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Hypertrophic obstructive cardiomyopathy

To the Editor:

The Journal published an article titled "Hypertrophic Obstructive Cardiomyopathy in Pediatric Patients: Results of Surgical Treatment," by Theodore, Danielson, Feldt, and Anderson (1996;112:1589-97). I would like to bring to the attention of the readers our article,¹ which in 1969 provided the longest-term follow-up of a young teenager with biventricular hypertensive hypertrophic subvalvular stenosis successfully treated by right ventricular septectomy. The patient and one sibling were deaf and mute, and the mother and three of her siblings had congenital heart disease.

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Subxiphoid tube drainage in bullectomy and lung volume reduction: A word of caution

To the Editor:

Persistent air leaks after bullectomy or lung volume reduction (more than 7 days) may be complicated by infection in the residual pleural space not yet filled by the remaining lung.

Drainage of this space must therefore be effective to facilitate the expansion of the lung. Sometimes it is necessary to leave the pleural tubes in for several days until complete resolution of the air leak and reexpansion of the lung occurs. A pleural tent may help in obliterating this space.

In bilateral lung volume reduction and bullectomy done through a median sternotomy approach, we have been placing chest tubes to drain each base of the lung and each apex. The tubes exited through the subxiphoid area, exactly as described by Cooper and associates,¹ and were placed on waterseal drainage. Recently we changed this exit location after a *Pseudomonas aeruginosa* infection of

the residual pleural cavity developed in one of our patients. Eventually the lower end of the sternum became infected as well during the gradual removal of the empyema tube.

Clinical summary. A 46-year-old man was admitted for severe apical bullous emphysema resulting from smoking, with moderately severe restriction of daily activities. Respiratory examination yielded the following results: forced expiratory volume in 1 second, 31% of predicted; forced vital capacity, 45% of predicted; total lung capacity, 101% of predicted; residual volume, 220% of predicted; arterial oxygen tension, 84 mm Hg; arterial carbon dioxide tension, 33 mm Hg; and no need for supplemental oxygen at rest or during exercise. Bronchodilators and steroids were used before the operation. A fiberoptic bronchoscope was inserted at the beginning and at the end of the surgical procedure through a single-lumen endotracheal tube to clear the bronchial tree as much as possible of secretions. A left-sided double-lumen tube was otherwise used, and through a median sternotomy incision a bilateral apical bullectomy was performed with a linear stapler reinforced with strips of bovine pericardium. A pleural tent was not used in this case. Amber Latex IV tubes, 1/4 inch $\times$ 3/32 inch (Baxter Healthcare Corporation, Hospital Supply Division, Deerfield, Ill.), were used to drain each apex and each base of the pleural space. A total of four chest tubes were used and all exited at the level of the subxiphoid area. The basal chest tubes were removed a few days after the operation, but the apical chest tubes were left in place because of the persistence of an air leak and a left apical residual cavity (approximately 10 $\times$ 8 $\times$ 6 cm), which eventually became infected with *Pseudomonas aeruginosa*. Ceftazidime and gentamicin were started without improvement in the air leak or obliteration of the residual cavity. Twenty-six days after the operation, a left osteoplasty-thoracoplasty (Björk technique) from the second to the fifth rib was performed.² This procedure greatly reduced the residual cavity but did not stop the air leak. Two days later a solution of doxycycline and lidocaine was introduced into the left apical residual cavity through the tube drainage, and within 48 hours the air leak ceased. The cavity became obliterated on the twenty-ninth day after the operation. The chest tube was converted to an empyema tube and was slowly pulled out at a rate of approximately 1 inch every 2 weeks. Two months after discharge, a 2 $\times$ 2 cm abscess developed at the lower end of the sternum. The abscess eventually drained pus infected with *Pseudomonas aeruginosa*. This chronic infection is now slowly resolving with dressing changes, and the empyema tube is almost completely removed. Surgical débridement of the bone may be necessary if the fistula to the sternum persists.

As a result of this complication we now place the drains differently. The apical chest tubes exit from the second intercostal space at the level of the midclavicular line, and the basal chest tubes exit from the seventh to eighth intercostal space at the anterior axillary line.

We favor latex tubes. Because of the possibility that they will be left in place for an extended period, their pliability is particularly convenient inasmuch as they (1) do not compress the adjacent lung that has to expand, (2) do not create decubiti at the entry site, and (3) cause less