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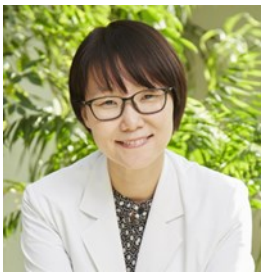
Guest Opinion/Editorial

The Role of EUS-B-FNA in Lung Cancer Staging in 2019



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Endoscopic ultrasound with bronchoscope guided transbronchial needle aspiration (EUS-B-FNA) is a transesophageal sampling method using a convex probe ultrasound bronchoscope. This technique was first introduced for the diagnosis and staging of lung cancer in 2009[1]. As conventional endoscopic ultrasound-guided fine needle aspiration (EUS-FNA) has been used for lung cancer since the 90's, EUS-B-FNA, which is based on the same principle, was relatively easily accepted by practitioners.

Currently, the primary procedure for pre-operative invasive mediastinal staging of lung cancer is endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA). EBUS-TBNA can cover a larger area of the mediastinum (stations 2R, 2L, 3P, 4R, 4L, 7 and some lymph nodes at stations 1 and 8) than standard cervical mediastinoscopy. According to a 2013 meta-analysis by the American College of Chest Physicians (ACCP), the pooled sensitivity of EBUS-TBNA in mediastinal staging was 89%, which was similar with that of video-assisted mediastinoscopy [2].

The role of EUS techniques in lung cancer staging cannot be discussed separately from EBUS-TBNA. EUS-FNA/EUS-B-FNA (EUS-(B)-FNA) have different accessibility to the mediastinum than EBUS-TBNA. EUS-(B)-FNA can reach mediastinal nodes adjacent to the esophagus (station 2L, 3P, 4L, 7, 8, 9 and some lymph nodes at station 1 and 5). Compared to EBUS-TBNA, EUS has limitations in targeting lymph nodes anterior to the trachea (stations 2R and 4R) commonly sampled in lung cancer, but can access nodes inaccessible by EBUS-TBNA (stations 8, 9 and some nodes at station 5). However, in general, EUS-(B)-FNA has lower accessibility to the mediastinum in lung cancer staging. One of our prior studies found 79% of mediastinal nodal stations with at least one node > 5mm, were reachable by EBUS-TBNA in potentially operable lung cancer; however 51% of nodal stations were reachable by EUS-B-FNA. 34% of nodal stations were accessible only by EBUS-TBNA (mostly stations 2R and 4R) and 6% were accessible only by EUS-B-FNA (stations 5, 8 and 9) [3]. Considering the low accessibility to the mediastinum of EUS, using EUS-(B)-FNA as the single method for mediastinal staging may not be sufficient. The 2013 ACCP guidelines recommend EUS as an initial test for lung cancer staging based on high diagnostic value [2]. However, the guidelines also mention the possibility of selection bias in EUS studies. In another of our previous studies, the sensitivity of EUS-B-FNA was 60% for the mediastinal staging of operable lung cancer and it increased to 92% after adding EBUS-TBNA [4].

Therefore, the role of EUS-(B)-FNA in lung cancer staging is complementary to EBUS-TBNA. In our studies, adding EUS-B-FNA to EBUS-TBNA increased sensitivity by 3-7% (84% to 91% [3], 82% to 85% [4]). We observed the benefit in patients with metastases at locations accessible only by EUS-B-FNA. Other studies have reported greater additional benefits of EUS-(B)-FNA after EBUS-TBNA in sensitivity (13% in a meta-analysis [5]). Considering the additional benefit of EUS-(B)-FNA, combined EBUS/EUS staging is not recommendable in all cases. The decision to add EUS-B-FNA after EBUS-TBNA is not simple. The benefit of EUS-(B)-FNA can depend on the thoroughness of EBUS-TBNA. Personally I perform EUS-B-FNA following EBUS-TBNA in patients with inaccessible nodes by EBUS only when the status of the target node(s) can change the treatment decision. EUS-B-FNA can be considered when bronchoscopic procedures are difficult or not tolerated.

EUS-B-FNA can be of benefit in some patients, but we must consider that adding EUS-B-FNA increases potential risk of complications. Serious complications such as esophageal perforation, mediastinitis, etc. have been reported with EUS-FNA. [6]. Adding EUS-B-FNA just because of technical ease is inappropriate. We have to consider many clinical factors to judge the utility of EUS-B-FNA in each patient. EUS-B-FNA is a different procedure than EBUS-TBNA and requires dedicated training.

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Technology Corner

Robot-Assisted Bronchoscopy

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Introduction

The use of robots in medicine has been around for 35 years, with the first "robot surgeon" used on a human patient being PUMA 2000 in 1985, to perform CT guided neurosurgical biopsies. In 1990's, scientists developed a robot with remote manipulators controlled by a surgeon for laparoscopic surgeries [1]. Since then, robotics has been used in the field of general surgery, gynecologic surgery, and urological surgery as well as cardiac and thoracic surgery. Robotic thoracic surgery offers multiple advantages over traditional Video Assisted Thoracoscopic Surgery (VATS) such as increased 3-D visualization, increased degrees of freedom of motion, better ergonomics and increased precision and in 2011 comprised approximately 10% of all lobectomies in the United States [2]. In the field of thoracic oncology, the increasing need to efficiently and safely sample lung lesions, has led to the development of guided bronchoscopy systems such as virtual bronchoscopy (VB), radial endobronchial ultrasound (r-EBUS) and electromagnetic navigation (EMN). The diagnostic yield of guided bronchoscopy using EMN ranges from 67-84%, with a one year follow up of the NAVIGATE study showing a diagnostic yield of 73% [3], but is lower than CT-guided transthoracic needle aspiration (92.1%) [4]

The lower diagnostic yield may be explained by the following factors which can be potentially overcome by using the newly available robot-assisted bronchoscopic (RAB) systems. Some bronchoscopists may get disoriented beyond the 5th generation airways and miss a small peripheral airway leading to the lesion. The use of EMN has been combined with r-EBUS to increase diagnostic yield, but can be limited by respiratory motion and CT-to-body divergence. The RAB technology allows the operator to navigate through smaller airways under direct visualization while continuing to offer either EMN guidance (Monarch^{TM} platform by Auris Health Inc.) or Fiberoptic Sensing Navigation (Ion^{TM} Endoluminal System by Intuitive Surgical) to find target airways and also provides stability during sampling of the target lesion.

Background

There are currently two commercially available RAB platforms on the US market. The Monarch^{TM} platform by Auris Health Inc. was FDA approved in March 2018. In cadavers, the Monarch ^{TM} platform was noted to have farther access to the periphery of the lung when compared to a conventional thin (4.2mm OD) bronchoscope (9 vs 6 airway generations) [5]. Rojas-Solano et al performed the first feasibility study with the Monarch ^{TM} platform in 15 patients that showed no pneumothoraces or significant bleeding [6]. The Ion^{TM} Endoluminal System by Intuitive Surgical was approved by the FDA in February 2019. Fielding et al. demonstrated that the Ion^{TM} system safely navigated to very small peripheral airways under direct visualization in 29 subjects, and were capable of biopsing small solitary pulmonary nodules while maintaining a static position [7]. The differences between the two available robotic systems are highlighted in Table 1.

Table 1. Comparison of the MonarchTM platform and IonTM Endoluminal System

Robot Assisted Bronchoscopy Platforms	**The Monarch™ platform Auris Health Inc**	**Ion™ Endoluminal System Intuitive Surgical**
FDA Approval	March, 2018	February, 2019
Bronchoscope Specifications	- Inner bronchoscope (4.2 mm) & Outer sheath (6 mm), both with 4 way steering control - The sheath can be locked in place and the bronchoscope can be advanced to the airways under EMN guidance and direct visualization - 2.1 mm working channel - Constant peripheral visualization during workflow at the target	- 3.5 mm outer diameter fully articulating catheter - 2 mm working channel - The catheter has a shape-sensing fiber along its entire length which provides positional and shape feedback - Catheter articulates 180 degrees in any direction - Integrated vision probe that provides navigation - Vision probe has to be removed prior to tissue sampling
Navigation Technology	- Relies on Electromagnetic Navigation along with peripheral vision and real time input from the micro-camera at the tip of the bronchoscope - Potentially limited by factors affecting electromagnetic navigation (interference with AICD, pacemakers) - The initial EMN software is sensitive to metal objects (eg. Fluoroscopy C-arm)	- Relies on fiber optic sensing technology "shape sensing" and peripheral vision for navigation - The shape sensing technology is reportedly not sensitive to metal objects
Instruments	- Auris needle (currently not available on the market) - Other needles such as Olympus Periview Flex or Arc Point SuperDimension needles - Can use R-EBUS, needle, biopsy forceps or brush through the working channel - The direction and positioning of the R-EBUS, needles, brushes or forceps instruments can be re-oriented under direct guidance	- Flexible needle – Flexision ™; The biopsy needle can be visualized along its length, and its length can be set to avoid the pleura and reach the middle of the nodule. - Can use R-EBUS, needle, biopsy forceps or brush - Relies on the fiber optic sensing technology as well as real time positioning during tissue sampling - No direct visualization available during biopsy as the vision probe has to be removed
Controller	- Two joysticks are used to drive and articulate the bronchoscope while various buttons are used to control irrigation, aspiration and the device state	- Trackball and scroll wheel which control catheter insertion and retraction, and precise distal tip articulation. Also includes a touch screen which is used to change system settings during the procedure.
Potential Advantages & Limitations	- Constant peripheral visualization that allows for directional targeting of instruments, especially in cases of eccentric lesions seen on r-EBUS - Visualization of possible complications while working at the target-such as bleeding and ability stay wedged in the target segment - The sheath and bronchoscope can be locked into position to prevent accidental displacement during tissue sampling. - Larger size of bronchoscope (4.2mm) may limit access of the actual scope to smaller airways; however, instruments can still be advanced in the target small airway under direct visualization	- The fiber optic sensing technology maintains active robotic control of the catheter position and corrects unwanted deflection and secures it into a fixed position during tissue sampling - No direct visualization while performing biopsies may limit the ability for directional targeting of instruments under direct visualization (relevant for cases of eccentric lesions seen on r-EBUS); it is unclear at this time if this limitation has any consequences on diagnostic yield -The 3.5 mm bronchoscope may provide further access to smaller distal airways

Clinical Application

For peripheral lung lesions sampling, robotic platforms may overcome some limitations of the currently available guided bronchoscopy systems. These systems may increase the diagnostic yield due to their stability, adjustable angulation and peripheral visualization, when available. A retrospective post-marketing study by Chaddha et al. showed that the Monarch ™ robotic platform was used in 82 cases to successfully navigate to 90.2% of the lung nodules (79.3% located in the outer third of the lung) [8]. Chen at al. in a multicenter prospective study demonstrated lesion localization in 91.7% cases also using the Monarch™ Auris robotic platform [9]. Both of these studies (presented in an abstract form) did not report the diagnostic yield as the follow up period post intervention was not sufficient for defining true negative cases. Fielding et al. recently published the first study using the Ion™ Endoluminal System showing an overall diagnostic yield of 79.3% and a diagnostic yield for malignancy of 88% [7]. Both of these studies suggest that RAB is a feasible technology with low adverse events that has the potential of increasing the success of navigation and diagnostic yield in patients with peripheral nodules.

In addition to their potential for improving diagnostic rates, robotic bronchoscopies may guide ablative therapies for treating inoperable peripheral lung tumors or oligometastatic lesions. Animal and case studies in humans have demonstrated feasibility of guided bronchoscopic ablative therapies such as laser interstitial thermal therapy [10], photodynamic therapy [11] radiofrequency ablation [12], microwave ablation [13] and bronchoscopic thermal vapor ablation. Robotic assisted bronchoscopy may further increase the accuracy in guiding flexible catheters to peripheral lesions and provide a stable platform to deliver ablative therapies [14, 15]. It is, however, premature to say that any of these therapeutic modalities are ready for clinical use. A few questions that will have to be answered by future research include but are not limited to: What are the exact energy settings to be safely applied during peripheral MWA? How many fibers should be used for peripheral PDT? Is concentric location of the probe essential for reliable ablation? What is the optimal location and freezing time for peripheral cryoablation?

It is possible that these interventions will have to be performed under direct imaging guidance (maybe cone-beam CT) for precise application of the probes and for monitoring intra-procedural effect.

Conclusions

The currently available small studies suggest that RAB is feasible and safe, but further data are needed to determine whether these technologies improve the diagnostic yield when compared to current bronchoscopic-guided diagnostic modalities. In these authors' opinion, the vast majority of patients with suspected lung cancer require concurrent EBUS-TBNA either because of the primary lesion size, location, presence of intrathoracic adenopathy on CT or PET or prior to stereotactic body radiation therapy.

Auris Health, Inc. is currently conducting a multi-center prospective trial to study navigation success and diagnostic yield in patients with peripheral pulmonary lesions using the Monarch™ platform (https://clinicaltrials.gov/ct2/show/NCT03727425). An ongoing multi-center single arm study is evaluating early outcomes associated with the ION™ Endoluminal System looking at navigation success, biopsy success as well as diagnostic yield trends in patients with lung nodules (https://clinicaltrials.gov/ct2/show/NCT03893539).

If the studies using RAB reliably demonstrate the ability to reach peripheral lesions as confirmed by radial EBUS or cone beam CT, RAB could eventually play a role in guiding ablative therapies for inoperable primary lung tumors or oligometastatic lesions.

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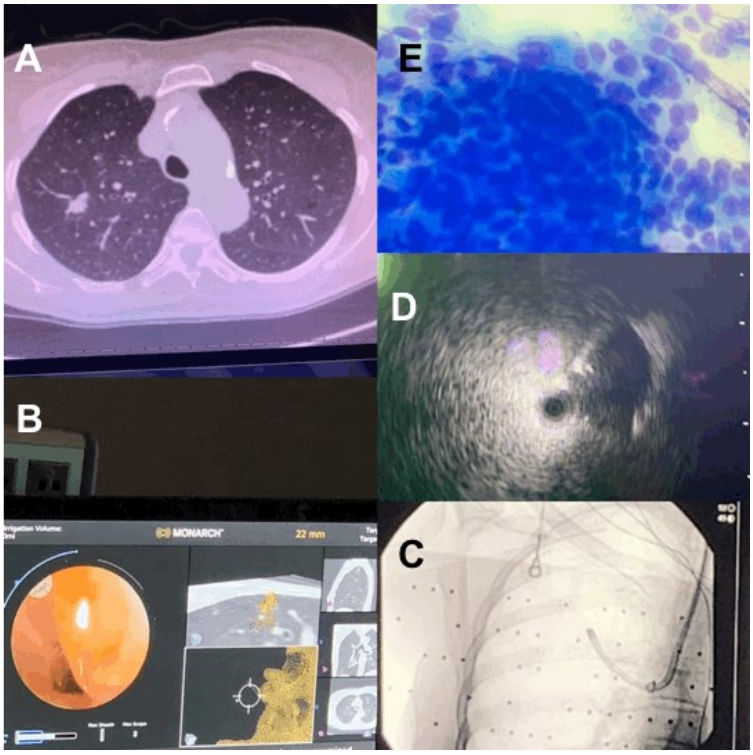


Figure 1: MonarchTM platform by Auris Inc.

A. Computed Tomography (CT) image of the right upper lobe nodule.
B. Real time white light bronchoscopy view and target view on the MonarchTM platform.
C. Fluoroscopic image of robotic bronchoscope.
D. Eccentric radial EBUS view of peripheral pulmonary nodule.
E. Diff quick stain from needle aspirate (RUL nodule) showing non-small cell lung cancer.

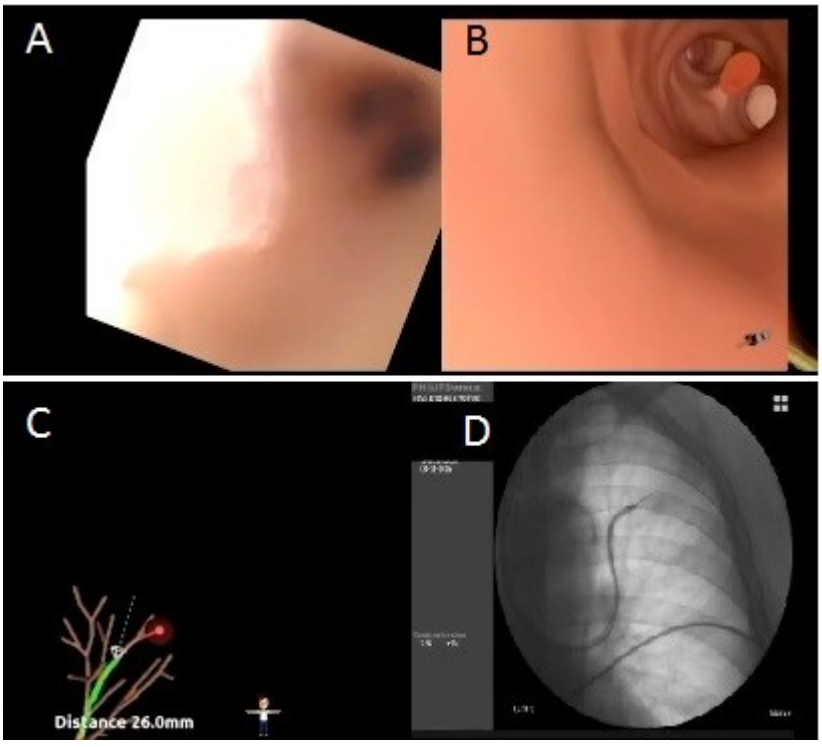
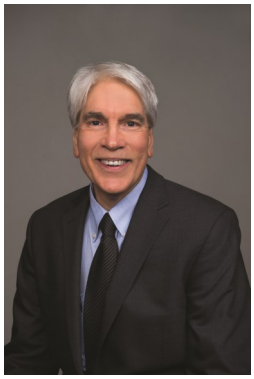


Figure 2: IonTM Endoluminal System by Intuitive Surgical (Courtesy of David Fielding, MD, Royal Brisbane and Women's Hospital, Brisbane, Queensland, Australia)

A. Real time view using the vision probe.
B & C. Global view with shape-sensing fiber displaying the position of the catheter in the airway and distance from target lesion.
D. Fluoroscopic image demonstrating catheter position.

Bronchoscopic Lung Volume Reduction
Techniques and Pitfalls of Placing and Adjusting Endobronchial Valves



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Hyperinflation is one of the most devastating consequences of COPD, especially those with an emphysematous phenotype.[1] It correlates with increased breathlessness, decreased exercise performance, worsened quality of life, respiratory failure, hospitalization and in those most hyperinflated, it is a major risk for mortality.[2] Lung volume reduction surgery (LVRS) in carefully selected individuals with hyperinflation and advanced emphysema has shown to be beneficial in improving lung function, exercise performance and quality of life, and in a subset with upper lobe predominate disease and ventilatory limited exercise, survival.[3] Despite the positive benefits of LVRS on patient outcomes, its perceived high morbidity and mortality and costs of care coupled with limited availability has relegated it to less than 200 Medicare beneficiaries with emphysema receiving that therapy on an annual basis.[4] For the last 2 decades, multiple bronchoscopically placed devices using a variety of techniques have been developed to duplicate the effects of LVRS on deflating the lungs of hyperinflated patients with advanced emphysema. Although these techniques differ markedly from one another, they all share the main objective to decrease thoracic volume and thus improve lung, chest wall, respiratory muscle and cardiac performance.[3,5-7]

Several of these techniques are shown in Figure 1; endobronchial valves have received FDA approval for clinical use in properly selected patients with hyperinflation due to emphysema and the absence of collateral ventilation. The other therapies are not approved for clinical care in the U.S. and some (lung coil, Aeriseal, vapor ablation) are either undergoing clinical trial evaluation, or have limited clinical access (lung coil, vapor ablation) outside the U.S. For those reasons, I will focus on the techniques and practices of placing and removing endobronchial valves.

1. Patient selection. Patient selection is key for which patients to treat, and which lobe to treat with endobronchial valve (EBV) therapy.[8,9] All patients should be maximally medically treated with maximal bronchodilator therapy, supplemental oxygen if criteria are met and use of pulmonary rehabilitation or evidence of an active lifestyle. Dual long acting bronchodilators, supplemental oxygen and rehabilitation all have been shown to attenuate air trapping by either decreasing airways resistance or respiratory rate, respectively, thus prolonging expiration and decreasing air trapping.[10] Patients morbidly obese (BMI $\geq$ 34) or severely undernourished (BMI $\leq$ 19) should have nutritional status optimized before considering an EBV procedure.

Patients selected for EBV should have advanced emphysema and suffer from hyperinflation. Lung function testing should demonstrate that patients have severe airflow obstruction (FEV_1 15-45% predicted), hyperinflation (TLC >100%) and air trapping (RV $\geq$150% predicted). Additionally, patients should not have severe gas exchange imbalance (PaO_2< 45 mmHg, $PaCO_2$ > 50-55mm Hg, DLCO < 15% predicted, O_2 requirements > 6L at rest or with ambulation).[8,9]

Patients should not have uncontrolled or severe comorbid conditions that may be contributing to their symptom burden of breathlessness or provoke significant periprocedural or post procedural complications. Patients with coronary artery disease or severe pulmonary hypertension should be avoided, uncontrolled or poorly controlled supraventricular tachycardias or symptomatic CHF or low EF states should be avoided. Hematologic abnormalities or the need anticoagulation needs to be addressed to ensure that constant anticoagulation is not needed during or immediate post procedure when urgent chest tube placement may be needed.

All patients referred for EBV have multidisciplinary assessment for lung volume reduction surgery or lung transplantation, the full array of interventions is individualized for what the patients' needs are at that time and stage of their disease while always attempting to balance the risks and the benefits.

2. Selecting the lobe for EBV treatment. EBV is only effective when total lobar occlusion leads to a significant decrease in targeted lobe volume reduction, at least 350 ml reduction**.** Most studies should that this can be achieved in about 70-80% of patients if the following selection criteria are used: a) more than 40-50% destruction of the EBV target lobe, b) fissure integrity or lack of physiologically determined endobronchial airflow between the targeted lobe and ipsilateral non treated lobe, c) greater inspiratory lobar volume, and d) decreased lobar perfusion. Additional considerations should include the degree of heterogeneity between the target and ipsilateral non targeted lobe- a greater difference may indicate a better treatment response, picking a lung to treat that lacks evidence of pleural adhesions, lung nodules,

significant bronchiectasis or interstitial infiltrates.[11] The pattern of emphysema needs to be considered- those with predominately pre pleural emphysema may benefit from surgical resection of peripheral emphysema areas rather than sacrificing functional parenchyma with EBV total lobar occlusion.[12] In homogenous cases, a perfusion assessment is recommended to select a lobe that is less than 20% perfused compared to other lung lobes.[13] Depending upon an individual patient's anatomy, multiple targets may be possible, preplanning the procedure to prioritize the lobar targets that achieve the removal of the greatest volume of dead space is recommended.

3. EBV placement. During the procedure, an airway examination is performed to exclude any endobronchial lesions, suction any secretions and if purulence is found submit for microbiological culture. Assessment of collateral ventilation can be performed using a balloon tipped catheter inserted via the bronchoscope and inflated into the target or non-targeted lobe to asses flow across a major fissure.[8,14] Alternatively, analysis of a pre procedural HRCT analyzed for fissure integrity has been reported to be effective in selecting the lobe for EBV treatment.[9] The segmental orifices in the lobe targeted for EBV treatment are then sized for EBV length and width using either a calibrated balloon or using an unloaded deployment catheter with flap-tabs that measures airway width.(Figures 2 and 3) Airway length is sized with calibrated markings on the catheter shaft.(Figure 2) Sizing is recommended to be sequential after EBV placement- some configurational changes may be made in the airway dimensions once an EBV is placed in the adjacent orifice. Care should be taken that the EBV is inserted parallel to the airway wall to prevent rotational changes or development of granulation tissue and that the valve is seated with its struts below the segmental orifice and the valve structure occludes the orifice without gaps, overdistention or protrusion of the valve structure outside of the airway orifice. In some difficult to access segments, a j-wire device may be used to deploy the EBV or using ventilator inflation hold, change in head or body position may also enable better access during deployment.(Figure 4) Post procedure instillation of saline should be done to assess for any bubbles that may emanate around the valve border with the airway wall indicating lack of lobar occlusion. We perform a pre and post procedural ultrasound of the intended lung and lobe of treatment to demonstrate absence of sliding after EBV therapy in the target lobe and continued sliding in the ipsilateral non targeted lobe to indicate lobar occlusion of the target lobe and no evidence of pneumothorax post procedure.

4. Post procedural assessment. At our institution we perform a CXR post procedure on the table, at one and 3 and 8 hours post and then daily till discharge. We keep patients hospitalized for 4 nights and see them in clinic at one-week post discharge with a CXR and 6-minute walk test for oxygen assessment. At day 45 we perform a HRCT to assess for target lobe volume reduction and if less than 50% targeted lobe reduction we consider repeat bronchoscopy with valve adjustment based on any changes in valve position identified by HRCT or lack of clinical response.[8] Valves are easily removed by using forceps remembering to remove the EBV from the orifice by rotating it out of the airway before withdrawing it into the central airway. Sizing is then performed as previously mentioned. On repeat examination if significant granulation tissue is present, we remove it with directed cryotherapy or APC treatment. We then perform HRCT annually to assess for treatment effect and lung cancer surveillance based on prior smoking history and age according to published recommendations.

5. Long term goals of EBV treatment. Treatment of hyperinflation is the goal of effective EBV, patients with total lobar collapse may have a survival benefit based on some cohort single center studies. Emphysema is a progressive disease, EBV is only one part of an individual patient's treatment regime to reduce hyperinflation, other medical and non-pharmacologic treatments such as supplemental oxygen and physical activity need to continue. Some patients may move on to transplant or in case where EBV is not successful lung volume reduction surgery. A successful EBV program should follow and assess the patient's outcome longitudinally to optimize outcome post EBV and more importantly improve the patient's long-term trajectory of this devastating disease.

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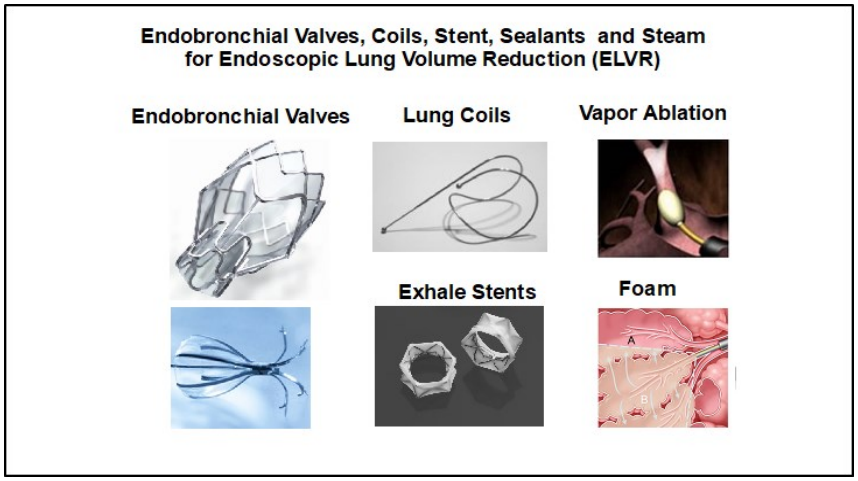
Figure 1



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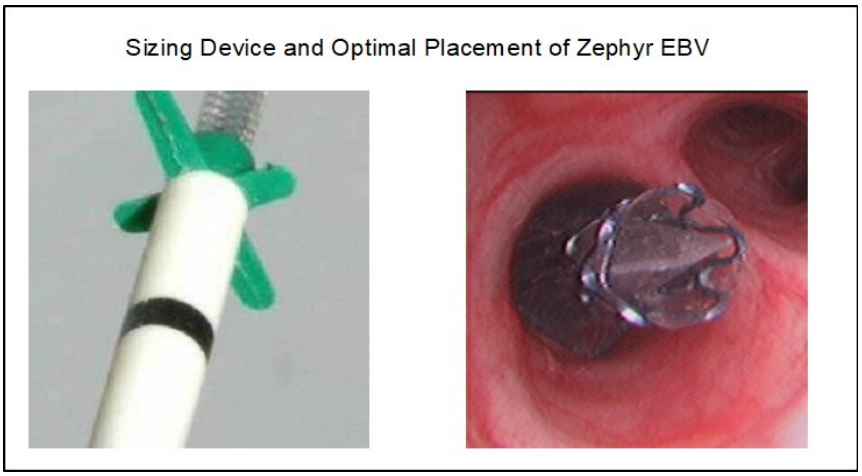

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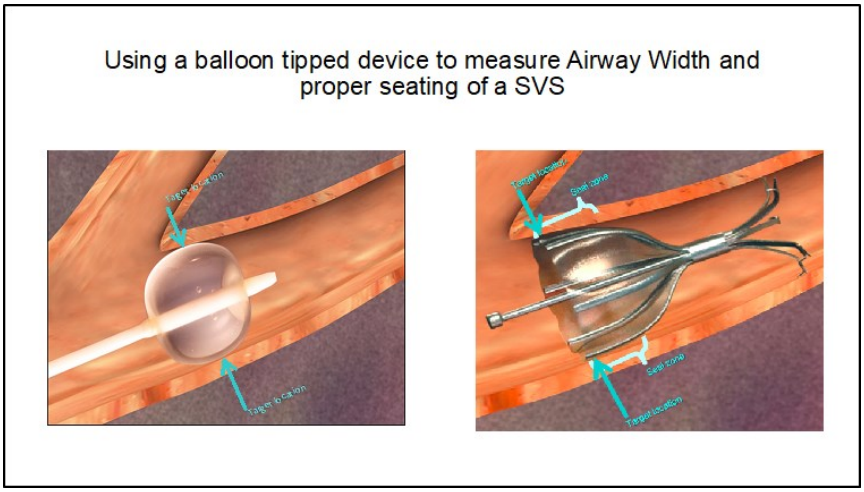
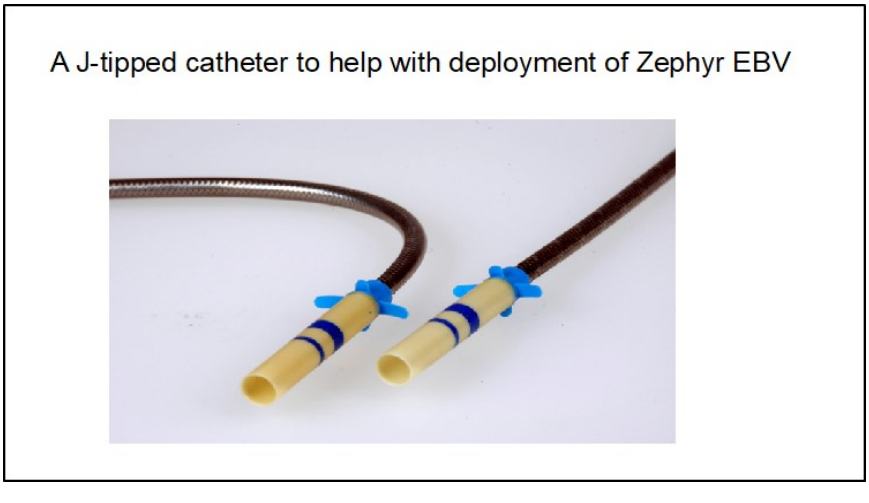


Figure 4



ON BEING NEUTRAL: CURRENT CHALLENGES OF NEUTRALITY IN HUMANITARIAN AID

Humanitarian principles define what humanitarian aid is: delivering life-saving assistance to those in need, without any adverse distinction. Adherence to the humanitarian principles facilitates access and acceptance, and helps humanitarian workers to do their work. One the cornerstone principles of humanitarian aid is neutrality which means that humanitarian aid must not favour any side in an armed conflict or other dispute.

Neutrality does not only define the nature of humanitarian action, but is also essential to securing access to people in need of protection and assistance in environments living political turmoil or during war conflicts. Neutrality allows to gain the trust of armed groups for them to permit access to zones under their control. Any humanitarian action demands to be judged neither a hostile act, nor a contribution to the war efforts of the belligerent parties.

However, during the last decade, practical issues have challenged the concept of neutrality and for many humanitarian actors today, neutrality is an impractical and unrealistic standard if not an empty declaration that may cost many lives. The underlying basis for neutrality has come under sustained attack mainly by the political and military instrumentalization of the "with us or against us" discourse after September 11. Neutral provision of aid becomes impossible if for some governments the enemy is so barbaric that they do not deserve human treatment. As expressed by Oxfam's policy adviser on Iraq, Jo Nickolls, Bush's “with-us-or-against-us” doctrine denies the possibility of neutrality by simply vanishing it away. That doctrine defines two sides of the conflict as ‘terrorism’ versus ‘freedom’ and ‘civilization’”. That concept of terrorists as ‘evil’ but mainly populations sympathetic to their cause considered not worthy of assistance and protection, defies the very principle of humanity and poses extreme challenges to the humanitarian movement. In the current scenario, conflicts exacerbate radicalization, suspicion and hatred, and the mere idea of assisting all those affected without discrimination, in line with the principles of humanity and impartiality, is instinctively regarded as unacceptable by many actors in or out the humanitarian environment.

It is true that there has never been absolute neutrality, in an indirect way any humanitarian action may have benefits for one of the belligerent sides. But currently, in certain conflicts, the maintenance of neutrality may pose major problems and, mainly the perception of the local population about neutrality can no longer be given for granted. A combatant's perception of the humanitarian operation may be very different from the past one and it jeopardizes the safety of humanitarian aid workers.

Not only are military forces increasingly and explicitly co-opting humanitarian efforts, but also several aid agencies appear as either willingly collaborating with coalition forces or doing little to disassociate themselves from them arguing that it does not matter how political their actions are as long they provide help to those who need it.

This growing confusion in distinguishing between military and humanitarian actors in conflict regions can have (and is having) fatal consequences for aid workers.

On the other hand, neutrality has been criticized for putting victims and their tormentors on an equal status. Humanitarian principles are seen by some scholars and policy-makers as helping fuel conflicts by justifying the provision of aid to all sides without distinction, regardless of their moral rights or wrongs, without joining the efforts of political actors to address the causes of conflict and intent to produce changes that may conduct to the end of the conflicts and the suffering of civilians.

The humanitarian system itself is far from being homogeneous and has varied ethical positions at the time of interpreting the principle of neutrality. In fact, the humanitarian world is composed of a wide variety of agencies and organizations, that include very different sectors of the civil society and, although all are driven by the principle of humanity, they may differ substantially in the philosophy and ethics underlying their work. Hugo Slim (a leading scholar in humanitarian studies with particular expertise in humanitarian ethics) has pointed that some organizations are driven by deontological ethics (so, they

consider the moral good of a particular action by itself and not necessarily by its consequences) whilst others are driven by consequentialist ethics, and so consider that the morality of an action must be measured by its consequences.

This crisis of the neutral humanitarianism has led some scholars like David Chandler to sustain that neutral humanitarianism is impossible in this new international context. One of the main reasons is for him the increasing manipulation of humanitarian aid with political purposes. Former Secretary of States of the US Collin Powell said that international NGOs may be "force multipliers" of the aims of the United States. During the Kosovo and Afghanistan conflicts, American soldiers frequently worn civilian clothes and perform "humanitarian activities", distributing food at the time that they carried guns. Those declarations and behaviors created an increasing confusion between military and humanitarian operations making the perception of neutrality almost impossible for the target populations.

This is an open debate in the humanitarian field and there is not a unique answer to the dilemma. It is a topic worthy to be analyzed because it remarks that humanitarian action is not a naive, romantic action that can be carried by willing amateurs but a deeply politically complex activity with profound impact and consequences in the life of the populations that are the target of their operations. But also, because in ceasing to be seen as absolutely neutral in the perception of combatants and the civilian populations (whose limits are currently blurred too), the humanitarian workers have become a target of the violence of the war. A quite practical approach to this dilemma has been exposed by Kate Mackintosh (a very experienced humanitarian worker and currently Deputy Registrar of the International Criminal Tribunal for the former Yugoslavia in The Hague) during the World Humanitarian Summit in 2015. She started by assuming that, of course, every humanitarian worker has his or her own views on the conflict he is working at which means that in his mind he is probably not neutral. She sees neutrality more as a tool to accomplish the adherence to the humanity principle than as an absolute principle. In that way, she describes two different categories of neutrality, the "ideological" and "practical" neutrality. As David Forsythe stated "not taking one side does not mean being indifferent, ICRC (International Committee of Red Cross, the most adherent organization to the principle of neutrality) tries to avoid or minimize the impact of their actions on the various factions that struggle for power". He recognizes that, of course, it is not an easy task as even the most basic activities may give some advantage to one of the sides compared to the other. On the other hand, Pierre Krähenbühl (Director of Operations of ICRC) remarks that not taking side does not mean that the ICRC is neutral in the face of violations of the international humanitarian law. And in this way, he also considers neutrality as a means to an end and not an end in itself. In the terms of Kate Mackintosh it means that a humanitarian actor may be flexible about "ideological" neutrality and (according the profile of each organization) and may speak out more or less about their disagreement with the actions of a host country, even knowing that it may be at the cost of having to stop their activities in that country. It is imperative to understand that humanitarians cannot be neutral about atrocities against the civilian populations and that at that extent neutrality overlaps with complicity. On the other hand "practical" neutrality refers to the concept that no activity performed by a humanitarian action should alter the balanced between the two sides of the hostilities. In fact, following the Geneva Convention, if any humanitarian operation results in an advantage (military or economical) to one of the belligerent sides, it is not neutral and so, the party in control of that area is not obliged to permit access. So, practical neutrality cannot ever be violated as it means losing the privileged position of being a neutral actor and not only being denied access (with the consequent impossibility of delivering aid) but also in a certain way entering the conflict and creating a great menace for every involved humanitarian worker.

The general principle that any activity that is humanitarian and is impartial is neutral is a good start. But we cannot deny the extreme difficulties humanitarian movement is facing in order to keep their fundamental principles. With all the differences in interpretations, most of the humanitarian actors strongly believe that the principles themselves should not be compromised; even when sometimes it means that a humanitarian operation should be stopped. Humanitarian action cannot solve problems that are political in nature. Most importantly, in order to be able to deliver aid framed in the principles of the humanitarian principles, it is essential to understand that the use of force should be absolutely independent of the humanitarian operation. The only chance of success of a humanitarian operation is to be clearly separated from the international community's efforts at political containment.

Humanitarian News

**The views expressed in this article are those of the author (Silvia Quadrelli) and do not necessarily reflect the official positions of the Executive Board or International Board of Regents of the WABIP.*

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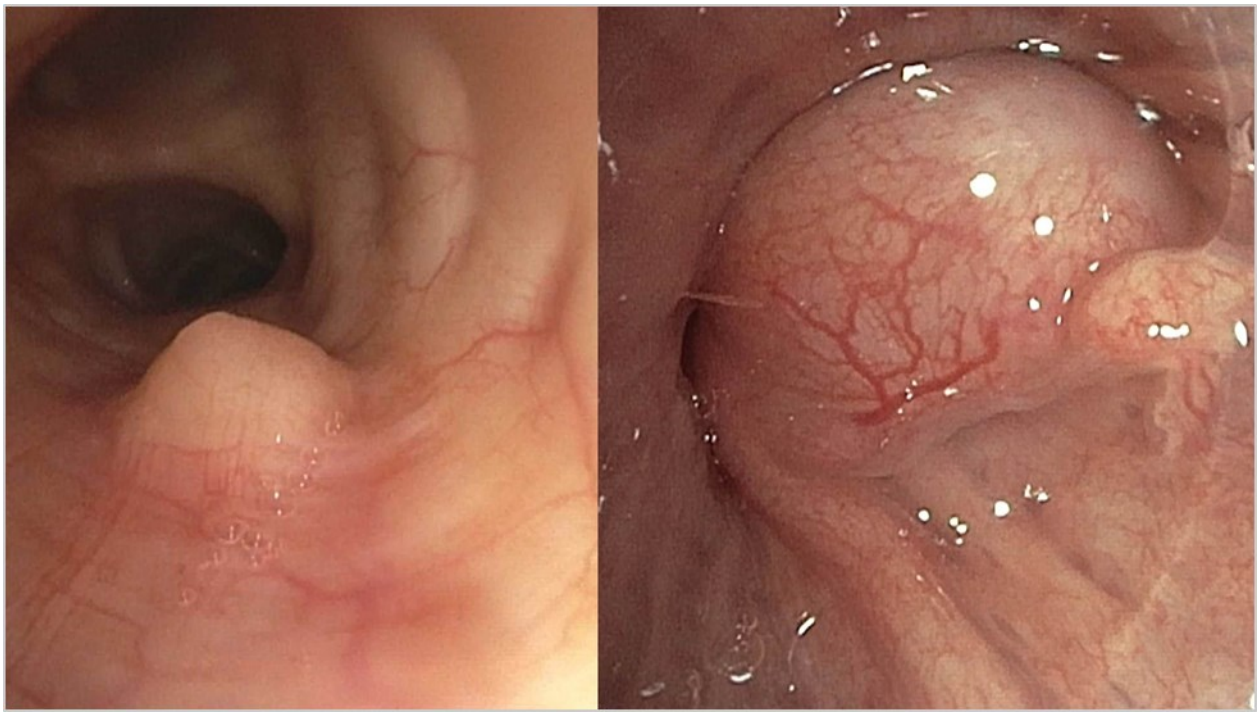
Best Image Contest

We are pleased to present to you below the final best image from the 2018 Image Contest campaign. Due to the popularity of contest, we are excited to have underway another Best Image Contest campaign for publishing in next year's Newsletter issues. We look forward to receiving your submissions.



Description: Comparing benign airway tumors - chondroma of the left mainstem bronchus (left image) and endobronchial hamartoma of the right upper lobe (right image)

Contributor: Dhaval Thakkar MD, Carla Lamb MD, and Sara Shadchehr MD

WABIP Member Society: : American Association for Bronchology and Interventional Pulmonology

WABIP NEWS

World Lung Cancer Day - August 1st marked World Lung Cancer Day, a day to commemorate and support those affected by lung cancer and, also, to recognize the ongoing efforts world-wide to advance prevention and treatment of this disease.

As part of our own campaign to spread awareness, the WABIP is proud to have released an Ebook collection of top articles published in the past year about IP in lung cancer, with comments from the WABIP Journal Club and a variety of leading experts regarding lung cancer treatment. Download Ebook

Call for Nominations and Applications – Vice-chair, Awards, Travel Grants, WCBIP 2026 Bids

As we approach the end of the year and head into final preparations for Shanghai WCBIP 2020, the WABIP is now accepting a variety of nominations and applications (listed below). Leave your mark in the future of the WABIP by submitting your nominations and applications via the below links:

Vice-Chair 2020 • WABIP Awards 2020 • Travel Grants 2020 • WCBIP 2026 Bids

Ecuadorian Society of Thisiology and Thorax Diseases Joins the WABIP

We are pleased to announce that Ecuadorian Society of Thisiology and Thorax Diseases (SETET) have joined the WABIP. We welcome society representative Dr. Rocio De Janon Q and friends in our international community with now over 9,000 members representing 60 national and regional societies.

WABIP Academy Podcast – 8 bronchoscopy experts at the 2019 ECBIP congress shared their insights with the WABIP in this series of brief interviews recorded during the congress. Dr. Manuel Ibarrola goes one-on-one with these experts and asks a series of questions regarding the main aspects of some of their most relevant and important articles related to IP.

LISTEN online at: https://www.wabipacademy.com/podcast

WABIP Visiting Scholar Report – Dr. Desk Deepak (India) - We are pleased to report that Dr. Deepak has successfully completed his 6-week training at the University of Maryland Medical Center (USA), with the support of the WABIP Visiting Scholar Grant awarded to the young doctor.

WABIP NEWS

Dr. Deepak spent his initial 2 weeks rounding with thoracic surgeons to better understand mediastinal and thoracic anatomy and surgical aspects of pulmonary diseases. Observations included: mediastinoscopies and thoracic surgeries including wedge resection, lobectomy, tracheal resection and anastomosis, lung volume reduction surgery and thoracoscopic management of complicated pleural space.

An additional 4 weeks was dedicated to Interventional Pulmonology, and Dr. Deepak was fortunate to have participated in following:

- Sampling of lung nodules using radial EBUS, electromagnetic navigation, and fluoroscopy to assist with cytology brushings, needles, and biopsy forceps. Dr. Deepak observed protocols for sample processing and management of procedure related bleeding.
- Curvilinear endobronchial ultrasound bronchoscopy for sampling of mediastinal lesions and systematic evaluation of mediastinum for staging of lung cancer.
- Cryotherapy for debulking, cryo-extraction, devitalization and obtaining tissue samples.
- Multimodality management of central airway obstruction using rigid bronchoscopy, cryotherapy and balloon dilatation. Technique for mucosal drug injection.
- Management of trachea-esophageal fistulas with placement of silicone and hybrid stents and their long-term care.
- Management of malignant pleural effusions with indwelling tunneled pleural catheter.
- Placement of small bore catheter with Seldinger technique for pleural irrigation.

In total, Dr. Deepak participated in 48 pulmonary intervention procedures in 29 patients.

The WABIP Visiting Scholar Grant enabled Dr. Deepak to better understand the requirements for developing specific programs. Dr. Deepak is enthused to advance the science of Interventional Pulmonology in India and share experiences with fellow pulmonologists in his country.

With Dr Joseph Friedberg, Chair, Division of Thoracic Surgery, at University of Maryland Medical Center, Baltimore, Maryland, USA

WABIP NEWS

LUNG CANCER diagnosis and staging: an interactive, hands-on seminar

Philip Emmanouil MD, Athens, Greece

In the midst of summer, a 2-day seminar on diagnosis and staging of lung cancer took place in the experimental center ELPEN in Athens, Greece, under the auspices of WABIP. Scientific director of the program was Assoc. Prof. Grigoris Stratakos. This seminar included selected lectures and hands-on stations aimed to indulge the participants in the current algorithms of lung cancer diagnosis and staging and not just train on IP instrumentation. Lectures included the latest data on lung cancer screening, the role of PET CT in staging and re-staging, necessity of sample adequacy for molecular analysis as well as re-biopsy, recent EBUS/EUS staging guidelines, pulmonary nodule algorithms and management, and finally therapeutic bronchoscopy. Both trainers and trainees had the opportunity to hear up-to-date information from pulmonologists as well as other specialists. The hands-on workshops focused on sample acquisition with electrocautery and cryoprobe, bleeding control with APC, conventional TBNA and rapid on site evaluation, EBUS simulation scenarios and needle handling. The session photos depict the passion invested by trainers and trainees likewise.

WABIP Academy Lecture Library —We are pleased to present a brand new on-demand videos series on the latest Interventional Pulmonology topics presented by lecturers from around the world. This collection is and will always be FREE for anyone to watch and use. Without further ado, follow any below link to begin:

- Thirty Years of Airway Stenting: The Lessons Learned
  Hervé Dutau, MD
- Bronchial Thermoplasty: A Nonpharmacological Therapy for Severe Asthma
  Ali Musani, MD
- Ultrasound for pneumologist? Needs, Training, Expectations
  Tudor Toma, PhD, FRCP.

Research

Bronchoscopic Lung Volume Reduction

A Dream Come True for Millions of Patients Around the World

Lung Volume Reduction Surgery (LVRS) blazed the trail for the current success of Bronchoscopic Lung Volume Reduction (BLVR) almost 20 years ago. The National Emphysema Treatment Trial (1) (NETT) outlined the physiologic principals, patient selection criteria, and pitfalls of managing severe emphysema patients with surgical procedures. Bronchoscopic management of emphysema followed NETT criteria to establish the safety and efficacy of Bronchoscopic Lung Volume Reduction (BLVR) more than a decade ago. Since then newer iteration of devices and procedures have led to many successful clinical trials and approval of several BLVR products around the world. Various types of valves and coils have been approved in Europe and Asia for clinical use. Some other products, such as bronchoscopic application of steam, are undergoing clinical trials. Like any other technology development, there have been failures along the way. One such product/technique, which made an excellent conceptual sense, was rejected by the Food and Drug Administration (FDA) after human trials because of poor performance or safety concerns. This technique/technology was based on the creation of transbronchial passages into the lung to release trapped air, supported with paclitaxel-coated stents to ease the mechanics of breathing ("EASE Trial)"(2). Recently valves were approved by the FDA for clinical use in the US. This approval has created great enthusiasm among patients and pulmonologists alike.

As we know, two-thirds of patients with emphysema have a homogenous type which did not show significant benefit in the NETT trial, but recent studies have shown that BLVR can help patients with homogenous emphysema as well. Conceivably, this benefit is at least in part due to risk reduction of procedural complications due to the sheer extent and nature of the surgical procedure. The valves are also removable in case the patient does not see expected benefits or develops complications associated with the device such as worsening of respiratory symptoms, post obstructive pneumonia, and persistent air leak/pneumothorax.

In a multicenter, randomized, controlled trial to evaluate the effectiveness and safety of Zephyr Endobronchial Valve (EBV) in patients with little to no collateral ventilation (LIBERATE Trial) (3) 24 sites from around the world participated. One hundred and ninety patients were enrolled to see the improvement in FEV1 (primary outcome) with valves compared to controls. The secondary outcomes were the six-minute walk test (6MWT) and St. Georges Respiratory Questionnaire (SGRQ), among others. The study found that more than 47% of patients improved their FEV1 by 15% or more compared to only under 17% in the control arm at 12 months. There was also a statistically significant improvement in the 6MWT and SGRQ in the group that received the valves compared to the control group. The most common complication noted was the pneumothorax, as expected. Approximately 26% of patients in the valve group developed pneumothorax in the first 45 days. The vast majority of them took place in the early 3-4 days. It should be emphasized that regardless of the type of valve used, pneumothorax remains a common complication of this procedure. Pneumothorax should be expected, and the team placing the valves should be prepared to manage it in a timely fashion.

Research

This is also the primary reason why patients are hospitalized for 3-5 days post-valve placement since the majority of pneumothoraces happen during this period.

In another multicenter, prospective, randomized controlled trial to assess the safety and effectiveness of the Spiration® Valve System (SVS) compared to standard medical care in patients with severe emphysema (REACH Trial), ninety-nine patients were randomized in 2:1 ratio into the treatment group with Spiration valve vs. control group. FEV1 was the primary endpoint again while SGRQ and 6MWT were secondary endpoints besides others. Statistically significant improvement in FEV1 and reduction in the volume of the targeted lobes were seen. Secondary endpoints of improvements in 6MWT and SGRQ were noted as well.

There are not many clinical trials looking at BLVR in homogenous emphysema patients. However, a recent randomized controlled, multicenter trial compared the effect of Zephyr valve vs. standard of care in patients with homogenous emphysema (4). Ninety-three patients were randomized into two groups, intervention group that was treated with multiple Zephyr valves for homogenous emphysema with intact fissures and the standard of care group. Primary (FEV1) and secondary endpoints (including 6MWT, and SGRQ) showed statistical and statistical plus clinical improvement, respectively. Pneumothorax was noted in 25% of patients. This Trial importantly indicates the success of BLVR in homogenous emphysema patients who comprise almost 65% of all emphysema patients.

Hence both types of valves have shown promising results in subjective and objective improvment in breathing in a well-selected group of patients suffering from homogeneous and heterogeneous emphysema. Finally, BLVR does not preclude one from having lung transplantations in the future.

Device	Heterogeneous	Interlobar Fissure	Collateral Flow
Coils Not approved in	Yes	Not Required	Unaffected
Sealants Not approved in	No	Not Required	Unaffected
Steam Not approved in	No	Not Required	Unaffected
Spiration Valves Approved in the US	Yes	Required	Affected
Zephyr Valves Approved in the US	Yes	Required	Affected

References:

1. National Emphysema Treatment Trial Research Group. N Engl J Med. 2003; 348:2059-2073

2. Shah PL et al. Lancet. 2011; 378: 997–1005

3. Criner GJ et al. Am J Respir Crit Care Med. 2018; 198(9):1151-1164

4. Valipour A et al; Am J Respir Crit Care Med.2016;194(9):1073-1082

Bronchoscopy Education Program - Madrid, Spain, 2019

Figure 1: Congratulations to Dr. Javier Flandes, Dr. Henri Colt, and everyone who participated in the Bronchoscopy Education Program held in Madrid, Spain, 2019.

Success in Madrid, 2019

Madrid is the city of Miguel de Cervantes (1547-1616), author of Don Quixote and perhaps the greatest of Spanish novelists. It is also home to Lope de Vega, renown poet and playwright of the Spanish Golden Age (early 16th century to late 17th century). The city boasts two of the world's most marvelous museums: The Museo Centro de Arte Reina Sofia, once an important public hospital and now the exhibition place of the powerful El Guernica by Pablo Picasso, and the Museo Nacional del Prado with its incredible collection of European art dating back to the 12th century, and it's reputation of hosting world-class exhibitions of contemporary art (when I was there I saw the retrospective of David Wojnarowicz (1954-1992), an important American painter, photographer, and filmmaker who made his name as an AIDS activist and sadly died from the disease in 1992.

Figure 2A: Hospital Universitario Fondacion Jimenez Diaz. **Figure 2B:** Central hall of the Muséo Nacional de Arté Reina Sofia (previously 18th century Hospital de San Carlos)

In May, 2019, under the leadership of Dr. Javier Flandes MD, PhD, an innovative Bronchoscopy Education Program was held at the Hospital Universitario Fundacion Jimenez Diaz just ten minutes from the city center. This hospital, which opened in 1955, has become an important referral center and primary care health care institution with state-of-the-art facilities. Professor Flandes is a distinguished leader, Section Head of the Pulmonary Division, President of the Spanish Association for Bronchoscopy and

Interventional Pulmonology, Regent to the WABIP, and Director of the Bronchoscopy and Interventional Pulmonary unit. He and his team of expert nurses, physicians, and administrative staff perform more than 2000 procedures each year, including endobronchial valves, radial and convex-probe EBUS, stents and ablative airway procedures, navigational bronchoscopy, cryobiopsy and thoracoscopy. In addition to medical residents, pulmonary trainees and students, the service hosts many foreign bronchoscopists who wish to observe procedures and learn about building a successful referral center.

During the course, about thirty pulmonary specialists, trainees, anesthesiologists and intensivists gathered to learn more about flexible bronchoscopy. The course itself was built around the use of airway models and hands-on training using no more than two students per workstation*. Teaching objectives for each station were explicit, using Bronchoscopy Step-byStep and the validated Bronchoscopy Skills and Tasks Assessment Tool. Additional time was devoted to interactive hands-on sessions about how to organize a bronchoscopy procedure room, and equipping an emergency cart to help handle procedure-related complications. Focused lectures were highly interactive, leaving plenty of room for questions and debate. These were designed to be student-centric and modified as needed to fit the desires and educational requirements of intensivists and anesthesiologists, while still providing useful information for trainees and practicing bronchoscopists.

An unexpected addition to the program was the emergency hospitalization of a patient with hemoptysis. Bronchoscopy was scheduled immediately and performed by Javier's assistant Adjunct Physician, Dr. Iker Fernandez Navamuel Basozabal. The course participants gathered in a separate conference room to watch the procedure on a large High-Definition screen while Dr. Flandes commented and answered questions. At no time was there communication with the bronchoscopist or the bronchoscopy team who were able to focus all of their attention on the problem at hand and care for their patient. A lesion was discovered in the left upper lobe, and the patient was sent to interventional radiology for urgent embolization. This was an excellent example of how to conduct teaching without interrupting the flow of a case in "real-time" and without creating any teaching-related risks to the patient. Considering the success of this program, and the unanimously positive feedback from participants, Dr. Flandes, who is also a Master Instructor for Bronchoscopy International (using Bronchoscopy Education Project teaching tools such as videos from the BronchOrg YouTube channel, Practical Approach exercises, Checklists, and Assessment tools in his own unit), plans to implement a similar teaching program on a yearly basis. This will provide an important educational opportunity for Spanish bronchoscopists in and around Madrid.

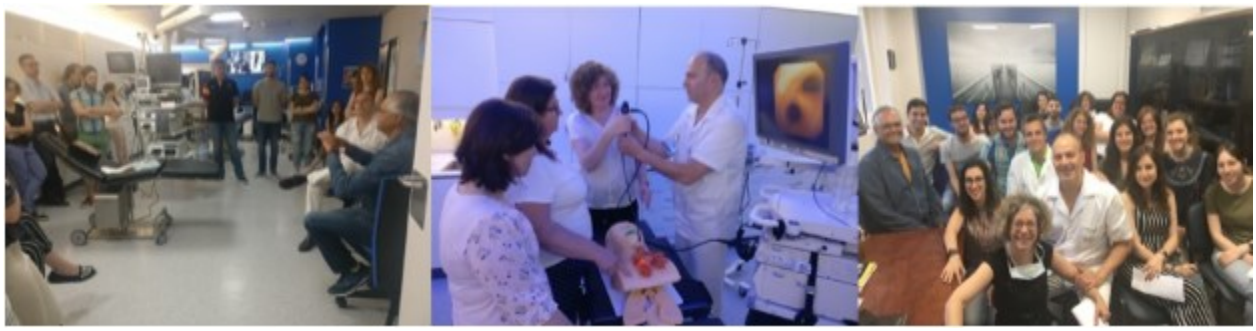


Figure 3A: Course participants gathering to discuss the organization of a bronchoscopy procedure room. **Figure 3B**. Students learning Step-by-Step under the guidance of Professor Javier Flandes. **Figure 3C.** Course participants thoroughly enlightened after watching a case of bronchoscopy for hemoptysis transmitted in real-time to their conference room.

*Many thanks for contributing sponsors including Olympus Corporation, Trucorp Airway models (Airsim), and Ambu Disposable bronchoscopes.

When Less Means More in Bronchoscopy Education

Training is teaching or developing in oneself or others any skills and knowledge that relate to specific competencies. Training has specific goals of improving one's capability, capacity, productivity and performance. Procedural training has long been an important component in the specialty of pulmonology and bronchoscopy-based procedures have been a defining skill for the pulmonologist.

The training for bronchoscopy in Romania is still made under the supervision of an experienced trainer. There are 3 months of bronchoscopy training in the Pulmonology curriculum. The residents learn bronchology directly on the patients under the supervision of a bronchologist.

This education has been more theoretical than practical because the trainees did not have the possibility to use the specific equipment, scarcely available in the hospital. The Section of Bronchoscopy of SRP has organized bronchology workshops for beginners as well as for the advanced, with a complex program involving a theoretical part and handson. The Bronchoscopy Educational Project is a new project for us and a new model of bronchoscopy education with very well-structured training program, useful and validated assessment tools. In spite of all these yearly workshops, the training in bronchoscopy for pulmonologists was not enough.

The WABIP cost-sharing program was a very good opportunity to improve the training in bronchology for our trainees and helped us a lot.

Due to this program in Romania, in Cluj-Napoca nowadays there is the possibility to use the Broncho-Sim in our daily practice for training and the young doctors are very satisfied with this kind of education and this model will improve their bronchoscopy skills.

"Being able to train on Broncho-Sim, under the guidance of Dr Simon, has been very useful to gain basic experience and skills in the practice of bronchoscopy before performing the procedure safely on patients. It improves our learning, but also our awareness and selfconfidence." - one of my trainees said.

Many thanks to Prof. Colt for the idea and WABIP for this program, which gave us the opportunity to improve our training in bronchology and to learn bronchoscopy step by step.

In Mourning: Professor Victor Sokolov

Viktor Viktorovich Sokolov (1946-2019)

In 1826, The Russian poet Alexander Pushkin wrote "But with the truth he attracted hearts. But with science he quelled mores." (From, Stanzas). Such words could be used to describe the life and work of my friend Professor Viktor Sokolov, who died last month at the young age of 73.

Viktor was an accomplished surgeon, anesthesiologist and bronchoscopist. He created the Russian Bronchology Group and was the first Russian regent to the WABIP. He fought to defeat conventional wisdoms and dedicated his life to modernize bronchoscopy practice in his country. In addition to numerous leadership positions, Professor Sokolov was also a former Chair for the Endoscopy Commission of the Russian Ministry of Health, and a long time member of the Academic Council.

As department head at the Moscow Research institute he led efforts to perform novel interventions in patients with early cancer of the larynx, trachea and bronchi, esophagus, stomach and duodenum, bile duct, choledochus, rectum and colon. He helped promote the use of electrosurgery, argon plasma coagulation, laser thermal destruction, photodynamic therapy and stent insertion. He published more than 300 original scientific papers, dozens of monographs, clinical care guidelines, and 10 teaching manuals. He held 26 patents for scientific methodologies and instruments.

For more than ten years, I corresponded frequently with Viktor and his son Dmitry (also an expert bronchoscopist). It was a great honor to help them build a training program in Moscow. A few years ago, with my colleagues Nikos Koufos, Rosa Cordovilla, and Enrique Cases, we helped faculty implement the use of training models, checklists and assessment tools in bronchoscopy education. This has been particularly helpful for building skills in endobronchial ultrasound.

Viktor was a scientist at heart, and it is as a scientist that he approached his medical practice. His dream was to cure lung and digestive cancers in their earliest stages, and for this he was always on the alert for technologies that might assist with early diagnosis and treatment. Because his first love was actually pediatric surgery back in the 1970s, Professor Sokolov was particularly excited to see the recent growth of pediatric bronchoscopy (we have more than 400 doctors communicating through our WhatsApp Peds Groups).

Viktor, we shall miss your humor, your intelligence, and most of all the inspiration of your relentless pursuit of truth.

Farewell, my friend.

WABIP ACADEMY- WEBCASTS

The WABIP has started a new education project recently: *THE WABIP ACADEMY.* The WABIP Academy will provide free online webcasts with new and hot topics that will interest pulmonologists and interventionalists.

Current webcast topic: **Tissue acquisition for biomarker directed therapy of NSCLC**

You can reach these webcasts by using this link: http://www.wabipacademy.com/webcast/

Links

www.bronchology.com	Home of the Journal of Bronchology
www.bronchoscopy.org	International educational website for bronchoscopy training with u-tube and facebook interfaces, numerous teachiing videos, and step by step testing and assess ment tools
www.aabronchology.org	American Association for Bronchology and I nterventional Pulmonology (AABIP)
www.eabip.org	European Association for Bronchology and Interventional Pulmonology
www.chestnet.org	Interventional Chest/Diagnostic Procedures (IC/DP) NetWork
www.thoracic.org	American Thoracic Society
www.ctsnet.org	The leading online resource of educational and scientific research information for cardiothoracic surgeons.
www.jrs.or.jp	The Japanese Respirology Society
sites.google.com/site/asendoscopiarespiratoria/	Asociación Sudamericana de Endoscopía Respiratoria

UPCOMING EVENTS

8th Annual International Pulmo-Delta Conference of the Egyptian Society of Chest Diseases and Tuberculosis
October 10-12, 2019 • Hilton Heliopolis Hotel, Cairo Egypt
Website: https://www.wabip.com/events/447-8th-pulmodelta

5th MABIP Annual Scientific Meeting (Malaysia)
October 18-20 , 2019 • Kuching, Sarawak, Malaysia
Website: http://www.mabip.com/

Congreso Sudamericano de Broncologia XII (Chile)
November 8-9, 2019 • Hotel Enjoy Coquimbo
Website: http://www.serchile.cl/

18th Regional Annual Assembly of ESSB (Egypt)
December 4-6, 2019 • Semiramis Intercontinental Hotel, Cairo, Egypt
Website: http://www.essb-eg.org/

Faculty Development Program (Algeria)
December 4-6, 2019 • Medical University of Mostaganem, Algeria
Website: https://www.wabip.com/events/417-fdp-algeria2019

10th Annual Evaluation and Management of Pleural Disease (MD, USA)
February 3, 2020 - February 4, 2020 • Chevy Chase Bank Conference Center, 1800 Orlenas…
Website: https://hopkinscme.cloud-cme.com/default.aspx?P=0&EID=18619

Bronchoscopy Course NEUQUEN 2019 (Argentina)
Annual Course (May 2019-April 2020) • Neuquén. Argentina
Website: https://www.wabip.com/events/458-neuquen2019-2020

21st WCBIP Congress • April 16-19, 2020, Shanghai China
April 16-19, 2020 • Shanghai, China
Website: https://www.wcbip.org/

6th European Congress for Bronchology and Interventional Pulmonology (Greece)
April 22-24, 2021 • Megaron Athens International Conference Centre - Athens, Greece
Website: https://pcoconvin.eventsair.com/QuickEventWebsitePortal/ecbip21/web