

Advanced Medical Thoracoscopy

G.F. Tassi¹, G.P. Marchetti¹, P.L. Aliprandi²

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¹ *Divisione di Pneumologia, Spedali Civili di Brescia,*

² *U.O. Medicina III, Pneumologia Interventistica, Ospedale di Rho, A.O.G. Salvini, Garbagnate Milanese (Milano), Italy.*

Correspondence: Dr. G.F. Tassi, Divisione di Pneumologia, Spedali Civili di Brescia, Piazzale Spedali Civili 1, 25123 Brescia, Italy; e-mail gf.tassi@tin.it

Advanced medical thoracoscopy include the less frequent and more complex applications of medical thoracoscopy: 1) the management of parapneumonic pleural effusion and pleural empyema; 2) the thoracoscopic lung biopsy; 3) the thoracoscopic sympathectomy [1]. They can be considered as non-routine methods and represent the areas of application of medical thoracoscopy for expert pulmonologists. They can also be an aim for those who, having learned and applied the basic techniques, want to develop them further.

Thoracoscopy

For years, thoracoscopy has largely been used in pleural effusion due to lung infection, as an alternative to thoracotomy, because it allows the mechanical removal of infected material and permits lung re-expansion. It is possible to open multiple loculations and aspirate the purulent liquid, removing the fibrinous adhesions, including the layer on visceral pleura. Therefore, it is possible to have a single cavity in which, using an accurately positioned chest tube, subsequent local treatment is facilitated with antiseptic solutions or fibrinolytics. Moreover, the possibility to perform pleural biopsies allows the precise aetiological definition of the disease and aids the diagnosis of occult infections (e.g. tuberculosis) or tumours causing pleural effusion. Most thoracoscopic empyema treatments are performed and described by surgeons using classical three-entry port intervention under general anaesthesia and double-lumen intubation [1]. However, it is important to remember that thoracoscopy in empyema may also be performed by expert medical thoracoscopists [2-5]. However, the exact application of thoracoscopy in infections of the pleural cavity has yet to be established universally. Its use has been proposed prior to the positioning of a thoracic drain, while another application might be only after the drain has not determined a reduction in temperature or the complete evacuation of pleural fluid within a few days. Yet another approach makes reference to the loculate character of the effusion, and considers thoracoscopy appropriate in the

presence of loculated empyema. More recently, in the surgical field the treatment has been extended to chronic organising empyema, both to clean the cavity prior to thoracotomy decortication, and for the actual decortication [1]. The case studies of the role of thoracoscopy in the infection of the pleural space deal principally with empyema and are both medical and surgical, the latter being undoubtedly more numerous [6]. In general the figures demonstrate favourable results, with percentages of primary success (meaning complete cure without subsequent thoracotomy or video-assisted thoracoscopic surgery (VATS), or conversion from VATS to thoracotomy) between 60% and 100%, and higher if the method was used without delay. However the number of patients treated was generally small, and few authors present case studies dealing with more than 100 patients.

In surgical thoracoscopy there is total agreement about the advantages of VATS over thoracotomy, in terms of lower cost, shorter hospitalisation, and better cosmetic results with less surgical sequelae. The medical thoracoscopy experiences outline the mini-invasive character of the procedure, together with lower cost compared to VATS and the fact that it can be used with frail patients at high risk from surgery.

Complications occurred in direct correlation with the complexity of the cases treated and were represented mainly by prolonged air leakage and bleeding, with very varied incidence, between 16% and 0% [1]. In some surgical series, including patients with severe comorbidity, deaths also occurred.

Therefore thoracoscopy is undoubtedly useful in the treatment of infection of the pleural space, in particular with multiloculate empyema, since it permits the treatment of the illness without thoracotomy, even though until now sufficiently large randomised studies on the method have not been carried out. As an intermediate drain procedure between positioning a drain tube and VATS, medical thoracoscopy can play an important role and is characterised by its efficacy and low cost. It should be carried out without delay in the treatment of empyema and is recommended for patients in poor health and at high surgical risk.

Recommendations

- **Thoracoscopy is indicated in loculated parapneumonic effusion and empyema (Grade B).**
- **Chest ultrasonography is the method of choice to identify loculations (Grade C).**
- **Medical thoracoscopy, as a drainage procedure which is intermediate between tube thoracostomy and VATS, is significantly lower in cost and can avoid surgical thoracoscopy under general anaesthesia (Grade C).**
- **It is essential that medical thoracoscopy is performed early in the course of empyema and advisable in particular for frail patients at high surgical risk (Grade C).**

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Thoracoscopic Lung biopsy

Forceps lung biopsy during thoracoscopy under local anaesthesia has been used for many years by pulmonologists and has been described frequently as an integral technique of medical thoracoscopy [7-11]. With the advent of video-assisted thoracoscopic surgery (VATS) its employment has been considerably reduced in particular in lung nodules and in diffuse lung disease. However the biopsy of visceral pleura and lung in patients with pleural effusion and visceral pleura involvement or associated lung disease (mesothelioma; metastatic tumour; suspected carcinomatous lymphangitis; suspected asbestosis) still maintains its importance and significance. In particular, in mesothelioma, the identification of visceral pleura involvement by biopsy is crucial to establish the stage of development of the disease [12].

Recommendation

- **Thoracoscopic forceps lung biopsy is indicated in patients with pleural effusion and associated lung disease (Grade C) Thoracoscopic forceps lung biopsy is indicated to evaluate the visceral pleura involvement in mesothelioma (Grade C).**

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Sympathectomy

Thoracoscopic sympathectomy, the anatomical interruption of the thoracic sympathetic chain by means of thoracoscopic techniques, more frequently performed and described by surgeons, can safely be performed by trained interventional pulmonologists [13-18]. It is a minimally invasive, accepted intervention for patients with a variety of autonomous nervous system disturbances with short- and long-term excellent results. It should be carried out by expert and highly trained thoracoscopists [19] and carried out in specialized centres with sufficient expertise in close collaboration with thoracic surgeons.

Recommendations

- **Thoracoscopic can be performed safely by trained interventional pulmonologists (Grade C).**
- **Thoracoscopic sympathectomy carried out in specialised centres with sufficient expertise in close collaboration with thoracic surgeons (Grade C).**

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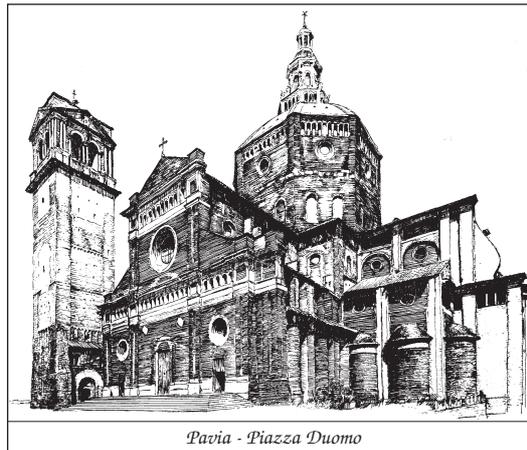
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Summary of Recommendations

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- **Chest ultrasonography is the method of choice to identify loculations (Grade C).**
- **Medical thoracoscopy, as a drainage procedure which is intermediate be-**

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- **It is essential that medical thoracoscopy is performed early in the course of empyema and advisable in particular for frail patients at high surgical risk (Grade C).**
- **Thoracoscopic forceps lung biopsy is indicated in in patients with pleural effusion and associated lung disease (Grade C).**
- **Thoracoscopic forceps lung biopsy is indicated to evaluate the visceral pleura involvement in mesothelioma (Grade C).**
- **Thoracoscopy can safely be performed by trained interventional pulmonologists (Grade C).**
- **Thoracoscopic sympathectomy carried out in specialised centres with sufficient expertise in close collaboration with thoracic surgeons (Grade C).**



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