Case report

A 36-year-old woman with a 5-year history of progressive dysphagia was referred to our institute. Her dysphagia had progressed to the point that she could swallow only liquids or semi-solids. The barium swallow revealed notching of the upper oesophagus from an extrinsic compression, which was consistent with an aberrant right subclavian artery. Subsequently, a computed tomography angiography confirmed the aberrant origin of the right subclavian artery (Fig. 1), arising from the aorta distal to the usual left subclavian artery. The artery had a retro-oesophageal course that was causing compression of the oesophagus. Her blood pressure was equal in both upper extremities. Due to the persistence and worsening of her symptoms, surgical correction was recommended. The patient was taken to the operating room for resection and reconstructive bypass surgery.

Surgical technique

Under general anaesthesia, the patient was placed in the supine position, with a sandbag in the midline behind her shoulders, to extend her neck. Monitoring lines were placed in both the radial and right femoral arteries. A 28-Fr thoracic tube was introduced into the oesophagus for its identification. Through a right supraclavicular incision, we divided the clavicular head of the sternomastoid muscle and identified and exposed the right common carotid artery. We then located the aberrant right subclavian artery and followed its retro-oesophageal segment to its origin at the aortic arch, by retracting the oesophagus anteriorly. Injury to the brachial plexus and the right recurrent laryngeal nerve was avoided by a careful identification of these structures.

After systemic heparinization and the application of a vascular clamp, we divided, ligated and oversewed the proximal portion of this artery as close to its origin as possible. The distal portion of the right subclavian artery was trimmed, with a careful preservation of the right vertebral artery; then, an end-to-side anastomosis was made with the right common carotid artery (Fig. 2). At the end of the operative procedure, good pulses were palpated in the right radial artery.

Postoperatively, the patient was shifted from the ICU within 12 h and was able to take a regular diet without symptoms of dysphagia. The right upper extremity had a good palpable radial pulse, with the blood pressure equal to that of the contralateral side. She was discharged home on postoperative day 3.

Discussion

The most common embryological abnormality of the aortic arch is an aberrant right subclavian artery, which occurs in 0.5–1.8% of the population. As hypothesized by Edwards, this abnormal origin of the right subclavian artery can be explained by the involution of the fourth vascular arch with the right dorsal aorta. The seventh intersegmental artery remains attached to the descending aorta and this persistent intersegmental artery becomes the right subclavian artery. This leads to the aberrant artery, which often follows a retro-oesophageal course. Although most cases of this anomaly are asymptomatic, symptoms may appear when a ‘ring’ completely encircles the trachea or the oesophagus.
Extrinsic compression of the oesophagus may lead to dysphagia. This phenomenon, first reported in 1794 by London physician David Bayford, was originally described as ‘dysphagia by freak of nature’ and is commonly referred to as dysphagia lusoria.

In 1936, Kommerell described the radiological findings of this persistent route of the aortic arch as an aortic diverticulum (Kommerell’s diverticulum). The first successful repair of this anomaly was reported by Gross [1]. Early reports revealed that simple division without the restoration of blood flow, leads to weakness and ischaemia of the right arm, which can cause a reversal of blood flow from the right vertebral artery to the right subclavian artery. This phenomenon, first described by Contorni in 1960, was named subclavian steal by Reivich et al. in 1961. In 1964, Hallman and Cooley [2] recommended an arteriogram prior to the surgical repair of the congenital aortic vascular ring in adults.
Reconstitution of blood flow to a divided aberrant right subclavian artery was first performed by Bailey et al. [3]. They attached the distal end of the ligated artery to the ascending aorta proximal to the right common carotid artery. Numerous alternatives have been described. Cooley was the first to attach the distal subclavian artery to the right common carotid artery. In this case, the right supraclavicular approach was found to provide an excellent exposure for proximal ligation and distal anastomosis of the aberrant right subclavian artery to the right common carotid artery.

This technique, elegantly described by Valentine et al. [4], is a simplified version of the low cervical approach originally described by Orvald et al. [5], which required extensive dissection on both sides of the oesophagus before the ligation of the aberrant subclavian artery.

In our opinion, the supraclavicular approach provides a good exposure and rapid recovery and avoids the morbidity associated with the classically described median sternotomy or thoracotomy. We describe a case of dysphagia lusoria treated through a right supraclavicular approach. This approach has to be avoided in obese, short-necked patients, in children and probably in patients with an aneurysm of the aortic end of the aberrant right subclavian artery, in whom there may be difficulty with regard to the exposure of the vessel, as well as to control haemorrhage due to a friable proximal stump.

**Conflict of interest:** none declared.

**REFERENCES**