Surgical repair of an acute Stanford type A aortic dissection in a patient with a retrosternal gastric tube

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Abstract
Cardiovascular surgery in patients with a retrosternal gastric tube (RGT) remains rare despite improvements in the prognosis of oesophageal cancer. A 75-year old woman with a history of total thoracic oesophagectomy with RGT reconstruction required emergency aortic arch replacement for an acute Stanford type A aortic dissection. We opted for a median sternotomy approach involving complete dissection of the RGT from surrounding tissues and retraction for surgical access to the dissection. Enhanced computed tomography was useful for the diagnosis and planning of the emergency surgery.

Keywords: Retrosternal gastric tube • Acute Stanford type A dissection • Reoperation • Enhanced computed tomography

INTRODUCTION
Although advances in surgical and medical management of oesophageal cancer have improved the prognosis of affected patients, cardiovascular surgery for patients with retrosternal gastric tube (RGT) reconstruction remains rare. Various approaches to avoid a temporary RGT retraction have been reported, and the utility of enhanced computed tomography (CT) has been highlighted in these reports. However, all these reports have documented cases of single aortic valve replacement surgery. In this study, we describe our experience with the ascending aorta and partially the arch in a patient with RGT reconstruction, which is, to our knowledge, the first such reported case.

CASE REPORT
A 75-year old woman was admitted to our institute because of deterioration of her physical condition and chest congestion. She had a history of surgical treatment for oesophageal cancer with RGT reconstruction 3 years before. Furthermore, she was under treatment for chronic obstructive pulmonary disease (COPD) of the emphysematous phenotype for several years. Enhanced CT revealed an acute Stanford type A aortic dissection (Fig. 1). We used a median sternotomy approach, which requires the temporary retraction of the RGT, to prepare for the possibility of an aortic arch replacement. A cardiopulmonary bypass (CPB) was established via the sternotomy. We selected the femoral artery as the site for arterial cannulation and the right atrium as that for venous cannulation. When core cooling to 18°C was achieved, perfusion to the lower body was discontinued. Selective cerebral perfusion was established after transection of the ascending aorta. She underwent a partial aortic arch replacement with an artificial graft (J-Graft 28/11/9/9 mm; Japan Lifeline, Inc., Tokyo, Japan). After careful de-airing, antegrade systemic perfusion was started and the patient was rewarmed. The patient was easily weaned off CPB. An RGT was repositioned in front of the sutured pericardium. The patient was extubated 10 days after surgery, but was re-intubated 28 days after surgery because of aspiration pneumonia. Subsequently, she was re-extubated 32 days after surgery and discharged 77 days after surgery without any complications.

DISCUSSION
Despite progress in the surgical treatment for oesophageal cancer, cardiovascular surgery in patients with RGT reconstruction is still rare. Only 13 such cases have been reported, and all these reports have documented the cases of single aortic valve replacement surgery. To the best of our knowledge, ours is the first case of surgical repair of an acute Stanford type A aortic dissection in a patient with RGT reconstruction.

The approaches used in the reported cases have been varied, with median sternotomy being used in seven (including mini-sternotomy in one), left thoracotomy in three and the right parasternal approach in three. In cases of acute Stanford type A aortic dissection, if the intimal tear that served as the entry is not accurately identified, the surgeons should prepare for a total aortic arch replacement. In addition, if the dissection extends into the coronary orifice, a Bentall-type surgery or additional coronary artery bypass grafting (CABG) must be considered. Thus, the heart and the aortic arch need to be exposed in such cases.

Wakasa et al. [1] reported that a median sternotomy was unsafe in patients who have previously undergone oesophagectomy with...
RGT is bluntly dissected with relative ease. However, because Sato [3] described severe adhesions at the cervical anastomotic region of RGT and sites of diaphragmatic penetration, we particularly performed careful dissection in these sites.

Preoperative enhanced CT provided useful information for performing the surgery. Apart from diagnosing acute Stanford type A aortic dissection on preoperative enhanced CT, we were able to identify the relationship between the sternum and the RGT. In addition, we were able to identify the gastroepiploic artery and bilateral internal mammary arteries (Fig. 1A). All this information was invaluable for performing the surgery.

After dissection and retraction of the RGT, we paid particular attention to protecting the RGT considering the saburra inside. We covered the RGT with gauze saturated with normal saline. In case of operative damage to the RGT, total removal should be considered as an alternative to prevent complications, such as infection.

We confirmed the repaired aorta and preserved structures using postoperative enhanced CT (Fig. 1B). A narrowing of the RGT between the sternal notch and artificial graft was identified, despite removal of compression due to the Stanford type A aortic dissection. She was started on oral feeds similar to the protocol after oesophageal surgery.

Endovascular repair of an acute Stanford type A aortic dissection using an endograft designed for the ascending aorta has been reported [4]. However, because the intimal tear that served as the entry was at the aortic arch, this strategy could have failed. A triple-branched aortic arch stent graft for an acute Stanford type A aortic dissection has also been reported. However, this requires preceding replacement of the ascending aorta or aortic root, and the potential risks have been pointed out [5]. Moreover, a conventional approach is required in cases where replacement of the ascending aorta or aortic root is necessary.

In conclusion, we recommend our strategy of using a median sternotomy approach and retraction of the RGT for an acute Stanford type A aortic dissection in patients with RGT reconstruction.

**Conflict of interest:** none declared.

**REFERENCES**


