Abstract:
Introduction- Subclavian to carotid transposition -The technique of subclavian carotid transposition (SCT) for the treatment of proximal subclavian arterial occlusive disease is gaining importance as an adjuvant for Thoracic EndoVascular Aortic Repair (TEVAR). There are two approaches regarding this procedure. Here we have shared our experience with medial approach of Subclavian Carotid Transposition with four patients. 

Abstract - The four patients were managed with subclavian transposition for proximal subclavian occlusion. SCT were done in these patients with medial approach which was associated with lesser complications. Median follow up of these patients was six months. The luminal patency of the transposed vessels was good and the peripheral blood flow in the operated upper limb was adequate. Conclusion - The subclavian artery carotid artery transposition is a durable procedure in the management of proximal subclavian artery occlusions. Hence the medial approach is associated with lesser complications and excellent long term results with patency comparing with lateral approach. Preservation of side branches of subclavian artery is possible in most cases which is important for management of IHDs and thoracic aortic pathology.

Keyword: Subclavian Carotid Transposition, medial approach, lateral approach

Paper: Aim: A case report of four patients who underwent subclavian carotid transposition for supra aortic (subclavian) trunk occlusions

In 1964, Parrot(3) described the technique of subclavian carotid transposition (SCT) for the treatment of proximal subclavian arterial occlusive disease. Since that time, the operation has not gained popularity. However, recent reports suggest that it has theoretical advantages.
and may have superior long-term patency. In 1971, Edwards and Wright (7) reported their first experience with the side-to-side anastomosis, forming the basis for the patients who were subjected initially in this report. Subsequently, the technique was modified to an end-to-side anastomosis because of more universal applicability and technical ease. This has been termed more recently as subclavian carotid transposition. It is generally agreed that proximal subclavian stenosis should be treated by an extrathoracic route whenever possible (2). However, the optimal procedure is debated (5-8). Although direct revascularization via median sternotomy or thoracotomy might be indicated occasionally, its higher morbidity and mortality have led to other procedures. Alternatives include subclavian carotid bypass (SCB) and subclavian to subclavian or axilloaxillary bypasses (1). Our preferred operative technique has been subclavian carotid transposition (SCT). This case report examined our experience with subclavian revascularization and determined the long-term patency rates of extrathoracic approaches. With the endovascular repair of thoracic aorta, there is increase in the use of transposition of subclavian artery where the subclavian artery will be disbranched and transposed for revascularisation (3).

**Methods:**

During the period from June 2011 to November 2011 i.e., for a period of 6 months, in the department of vascular surgery, GOVT. RAJAJI HOSPITAL, MADURAI, 1256 cases of arterial disease were identified. Out of them, 56 cases of upper limb ischaemia were found and examined. All the patients had been investigated with multi slice CT Angiogram (Fig.2). of which 24 needed surgical correction. We adapted the following criteria for this observation.

The inclusion criteria for this observation were

1. The patient should have symptomatic upper limb ischaemia
2. Patients with supra aortic trunk occlusion included.
3. Only patients with single vessel occlusion
4. All the patients of supra aortic occlusion with or without distal occlusion

The exclusion criteria were

5. Patients with vasogenic thoracic outlet syndrome
6. All vasospastic diseases
7. Multiple supra aortic trunk occlusions
8 Asymptomatic patients Out of 24 patients who underwent surgery for upper limb ischaemia, only 6 patients were fit into this criterion. Out of the 24 cases, we had 6 cases who underwent surgery for subclavian origin occlusion. 2 cases were excluded because in one case, carotid to subclavian bypass done and in another case, axillary-axillary bypass been done. Hence only in 4 cases, SCT done.

Procedure:
Using a transverse supra clavicular incision, starting between the 2 heads of the left sternocleidomastoid, the medial head of the sternomastoid cut open providing exposure of the common carotid and subclavian arteries. After dividing the left omohyoid muscle, the left common carotid artery was circumferentially dissected and medially mobilised. The internal jugular vein and vagus nerve were lateralised. Subclavian artery and its branches were exposed after division of vertebral vein. Once the vertebral and the internal mammary arteries were controlled, the patient was heparinised and proximal subclavian artery transacted (Fig. 3). Control of the proximal stump taken and oversewn. The inflow artery was clamped and end to side anastomosis (Fig. 4) done using 6-0 prolene (9). Sequential declamping of the vessels done to prevent carotid embolisation during this procedure. Total clamp time on all the 4 cases didn’t exceed 20 minutes and it varied between 15 -20 minutes. In all the 4 cases carotid shunting was not done.

Patient demography:
All the patients were male, younger most of the patients had age of 54yrs and older was 67 yrs. 2 patients were hypertensive and one patient was a known diabetic and other patient had a recent history of blindness which was partial not related to any vascular event.

Etiology:
All the patients were atherosclerotic. These patients had normal ESR, CRP, ANA, ANCA. All the patients were smokers. Serum lipid profile were within normal limits.

Sex
All were male patients.

All the patients were manual labourers where they had effort pain to start with.

All the patient had gangrene fingers with their finger tip involved.

OBSERVATION:
The following time were noted.
the operating time for all these procedures was 84 minutes on average.

no patient required blood transfusions except for the one who had complication and required 2 units of transfusion.

no major neurological injuries noted.
patients had good upper limb pulsations and the other patient had distal vessel occlusion and his upper limb pressure was adequate.

Follow up:
All the patients were followed up by clinical examination, pressure recordings and duplex scan examination.

Follow up: !!br0ken!!

Results:
In one patient there was an intraoperative complication of slippage of proximal subclavian artery stump, which was managed by a trap door thoracotomy and ligation of the subclavian artery stump. Intraoperatively this patient needed two units of blood transfusion and intercostal drainage for seven days postoperatively.

In another patient, there was a postoperative confusion which lasted for two hours.

The mean hospital stay of the patients was seven days except the one who needed another 10 days.

Postoperatively no neurological deficits noted in these patients.

In the follow up period these patients were examined with Doppler flow studies and they were found to be having normal carotid outflow except the one who had distal occlusion because of embolism supporting atherosclerosis. He had normal blood pressure recordings.

Discussion:
SCT is becoming an important procedure to expand the clinical applicability of TEVAR and it is a known extra-anatomical procedure for supra aortic subclavian occlusion. To assess the proximal segment of SA and CCA, a medial (10) and lateral approach (11) are described. In general, SCT is associated with excellent long term results with regard to patency. In our report of 4 patients of SCT, all the subclavian-carotid reconstructions remained patent through an followup period of 6 months. To date, no direct comparison between surgical and endovascular management of occlusion of SA exists. However, long term patency rates after SCT are superior to those of carotid subclavian bypass (1,13) and considerably superior to the results reported for endovascular intervention (14,15,16). According to previous published data, SCT is associated with a post operative complication rate of 10% to 20% (1,12,17). We observed a postoperative complication in one patient where slippage of subclavian artery occurred which was managed with subclavian ligation and blood transfusion.

In our experience, the medial approach (10) was done with a significantly lower complication rate. In this approach, dissection was needed to a lesser extent.

References:


9. Vascular surgery RUTHERFORD 6TH EDITION: 91;1306-07


