

VIDEO THORACOSCOPY: ROUTINE APPLICATION FOR RECURRENT SPONTANEOUS PNEUMOTHORAX

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Video thoracoscopy is a technique that allows a minimally invasive approach to common thoracic surgical problems. This article reports three patients with recurrent spontaneous pneumothorax managed by video thoracoscopic apical bleb resection and describes the surgical technique. (*J Natl Med Assoc.* 1994;86:527-529.)

Key words • pneumothorax • thoracoscopy
• video thoracoscopy

The technique of thoracoscopy was introduced by Jacobaeus more than 80 years ago.¹ Its diagnostic use was limited due to the tunnel-like field of vision for the surgeon. It was applied therapeutically for the division of pleural adhesions in collapse therapy for pulmonary tuberculosis.^{2,3} Despite this early introduction, thoracoscopy never quite reached general acceptance. However, with recent advances in video optics and instrumentation, thoracoscopy has become part of the armamentarium of an increasing number of thoracic surgeons.

Thoracoscopy with minithoracotomy and Nd:YAG laser pleurodesis has been described in the treatment of spontaneous pneumothorax.^{1,4} Imaged thoracoscopic procedures on "video thoracoscopy" recently has been introduced⁵ and theoretically should be applicable to the management of apical blebs. This article reports three patients who underwent successful apical wedge

resection of blebs and mechanical pleurodesis with the use of video thoracoscopy techniques.

OPERATIVE TECHNIQUE

After induction of general anesthesia and intubation with a double-lumen endotracheal tube, the patient is prepped and draped in the lateral decubitus position. The appropriate lung is collapsed. The pre-existing chest tube is transected to produce a pneumothorax, and the tube is then removed. A 1-cm incision is made in the anterior axillary line at the fifth interspace. A 10-mm port (Auto-Suture, US Surgical, Norwalk, Connecticut) is then inserted (Figure 1). An Olympus 10-mm telescope used for video thoracoscopy is placed within this port (Figure 2). This is attached to the light source on the video display cart (Figure 3).

A grasping forceps is inserted through a small stab wound in the mid-clavicular line at the second interspace. The apical surface of the upper lobe is examined for blebs. Once this area is identified, it is retracted with the grasping forceps. An Endo-GIA (Auto Suture) (Figure 4) is then inserted through a 12-mm port in the posterior axillary line at the fifth interspace. A wedge resection of the apex is then performed. A grasping forceps mounted with a 1-cm×2-cm piece of cautery scratch pad is inserted through the 12-mm port and is used to perform mechanical pleurodesis of the parietal pleura. Finally, a no. 32 chest tube is inserted through the posterior axillary line incision, and all wounds are closed.

CASE REPORTS

Case 1

A 33-year-old male presented with acute onset shortness of breath secondary to a complete right pneumothorax. His past history was remarkable for two episodes of spontaneous pneumothorax over the last 3

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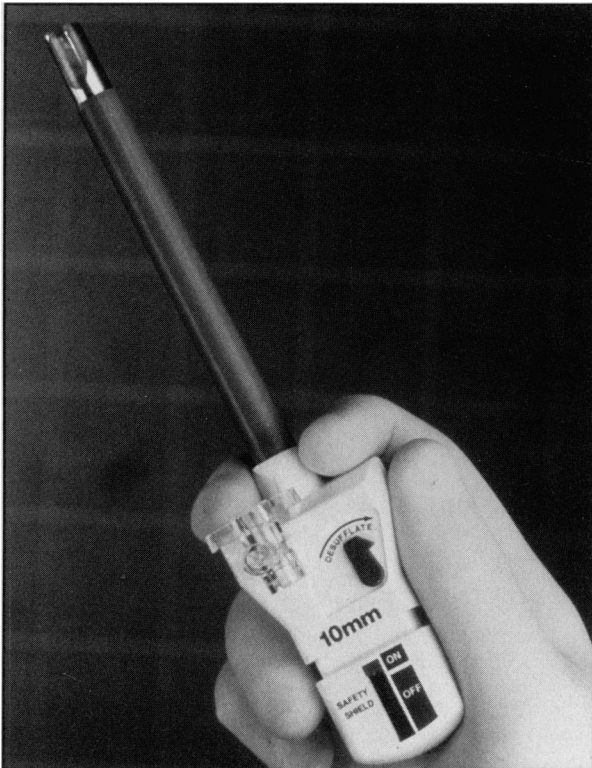


Figure 1. Auto-Suture surgical ports for use in thoracoscopic procedures.

months. A chest tube was placed, and the following day he underwent thoracoscopic bleb resection and pleurodesis. He was discharged home on postoperative day three and immediately resumed his normal activities.

Case 2

A 39-year-old male presented with shortness of breath of several days' duration. A chest radiograph revealed a left pneumothorax. The patient gave a history of an ipsilateral pneumothorax 10 months prior to admission. A chest tube was placed, and the following day he underwent thoracoscopic bleb resection and pleurodesis. Postoperatively, he had minimal serous drainage from his chest tube for several days. He remained pain free and was discharged home on postoperative day four after the chest tube was removed and returned to work within 1 week.

Case 3

A 36-year-old male presented with acute onset shortness of breath, and a chest radiograph confirmed a right pneumothorax. He had a previous right spontaneous pneumothorax 15 years ago. A chest tube was placed, and he subsequently underwent thoracoscopy bleb resection

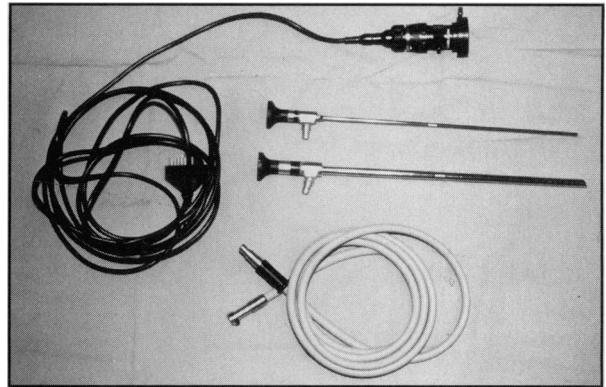


Figure 2. Olympus 10-mm telescope for video thoracoscopy.

of the right upper lobe apex and pleurodesis. His postoperative course was complicated by a persistent air leak that resolved on the seventh postoperative day. He was discharged home the following day after chest tube removal.

COMMENT

True spontaneous pneumothorax is almost always the result of rupture of a subpleural bleb or bullae. These are usually small and located in the apex of the upper lobe. Closed tube thoracostomy has been the standard of therapy. The risk of recurrence with this conservative therapy after the initial episode is roughly 30%.^{4,5} After the second and third ipsilateral pneumothorax, the risks of recurrence have been reported to be from 50% to 80%, respectively.⁵

Previously, the mainstay of therapy for recurrent pneumothorax was thoracotomy with bleb resection and parietal pleura abrasion or pleurectomy.⁵ Major thoracic procedures requiring a large incision have been associated with postoperative pain, prolonged hospitalization, and a lengthy recovery time. Patients undergoing thoracoscopic procedures generally have experienced decreased pain and a quicker recovery time.

Patients presenting with their first episode of spontaneous pneumothorax generally have not undergone bleb resection unless there is a persistent air leak or unless they are engaged in an occupation subjecting them to rapid changes in atmospheric pressure. A minimally invasive procedure such as video thoracoscopy may decrease the threshold for performing a definitive operation in patients with a first episode of spontaneous pneumothorax. Unlike a previously published report on imaged thoracoscopy in which a TA-type stapling device is inserted via a small thoracotomy under video guidance,⁶ our technique,



Figure 3. Self-contained endoscopic storage unit for video thoracoscopy. (A = video screen, B = camera, C = light source, and D = VCR.)

using an Endo-GIA, requires a much smaller thoracic incision for entry of the stapling device.

We also have used this technique to obtain lung biopsies in patients with poor pulmonary reserve in whom a thoracotomy is less desirable. A chest tube is avoided, and patients have been discharged home the following day. Others have used video thoracoscopy in the management of a solitary pulmonary nodule by performing an endoscopic wedge biopsy.⁷

The recent revival of the thoracoscope as a diagnostic

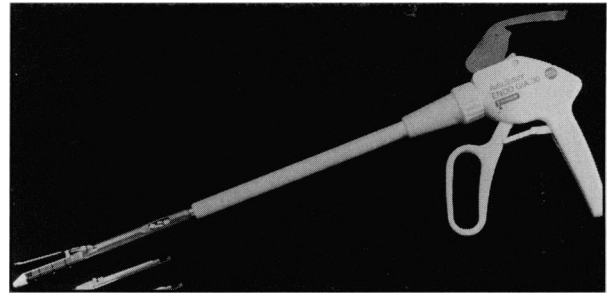


Figure 4. Endo-GIA stapling device that joins and divides tissues endoscopically.

tool has led to many new therapeutic uses. Recent publications report minimal morbidity, and its proper use can eliminate the necessity for a thoracotomy in many situations.^{1,3,7,8} In the unlikely event of a major complication or the inability to successfully complete a procedure with videoscopic techniques, one must be prepared to perform a standard thoracotomy. Therefore, this procedure should be performed only by surgeons with thoracic surgical experience. As with any new surgical procedure, progress should be made with good judgment and with the patient's best interest foremost in mind.

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