Cost-Effective and Surgically Effective Lung Volume Reduction Surgery

The paper by Liu et al in this issue of CHEST (see page 489) resurrects an intriguing technique for management of bullae during thoracoscopic surgery. Before the introduction of the endoscopic stapler in 1991, thoracoscopic management of blebs and bullae consisted of ligation by suture endolops. Because of some early failures, which in retrospect may have been due to usage of loops during an early stage in the surgical learning curve, this technique was quickly abandoned when the more technically simple endoscopic stapler became available.

Lung volume reduction surgery as described by Cooper et al1 using an open technique and by Keenan et al2 using a thoracoscopic approach involved bulla ligation with either an open or endoscopic stapling technique. Because of the air leaks caused by the metallic staples placed across emphysematous lung tissue, bovine pericardial strips were used to “buttress” the staple line.3 A recent randomized study by Hazelrigg et al4 showed pericardial buttressing to be effective in decreasing air leaks, which are the most common complication of lung volume reduction surgery. An alternative is the “plication” technique of David Sugarbaker, MD, FCCP (personal communication, 1996), which uses the patient’s own lung to buttress the staple line.

The technique of Liu et al is interesting because it appears to be not only a “cost-effective” technique, but also a “surgically” effective technique. Their prolonged air leak rate of 8.9% over 10 days is superior to that of any published surgical series to date. The technique, which appears to be technically simple and straightforward and able to be mastered by most thoracic surgeons who have had moderate experience in thoracoscopy, involves collapse of the bulla by stabbing and twisting. Two or three suture endolops are then placed across the base of the twisted bulla. Another interesting aspect of the technique described by Liu et al is the talc pleurodesis performed at the conclusion of the procedure.

This may be an additional component of the technique leading to the low air leak rate. One point about which many surgeons performing lung volume reduction surgery may differ, however, is in the use of postoperative chest tube suction. It is our own feeling, as well as that of many others, that no suction should be placed on the chest tubes unless it is necessary to keep the lung expanded. We have found that leaks appear to be fewer and seal quicker when no suction is used.

The technique of bulla ligation by loops described by Liu et al should be added to each surgeon’s armamentarium. It not only has the potential to decrease the $1,500 to $2,000 spent on staplers and bovine pericardium for each procedure, but it may be a useful adjunct when staple application is technically difficult.

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REFERENCES

Video-Assisted Thoracoscopy’s Anniversary

This year marks the fifth anniversary of the beginning of the new era of video-assisted thoracic surgery. During that time, nearly every type of thoracic surgical operation has been performed “through the scope.” A simple literature search yields 185 publications on thoracoscopy in the 5-year period before video-assisted thoracic surgery. In the most recent 5 years up to September 1996, there have been 591 publications on thoracoscopy and video-assisted thoracic surgery. Of course, some of these manuscripts simply introduce a new procedure, present a small series of a menu of various procedures, or extend already-published series. Even accounting for these factors, the number of publications represents a huge volume of patients operated