"Mini-Sternotomy" for Bilateral Pulmonary Wedge Resections

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A mini-sternotomy is described that allows access to both thoracic cavities. This technique offers excellent exposure for lung resections from chest cavities without the invasiveness of a formal thoracotomy.

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Comment

Minimally invasive surgical techniques have been increasingly used in cardiothoracic surgery. Thoracoscopic-assisted surgery is a common minimally invasive procedure and has been combined with median sternotomy for resection of left lower lobe lesions [1]. We did not expose the left lower lobe, since there were no lesions identified in the computed tomography. But we feel that by dividing the inferior pulmonary ligament, the left lower lobe can be mobilized sufficiently to provide access for wedge resection. We have applied the "T" type median sternotomy for minimally invasive valvular and coronary artery surgery as an alternative for bilateral thoracoscopic or open chest surgery. This technique is less expensive, can be performed in shorter operative time, and decreases standard postoperative stay. The incision preserves the integrity of the manubrium and is less invasive.

Median sternotomy incision predates coronary artery bypass graft operation by five decades [2] and was used to approach the anterior mediastinum. Use of the median sternotomy has been extensively documented for a wide range of operative procedures [2]. The first documented case of median sternotomy performed for bilateral pleural abrasion was performed in 1973 [2].

There is significant physiologic advantage comparing a median sternotomy with thoracotomy. The injury resulting from a thoracotomy incision significantly decreases chest wall compliance, which results in a decrease in key pulmonary function indices such as lung compliance, vital capacity, minute ventilation, and maximum expiratory flow rate. The overall physiologic end result of a thoracotomy incision is a hypoventilating patient with a depressed ability to expectorate secretion effectively. This deterioration of pulmonary function may last as long as 10 days [3].

Patients undergoing sternotomy preserve most of the
key pulmonary function indices. There is very little disturbance or division of the major muscle groups involved with the respiratory cycle. The change in the pulmonary function tests between thorocotomy patient and the sternotomy patient becomes statistically significant after the fourth postoperative day [3]. The "T" mini-sternotomy achieves these benefits as it results in decreased operative trauma.

We have applied "T" mini-sternotomy to a selected population for access to both thoracic cavities for multiple pulmonary nodule resections at one setting. It may also be applicable to bilateral resection of bulla and pleurodesis with less operative trauma.

References