

Semirigid Pleuroscopy

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Pleuroscopy, also referred to as medical thoracoscopy, generally describes the evaluation of the pleural space in a nonintubated patient under conscious sedation (1).

A visual inspection of the pleural space, drainage of a pleural effusion, performance of pleural biopsies, and pleurodesis are commonly performed procedures during pleuroscopy. This type of endoscopy is usually performed by a pulmonologist with special training. This is in contrast to videoassisted thoracic surgery, performed by a thoracic surgeon in the operating room.

In experienced hands, medical thoracoscopy is very well-tolerated. The patient does not have to undergo general anesthesia and endotracheal intubation (2).

Since there is no need for an operating room and anesthesia time, there may be significant cost ad-

vantages compared to conventional thoracoscopy. Despite these well-known facts, pleuroscopy is not frequently performed by pulmonologists in the United States. There are few practitioners with expertise in the procedure (3). In the past, it has required the use of specialized rigid endoscopic instruments with appropriate camera equipment, as well as a dedicated processor and light source. Besides the expense of this additional equipment, the rigid thoracoscope is an unfamiliar tool for most pulmonologists.

The semirigid pleuroscope (LTF-160, Olympus Medical Systems, Tokyo, Japan) is a novel endoscope that is similar in design to a commonly used bronchoscope. This pleuroscope interfaces with existing processors and light sources that are routinely employed for flexible bronchoscopy and, therefore, are available in most endoscopy units (Figure 1).

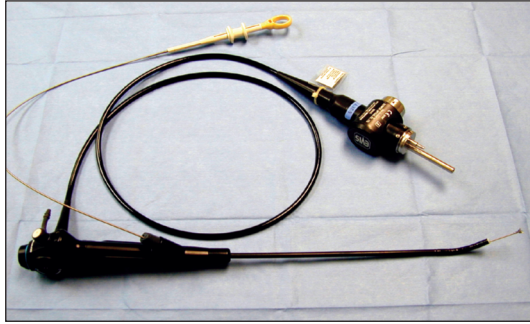


Figure 1: *The semirigid thoracoscope.*

The Instrument

The instrument consists of a handle similar to a standard flexible bronchoscope. The outer diameter of the shaft is 7.0 mm. The length of the insertion portion is 27 cm, which consists of a proximal rigid portion (22 cm) and a bendable distal end (5 cm). The tip is movable in one plane with the help of a lever on the handle, which is similar to a conventional flexible bronchoscope. A 2.8-mm single working channel accommodates the biopsy forceps and other instruments. Angulation is 100° and 130°. The instrument connects to a standard video processor and light source (models CLV-U40 and CV-240, respectively; Olympus), and images are viewed on a screen.

Pleuroscopy Technique

The procedure is performed using a single-puncture technique (4). Patients will be placed in the lateral decubitus position, with the affected side up. Most patients received IV conscious sedation using midazolam and fentanyl, with appropriate monitoring. After local anesthesia is placed, a small incision is made in the mid-axillary line and an 11-mm trocar is introduced. A somewhat larger sized trocar than is necessary for the instrument is chosen as to allow for the use of rigid equipment if necessary. After all fluid is suctioned, the pleuroscope is introduced into the pleural cavity, and the lung, diaphragm, and pleural surfaces will be inspected.

Parietal pleural biopsy specimens are obtained when indicated (Figure 2), in case of malignant effusion the procedure is followed by talc poudrage (with 5 g sterilized talc) when indicated. Rigid instruments (Karl Storz Endoscopy-America; Culver City, CA) are always available, if the examination with the semirigid pleuroscope is deemed unsatisfactory. The procedure is followed by the placement of a 24F standard chest tube through the trocar. A chest radiograph is obtained post-procedure.

Summary

Although pleuroscopy is generally safe, it is an invasive procedure. To minimize procedure-related complications, pulmonologists intent on performing pleuroscopy should not only receive specific training in the techniques and instrumentation but be cognisant of appropriate patient selection, the indications and contraindications of pleuroscopy.

Moreover, a consultative collaboration between the pleuroscopist, primary care physician, chest radiologist and thoracic surgeon assures that patients undergoing these procedures are fully and adequately assessed.

The arrival of the semirigid pleuroscope will revolutionize the practice of pulmonary medicine in the same way that the flexible bronchoscope did



Figure 2: *A biopsy of the pleura using the semirigid pleuroscope.*

four decades ago. Current debate should not focus on the time-honoured controversy of where to perform and who should perform pleuroscopy but rather when to use conventional rigid and semirigid instruments for different clinical scenarios.

The semirigid instrument may offer a way forward. It appears to have some advantages over the rigid thoracoscope. With its similarity in design to the flexible bronchoscope, it is hoped that chest physicians will be able to adapt to its use without too much difficulty, although formal training is essential. It is easy to manoeuvre within the pleural cavity. It is compatible with standard biopsy forceps and can be used with the processors and light sources found in most endoscopy rooms. Undoubtedly, the biopsy size from the rigid thoracoscope is larger than with the semirigid instrument. This has been quoted as a reason for the former's superiority. However, smaller biopsy size does not necessarily translate to inferior diagnostic yield; indeed, the present authors' results, as well as those of other operators, have been excellent (5). The fact that the instrument used can be autoclaved is a huge bonus and it opens the way for its wider use abroad.

Overall, there is immense potential for the use of the autoclavable semirigid thoracoscope in the speedy and accurate diagnosis and effective management of pleural disease.

The semirigid pleuroscope is a significant invention in the history of minimally invasive pleural procedures. As pleuroscopic technology and techniques continue to evolve, it will certainly pave new inroads into stimulating and directing novel research and education in the future.

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