



A NOVEL SINGLE INCISION SURGICAL MANAGEMENT OF RETROESOPHAGEAL ABERRANT RIGHT SUBCLAVIAN ARTERY (ARSA)

Vascular Surgery

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KEYWORDS

INTRODUCTION:

Aberrant right subclavian artery (ARSA) is a rare anatomical variation of the origin of the right subclavian artery.(1) Essentially, right subclavian artery originates from the brachiocephalic artery, but in 0.4-1.8% of the general population it may arise directly from the aortic arch distal to the left subclavian artery. ARSA on its way to the right arm crosses the midline posterior to esophagus. The anomaly may be associated with some clinical manifestations such as dyspnea, stridor, dysphagia (which is called dysphagia lusoria), chest pain or fever but majority of cases with ARSA are asymptomatic.(2)

Case Summary:

A 30-year-old male presented to the Cardiothoracic and Vascular Surgery Outpatient Department at our hospital with dysphagia and recurrent episodes of vomiting which was managed conservatively with antacids.

Barium swallow indicated smooth oblique posterolateral indentation of the proximal thoracic esophagus causing narrowing of lumen at T4 s/o extrinsic compression. Contrast enhanced CT s/o aberrant right subclavian artery is seen arising as the 4th branch from the arch of aorta distal to the origin of left common carotid artery, with a small Kommerell's diverticulum at its origin. It courses behind the esophagus causing its focal compression at the level of T2-3.

Procedure: Upper mini-sternotomy, Innominate dissected, arch of aorta with all arch vessels delineated, aberrant right subclavian artery arising from dorsal portion of arch of aorta found coursing behind cervical esophagus. Aberrant subclavian artery looped, systemic heparinisation. Aberrant subclavian artery transfixied and clipped on right side of esophagus and disconnected. Stump brought on left side of esophagus. Disconnected distal end brought near the right common carotid artery. Reimplantation of Aberrant Right subclavian artery (ARSA) to Right common carotid artery in end to side fashion using 6-0 prolene suture. Heparin reversed with protamine. Hemostasis achieved. Chest closed with No 5 ethibond after placing one Right Pleural drain. Wound closed in layers.

DISCUSSION:

Aberrant right subclavian artery is a rare phenomenon, but also the most common abnormality of the aortic arch. Hanulid was first described this arterial anomaly in 1735, but its symptomatic form was first described by Bayford in 1787 as the term of "dysphagia lusoria" or the freak of nature in patients with dysphagia.(2)

Surgical management of ARSA from DTA essentially involves 2 parts: A) Division of the ARSA from DTA + management of Kommerell's diverticulum if present. B) Reimplantation of the ARSA to ipsilateral common carotid artery or Aorta after bringing the divided end to implantation from its retroesophageal course.

For each of the two steps in literature separate incisions have been discussed. We in our centre (N.S Jhajhria et al.)(3) first described a single incision technique for management of this anomalies in pediatric cases by midline hemisternotomy with extrapericardial, extra pleural dissection of the aberrant subclavian artery and implantation

into CCA in 2 cases. In adults we modified into manubriotomy for this anomaly.

Our approach has advantages to provide access to both sides of esophagus and for anastomosis of ARSA to carotid artery or ascending aorta. It provides space to retract the arch anteriorly after looping extrapericardial ascending aorta that can reach at the origin of ARSA from DTA. Dissection plane is along the posteromedial surface of aorta to reach the origin of ARSA. Also has a advantage of avoiding injury to brachial plexus as no dissection around brachial plexus as in cervical approach.

CONCLUSION:

Our novel approach gives better exposure to (keiffer) type 1 and 2 ARSA dissection and division and its anastomosis to carotid artery by single incision.



Figure 1 Barium swallow showing indentation



Figure 2 CECT showing ARSA crossing midline to right hand



Figure 3: Blue loop around the ARSA, Red loop around innominate

vein, Umbilical tape around Ascending aorta



Figure 4: Ascending aorta (umbilical tape) pulled to right side, innominate vein (red loop) pulled up, division of ARSA from descending thoracic aorta ligated with silk and transfixed with prolene



Figure 5 Divided ARSA proximal end is mobilized brought to right side of right common carotid artery

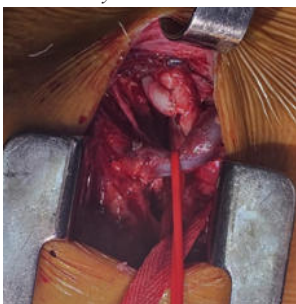


Figure 6 ARSA has been anastomosed to Right CCA



Figure 7 Line of incision after closure

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