Nonvideo thoracoscopy with local anesthesia in elderly patients

Authors:

Julio Mott Ancona Lopez

André Miotto

Pedro Augusto Antunes Honda

Daniela Cristina Almeida Dias

Jorge Henrique Rivaben

Herbert Felix Costa

Marcio Botter

Cristiano Rodrigo de Alvarenga Nascimento

Roberto Saad Junior

Hospital Sancta Maggiore – Prevent Senior
São Paulo - Brazil

Corresponding author:

Julio Mott Ancona Lopez

Chief - Thoracic Surgery

Hospital Sancta Maggiore

Prevent Senior

E-mail: mottlopez@uol.com.br

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Abstract

Introduction

Thoracoscopy was improved after the introduction of video-surgery at the end of the 80s, enabling thorough investigation of the pleural cavity. However, the video-assisted thoracic surgery (VATS) requires general anesthesia, which limits its use in seriously ill patients and elderly patients. Closed pleural biopsy and analysis of pleural fluid by thoracocentesis have limited value in the diagnosis of pleural conditions. Thus, we studied the indications and the results of this procedure under local anesthesia in an elderly population and with borderline clinical condition.

Method

During the period 2003-2010, 137 thoracoscopies with local anesthesia and sedation were performed.

Results

73 patients (53.2%) were female and 64 (46.8%) were male. The average age was 67 years. 91 patients (66.4%) had comorbidities, such as cardiac and renal failure, hypertension, diabetes and chronic obstructive pulmonary disease.

The indication of thoracoscopy was given by the following reasons: 6 patients with pleural empyema (4.3%); 7 hemothorax patients (5.1%); 49 patients (35%) with a history of malignancy and suspected secondary pleural effusion; 75 patients (54.7%) with pleural effusion of unknown cause.

In patients with neoplastic history (49 patients), the secondary pleural disease was confirmed in 71.4%. In 14 patients, pleural infiltration was not diagnosed. In 38 patients (86.3%), pleurodesis was performed due to a history of cancer and recurrence of pleural effusion. Talc was the only sclerosing agent used in all cases of pleurodesis. There was no immediate mortality related to the procedure nor need for thoracotomy due to bleeding after pleura and lung biopsies.

Conclusion

Thoracoscopy under local anesthesia is a low-cost method, technically simple and useful in the diagnosis and treatment of several pleural diseases. In critically ill, elderly and patients with several comorbidities, it should be considered as an alternative to VATS.

1. Introduction

Pleural effusion may be initially investigated by clinical evaluation and physical examination of the patient, guiding the choice of a more accurate and definitive method for final diagnosis. In 15-20 % of cases, analysis of the liquid in conjunction with clinical factors is not enough for diagnosis, leading to the need for pleural biopsy [(1)]. Thoracoscopy was described in 1910 by Jacobeous [(2)] and is used to this day as a method of choice for diagnosis of pleural effusion. Over the years, along with technology, it has been improved.

After clinical examination, the presence of a pleural effusion can be confirmed by an imaging exam, such as a chest radiograph or a CT scan. Once the pleural effusion has been found, the diagnostic investigation proceeds with a thoracocentesis, very useful to define the effusion nature, pointing to its cause. It is also used to relieve symptoms. A pleural biopsy can be performed in the same procedure or later, in a more specific procedure [(3)].

Several methods have been used as an access way for pleural biopsies. Closed pleural biopsies, using Cope or Abrams needles, were described long ago and have been widely used until nowadays[(1)]. In some specific cases, when the diagnosis was not defined by closed biopsy, an open surgery biopsy was necessary, by thoracotomy. After the introduction of video - surgery at the end of the 80's, image resources with magnification allowed the pleural cavity investigation to become much broader and more accurate. The thoracoscopy shows up to be more effective in the diagnosis when compared to closed chest biopsy (using a Cope needle), with results that reach 78.2 % thoracoscopy diagnostics 21.7% against the closed biopsy [(1)]. However, the video-assisted thoracic surgery (VATS) requires general anesthesia and intubation, which limits its use in seriously ill patients, elderly and

patients with several comorbidities.

This technique has been used for a long time and still seems to be very effective, fast, simple and is done through one incision only. It allows a good visualization of the pleural cavity and lung surface [4,5]. Thus, we studied the indications and the results of this procedure under local anesthesia in an elderly population and with borderline clinical condition.

2. Method

This is a retrospective study, which analyzed patients operated on between 2003 and 2010. 137 thoracoscopies with local anesthesia and sedation were conducted, with diagnosis of pleural effusion. Optical mediastinoscope (non-video) was used with direct visualization of the pleura and lung surface in all cases (Figure 1, Figure 2, Figure 3). Biopsies were made with a rigid forceps.

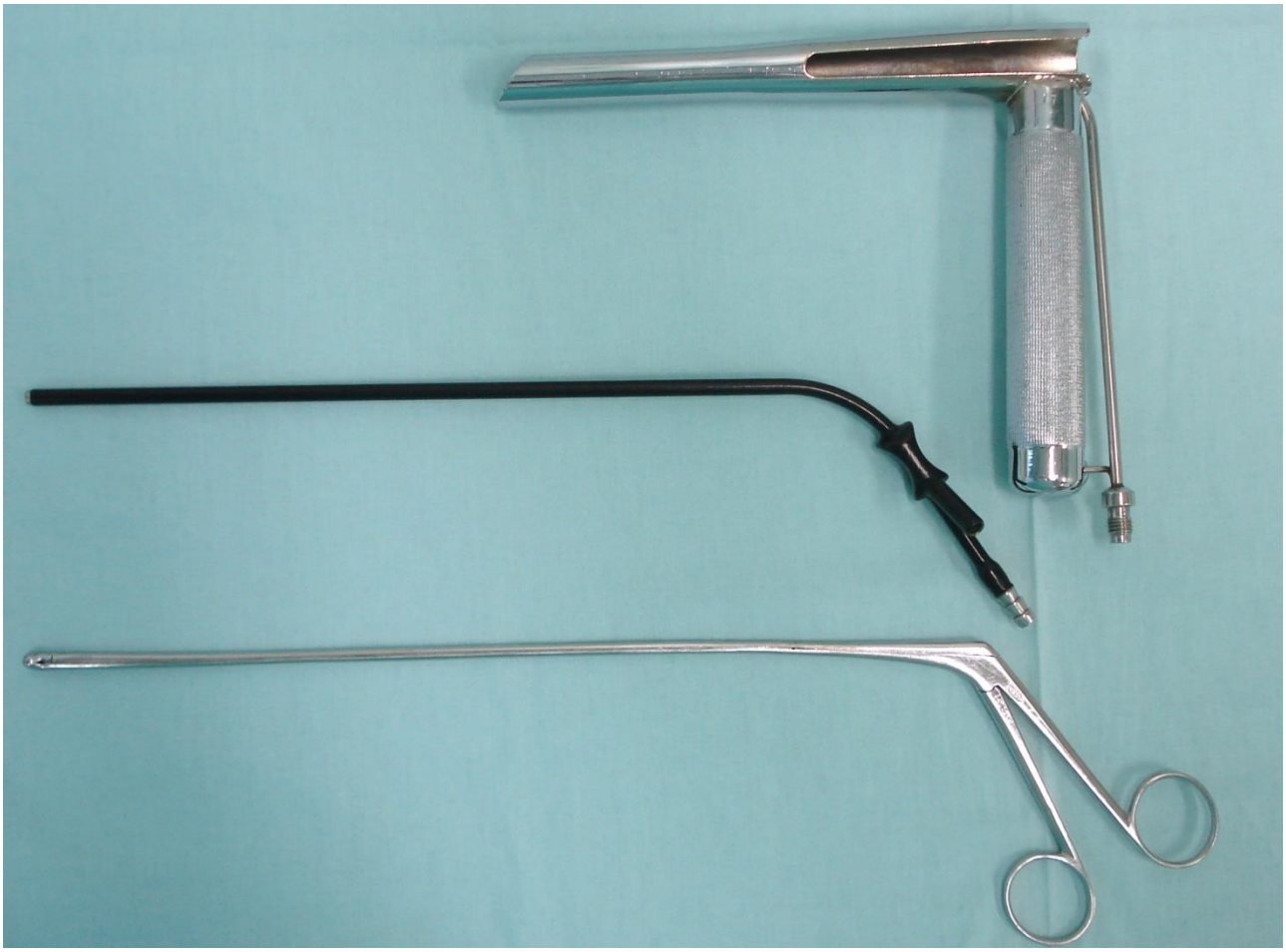

Figure 1. Mediastinoscope and rigid forceps.

Figure 2. Local anesthesia

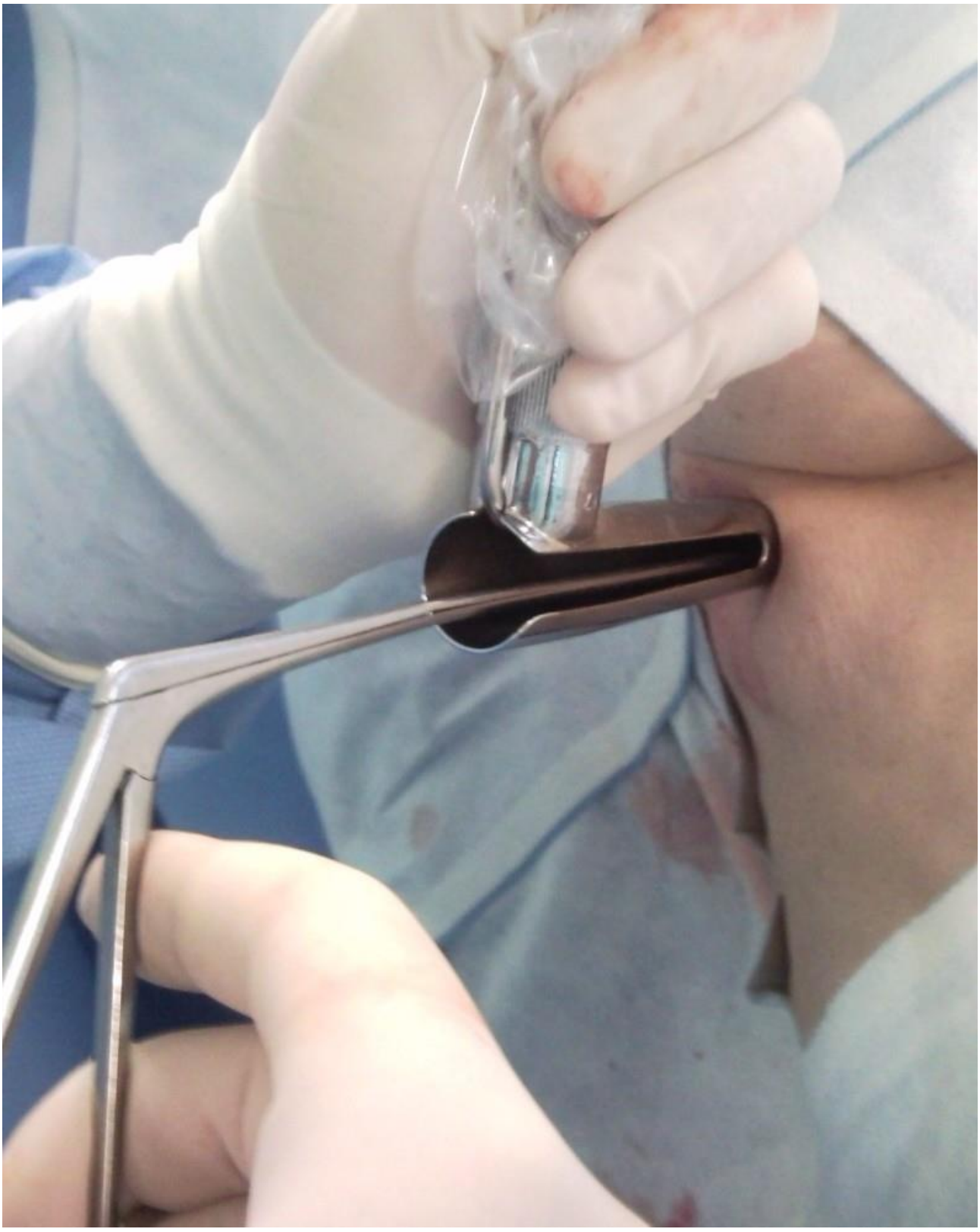

Figure 3. Performing thoracoscopy and biopsy.

3. Results

73 patients (53.2%) were female and 64 46.8%) were male. The average age was 67 years. 91 patients (66.4%) had a comorbidity, such as cardiac and renal failure, hypertension, diabetes and chronic obstructive pulmonary disease. The indication of thoracoscopy was given for the following reasons: 6 patients with pleural empyema (4.3%); 7 patients with hemothorax (5.1%); 49 patients (35%) with a history of malignancy and suspected secondary pleural effusion; 75 (54.7 %) with a pleural effusion of unknown cause.

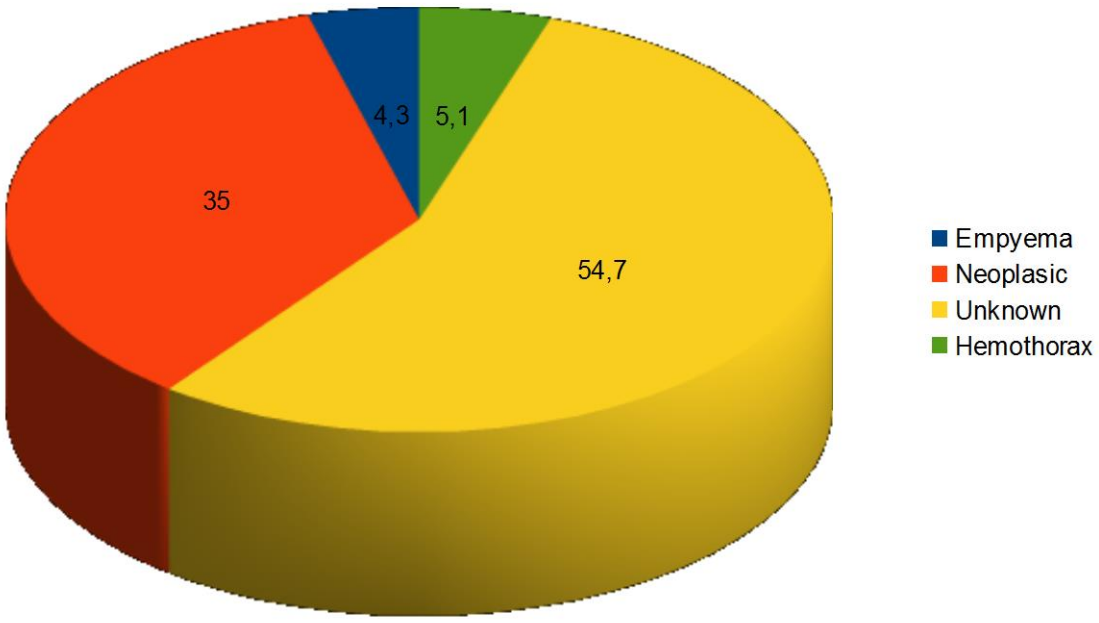

Figure 4. Chart showing the distribution of thoracoscopy notes in the study patients (percentage).

In patients with empyema, a thoracoscopy with debridement of empyematous loculations was the definitive treatment for 5 patients (83.3%). In only one patient thoracotomy with pulmonary decortication was necessary. Patients with hemothorax had closed thoracic trauma as the main cause of their disease (85.7 %) and one case of post CABG (coronary artery bypass grafting) hemothorax. A hygienic thoracotomy was performed in a patient

with massive hemothorax traumatic whose thoracoscopy was not sufficient for a total cavity cleaning. In patients with neoplastic history (49 patients), the pleural secondary disease was confirmed in 35 (71.4). In 14 patients, no neoplastic pleural infiltration was diagnosed.

Pleuroscopies were performed in 25 patients with breast cancer history, and a biopsy confirmed metastatic pleural disease in 84%. In patients with pleural effusion of unknown cause, we found the following diagnoses: pleural tuberculosis in 6 patients (4.3%); 18 cases of metastatic pleural disease, without a known primary tumor (13.1%); 51 patients (37.2 %) had pleural non-specific inflammatory process, without signs of malignancy or other important histological changes. These findings relate to the transudate pleural effusions, usually secondary to systemic diseases such as heart and kidney failure, ascites, among others.

44 pleurodesis were carried out, six patients had no secondary pleural disease, and the indication was the recurrence of pleural effusion. In 38 patients (86.3%), pleurodesis was performed due to a history of cancer and finding of metastatic pleural disease. In patients with pleural effusion secondary to metastatic breast carcinoma, pleurodesis was performed in 72% of patients (18 patients). In the other (7 patients), pleurodesis was not performed due to lung trapping or partial expansion, which contraindicate the procedure.

Sterile talc was the only sclerosing agent used in all pleurodesis cases. There was no immediate mortality related to the procedure nor need for thoracotomy due to bleeding after pleura and lung biopsies. 9 patients (6.5%) developed empyema after the procedure, and 3 patients with empyema had undergone talc pleurodesis. There was a recurrence of pleural effusion, even after pleurodesis in 5 patients (11.3%).

4. Discussion

The choice between closed or under direct pleural biopsy is still recurrent a theme of discussion. The effectiveness of open biopsies or video reaches more than

90 % [12] turning these into methods of choice for histological diagnosis of pleural diseases, once Cope needle closed biopsy has a much lower yield [6,7,8,9]. Furthermore, open procedures allow pleurodesis, better evacuation of the pleural fluid and safe biopsy of the pulmonary parenchyma [5, 7, 8]. The image in VATS has better quality, undoubtedly. Then, for minor or single lesions, VATS is better indicated [7,8,9]. Nevertheless, the advantage of the video is not clear when we think about cost and pain.

VATS set is much more expensive than a non-video mediastinoscope, and also has more expensive maintenance. What is more, classic VATS requires two incisions, whereas the approach with the mediastinoscope only requires one, and can be performed with local anesthesia and sedation [5]. VATS single-port thoracoscopy is a reality, performed without orotraqueal intubation and widely used these days, but it is also expensive and has similar data to that obtained by the open method [10]. From the data here presented, we can see that the effectiveness of the method is as good as the VATS in cases of neoplastic and undiagnosed pleural effusions.

Cajozzo et al. showed that postoperative hospitalization of patients undergoing thoracoscopy with local anesthesia and sedation was shorter, as well as pleural drainage time. Furthermore, the efficiency of both methods was similar [11]. Another method used today is the image-guided pleural biopsy. As thoracoscopy, it is an effective and low complication rate method, but has not the advantages of pleural drainage and pleurodesis in the same procedure [12].

5. Conclusion

Thoracoscopy under local anesthesia is a low cost method, technically simple and useful in the diagnosis and treatment of several pleural diseases. In critically ill, elderly and patients with several comorbidities, it should be considered as an alternative to conventional VATS with endotracheal intubation.

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