

Surgical Technique

Technique chirurgicale

STERNOTHORACOTOMY FOR COMBINED CORONARY ARTERY BYPASS GRAFTING AND LEFT UPPER LOBECTOMY IN A PATIENT WITH LOW-LYING TRACHEOSTOMA

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A 64-year-old man had a low-lying tracheostoma and presented with unstable angina and a mass in the pulmonary left upper lobe. Simultaneous coronary revascularization and resection of the lung neoplasm were completed through a sternothoracotomy (clam-shell) incision. The advantages of this approach include excellent exposure to the mediastinum and the lung fields, and the option of using both internal thoracic arteries for bypass grafting.

Un homme âgé de 64 ans a subi une trachéostomie basse. Il a un angor instable et une masse au lobe supérieur gauche du poumon. On a procédé simultanément à une revascularisation coronarienne et à une résection du néoplasme pulmonaire en pratiquant une sternothoracotomie (en coquille). Cette méthode offre les avantages suivants : excellente exposition du médiastin et des champs pulmonaires, et possibilité d'utiliser les deux artères thoraciques internes pour le pontage.

Owing to related etiologic factors such as cigarette smoking, the rates of lung cancer and coronary artery disease are increased in patients with head and neck neoplasms,¹ such that these disorders may require simultaneous treatment. However, if the patient has undergone extensive head and neck surgical procedures with a tracheostomy, the use of a median sternotomy to perform cardiac revascularization may prove hazardous because it may not be possible to isolate the stoma from the top of the sternotomy incision. Postoperatively, this may result in serious complications such as mediastinitis. An alternative incision involves the use of a sternotho-

racotomy (clam-shell incision), an approach most commonly used in bilateral lung transplantation.² With this incision we performed both coronary revascularization and resection of a left upper lobe lung cancer in a patient with a low-lying tracheostoma after surgery for laryngeal cancer.

CASE REPORT

A 64-year-old man was admitted because of unstable angina. He had undergone partial laryngectomy for carcinoma of the larynx. Carcinoma of the hypopharynx subsequently developed necessitating a laryngectomy and partial pharyngectomy with a

permanent tracheal stoma. A tracheoesophageal fistula was created for vocal rehabilitation. A fourth head and neck primary tumour in the left oropharynx was resected and repaired with a left pectoralis myocutaneous flap. During the admission for angina, the patient underwent cardiac catheterization that demonstrated a proximal 99% occlusion of the left anterior descending coronary artery with an occluded right coronary artery and refilling of a graftable posterior interventricular branch through collateral vessels. A small lesion in the pulmonary left upper lobe was also found that on needle biopsy was identified as squamous cell cancer.

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The patient was placed in a supine position with a roll placed transversely under the middle portion of the back. A transverse incision, starting below the nipple on the right side, was extended over the left chest, following the inferior scar from the previous pectoralis flap harvest. The dissection was continued to enter both pleural cavities in the fourth intercostal space at both lateral aspects of the incision. By palpation, the pedicles of the internal thoracic arteries could be identified, and these were isolated and retracted. A Gigli saw blade was introduced around the sternum medial to the arteries, and the sternum was divided. With retraction of the superior and inferior aspects of the sternal edges, the internal thoracic arteries were then dissected. After heparinization, the vessels were divided distally and the proximal dissection was carried up to the level of the top of the first rib. In addition to exposure to the arteries, there was excellent exposure of the great vessels for cannulation. After coronary artery bypass was established, the distal posterior interventricular branch of the right coronary artery was bypassed with a right internal thoracic artery free graft, and the left internal thoracic artery was used to bypass the left anterior descending artery. The heparinization was reversed with protamine sulfate and the aortic cannula

was removed. At that point, a left upper lobectomy was completed. Bilateral chest tubes were inserted through stab incisions inferior to the lateral aspects of the sternothoracotomy incision. The sternum was reapproximated using an acetabular compression plate with 3 screws on both the cephalad and caudad aspects.

Postoperative course

The sternal incision healed well with excellent apposition of the sternal edges and a superb cosmetic result.

COMMENT

This case illustrates that a sternothoracotomy provides excellent exposure for combined procedures of the heart and lung. This incision was previously advocated by Marshall and colleagues³ as an alternative to the use of a modified median sternotomy. The novel aspects of our approach compared with that in Marshall's report involve the use of both internal thoracic arteries by careful dissection and division of the sternum with a Gigli saw. Further, we found that there was excellent exposure when the fourth intercostal space was used bilaterally as opposed to the fourth and the fifth intercostal spaces as described by Marshall and colleagues. The patient's management was facilitated by the combined procedure with resection of the left upper lobe lung can-

cer. Finally, an acetabular compression plate was inserted on the anterior aspect of the sternum in an effort to prevent sternal overriding, which is a common complication of this approach.

The sternothoracotomy, or clamshell incision, has been advocated for a variety of procedures, ranging from isolated cardiac operations to resection of bilateral lung metastases and lung transplantation.^{2,4} This report emphasizes the facility of the procedure in patients with low-lying tracheostomas as well as the excellent exposure that it provides in the operative management of these patients.

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