Introduction

Debranching of the left subclavian artery is often performed during thoracic endovascular aortic repair (TEVAR) of proximal descending and aneurysm-related pathology. Consequently, debranching of the left subclavian artery frequently becomes necessary in such a setting, most commonly involving a left subclavian artery bypass. The technique was first described by Lyon and Galbraith in 1953. Since then, several modifications have been published. In a comprehensive review published 15 years later, the authors concluded that left subclavian artery revascularization for management of aneurysmal disease and, more recently, the concept of TEVAR procedure when re-orienting the vessel flow, are creating a new field of surgical complexity and potential complications, such as graft type and functional outcomes. As an alternative to stenting, left subclavian artery revascularization in terms of efficacy and durability, with the additional benefit of anatomic and functional advantages—would benefit the patient more. Among the alternative revascularization strategies to be considered is the use of bypass surgery, which can be a safer and more effective option. Below are the various options available:

- C-S bypass
- C-A bypass
- S-S bypass
- A-A bypass
- S-C transposition

Z-2 TEVAR = 40%

Debranching/Revasc the LSA:

- C-S bypass
- C-A bypass
- S-S bypass
- A-A bypass
- S-C transposition

DISCLOSURE

Frank J Criado

I have the following potential conflicts of interest to report:

- MEDTRONIC: Consulting and Sales Training

Carotid-Subclavian Bypass

1957. Lyons and Galbraith
Occlusive disease of the common carotid and subclavian arteries treated by carotid-subclavian bypass

Analysis of 125 cases

1957: Lyons and Galbraith

1967: Diethrich et al.

Risks with Left Carotid-Subclavian Bypass

- Nerve injuries
- Lymphatic complications
- Wound healing complications
- Stroke
- Death

- 5-11% overall


Carotid-Subclavian Bypass

1957: Lyons and Galbraith

1967: Diethrich et al.

Carotid-Axillary Bypass

1973: Shumacker

Carotid-axillary artery bypass: A ten-year experience

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Purpose: The purpose of this study was to review our 10-year experience with carotid-axillary bypass in the treatment of occlusive disease of the proximal subclavian artery. Methods: Our 10-year experience with 26 carotid-axillary bypasses for occlusive disease of the subclavian artery was reviewed retrospectively. The review focused on the indication for the operation, the surgical technique used, and the development of immediate and late postoperative complications. Long-term bypass graft patency and clinical states were determined on the basis of information obtained from the office records of all patients. Only three patients were lost to follow-up at 13, 30, and 48 months.

Results: There were no operative deaths. Two patients had small cervical wound hematomas, and two others experienced transient symptoms of brachial plexus irritation, which subsided spontaneously. Permanent nerve or sympathetic complications did not occur. In a mean follow-up of 37 months, carotid-axillary bypass graft patency was 90%.

Conclusions: This retrospective review demonstrates that a carotid-axillary bypass performed under the described technique is a feasible procedure and can be considered a reasonable alternative to the more standard carotid-subclavian bypass for the same indication. (J Vasc Secf 1999;22:57-53.)

Fig. 3. Life-table graph of carotid-axillary bypass graft patency
Combined CEA and Carotid-Axillary Bypass

**Advantages**
- Avoid lymphatic/nerve injuries
- Familiarity with ax art exposure
- Results equivalent to CSB

**Disadvantages**
- Two incisions
- Infraclavicular routing
Disadvantages

• Two incisions
• Infraclavicular routing
• Unable to ligate prox LSA

Summary

• Carotid-subclavian bypass is the acknowledged standard for left subclavian artery revascularisation, as it has been embraced by most surgeons performing these procedures.

• The carotid-axillary technique has been found to be an appealing and possibly superior technical option, offering an easier technical operation and avoidance of potential injury to the phrenic nerve and thoracic duct.

• Potential disadvantages of the carotid-subclavian bypass include the need for two incisions and the use of a longer graft conduit, but these have not been found to be detrimental in any way.

• The technical inability to perform proximal left subclavian ligation during carotid-axillary bypass is felt to constitute an actual advantage, as the potential for misplacing such ligature distal rather than proximal to the origin of the vertebral artery is eliminated altogether.

Carotid-axillary bypass may be a better surgical option for revascularisation of the left subclavian artery in zone 2 TEVAR

THANK YOU!