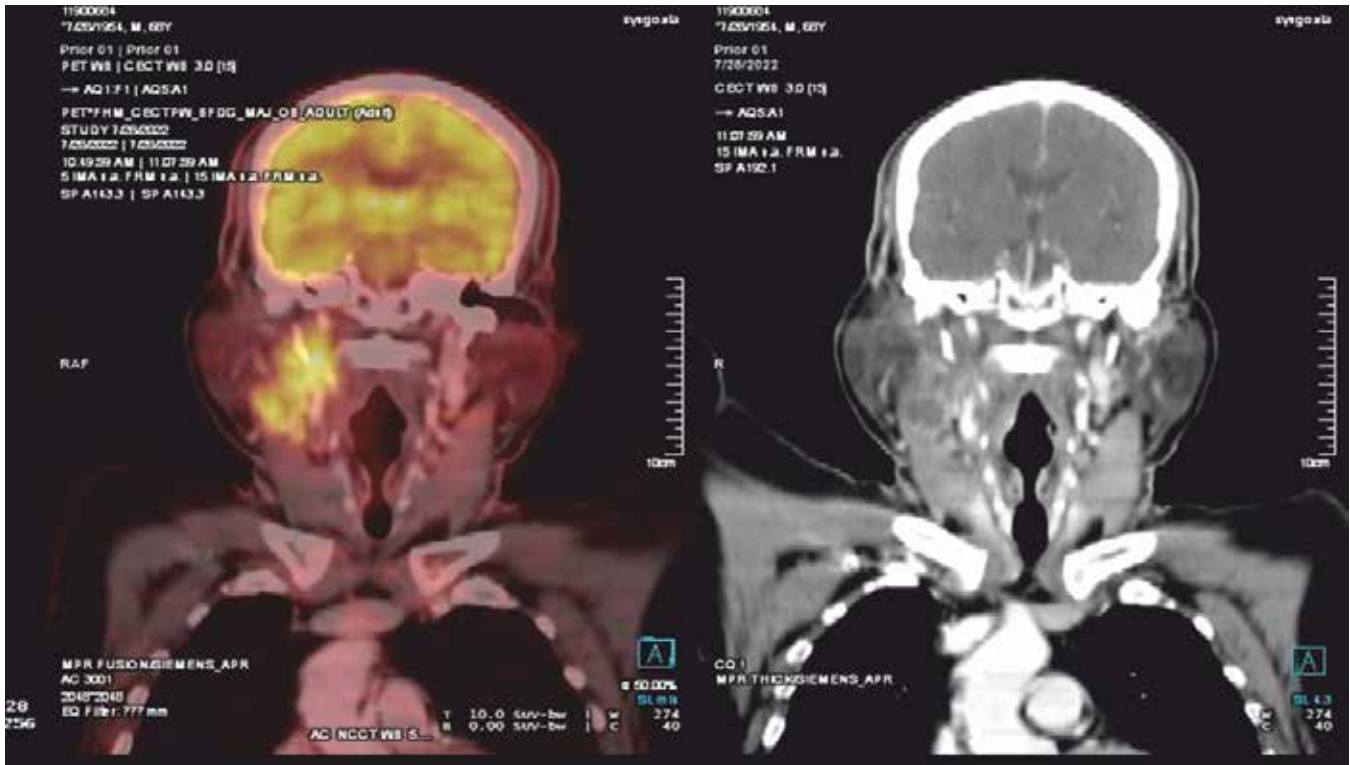


Figure 2: Pre NACT coronal section PETCECT at the level of condyle

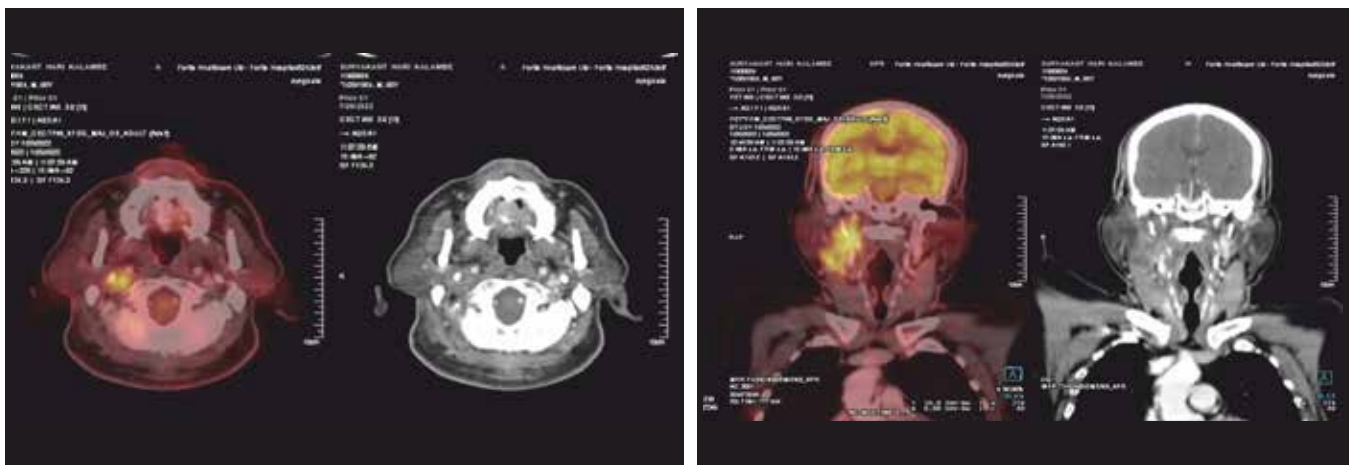


Figure 3: Pre NACT PETCECT in axial and coronal section



Figure 4: Post NACT PETCECT in axial and coronal section

**CASE 3**

**A Unique Case of Thyroid Malignancy**



**Dr Sandeep Nayak**  
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Fortis Hospitals, Bangalore

Presenters :  
**Dr Abhilasha Sadhoo**  
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A 58-year-old female came with complaints of swelling of neck since three months.

FNAC of a right nodule of thyroid showed papillary carcinoma and the neck node as reactive lymphadenitis.

The USG showed both thyroid lobes to be bulky, the right lobe showed a hypoechoic nodule 3.8\* 3 cm in the lower pole and 2.4 \*2 cm in the upper pole. The left lobe showed hypoechoic nodule 3.2\* 2.8 cm in the lower pole. Bilateral neck nodes with the largest 1.5 \*0.5 cm on right side and 1.5\*0.6 on the left side with loss of fatty hilum.

The patient was euthyroid.

The patient underwent robotic total thyroidectomy + central compartment (RABIT Technique) dissection under general anesthesia.

Histopathology showed left central

compartment node 1 node with focus of 0.2 cm with features of metastatic carcinoma thyroid.

Right and left lobe of thyroid: Lymphocytic thyroiditis with extensive Hurthle cell changes.

Right central compartment node: Reactive nodes.

After 3 weeks of postoperative period, TSH =>100 micu /ml, Serum thyroglobulin: 0.5 ng/ml

ATG=449 iu/ml, Ca: 8.9 mg/dl.

The whole body scan came as negative

**Tumor Board Opinion**

It was decided to follow the patient aggressively with serial ultrasound and thyroglobulin levels in view of the metastatic nodule in the neck.





## Central Uro-Oncology Tumor Board

Dated - 27<sup>th</sup> October 2022

<b>COORDINATOR</b>	<b>Dr Karthik Rao</b> Consultant - Urology, Uro-Oncology Robotic Surgery and Renal Transplant Fortis Hospital, Bannerghatta Road
<b>CHAIRMAN</b>	<b>Dr Mohan Keshavamurthy</b> Director - Urology, Transplant and Robotic Surgery Fortis Hospital, Bangalore
<b>PANELISTS</b>	<b>MEDICAL ONCOLOGISTS</b>  <b>Dr Niti Raizada</b> Director - Medical Oncology Hemato - Oncology Fortis Hospital, Bannerghatta Road  <b>Dr Ankur Bahl</b> Senior Director - Medical Oncologist and Hematology Fortis Medical Research Centre, Gurugram
	<b>RADIATION ONCOLOGISTS</b>  <b>Dr A K Anand</b> Director - Radiation Oncology Fortis Medical Research Centre  <b>Dr Madhusudan</b> Consultant Radiation Oncologist Fortis Hospital, Bannerghatta Road
	<b>ONCO PATHOLOGISTS</b>  <b>Dr Kunal Sharma</b> Associate Director and Section Head Centre of Excellence and Histopathology Mumbai Reference Lab Lead - Dp and AI Initiatives SRL Diagnostics  <b>Dr Narendra K.L</b> Senior Consultant and Section Head Histopathology - SRL Diagnostics Fortis Hospital, Bannerghatta Road



## Uro-Oncology Tumor Board Cases



**Dr Mohan Keshavamurthy**  
 Director - Urology,  
 Transplant and Robotic Surgery  
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Presenters :

**Dr Karthik Rao**

Consultant - Urology, Uro-Oncology  
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 Fortis Hospital, Bannerghatta Road

### CASE 1

#### Low Volume Hormone Naive Metastatic Prostate Cancer

A 65-year old gentleman presented with increased frequency of urination since 6 months. The night frequency was four to five times; it was associated with urgency. There was no obstructive LUTS.

The patient was a diabetic since 6 years. He had undergone circumcision 3 months back for balanoposthitis.

**Examination** showed an ECOG 1. There was no pallor and no icterus. The vitals were stable.

**P/A:** There was no evidence of any palpable mass.

**P/R:** The prostate was hard and nodular. The rectal mucosa over the prostate was free.

#### Investigations

Hb: 12.4 g/dl

TLC: 8700

Serum creatinine : 0.78 cells/cmm

LFT: Normal

Urine Routine: Normal

PT: 14.2/ INR: 1.14 APTT: 36.5/  
 Control: 30 PSA: 26 ng/ml

#### Transrectal Ultrasound Guided Prostate Biopsy Right lobe:

Histologic type: Prostatic Adeno carcinoma Grade: Gleason Score-4+5=9

Percentage of pattern 4: 80%, pattern 5: 20% Cribriform glands present

Intraductal carcinoma not identified 11-20% involved by tumor

Perineurial invasion present Lymph-vascular invasion not identified

#### Left lobe

Histologic type: Prostatic Adeno carcinoma Grade: Gleason Score - 4+5 = 9

Percentage of pattern 4: 80%, pattern 5: 20% Cribriform glands present

Intraductal carcinoma not identified 11-20% involved by tumor

Perineurial invasion present Lymph-vascular invasion not identified

#### PSMA PET

Prostate is enlarged measuring 48x54x73 mm

Multiple tracer avid lesions largest in the right peripheral zone measuring 27x34mm abutting the levator ani muscle.

Bilateral seminal vesicles involved

Multiple tracer avid lesions seen in the lymph nodes

- **Pelvis:** Bilateral external, internal and common iliac, largest left external iliac node measuring 16 x 25 mm with Max SUV 15.2. A few mesorectal and superior rectal lymph nodes are also seen, largest measuring 8 x 10 mm with Max SUV 5.1.

- **Retroperitoneum:** Retrocrural, retrocaval, preparamcaval, aortocaval and preparamaortic, largest measuring 22 x 29 mm with Max SUV 17.2.
- **Cervical:** Bilateral supraclavicular, largest on right side measuring 7 x 8 mm with Max SUV 2.7.

#### Treatment

In view of metastatic disease the treatment option of medical versus surgical castration was given.

Patient opted for medical castration.

Patient was started on Inj. Leuprolide 22.5 mg Depot injection once in 3 months and Tab Abiraterone 1000mg along with 5 mg Tab Prednisolone.

Regular follow up was advised.

#### Follow up

Regular PSA was done every three months

In the 9<sup>th</sup> month the value of PSA was 0.01 ng/ml

#### Repeat PSMA SCAN

- The prostate now measures 36 x 40 x 36 mm (previously measured 48 x 54 x 73 mm) with median lobe protruding to the bladder base; interval decrease in size and tracer avidity of lesions in the prostate is noted, largest in the right peripheral zone now measuring 18 x 29 mm with Max SUV with Max SUV 14.5 (previously measured 27 x 34 mm with Max SUV 20.9); the lesions are again seen abutting the levator ani muscle on the right side; bilateral seminal vesicles are again involved; interval decrease in peri-prostatic stranding is seen.
- Interval decrease in size of tracer avid lymph nodes in the following regions is noted:

- **Pelvis:** Bilateral external, internal & common iliac, mesorectal and superior rectal, largest left external iliac node now measuring 10 x 15 mm with Max SUV 18.5 (previously measured 16 x 25 mm with Max SUV 15.2).
- **Retroperitoneum:** Retrocrural, retrocaval, preparamcaval, aorticaval and preparamaortic, largest now measuring 10 x 12 mm with Max SUV 16.9 (previously measured 22 x 29 mm with Max SUV 17.2).
- **Cervical:** Bilateral supraclavicular, largest on right side now measuring 5 x 6 mm with Max SUV nil (previously measured 7 x 8 mm with Max SUV 2.7).

### Managing Metastatic Prostate Cancer

Metastatic lesion biopsy Tumor testing for

1. Microsatellite instability-high (MSI-H) or dMMR
2. HRRm
3. Tumor mutational burden

(TMB) testing

Continue ADT to maintain castrate levels of serum testosterone (<50 ng/dL)

#### Additional treatment options

Bone antiresorptive therapy with denosumab or zoledronic acid if bone metastases Adenocarcinoma Prostate CRPC

(A). No prior docetaxel/no prior novel hormone therapy

Abiraterone

Docetaxel

Enzalutamide

- Useful in certain circumstances Radium-223 (symptomatic bone metastases) Sipuleucel-T

(B). Prior docetaxel/no prior novel hormone therapy

Abiraterone

Cabazitaxel

Enzalutamide

- Useful in certain circumstances

Cabazitaxel/carboplatin Mitoxantrone

Rucaparib for BRCA mutation

Palliative RT for symptomatic bone mets

Oligometastatic sites; RT (EBRT or SBRT)/ local ablative procedures/ surgery

#### Point of Discussion

Tumor board was consulted for further management of this patient. In view of good response to hormonal treatment the consensus reached was to continue the same line of management in this patient with significant volume persistent loco-regional burden of disease. Radiation to be considered after three months. Sequencing of Abiraterone vis-à-vis Enzalutamide was discussed. Systemic chemo with Docetaxel intervening between the two medications would be considered when the patient evolves into HRPC.

### CASE 2

#### Syndromic Renal Cell Carcinoma in a Young Patient

A 32-year-old lady presented with an incidentally detected right renal mass. There were no symptoms at present. There was no h/o haematuria, loss of appetite or loss of weight. She was a known case of hypothyroidism and PCOD. There was a significant history of a paternal aunt having breast cancer and a grandfather having died of cancer brain.

The C E C T ABDOMEN AND PELVIS showed the right kidney with a 6.2x6.1x5.4 cm lobulated enhancing mass lesion in the mid and lower pole with bright peripheral enhancement and central necrosis. The lesion was

seen abutting the collecting system superiorly and an exophytic component antero-inferiorly and two renal arteries and a single renal vein likely oncocytoma.

#### Course in Hospital

- Patient underwent cystoscopy + Right double J stenting + robot assisted laparoscopic right partial nephrectomy

#### Histopathology

Histopathology revealed

- Clear cell RCC
- Grade 2
- All margins free of tumour
- No Rhabdoid or Sarcomatoid changes

- No Lymphovascular invasion identified
- Stage pT1b Nx

#### Genetic Testing

Genetic testing showed VHL mutation positive.

#### Point of Discussion

Nephron sparing surgery using Robot has revolutionized the management of such patients making partial nephrectomy in a minimally invasive setting possible with high efficiency. The Tumor board was involved as the patient had a VHL mutation. Family tracing and strict follow up protocols were discussed as the way forward for this patient.

**CASE 3**
**Tumour in Bladder Diverticulum in Elderly Patient Wanting Bladder Preservation**

**Dr Mohan Keshavamurthy**  
 Director - Urology,  
 Transplant and Robotic Surgery  
 Fortis Hospital, Bangalore

A 79-year-old male, Hindu by religion, resident of Jaipur presented with complaints of gross total intermittent hematuria for the last three months and passage of tissue bits in the urine.

DRE: perianal sensations normal, BCR+, Anal tone was normal

Prostate: Grade 2, overlying mucosa was free, no nodule was palpable.

There was history of TURBT one month ago. The HPE showed high grade transitional cell carcinoma with lamina propria invasion. Deep Muscle was not identified. Lymphovascular invasion was identified.

**CECT Abdomen and Pelvis**

The urinary bladder appears to be overdistended with walls of normal thickness & a large left sided diverticula. Nodular enhancing & partially calcified mass lesion measuring approx. 4.4 x 4.2 x 2.6cm was seen within the diverticula. A small nodular enhancing lesion measuring approx. 1.7 x 1.5cm was seen along the superior aspect of diverticula. Perivesicle fat planes are clear. Another small sessile partially calcified lesion measuring approximately 1.0 x 0.8 cm was also seen along the posterior wall of the urinary bladder. The prostate appears enlarged with evidence of TUR.

**FDG PET CT Scan**

It showed a grossly enlarged prostate along with a grossly distended urinary bladder having a

large diverticulum along its lateral wall. Subtle, mildly FDG avid enhancing wall thickening along the anterior diverticular wall along with an ill-defined hyperdense soft tissue density growth having curvilinear calcific densities within. In view of the present clinical context, it may represent an active neoplastic etiology. Patient was planned for robot assisted laparoscopic partial cystectomy + TURP + bilateral double J stenting and was discharged on Day 3 with excellent recovery thereafter.

**Histopathology**

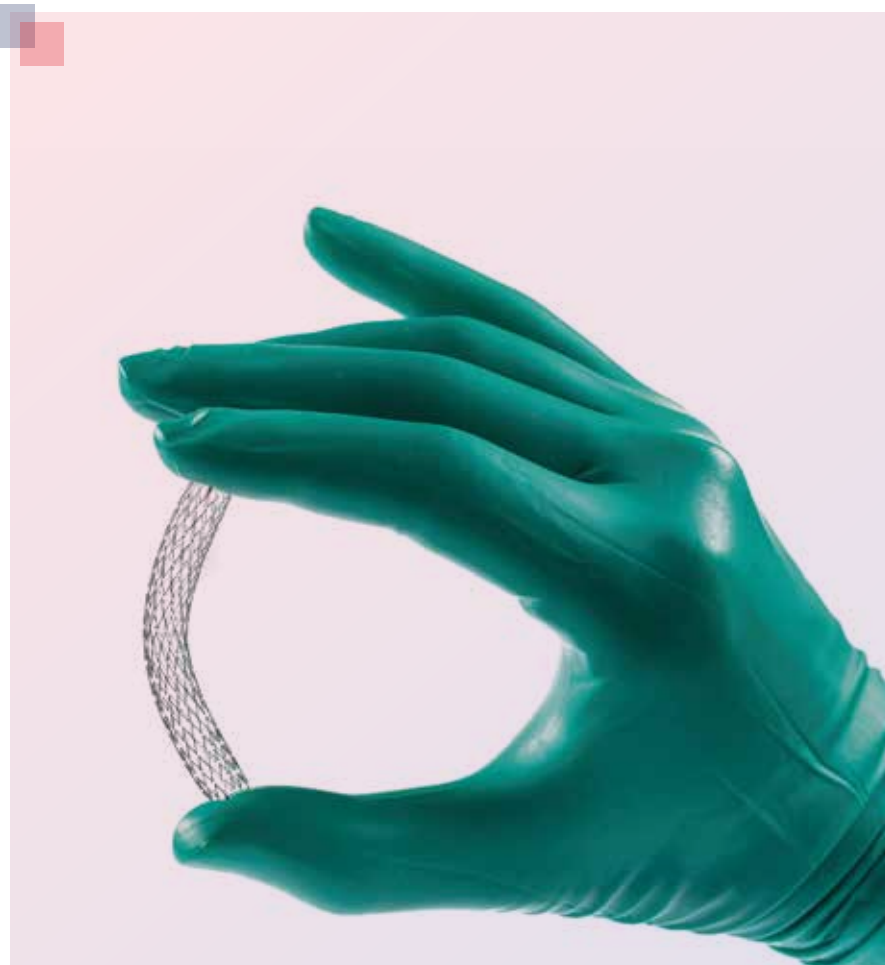
- Poorly differentiated carcinoma with mucinous areas
- High grade invades perivesical soft tissue microscopically
- All margins free
- Stage pT3a

- Immunohistochemistry done revealed large cell variant neuroendocrine carcinoma

**Points of Discussion**

Physiological age and not chronological age should be considered for robot assisted definitive cancer surgery.

Neuroendocrine carcinoma is a rare variant in bladder. The elderly gentleman was advised radical cystectomy by his urologist, but the patient wanted bladder preservation. Hence, following Robot assisted partial cystectomy, the way forward for optimizing the outcome was discussed. In view of minimal role for radiation therapy, adjuvant Chemotherapy regime using platins and etoposide was considered the optimal solution along with regular check cystoscopy, thereafter.





**COVID-19**

# COVID-19 Patients: When and Whom to Ventilate?

Source: *Acute Crit Care* 2020; 35(3): 218-219

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The coronavirus disease-19 (COVID-19) pandemic has severely strained intensive care unit (ICU) resources worldwide. It is estimated that a country like India with a population of 1.3 billion, has one doctor for every 1,457 individuals, 1.7 nurses per 1,000 people, approximately 1.9 million hospital beds, 95 thousand ICU beds, and 48 thousand ventilators. As the cases of severe acute respiratory syndrome (SARS) increase rapidly, finding ICU beds, ventilators, intensivists, and critical care nurses remains a big challenge. The need for mechanical ventilation in COVID-19 patients, however, remains a subject of debate. A Chinese study reported that invasive ventilation was required in only 2.3% of 1,099 COVID-19 positive patients<sup>[1]</sup>. In contrast, noninvasive ventilation (NIV), including bilevel positive airway pressure and continuous positive airway pressure, is being advocated for early/mild disease<sup>[1]</sup>. Patients needing mechanical ventilation were sicker and had a higher mortality rate, as compared to those receiving NIV. Additionally, the PaO<sub>2</sub>/FIO<sub>2</sub> ratio was worse among non survivors<sup>[2]</sup>. A meta-analysis that included 1,084 patients from eight selected studies showed that high-flow nasal cannula (HFNC) treatment could reduce the rate of endotracheal intubation and ICU mortality<sup>[3]</sup>. A more recent review concluded that HFNC and NIV should be reserved for patients with

mild acute respiratory distress syndrome until further data are available<sup>[4]</sup>. Although aerosolization risk exists for both HFNC (up to 62 cm around the face) and NIV (within 92 cm distance), the former has been recommended by surviving sepsis guidelines<sup>[5,6]</sup>. NIV must be delivered with a well-fitted full-face non-vented mask, delivered in negative pressure (or single) rooms, and by adding a viral filter between the mask and the expiratory leak or tubing. Besides face masks, NIV may also be provided by nasal pillows (aerosolization risk up to 33 cm distance) and helmet masks (aerosolization risk up to zero to 27 cm distance)<sup>[5]</sup>.

Potentially, HFNC and NIV have the advantage of being provided even outside the ICU and can be managed by trained paramedical staff which conserves ICU resources for more severe patients<sup>[7]</sup>. Further, recent research has shown an emerging role for awake prone HFNC and NIV<sup>[8]</sup>. Awake prone positioning improves the mismatch between ventilation-perfusion and opens the atelectatic lungs by promoting adequate sputum drainage. Many patients will immediately improve their oxygenation while others show signs of exhaustion or excessive respiratory effort. High tidal volumes (breathing spontaneously or on HFNC/NIV), may expose diseased lungs to swings of trans-pulmonary pressures and may lead to patient self-inflicted lung injury. Any undue delay in switching to invasive ventilation may worsen outcomes<sup>[9]</sup>. A recent study has shown that maximal level of interleukin-6 (IL-6), followed by C-reactive protein (CRP) level, was highly predictive of the need for mechanical ventilation suggesting the possibility of using IL-6 or CRP

level to guide escalation of treatment in patients with COVID-19-related hyperinflammatory syndrome<sup>[10]</sup>.

With medical facilities severely stretched out, especially in resource-limited regions like India and other developing nations with large population clusters, selective use of HFNC or NIV may reduce the need for ventilated ICU beds while achieving desired clinical results. The decision to switch from HFNC/NIV to invasive ventilation could be a tricky one with several factors and comorbidities to be taken into account. However, in the absence of randomized controlled trials (RCTs) and lack of clear guidelines, the clinical judgment of physicians and the availability of necessary resources in their respective hospitals will largely determine the ventilation techniques employed. Large RCTs or well-designed observational studies are needed to define stratification of COVID-19 patients for the best choice of initial respiratory support keeping in mind the resources available and the judicious and timely use of invasive ventilation.

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## A Multicenter Survey Study of Antifibrotic use for Symptomatic Patients with Post-COVID-19 Interstitial Lung Abnormalities

Source: *Lung India*. 2022 May-Jun;39(3):254-260. doi: 10.4103/lungindia.lungindia\_568\_21. PMID: 35488683; PMCID: PMC9200209

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### ABSTRACT

#### Background

Little data exist on antifibrotic drugs for treating symptomatic patients with persistent interstitial lung abnormalities in the post-acute phase of coronavirus disease 2019 (COVID-19). Herein, we describe the physician practices of prescribing pirfenidone and nintedanib for these patients and the physician-assessed response.

#### Materials and Methods

This was a multicenter, retrospective survey study of subjects administered pirfenidone or nintedanib for post-COVID-19 interstitial lung abnormalities. Data on the demographic details,

comorbidities, abnormalities on the computed tomography (CT) of the chest, treatment, antifibrotic drug use, and physician-assessed response were collected on a standard case record pro forma. We explored physician practices of prescribing antifibrotics (primary objective) and the physician-assessed response (secondary objective).

#### Results

We included 142 subjects (mean age, 55.9 years; 16.2% women) at eight centers. The most common abnormalities on CT chest included ground glass opacities (75.7%), consolidation (49.5%), reticulation (43.9%), and parenchymal bands (16.8%). Of the 5701 patients discharged after hospitalization at six centers, 115 (2.0%) received antifibrotics. The drugs were prescribed an average of 26 days after symptom onset. One hundred and sixteen subjects were administered pirfenidone; 11 (9.5%) received the full dose (2400 mg/day). Thirty subjects were

prescribed nintedanib; 23 (76.7%) received the full dose (300 mg/day). Of 76 subjects with available information, 27 (35.6%) and 26 (34.2%) had significant or partial radiologic improvement, respectively, according to the physician's assessment.

#### Conclusions

Antifibrotic agents were administered to a minority of patients discharged after recovery from acute COVID-19 pneumonia. Larger, randomized studies on the efficacy and safety of these agents are required.

## Energy Expenditure in COVID-19 Mechanically Ventilated Patients: A Comparison of Three Methods of Energy Estimation

Source: *JPEN J Parenter Enteral Nutr.* 2022 May 8;10.1002/jpen.2393. doi: 10.1002/jpen.2393. Epub ahead of print. PMID: 35526145; PMCID: PMC9348140.

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### ABSTRACT

#### Background

Indirect calorimetry (IC) is the gold standard for measuring resting energy expenditure. Energy expenditure (EE) estimated by ventilator-derived carbon dioxide consumption (EEVCO<sub>2</sub>) has also been proposed. In the absence of IC, predictive weight-based equations have been recommended to estimate daily energy requirements. This study aims to compare simple predictive weight-

based equations with those estimated by EEVCO<sub>2</sub> and IC in mechanically ventilated patients of COVID-19.

#### Methods

Retrospective study of a cohort of critically ill adult patients with COVID-19 requiring mechanical ventilation and artificial nutrition to compare energy estimations by three methods through the calculation of bias and precision agreement, reliability, and accuracy rates.

#### Results

In 58 mechanically ventilated patients, a total of 117 paired measurements were obtained. The mean estimated energy derived from weight-based calculations was 2576 ± 469 kcal/24 h, as compared with 1507 ± 499 kcal/24 h when EE was estimated by IC, resulting in a significant bias of 1069

kcal/day (95% CI [-2158 to 18.7 kcal]; P < 0.001). Similarly, estimated mean EEVCO<sub>2</sub> was 1388 ± 467 kcal/24 h when compared with estimation of EE from IC. A significant bias of only 118 kcal/day (95% CI [-187 to 422 kcal]; P < 0.001), compared by the Bland-Altman plot, was noted.

#### Conclusion

The energy estimated with EEVCO<sub>2</sub> correlated better with IC values than energy derived from weight-based calculations. Our data suggest that the use of simple predictive equations may potentially lead to overfeeding in mechanically ventilated patients with COVID-19.

#### Keywords

COVID-19; EEVCO<sub>2</sub>; energy expenditure; indirect calorimetry; predictive equation.

## Oral Mucosal Lesions in Moderate to Severe COVID-19 Disease

Source: *J of Datta Meghe Institute of Med Sciences University.* 2022; 17(5): 63-66

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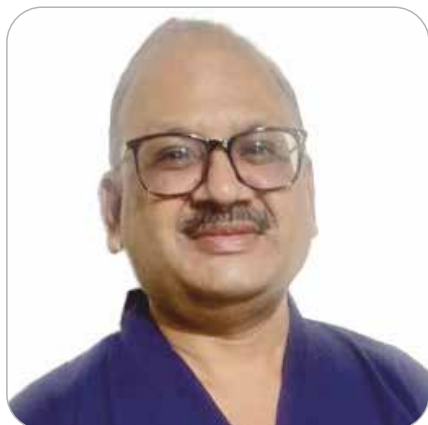
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 New Delhi, India

Severe acute respiratory syndrome coronavirus 2 is a widespread worldwide public health malady due to a viral COVID-19 infection. The World Health Organization has affirmed this malady as a pandemic and Public Health Emergency of International Concern. A wide array of oral lesions has been reported in patients with COVID-19. Oral lesions can be an initial sign of COVID-19 or an alarming sign of peripheral thrombosis. However, there is a scarcity of published literature on the oral manifestations of COVID-19 in hospitalized patients.

We present four different types of oral lesions in hospitalized patients with moderate-to-severe COVID-19 disease. This article proposes that a detailed examination of the oral cavity in patients admitted to COVID-19 intensive care unit/high dependency units will help to understand the significance of the oral lesions in the management of the disease. Dental professionals should be a part of the multidisciplinary treatment protocol, thus, emphasizing a detailed and meticulous oral examination and oral health amelioration of COVID-19 patients.

# Use of Intravenous Immunoglobulin in the Treatment of Severe COVID-19 Disease - A Case Series

Source: *European Journal of Medical and Health Sciences*, 3(5), 38–44. <https://doi.org/10.24018/ejmed.2021.3.5.1061>



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## Objective

To study and document the outcomes of adjuvant use of high dose intravenous immunoglobulin (IVIg) therapy in patients with severe or critical corona virus disease 2019 (COVID-19). We report a case series of five patients who were admitted with severe and critical COVID-19 disease and were treated with adjuvant IVIG along-with the institute's standard of care (SOC) treatment.

## Method

It is a retrospective observational study. We retrospectively collected data on all patients with COVID-19 disease who were hospitalized in the authors unit. The severe and critical disease patients who received IVIg were shortlisted and are discussed.

## Results

Data from 101 patients were analyzed. Of them five patients were treated with IVIG along with institution's SOC. Four patients were male and one was female. Except one patient (P2) all were above 60 years of age and all had one or more co morbidities with Diabetes mellitus (DM) and Hypertension (HT) present in all of them. Three patients had past history of pulmonary tuberculosis (P1, P4 and P5). P2 had chronic kidney disease (CKD) and P4 had coronary artery disease (CAD) with cardiac resynchronization therapy (CRT) device in situ. Median length of stay was 13 days and four of them were discharged.

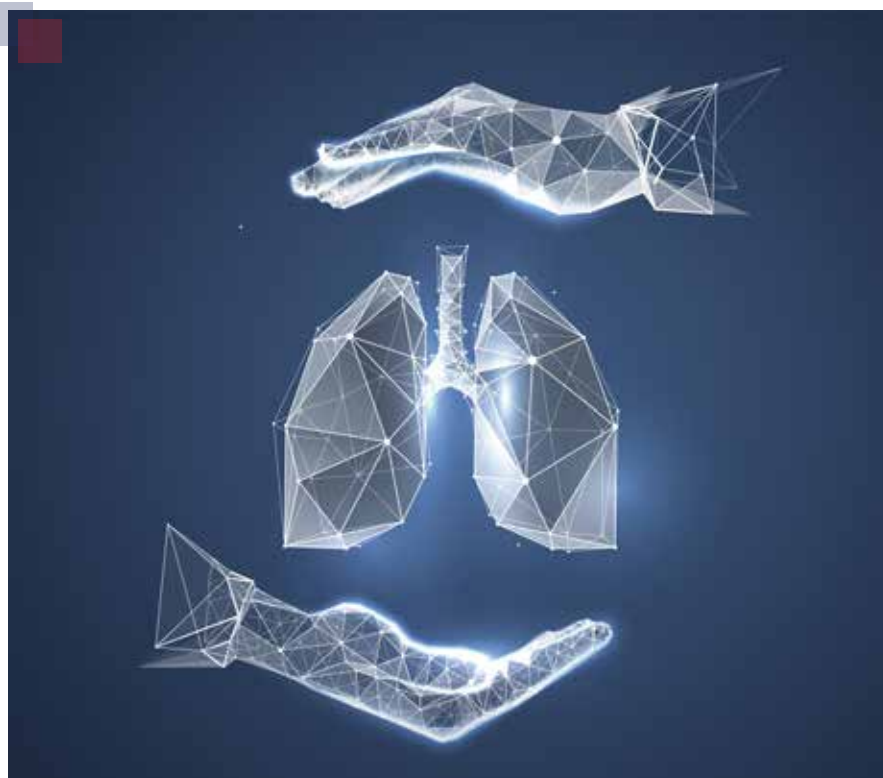
## Conclusion

This small case series demonstrates that the administration of IVIg in patients with severe COVID-19

disease, who did not respond to usual standard of care treatment, could improve clinical outcome and reduce the mortality rate. It should be especially considered in cases with severe critical COVID-19 disease along with evidence of hyper inflammation /cytokine storm. Clinical efficacy is possibly driven by its anti-cytokine effects, reduction of inflammation by inhibition of complement activation, and down-regulation of B and T cells' functions. Among the various inflammatory markers IVIg reduced CRP and D Dimer levels. It did not show relevant effect on other inflammation markers. However, multicenter studies with large sample size are needed to substantiate these observations.

## Keywords

COVID-19, cytokine storm, immunotherapy, IVIg, SARS-CoV-2.





# Is Empirical Antibiotic Treatment Required in COVID-19 Patients? What Lessons have we Learnt Over the Past 1 year?

Source: *International Journal of Research in Medical Sciences*, [S.I.], v. 10, n. 7, p. 1470-1473, June 2022.

ISSN 2320-6012. Available at: <<https://www.msjonline.org/index.php/ijrms/article/view/10526>>. Date accessed: 31 Oct. 2022.

doi:<http://dx.doi.org/10.18203/2320-6012.ijrms20221788>

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## ABSTRACT

### Background

Secondary bacterial infections manifest during or after a viral infection(s) and can lead to negative outcomes and sometimes fatal clinical complications. The choice for an empiric antibiotic therapy requires a broad spectrum of activity against pathogens including beta-lactamase producing pathogens. Ceftriaxone+sulbactam+disodium EDTA is one of the antibiotic combinations used to prevent secondary infections. The objective was to evaluate rate of secondary bacterial infections in patients

receiving empirical antibiotic therapy through retrospective analysis of data from a tertiary care center.

### Method

A single center, retrospective analysis of data from hospital of COVID-19 patients treated in the ICU or wards was conducted. Patients who received empirical antibiotic therapy including ceftriaxone +sulbactam+disodium EDTA were included in the study.

### Result

99 patients (mean age 75±9.89 years) were included in the retrospective analysis. Diabetes and hypertension were the most common comorbidities in the patients. The total WBC count was raised (12.36±9.01). All the biological

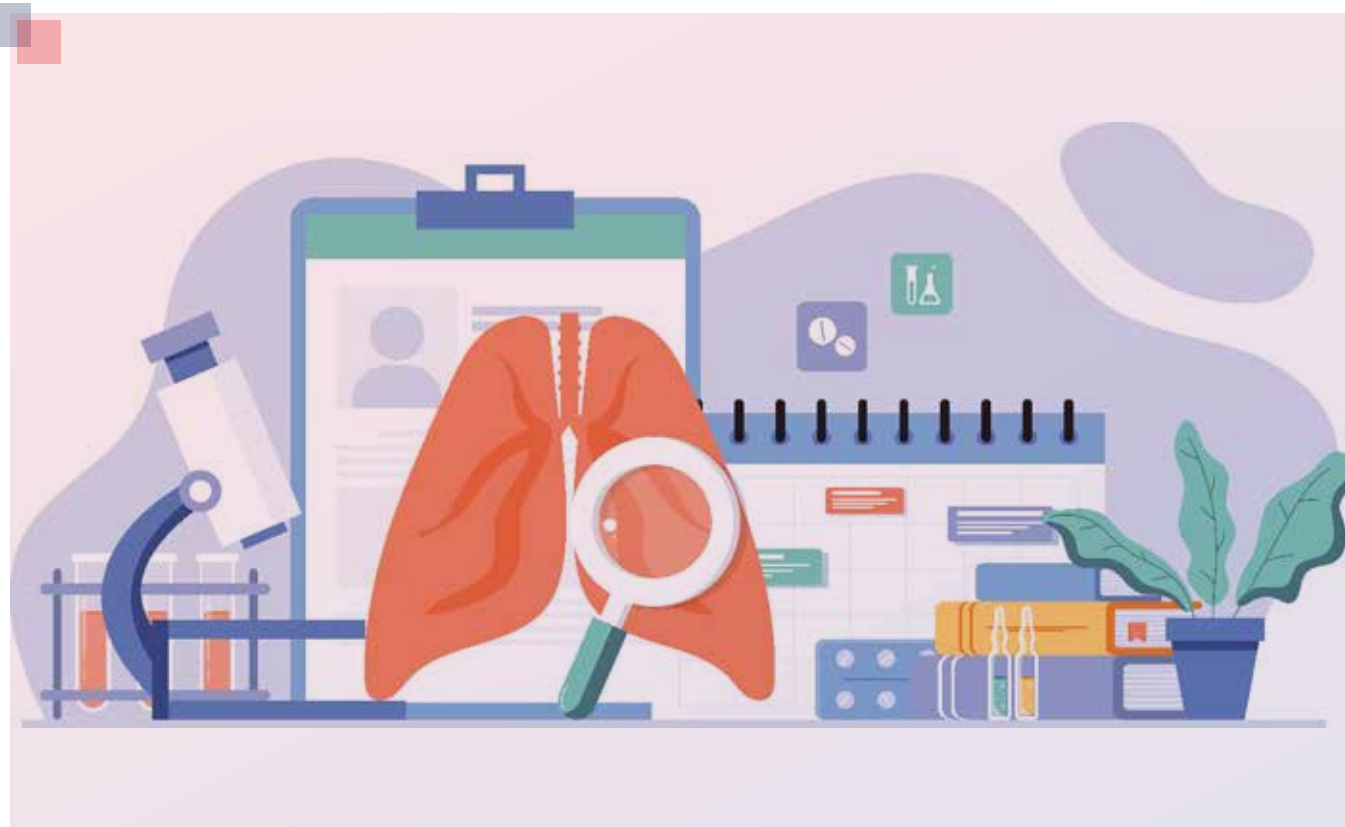
markers were raised. 45% patients had abnormalities in chest X-ray. The mean CT severity index was 13.81±5.64. Bacterial superinfection was observed only in 1 patient.

### Conclusion

Bacterial co infections and secondary bacterial infections are a major risk factor for adverse COVID-19 outcomes. The use of appropriate prophylactic antibiotics such as ceftriaxone+sulbactam+disodium EDTA has significantly reduced the prevalence of secondary bacterial infections in patients with severe COVID.

### Keywords

COVID-19, Ceftriaxone +sulbactam+disodium EDTA



## Helmet NIV in Acute Hypoxemic respiratory failure due to Covid-19: Change in PaO<sub>2</sub>/FiO<sub>2</sub> ratio a Predictor of Success

Source: *Indian J Crit Care Med* 2021; 25 (10): 1135-1144

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2 hours ( $158.8 \pm 56.1$  vs  $118.7 \pm 40.7$  mm Hg;  $p = 0.063$ ) and 24 hours (PFR-24) ( $204.4 \pm 94.3$  vs  $121.3 \pm 32.6$ ;  $p = 0.016$ ). As predictor variables, PFR-24 and change (delta) in PFR at 24 hours from baseline or helmet initiation (dPFR-24) were significantly associated with NIV success in univariate analysis but similar significance could not be reflected in multivariate analysis perhaps due to a small sample size of the study. The PFR-24 cutoff of 161 mm Hg and dPFR-24 cutoff of -1.44 mm Hg discriminate NIV success and failure groups with the area under curve (confidence interval) of 0.78 (0.62-0.95);  $p = 0.015$  and 0.74 (0.55-0.93);  $p = 0.039$ , respectively.

Helmet interface NIV may be a safe and effective tool for the management of patients with severe COVID-19 pneumonia with acute respiratory failure. More studies are needed to further evaluate the role of helmet NIV especially in patients with initial PFR <150 mm Hg to define PFR/dPFR cutoff at the earliest time point for prediction of helmet-NIV success.

### Keywords

Acute hypoxemic respiratory failure, Acute respiratory distress syndrome, COVID pneumonia, COVID-19, Helmet, Noninvasive mechanical ventilation, PaO<sub>2</sub>/FiO<sub>2</sub> ratio.

In acute respiratory failure due to severe coronavirus disease 2019 (COVID-19) pneumonia, mechanical ventilation remains challenging and may result in high mortality. The use of noninvasive ventilation (NIV) may delay required invasive ventilation, increase adverse outcomes, and have a potential aerosol risk to caregivers. Data of 30 patients were collected from patient files and analyzed. Twenty-one (70%) patients were weaned successfully after helmet-NIV support (NIV success group), and invasive mechanical ventilation was required in 9 (30%) patients (NIV failure group) of which 8 (26.7%) patients died. In NIV success vs failure patients, the mean baseline PaO<sub>2</sub>/FiO<sub>2</sub> ratio (PFR) ( $147.2 \pm 57.9$  vs  $156.8 \pm 59.0$  mm Hg;  $p = 0.683$ ) and PFR before initiation of helmet ( $132.3 \pm 46.9$  vs  $121.6 \pm 32.7$  mm Hg;  $p = 0.541$ ) were comparable. The NIV success group demonstrated a progressive improvement in PFR in comparison with the failure group at



# The Clinical Characteristics of Coinfection of COVID-19 and Influenza A Viruses - A Case Series

Source: JAPI, May 2021 Vol:69 ISSN 0004-5772

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Co Author:  
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## ABSTRACT

### Background

For eons, pandemics have terrorized us and affected human lives and their normal functioning. From being first identified in December 2019, Corona virus disease 2019 (Covid19) has become one of the most important human respiratory pathogens in existence. The question of how a coinfection between COVID-19 and influenza might manifest in the present flu season is of utmost concern.

### Aim

This being the flu season in northern hemisphere (including India) along with Covid19 pandemic, we looked into the limited cases of COVID-19 and influenza coinfections who were admitted in our unit during the early part of the 2020-21 flu season in India. We also looked into whether any patterns of clinical presentation and morbidity emerged and also identified the predominant strain of influenza virus circulating in this flu season.

### Design

A retrospective, observational study.

### Methods

Medical records of patients with Covid19 infection and admitted between 01/08/2020 to 31/12/2020 in our unit in fortis escorts Hospital, Jaipur, were extracted from medical records department. Of these covid19 cases, those individuals who had Coinfection with influenza virus were then extracted and clinical profiles were tabulated.

### Results & Findings

A total of 101 patients of Covid19 infection were admitted during the study period. Of them 9 patients had Coinfection with Influenza A virus. The median age was 65 years with 5 male (55.6%) and 4 female (44.4%) patients respectively. The presenting complaints, smoking status, vital parameters, Laboratory parameters including inflammatory markers,

Computerized Tomography chest findings, complications, treatment given, Intensive care unit (ICU) transfers, need of mechanical ventilation, length of stay and mortality in these 9 patients is discussed.

### Conclusion

Co circulation of Influenza A and specifically H3N2 virus in this covid19 pandemic is seen in the present flu season in India. This could have a significant impact on morbidity, mortality and health service demand. Testing for influenza virus and its stain alongside Covid19 needs to be implemented. At the same time priority should be towards maximizing Covid19 and influenza vaccine uptake to mitigate these risks.



## Effect of Lateral Positioning on Oxygen Levels in an Obese, Critically Hypoxic COVID-19 Patient

Source: *MAMC J Med Sci [Epub Ahead Of Print] [Cited 2022 Oct 31]. Available From: <https://www.mamcjms.in/Preprintarticle.Asp?id=350635>*

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COVID-19 is an infectious disease caused by SARS-CoV-2 virus. COVID-19 patients can develop a severe disease that can lead to hypoxic respiratory failure and acute respiratory distress

syndrome (ARDS), which requires mechanical ventilation, prone ventilation, and salvage therapy like extracorporeal membrane oxygenation. The COVID lung is a hypoxic lung with myriad of reasons of hypoxia including poor ventilation perfusion mismatch and atelectasis. We present a case report of a morbidly obese individual managed with lateral positioning as a salvage for deteriorating PaO<sub>2</sub>/FiO<sub>2</sub> ratio. We also demonstrated that the improvement of oxygenation was due to the recruitment of previously nonventilated lung areas as demonstrated by electrical impedance tomography (EIT). Our patient was morbidly obese and there was a dearth of man power to perform the prone position on this patient. Moreover, the sheer weight of this patient prevented us from trying the prone position.

Hence, this patient was placed in a cycle of left lateral, right lateral, and supine position for 120 minutes each for the subsequent 24 hours. Significant improvement in oxygenation and ventilation was noticed in the EIT and SpO<sub>2</sub> measurements. The EIT reading indicated ventilation redistribution to previously collapsed areas of the lung and this change persisted even when the patient was turned supine due the application of positive end expiratory pressure (PEEP) to maintain positive expiratory transpulmonary pressure. These results provide evidence of effectiveness of a lateral positioning in the improvement of oxygenation in COVID-19 ARDS.

### Keywords

COVID-19, EIT, intensive care unit, positioning, SARS-CoV-2.

## Severe Acute Acrocyanosis and Digital Gangrene as a Sign of Catastrophic COVID-19 Infection

Source: *Journal of Clinical and Diagnostic Research; 15(4):OD12-OD15, 2021. Article in English | EMBASE | ID: covidwho-1227172*

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Co Author:  
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### Abstract

Corona Virus Infection Disease 2019 (COVID-19) may present with different

symptoms and complications during its course. Emerging evidence suggests that it induces a hypercoagulable state with micro and macroangiopathy. This hypercoagulopathy has been identified in a subset of critically ill COVID-19 patients. However, extremity ischemia with acrocyanosis and digital gangrene has not been commonly reported with COVID-19. It is caused due to microangiopathic and immunothrombosis phenomenon, and may be accompanied by microvascular involvement of other organs. Here, a case of critically ill 67-year-old male COVID-19 patient is reported who developed digital

acrocyanosis and gangrene in lower limbs while being mechanically ventilated for severe Acute Respiratory Distress Syndrome (ARDS) despite being haemodynamically stable (i.e., not needing vasopressor) and on therapeutic anticoagulation. He subsequently succumbed to his disease due to multiorgan dysfunction. This suggests that extremity ischemia correlates with poor prognosis in this small subset of critically ill COVID-19 patients, and can have a prognostic role in the disease outcome. It may be the first clinical manifestation even in non-vasculopathic patients.

# A Retrospective Observational Study to Analyze Recruitment Paradigms in the Treatment of Hypoxemic COVID-19 Patients Admitted in the Intensive Care Unit of a Tertiary Care Institute in India

Source: *Indian Journal of Respiratory Care* | Volume 11 | Issue 3 | July-September 2022

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**Dr Namya Miglani**

## ABSTRACT

### Background

**Introduction:** This retrospective study attempted to assess the recruitability of the lungs that were affected by acute respiratory distress syndrome (ARDS) due to COVID-19. This was done with the combined use of transpulmonary pressure monitoring (to limit the stress), measurement of

endexpiratory lung volume (EELV) (to measure the actual volume gain and be within limits of strain), electrical impedance tomography (EIT), and compliance (to diagnose overdistension). Recruitment was judged clinically by an increase in the SpO<sub>2</sub> values.

### Methods

Retrospective data from the charts and progress sheets were collected from 27 patients admitted to the intensive care unit (between February 2021 and June 2021) with a ratio of arterial Partial pressure of oxygen (PaO<sub>2</sub> in mmHg) to fractional inspired oxygen (FiO<sub>2</sub>) <150 (i.e., PaO<sub>2</sub>/FiO<sub>2</sub> <150) with a diagnosis of ARDS. The esophageal pressure was monitored using the polyfunctional nasogastric tube (Nutrivent™). The end-expiratory volume was measured using the Carescape R860 (GE Healthcare) by the nitrogen multiple breath wash-out/wash-in (EELV) at a

positive end-expiratory pressure of 5. EIT measurements were performed using the Pulmo Vista 500. We performed a recruitment maneuver using the “staircase maneuver.”

### Results

As per the results of our study, we found that almost 2/3<sup>rd</sup> (66.7%) of the patients affected with COVID lungs affected with ARDS were recruitable.

### Conclusion

The results of our study again make us believe that majority of COVID-19 lungs affected with ARDS may be recruitable in the earlier stage of the illness (within the 1<sup>st</sup> week of ARDS). Thus, in such patients, safe, monitored lung recruitment should be attempted to improve oxygenation rather than directly proning the patient, which is fraught with its own set of complications.



# Efficacy and Safety of Intravenous and/or Oral Levonadifloxacin in the Management of Secondary Bacterial Pulmonary Infections in COVID-19 Patients: Findings of a Retrospective, Real-World, Multi-Center Study

Source: *International Journal of Research in Medical Sciences*, [S.I.], v. 9, n. 10, p. 2933-2939, sep. 2021. ISSN 2320-6012. Available at: <<https://www.msjonline.org/index.php/ijrms/article/view/10146>>. Date accessed: 01 nov. 2022. doi:<http://dx.doi.org/10.18203/2320-6012.ijrms20213685>.

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## ABSTRACT

### Background

Owing to dysregulated immune response, secondary bacterial pulmonary infections involving both gram-positive and gram-negative pathogens are common in COVID-19 patients and are often associated with higher mortality. This is a first ever report on the safety and efficacy of levonadifloxacin in the treatment of secondary bacterial pulmonary infections in patients with COVID-19 pneumonia.

### Methods

This multi-center, retrospective, post-marketing and real-world study assessed the safety and efficacy of IV and/or oral levonadifloxacin in the treatment of bacterial infections encountered in COVID-19 patients. Data for 154 male/female patients above 18 years of age who received levonadifloxacin (injectable and/or oral) was collected from 44 participating sites. Study outcomes were the clinical and microbial

success at the end of therapy. Safety was assessed based on clinical and laboratory adverse events.

### Results

Among the 154 patients assessed, 121 (78.6%) were males and 142 (92.2%) were hospitalized. Majority of the patients (119) received all-IV therapy while 11 patients were prescribed with IV followed by oral regimen. All-oral therapy was received by 24 patients. The most common co-morbid conditions were diabetes (19.6%) and hypertension (19.2%). Post-treatment with levonadifloxacin, clinical and microbial success rates were 96.8% and 97.0% respectively.

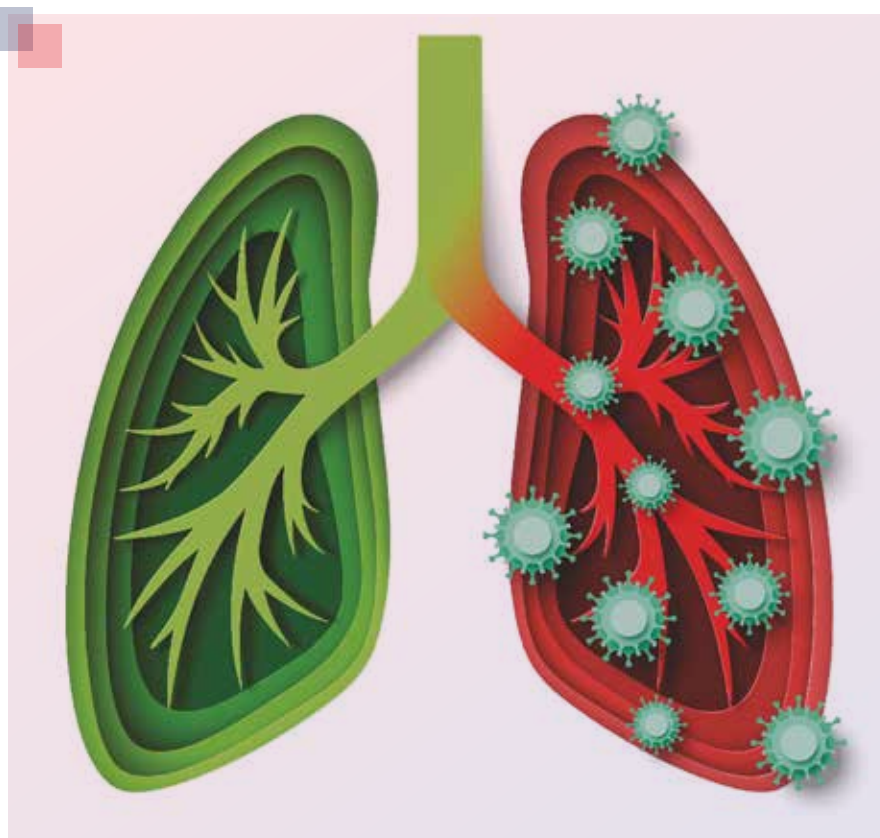
### Conclusions

Levonadifloxacin showed promising safety and efficacy when used as IV and/or oral therapy for the treatment of secondary bacterial pulmonary infections in COVID-19 patients. Clinically relevant features of levonadifloxacin such as availability of both IV and oral options, broad spectrum coverage and reassuring safety in patients with significant co-morbidities could help simplify the management.

Trial registration no. CTRI/2020/09/028152 [Registered on: 30/09/2020].

### Keywords

COVID-19, Levonadifloxacin, Secondary bacterial infections, Real world study





**NEWS AT FORTIS**

## Fortis Online Knowledge Series- Boon of Technology



**Mr Nitin Suryan**  
Associate General Manager & Analyst  
Medical Strategy & Operations Group  
Fortis Healthcare Limited

*“Education is the passport to the future, for tomorrow belongs to those who prepare for it today.” —Malcolm X*

350+ currently enrolled students across 233 National Board of Examinations (NBE)-accredited seats in 11 broad-specialties, 15 super-specialties and three post-graduate, post-doctoral Fellowship courses in 14 hospitals and still counting...the numbers fascinate! Don't they? Add to it, various PG courses and Fellowships courses accredited by the registered specialty societies like Society of Emergency Medicine India (SEMI) and Indian Society of Critical Care Medicine (ISCCM), Indian Academy of Paediatric (IAP) and National Neonatology Forum (NNF)...all at Fortis.

With a vision to capitalize its large size and knowledge-wealth, Fortis has taken an initiative to break the geographical boundaries and conduct online classes for doctors. It is a matter of pride for the Fortis Pulmonology Council to be the first in this series to deliver the online lectures. Started on 1<sup>st</sup> November 2022, three classes

have already been conducted at the time of writing this article. Conducted by seasoned clinicians and academicians, the sessions have been attended by over 40 doctors in each class from across the network cutting across specialties. The participative discussions are testimony to this approach of teaching.

### The Approach

It is envisaged that gradually, the 11 broad specialties and 15 super specialties which are currently accredited by the NBE at Fortis Hospitals, will be taken under the gamut of these online classroom series. Each online class will be hosted by the identified hospital and faculty. All interested doctors across the Fortis network hospitals will be able to attend.

To ensure effectiveness of the series, the pre requisites would be a circulated advance schedule of the classes mentioning topics, date, time and the speaker to participants, along with IT support in the form of computers with network connectivity.

The responsibility to plan the annual schedule shall be with the convener of the respective specialty council. Responsibility to coordinate the class as per schedule shall be with the academic co-ordinators of the respective hospitals. Each of the academic coordinators would be designated as 'host co-ordinator' to handle the responsibility for at least one broad/superspecialty.

The annual schedule once prepared would be handed over to the responsible 'host' coordinator'. The host coordinator will communicate to each speaker their respective scheduled class(es) with a request to block

these days and time in his/her calendar to ensure smooth conduct of the program.

The host coordinator would invite the academic coordinators (invited co-ordinators) of the other hospitals, via the Microsoft Teams calendar for the online classes. The host co-ordinator would also share the invitation-link on the WhatsApp group with all the other Fortis Hospital 'invited' coordinators'. It will make it easy for them to share the same link with doctors of their respective hospital, which will help increase participation. The same link shall also be shared on the Hospital Medical Heads WhatsApp group by the identified person in the MSOG Team, Fortis Corporate Office. The hospital IT teams would assist, as and when required, to ensure smooth conduct of the classes.

For the Pulmonology classes, the academic coordinator of Fortis Anandapur has been bestowed the responsibility of Host Coordinate. Dr Vasundhra Atre, Convener, Pulmonology Council, with assent of the speakers, has already drawn and submitted the year's schedule which is presented below.

### Figure- Table

Access to the 'Fortis Online Knowledge Series' is not restricted to the enrolled students registered for the particular program. Technology has enabled us to encompass a larger audience. Requesting attendance in large numbers to benefit from the experience and knowledge of our esteemed clinicians. Looking forward to announcing more in the series in the days to come.



Fortis Group Academic Classes					Schedule for Pulmonology Classes	Host Coordinator- Shruti Sinha, Anandapur
S.No	Day	Date	Time	Topic	Teacher	Core Unit
1	Tue	01/Nov/2022	1700 hrs to 1800 hrs	Clinical History taking	Dr J C Suri	Vasant Kunj
2	Thu	03/Nov/2022	1700 hrs to 1800 hrs	Clinical Examination	Dr J C Suri	Vasant Kunj
3	Tue	08/Nov/2022	1700 hrs to 1800 hrs	Clinical Examination	Dr J C Suri	Vasant Kunj
4	Thu	17/Nov/2022	1700 hrs to 1800 hrs	Clinical Examination	Dr J C Suri	Vasant Kunj
5	Tue	22/Nov/2022	1700 hrs to 1800 hrs	Case Presentation	Dr Mrinal Sircar	Noida
6	Thu	24/Nov/2022	1700 hrs to 1800 hrs	Asthma Phenotyping	Dr Satish K	CG Road
7	Tue	29/Nov/2022	1700 hrs to 1800 hrs	Journal Club	Dr Sushmita Roy Choudhary	Anandapur
8	Thu	01/Dec/2022	1700 hrs to 1800 hrs	Asthma - inhalation therapy and devices	Dr Satish K	CG Road
9	Tue	06/Dec/2022	1700 hrs to 1800 hrs	Case presentation	Dr Ankit Bansal	Jaipur
10	Thu	08/Dec/2022	1700 hrs to 1800 hrs	Role of biologicals in Asthma	Dr Rajesh Gupta	Greater Noida
11	Tue	13/Dec/2022	1700 hrs to 1800 hrs	Journal club	Dr Vikas Maurya	FHSB
12	Thu	15/Dec/2022	1700 hrs to 1800 hrs	Mechanical Ventilation in Asthma	Dr Mrinal Sircar	Noida
13	Tue	20/Dec/2022	1700 hrs to 1800 hrs	Case presentation	Dr J C Suri	Vasant Kunj
14	Thu	22/Dec/2022	1700 hrs to 1800 hrs	Asthma - Role of immunotherapy	Dr Satish K	CG Road
15	Tue	03/Jan/2023	1700 hrs to 1800 hrs	Journal Club	Dr Ankit Bansal	Jaipur
16	Thu	05/Jan/2023	1700 hrs to 1800 hrs	Pathogenesis of TB	Dr Behera	Mohali
17	Tue	10/Jan/2023	1700 hrs to 1800 hrs	Case Presentation	Dr Sushmita Roy Choudhary	Anandapur
18	Thu	12/Jan/2023	1700 hrs to 1800 hrs	Extrapulmonary TB	Dr Mandal	Mohali
19	Tue	17/Jan/2023	1700 hrs to 1800 hrs	Journal club	Dr Behera	Mohali
20	Thu	19/Jan/2023	1700 hrs to 1800 hrs	NTM	Dr J C Suri	Vasant Kunj
21	Tue	24/Jan/2023	1700 hrs to 1800 hrs	Case presentation	Dr Vikas Maurya	FHSB
22	Tue	31/Jan/2023	1700 hrs to 1800 hrs	Diagnostic tests for Drug resistant TB	Dr Uma	SRL, BG Road
23	Thu	02/Feb/2023	1700 hrs to 1800 hrs	Journal Club	Dr Sindhura	Vadapalani
24	Tue	07/Feb/2023	1700 hrs to 1800 hrs	DRTB treatment regimens	Dr Vikas Maurya	FHSB
25	Thu	09/Feb/2023	1700 hrs to 1800 hrs	Case Presentation	Dr Behera	Mohali
26	Thu	16/Feb/2023	1700 hrs to 1800 hrs	NTBEP	Dr Behera	Mohali
27	Tue	21/Feb/2023	1700 hrs to 1800 hrs	Journal club	Dr Sushmita Roy Choudhary	Anandapur
28	Thu	23/Feb/2023	1700 hrs to 1800 hrs	Understanding the HRCT - chest anatomy	Dr Murali Krishna	Vadapalani
29	Tue	28/Feb/2023	1700 hrs to 1800 hrs	Case Presentation	Dr Vikas Maurya	FHSB
30	Thu	02/Mar/2023	1700 hrs to 1800 hrs	Evaluation & Management of Haemoptysis	Dr Zafar	Mohali
31	Tue	07/Mar/2023	1700 hrs to 1800 hrs	Journal Club	Dr J C Suri	Vasant Kunj
32	Thu	09/Mar/2023	1700 hrs to 1800 hrs	E-cigarette or Vaping induced lung injury (EVALI): an update	Dr Sushmita Roy Choudhary	Anandapur
33	Tue	14/Mar/2023	1700 hrs to 1800 hrs	Case Presentation	Dr Amit Mandal	Mohali
34	Thu	16/Mar/2023	1700 hrs to 1800 hrs	COPD - Pathophysiology	Dr Behera	Mohali
35	Tue	21/Mar/2023	1700 hrs to 1800 hrs	Journal Club	Dr Zafar	Mohali
36	Thu	23/Mar/2023	1700 hrs to 1800 hrs	COPD - Rehabilitation	Dr Jitha (HOD Physiotherapy) & Dr Shalini (HOD Dietetics)	BG Road
37	Tue	28/Mar/2023	1700 hrs to 1800 hrs	Case Presentation	Dr Sindhura	Vadapalani
38	Thu	30/Mar/2023	1700 hrs to 1800 hrs	COPD - Mucolytics and antioxidants	Dr Ankit Bansal	Jaipur
39	Tue	04/Apr/2023	1700 hrs to 1800 hrs	Journal Club	Dr Sushmita Roy Choudhary	Anandapur
40	Thu	06/Apr/2023	1700 hrs to 1800 hrs	Asthma COPD overlap (ACO)	Dr Mrinal Sircar	Noida
41	Tue	11/Apr/2023	1700 hrs to 1800 hrs	Case Presentation	Dr Ankit Bansal	Jaipur
42	Thu	13/Apr/2023	1700 hrs to 1800 hrs	Triple therapy in COPD, for all or selectively	Dr Sushmita Roy Choudhary	Anandapur
43	Tue	18/Apr/2023	1700 hrs to 1800 hrs	Journal Club	Dr Vikas Maurya	FHSB
44	Thu	20/Apr/2023	1700 hrs to 1800 hrs	Role of interventional bronchoscopy in management of COPD	Dr Manoj Goel	FMRI
45	Tue	25/Apr/2023	1700 hrs to 1800 hrs	Case Presentation	Dr Sushmita Roy Choudhary	Anandapur
46	Thu	27/Apr/2023	1700 hrs to 1800 hrs	Fungal Lung Disease	Dr Vivek Padegal	BG Road

## Another Milestone in the FMRI Quality Journey



Team - Fortis Memorial Research Institute



JCI - Award Receiving

FMRI underwent the JCI Reaccreditation Survey in September 2022. The survey lasted for five days where in the hospital was evaluated by three Surveyors with technical expertise in Clinical Services, Nursing Services & Facility management. Some of the insights are listed as under

- Major focus was on the safety aspects both for patients and employees while inside the hospital and on improving the quality of care.
- The surveyors gave particular attention to the currency and comprehensiveness of our SOPs and their periodic revision. Throughout their hospital rounds, the surveyors assessed if practices on the ground matched the processes outlined in the SOPs.
- Laser safety being a new

standard, our monitoring of related incidents was specifically looked into.

- Involvement of clinicians and nursing team members in the committees and the effectiveness of committees was looked at in depth. Minutes of these meetings and actionable and their closures were reviewed.
- The functional induction of a new joiner in the clinical department besides an HR induction was specifically looked at.
- Ongoing Professional Practice Evaluation (OPPE) was another aspect which the surveyors were particular about. How is performance reviewed and what is the information used to review the same was deliberated

upon.

- While there are fall prevention and fall protection measures, the ask was to also develop Baby Drop prevention protocols.
- Medication safety especially the use of concentrated electrolytes, the processes around their availability, dilutions and monitoring were observed.
- While we have a protocol for identifying vulnerable patients, the surveyors impressed upon the need for a process to be in place for assessing pediatric patients for signs of abuse and/or neglect.
- There was a discussion around clinical alarm safety including the range setting to ensure that neither do these alarms ring too often nor do the alarm limits miss the critical point requiring intervention.
- The surveyors observed that while temperature monitoring was expected to be in place in all areas where medications are stored (especially the walk in storage in the IP Pharmacy), also required is a means to identify the increase or decrease from the normal temperature range
- Adequate CCTV coverage on the roof top to monitor the safety of its workers was impressed upon.
- Adequate number of directional signage from the hospital's fire exit doors to designated assembly points was desired.

All in all, while the survey gave us an opportunity to showcase our best practices, the surveyors also gave a new perspective on interpretation of the standards and compliance to them.

## No Substitute for Hard Work and Commitment



Team Fortis Hospital, Mohali

Fortis Hospital Mohali (FHM) is accredited both by the Joint Commission International (JCI) and the National Accreditation Board of Hospitals (NABH), India since when? Being the veritable torch bearer of super specialty centers of excellence across the country these accreditations ensure adherence to highest and strictest patient safety standards in the hospital.

Most recently, FHM underwent its most recent survey by the JCI team from the 26th to the 30th September 2022.

### The Learning

The JCI accreditation journey of the first flagship hospital of Fortis Healthcare, North India started in the year 2007. Over the years the quality and patient safety benchmarks have been strengthened, by the sustained and consistent efforts of every team member at FHM.

JCI 2022 accreditation (re)survey presented to the facility with multiple challenges consequent to promulgation of stringent 7th edition norms which have been instituted post the COVID pandemic.

### Challenges

The challenges envisaged were:

- Reinforcement of the JCI 7<sup>th</sup> Edition Standard implementation post pandemic.
- Introduction of new programs as per the JCI norms
- Training of all categories of staff
- Comprehensive risk management at the department level both clinical and non-clinical
- Facility maintenance
- Clinical engagement

### Solutions

We were up to the challenges and overcame them with

- Commitment from the Top Management
- The stakeholders took ownership at all levels and concentrated on team building
- Daily huddles at ground zero
- Mock survey and team quality tracers
- Mock interview session
- Weekly review by a core group

Fortis Hospital Mohali is blessed with a very agile and diligent team. Their

perseverance and honest approach led to a successful JCI survey 2022 with zero noncompliance for the first time in the history of Fortis Mohali.

All the credit for a successful JCI Survey goes to team work and commitment of all the staff, employees with 100% engagement of senior clinicians under the guidance of Mr Ashish Bhatia Business Head, Punjab and Mr Abhijit Singh- Head SBU, Mohali.



## Fortis Announces Launch of EMR Project



Dr Ashutosh Raghuvanshi, MD & CEO, Fortis Healthcare, and Mr Linus Tham, Group CIO, IHH, signing the license agreement



Group picture from the EMR agreement signing session

Fortis is pleased to announce the commencement of EMR implementation project. The kick-off session was held on November 11, 2022 at FMRI, Gurgaon. The event witnessed signing of Cerebral Plus EMR license agreement by Dr Ashutosh Raghuvanshi, MD & CEO, Fortis Healthcare, and Mr Linus Tham, Group CIO, IHH, in the presence of Dr Kelvin Loh, MD & CEO, IHH. The visiting team from Acibadem Technology, Turkey (implementation partner for this project), members of Fortis Clinical fraternity and Senior Leadership were present as well.

An Electronic Medical Record (EMR) is a digital collection of health-related information of an individual that can be created, gathered, managed, and consulted by authorized clinicians and care provider staff within a healthcare organization. It includes information about a patient's health history such as diagnosis; medicines; laboratory reports, radiology reports and treatment plans. As an 'integrated' set of interoperable technology, the EMR includes a software, e-Prescription, interfaces to labs, workflow tools, among others, thereby able to automate access to information and

streamline a clinician's workflow.

EMRs are the next step in the continued progress of healthcare, further strengthening the relationship between patients and clinicians. Timely access to patient data would improve clinician decision making and delivery of patient care.

The Fortis EMR project would consist of an initial Discovery phase, followed by solution Analysis and Customization, followed by pan-Fortis rollout across network hospitals, in a phased manner. The total project duration is expected to be 18 months.

# NEWLY LAUNCHED

Fortis Hospital, Greater Noida



Fortis Hospital, Greater Noida has been designed to deliver patient care with ease, warmth, and compassion. Located in the heart of the city, our state-of-the-art facility offers a healing environment and advanced medical care. Being part of one of the world’s largest healthcare network, this multi-speciality hospital will cater to the full spectrum of integrated healthcare services to the residents of Greater Noida & its surrounding areas. It is a state-of-the-art facility with over 250 beds and 8 operational theatres. With this new hospital, our aim is to provide the best-in-class medical facilities, making healthcare better, faster, easier, and more affordable for our patients. This hospital bring the finest professionals and the latest technology to treat all ailments.

## KEY HIGHLIGHTS

250 Bedded State-of-the-Art Facility

08 Modern OTs

Smart ICUs & HDUs

69 ICU beds

Dedicated Floor for Mother & Childcare

NICU - Level 1,2,3

Advanced CT, MRI & X-ray

Advanced New Age Cardiac Cath Lab

Best-in Class Lab and Radiology

OP & IP Pharmacy

**SPECIALTIES:** Anesthesia | Cardiology | Dental | Emergency Medicine & Trauma Services | Endocrinology | Gastroenterology | General Surgery | Hepatology | Internal medicine | Obstetrics & Gynaecology | Nephrology | Neurology | Neurosurgery | Oncology | Ophthalmology | ENT | Orthopaedics & Joint Replacement | Pain & Palliative Care | Paediatrics & Neonatology | Plastic & Reconstructive Surgery | Pulmonology | Urology



# CLINICAL RESEARCH

Important Research Projects at Fortis

## Indian Pulmonary Embolism Registry (IndiPER)



**Dr Ankit Bansal**  
 Consultant -  
 Pulmonology & Critical Care  
 Fortis Escorts Hospital, Jaipur

Total number of sites in India - 30

Total Sample size from India - 523  
 enrolled till now

### Introduction

Pulmonary thromboembolism is a well-known fatal disease, and has a variable and frequently nonspecific clinical presentation, which is a diagnostic challenge with the risk of underestimating its real incidence and delaying the initiation of specific

treatment that will result in a worse prognosis. This situation indicates that PE (pulmonary embolism) is one of the main cause of preventable in-hospital mortality.

We have limited data available nationwide related to its prevalence, diagnosis, treatment pattern and long-term outcomes, therefore this observational, cohort, prospective, non-interventional, registry study is designed which aims to report on demographics, clinical presentation, management and outcomes of patients diagnosed with PE.

The site has successfully enrolled 10 subjects in the study.

### Study Objectives

Primary Objective-

The primary objective of the registry is to collect prospective data on the epidemiologic characteristics, management and outcomes of patients with acute symptomatic PE that can be used to improve knowledge of epidemiology, management and outcome of acute

pulmonary embolism in India.

Secondary Objective-

- Assess individual hospital and specialty practice and outcomes to facilitate quality improvement.
- Identify gaps between recommendations based on clinical trials and real day to day practice.

### Potential Benefits

The information obtained from this study will improve the knowledge and guide the future management of Acute Pulmonary Thromboembolism.

### Opinion of PI

The data pertaining to epidemiologic characteristics, management and outcomes of patient of acute symptomatic PE will be very useful. It will help to understand and identify gaps for recommendations regarding management and outcome with respect to the Indian population.





**MEDICATION  
SAFETY UPDATE**





# NEED OF THE HOUR

## "Preventing Antimicrobial Resistance Together"

Many unavoidable factors, contribute to infection in medical practice. The presence of bacterial infection mandates the use of antibiotics. In contrast to bacteria that have been in existence for millions of years, antibiotics were discovered barely a century and half back. Even in this short period, the bacteria have acquired resistance to most available antibiotics. This situation where we face a lack of choice of antibiotics is perhaps a man-made disaster; professed by Dr Alexander Fleming many years ago. He had prophesied, "The thoughtless person playing with penicillin treatment is morally responsible for the death of the man who succumbs to infection with the penicillin-resistant organism". We have proved the great Fleming right by exhausting all available antibiotics by sheer misuse.

Today, bacteria exhibit widespread resistance to available antibiotics. This possibly would make their future use to control bacterial growth and treat infections futile. As per the World Health Organization bulletin it is estimated that antimicrobial resistance (AMR) in bacteria alone was responsible for an estimated 1.27 million deaths in 2019. Even 'minor' operations or infections may prove fatal, if we, the human society do not do something meaningful.

To help improve the action of antibiotics on bacteria, a few maneuvers, called 'antimicrobial stewardship (AMS)' can be implemented. These steps in antibiotic stewardship include

1. Use of appropriate antibiotic: At most of our units, the choice, timing, and route of surgical prophylaxis is appropriate.
2. Using of antibiotics for appropriate duration: The major challenge faced by most institutions is curtailing the prophylaxis of antibiotics to two doses and appropriately de-escalating/ ceasing antibiotic therapy when continued use is not indicated.
3. Starting suitable antibiotic only after checking the blood/ sputum/ urine/ pus for the type of organism.

4. Stopping or de-escalating prescribed higher antibiotic injections to lower antibiotics/ tablets.
5. Not administering antibiotics in unnecessary situations such as for viral infections.

Antibiotics are used in medical practice in three ways, which are as:

1. Prophylaxis or surgical prophylaxis, indicating the use of the antibiotic only before a surgical operation to prevent the occurrence of surgical site infection due to inoculation of bacteria, gram positive from the skin surface and gram negative from the gut, into the surgical incision.
2. Empiric antibiotics when an infection is suspected, but the specific organism is not confirmed. As per our hospital policy, a reasonably broad-spectrum antibiotic (usually a combination of piperacillin and Tazobactam) is administered empirically; changed/ discontinued once the culture and sensitivity report is made available. Should the culture reveal absence of infection, the empiric antibiotic is ceased. If the sensitivity indicates requirement of broader or narrower spectrum antibiotic, accordingly 'escalation' or 'de-escalation' may be carried out.
3. Specific antibiotic i.e., a specific class or type of antibiotic as indicated by the culture and sensitivity report may be instituted to treat the infection. The duration and combination of therapy is usually guided by the hospital policy.

Despite these policies, doctors abuse antibiotics by using them inappropriately – many times due to fear of infection. Such use not only causes emergence of resistant bacteria inhouse, but also enhances development of multidrug resistant bugs for the society in the long run. Instituting policies guiding appropriate antibiotic use becomes the prerogative of clinicians, infection control committee and the healthcare institution. There are several processes that we have instituted at our hospitals.



- Antimicrobial stewardship itself.
- Creating a restricted antibiotic list
- Insisting on antibiotic use justification forms
- One on one discussion with doctors
- Auditing existing practices and finding course correction

### Antimicrobial Stewardship

This is a mechanism where in choice of antibiotics, their combinations, days of use are monitored by a group of healthcare professionals and suitable advice is provided. The antimicrobial stewardship team also monitors de-escalations, escalations, use of irrational combinations and use of more than three antibiotics in any patient. Our antimicrobial stewardship committees consist of senior doctors, microbiologist, infectious disease specialist, infection control nurses and hospital administrators. They meet at regular intervals to discuss the success of the program as well as strategize future plans.

### Creating a Restricted Antibiotic List

Based on the data collected by the AMS committee, every healthcare institution can prepare their list of restricted antibiotics as well as irrational combinations, which will help them audit their antimicrobial use. The list of restricted antibiotics at Fortis healthcare includes up to 16 antibiotics. The antibiotics in this list are restricted for use; the first dose of the antibiotic is allowed, but subsequent use is authorized after receiving the 'Restricted Antibiotic Use form' duly signed by the treating physician. The compliance to informing the infection control committee of the restricted antibiotic use is up to 95% at the author's unit.

### Avoiding Use of Irrational Antibiotic Combination

A few of the irrational combination of antibiotics are listed and their availability in the hospital formulary are prevented. Many of them are banned by the Drug Controller, however, at times, some irrational combinations of antibiotics make it to the market. Some of the irrational combinations of antibiotics that are banned in the author's hospital formulary are available on the intranet of our hospital website.

### Optimizing Antibiotic Use by Engaging Clinical Leadership

The appropriate type, dose, route and duration of antibiotic are important. The data pertaining to this could be mined from the safe surgical checklist. Apart from choosing the type and duration of antibiotic (which is a responsibility of the surgical team/the clinical pharmacist/ the infection control committee)

the other variables involved in surgical prophylaxis fall into the realm of anesthesiologists. It is vital to keep the anesthesiologists in the loop to ensure control on the surgical prophylaxis. Additionally, a few other variables involved in surgical site infection such as maintaining normal blood sugar, temperature, oxygen saturation, and administering additional doses of antibiotic (after every 4 hours of surgery, during hemorrhage/hemodilution) also are the responsibility of the doctors. It is very important to appraise the stakeholders of their status and compliance of their colleagues to the policy. It is prudent to take them along and get their 'buy in' for successful implementation of antimicrobial stewardship. The chairman of the infection control also should be updated about newer developments and the attitude of "never say never, never say always" works best. At the author's facility, meetings are held every quarter with all the stakeholders.

### Auditing Existing Practices and Identifying Gaps

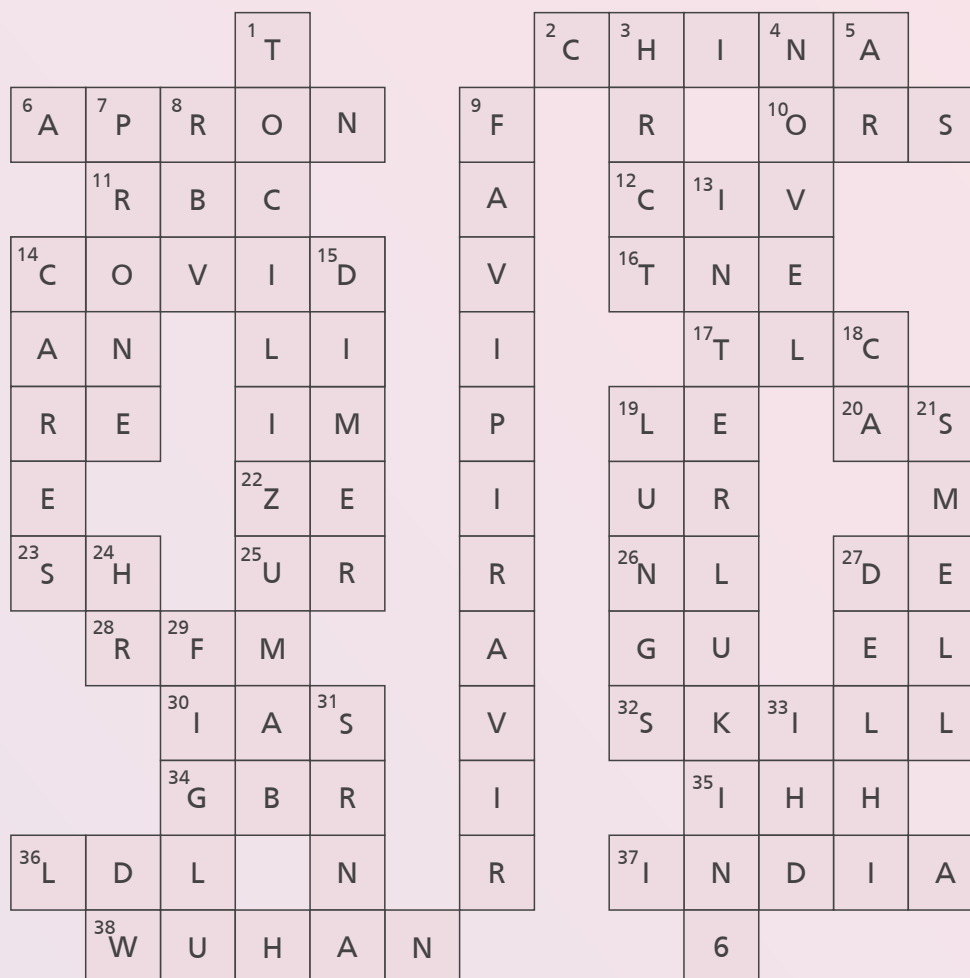
It is not true that a well-run system will continue to run well on its own. Intermittent audit and appraising audit finding go a long way in sustaining improvements and finding areas that require attention.

We are celebrating the "World Antimicrobial Awareness Week (WAAW)" from 18<sup>th</sup> to 24<sup>th</sup> November 2022. The World Health Organization has put the perspective right "This year, the theme of WAAW is "Preventing Antimicrobial Resistance Together." They call on all sectors to encourage the prudent use of antimicrobials and to strengthen preventive measures addressing AMR and working together collaboratively through a 'One Health' approach. By such measures, the global problem of antimicrobial resistance is given the correct global platform it deserves. It is hoped that by this, many countries will take it up as priority on their national health agenda.

### Conclusion

Appropriate antibiotic use is everyone's business. Though abuse of antibiotic may not appear to harm the facility, society, and country at large in the immediate time, it is not desirable in the long run. All efforts must be made by the healthcare facilities, administrators, and clinicians to curtail inappropriate use of antimicrobial agents. Thankfully, at Fortis Healthcare Limited, huge stress is placed on not only setting the process/ policy right but also practice as per expectation. This is the need of the hour.

# Answers To The Crossword



## ACROSS

2. Country that reported first case of COVID (5)
6. Doctor's Coat (5)
10. Oral Rehydration Solution (3)
11. COVID affects these circulating cells to alter oxygen transport (3)
12. Continuous intravenous infusion, abr (3)
14. Coronavirus Disease (5)
16. Transnasal Esophagoscopy, abr (3)
17. \_\_\_\_\_ measures number of leucocyte in body (3)
19. Lower extremity, abr (2)
20. Aortic Stenosis, abr (2)
22. Zollinger Ellison (syndrome) abr (2)
23. Sulphydryl group – symbol (2)
25. Covid 19 causes both \_\_\_ T1 and LRTI (2)
26. Normal, abr (2)
28. Rifampicin, abr (3)
30. Interatrial septum (3)
32. Doctor's \_\_\_\_\_ is improving in managing COVID infection (5)
34. Glutathione bicarbonate Ringer's Solution, abr (3)
35. Idiopathic hypogonadotropic hypogonadism, abr (3)
36. Bad Cholesterol (3)
37. Country that enforced early lockdown (5)
38. The first corona case was detected in this city (5)

## DOWN

1. Monoclonal antibody used in treating severe corona infection (11)
3. Diagnostic radiological scan for COVID (4)
4. The \_\_\_\_\_ strain COVID 19 is the cause of current pandemic (5)
5. Type of genetic transmission, abr (2)
7. This position may improve oxygenation in severe COVID patient (5)
8. Ribavirin, abr (3)
9. New oral anti-viral drug used in treating COVID patients (11)
13. Cytokine elevated in COVID (11)
14. PM \_\_\_\_\_ fund was created to combat COVID (5)
15. D- \_\_\_\_\_ is elevated in COVID (5)
18. Calcium, abr (2)
19. Affection of this organ may cause hypoxia (5)
21. Loss of \_\_\_\_\_ is an early COVID symptom (5)
24. Heart rate, abr (2)
27. Mumbai and \_\_\_\_\_ have maintained the top-slot in the number of COVID cases (5)
29. Marker for intracellular levels of folate (5)
31. Bacterial small RNA's, abr (4)
33. Ischemic heart disease, abr (3)

# The Fortis Network



Amritsar



Anandapur, Kolkata



Bannerghatta Road, Bangalore



Chirag Enclave, New Delhi



Cunningham Road, Bangalore



Faridabad



FEHI, New Delhi



FHKI, Kolkata



FLF Greater Kailash, New Delhi



FMRI, Gurugram



Greater Noida



Jaipur



Kalyan



Ludhiana



Malar, Chennai



Mohali



Mulund, Mumbai



Nagarbhavi, Bangalore



Noida



Raigarh, Chhattisgarh



Rajajinagar, Bangalore



Richmond Road, Bangalore



Shalimar Bagh, New Delhi



SL Raheja, Mumbai



Vadapalani, Chennai



Vasant Kunj, New Delhi



Vashi, Mumbai

Please send your comments, feedback and suggestions to  
[clinical.connect@fortishealthcare.com](mailto:clinical.connect@fortishealthcare.com)