

An unusual approach for ascending aorta graft infection: pectoral muscle flap-wrapping via intercostal space

Çıkan aort greft enfeksiyonuna nadir bir yaklaşım:
İnterkostal aralıktan pektoral kas flep wrapping

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A 32-year-old man underwent Cabrol aortic root repair one month prior. The patient was admitted to our clinic with fever and some drainage from the upper part of the sternotomy wound. Computed tomographic angiography (CTA) revealed a periprosthetic collection containing bubbles localized in the anterior mediastinum all around the ascending aorta tube graft (Figure 1a). However, there was a graft leak in the aneurysmal sac surrounding the aortic root graft.

Although the etiology is complex, *Staphylococcus* spp (*Staphylococcus aureus* and *Staphylococcus epidermidis*) are considered the most frequent causative organisms of sternal wound infection.^[1] The other major causative of sternal wound infections is Gram-negative organisms (*Streptococcus*, *Escherichia coli*, *Serratia*, *Klebsiella*, *Acinetobacter* and *Pseudomonas*).^[1] Mediastinal wound infection caused by *Acinetobacter baumannii* after cardiopulmonary bypass is rare.^[1] Interestingly, in our case, pan-resistant *Acinetobacter baumannii* was isolated from the culture of pus. Blood culture was negative. After two weeks of antibiotherapy with tigecycline, the cultures of the drainage material became negative; however, CTA scan showed an increased size of periprosthetic collection. Consequently, the patient was scheduled for re-exploration surgery.

The infected composite grafts were replaced with a new composite graft by the Cabroll's procedure after the debridement of the surrounding infected tissues and part of the aortic annulus (Figure 1b). The sternum was left open due to the bleeding.

Copious irrigation of the mediastinum with normal saline solution containing 0.1% povidone-iodine was initiated immediately after the operation.

After irrigation for two days in the intensive care unit, the sternal closure was planned. The connections

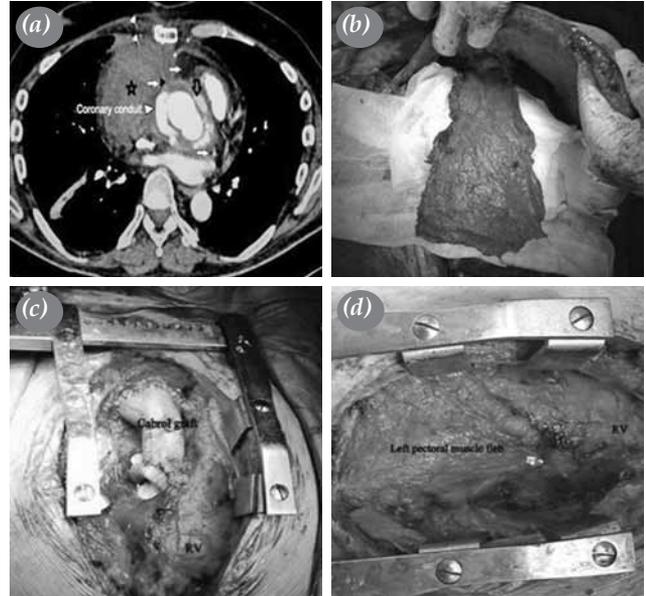


Figure 1. (a) A computed tomography scan showing mediastinitis with a large periprosthetic collection (*) with visible air bubbles (white arrows) and leaks (black arrow) surrounding the aortic prosthetic graft. (b-d) Intraoperative images showing that a pedicle of the pectoralis major flap is brought up into the chest via a second intercostal space to fill the mediastinal cavity and to surround the ascending aorta prosthetic graft.



of the left pectoral muscle to the chest wall and subcutaneous tissue and underlying pectoralis minor were mobilized using blunt dissection and diathermy. The superolateral border of the dissection of the flap was the anterior axillary fold and level of the clavicle. The tendinous insertion of the pectoralis major on the humerus was intact. The muscle flap was released inferiorly from the boundary to the rectus abdominis muscle. After the pectoral muscle was mobilized (Figure 1c), the flap was translocated into the thoracic cavity through a second intercostal window and wrapped the new Cabrol graft (Figure 1d). The patient recovered gradually without any complication. On the second postoperative week, he was eventually discharged.

The surgical treatment of thoracic aortic prosthetic graft infections in the past often involved the removal and *in situ* replacement of the prosthetic graft material itself, as well as extensive debridement and resection of all infected surrounding mediastinal tissue followed by some form of mediastinal antiseptic irrigation, broad-spectrum antibiotic therapy and occasional obliteration of the dead space by autologous tissue, frequently of the greater omentum.^[2] The pectoral muscle flap technique is simple which yields no peritoneal contamination risk contrary to the omental flaps.^[3] In case of composite graft infections, continuous mediastinal irrigation and autologous tissue transposition after the replacement of the infected composite graft should be considered to prevent the new-onset infection of the composite graft.^[3] However, in our case, there was a graft leak in the aneurysmal sac surrounding the aortic root graft.

Furthermore, the timing of the reconstruction is still controversial which depends largely on the extent of the tissue damage at the time of diagnosis.^[1] Surgical treatment is usually delayed, until reasonable control of infection is achieved;^[4] however, some surgeons

perform immediate reconstruction using muscle flaps at the initial debridement with good results.^[5]

Several studies have shown a mortality rate ranging from 0% to 18% over one year of follow-up after surgery.^[2,6] During the follow-up of 11 months, no recurrence or signs of infection were observed.

In conclusion, graft-sparing surgical technique may be preferable in appropriate most cases; however, pectoral muscle translocation into the thoracic cavity through a second intercostal window and wrapping with graft removal is a feasible and effective alternative technique for infected aortic prostheses in cases with leakage surrounding the aortic root graft.

Declaration of conflicting interests

The authors declared no conflicts of interest with respect to the authorship and/or publication of this article.

Funding

The authors received no financial support for the research and/or authorship of this article.

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