**Problem**

Bullectomy is a well-established surgical procedure which has shown to improve lung function in a well-selected patient (1-3). Though there has not been any randomized controlled trial to show the effectiveness of the bullectomy, all the data stemming from case reports and case series clearly suggest that bullectomy should be considered in a patient with a bulla occupying at least one-third of the hemithorax in the presence of compressed lung adjacent to bulla on CT imaging, and significant dyspnoea that has not responded to aggressive medical therapy (4). Still, bullectomy has not gained sufficient popularity due to the associated postoperative complications resulting in significant morbidity. Common postoperative complications include air leak, re-intubation, cardiac arrhythmia, pneumonia, and haemorrhage. Though video assisted thoracic surgery (VATS) has lowered the risk of postoperative complications and duration of hospital stay, prolonged air-leak continues to haunt the thoracic surgeon.

**Solution**

A number of options including coverage over a staple line using a pleural tent or an absorbable material (such as a polyglycolic acid sheet or nitrocellulose sheet), mechanical pleurodesis (mechanical or chemical), or reinforcement of the resection line by suturing or using staple line buttressing material wrappings (Peristrips Dry® Synovis Surgical Innovations, St. Paul, MN, USA), are available to lower the risk of postoperative air leak (5,6). Here, we describe a simple and inexpensive method of pleural tenting to buttress the staple line following thoracoscopic bullectomy to lower the risk of air leak.
No special equipment is required for fashioning the pleural tent.

Operative technique

The patent is placed in a classical lateral decubitus position with the non-operated side to be in dependent position. Two incisions are usually made—first 15 mm incision posteriorly in 7th intercostal space; the second incision of 5 mm is made in the 5th or 6th intercostal space anteriorly under direct vision following local anaesthetic infiltration. The final position of the incisions can be tailored to the position of the bullae, pleural adhesions, and intra-thoracic anatomy. Ports are dilated manually to accommodate the thoroscopic instruments. Usually 5 mm thoroscopic instruments are used so as to place multiple instruments through the same port. The position and number of the bullae are identified. At times, bullae may disappear as the lung is deflated. A gentle inflation of the lung to be operated upon would then help in the identification of the bullae. Bulla, once identified, is deflated and any adhesions with the parietal pleura are released using some electrosurgical device (either a simple monopolar diathermy or an electro-thermal bipolar vessel-sealing device like LigaSure™ (Covidien, CO, USA). The junction of the bulla and the normal lung tissue is demarcated as the stapler needs to be applied on the normal lung tissue. Thereafter, the bulla is resected with a rim of normal lung tissue using an endoscopic stapler.

After the bulla is resected, a pleural tent is fashioned to cover the staple line to prevent the air-leak. The parietal pleura is incised in line with the upper port using a monopolar diathermy down to the level of the intercostal muscle. The pleural incision extends anteriorly till the port and posteriorly till just lateral to the descending aorta on the left and the spine on the right. An extra-pleural pocket is created anterior to the superior edge of the pleura using a peanut dissector and suction-tip. The pleural edge is further held with a traction clamp and carefully teased off from the chest wall till the apex anteriorly, posteriorly and laterally. This pleural stripping has to be done gently, meticulously, and patiently to avoid any tearing as it affects the quality of the pleural tent. Any tough adhesions between the pleura and the chest wall, though rarely present, are divided using monopolar diathermy or LigaSure™. Once the pleura is completely dissected off the chest wall, it is spread over the stapler line. Haemostasis is secured over the pleural tent using monopolar diathermy. In authors’ experience, Aquamantys® System (Medtronic, Minneapolis, MN, USA), a combination of radio frequency energy and saline, is quite useful in achieving haemostasis from the raw surface of the chest wall. A single thoracostomy tube is placed underneath the pleural tent (and not over the pleural tent). The lung is then inflated ensuring that pleural tent covers the staple line adequately.

Thoracic epidural catheters can be used for postoperative pain relief. However, the authors prefer to give intercostal block and port-site infiltration (pre-emptive analgesia) using liposomal bupivacaine for postoperative analgesia.

Video

Figures 1-5 demonstrate the surgical procedure of Video-Assisted Thoracic Surgery, 2017
thoracoscopic bullectomy followed by pleural stenting to cover the staple line.

Results of series

We are in the process of publishing the results of our series.

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None.

Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

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