Subclavian vein reconstruction using tubularised bovine pericardium with adjunctive arteriovenous fistula creation after oncological resection

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INTRODUCTION

After resection of veins, reconstruction or bypass is required. Currently, there is **no consensus on the best material** for vessel reconstruction.

Since **synthetic prostheses often produce poor results** when used as venous substitutes, the search for improved materials is still ongoing[1, 2].

BOVINE PERICARDIUM

Bovine pericardium (BP) confers various **advantages**, including:

low cost	immediate availability	ability to precisely customize its diameter	high biocompatibility	resistance to infection[3]

Tubularised pericardium was first described in 1985[4]. However, its use for major venous reconstructions in literature has been extremely **limited**.

To our knowledge, there has been no report of subclavian vein reconstruction using tubularised BP.

PATIENT DESCRIPTION

- A 63 year-old lady with no significant past medical history presented with a **right neck lump** for 2 weeks.
- Examination revealed a **right firm supraclavicular lump** measuring 2 x 3 cm.

- Fine needle aspiration of the abnormal right cervical lymph node revealed a **metastatic carcinoma with papillary features**, favouring a thyroid primary. This was confirmed with an incisional biopsy.
- There was no definite evidence of distant metastases on PET-CT.

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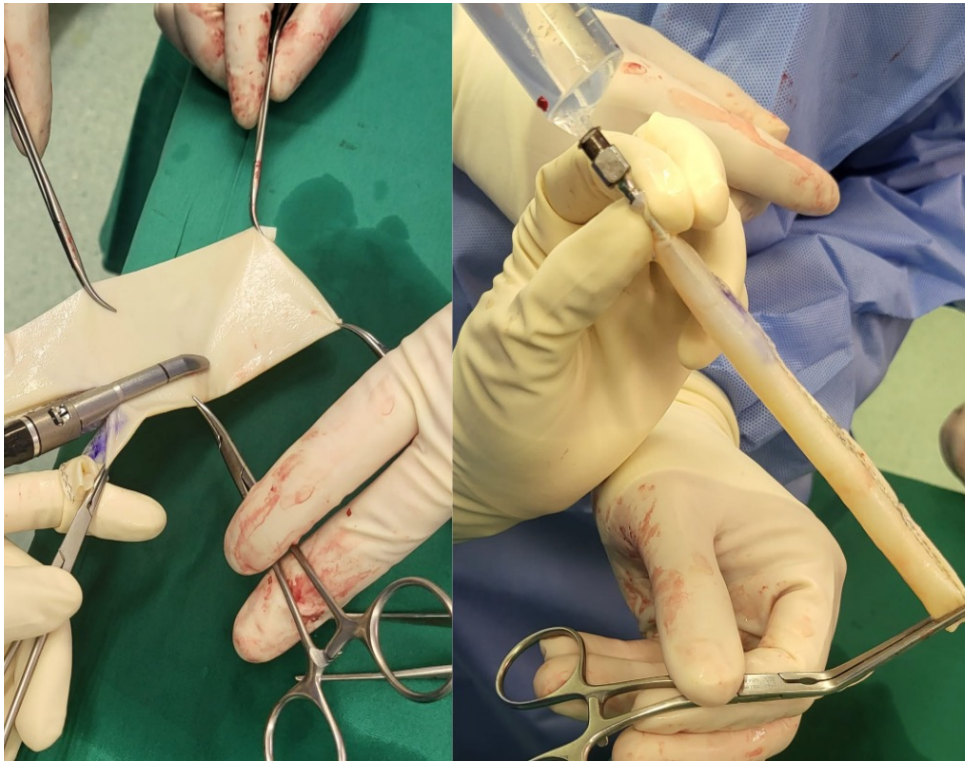

Fig. 1 Construction of the 1cm diameter pericardial conduit with vascular stapler echelon flex white reloads

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- The subclavian vein then was re-anastomosed to the IJV more cephalad (Fig. 2).

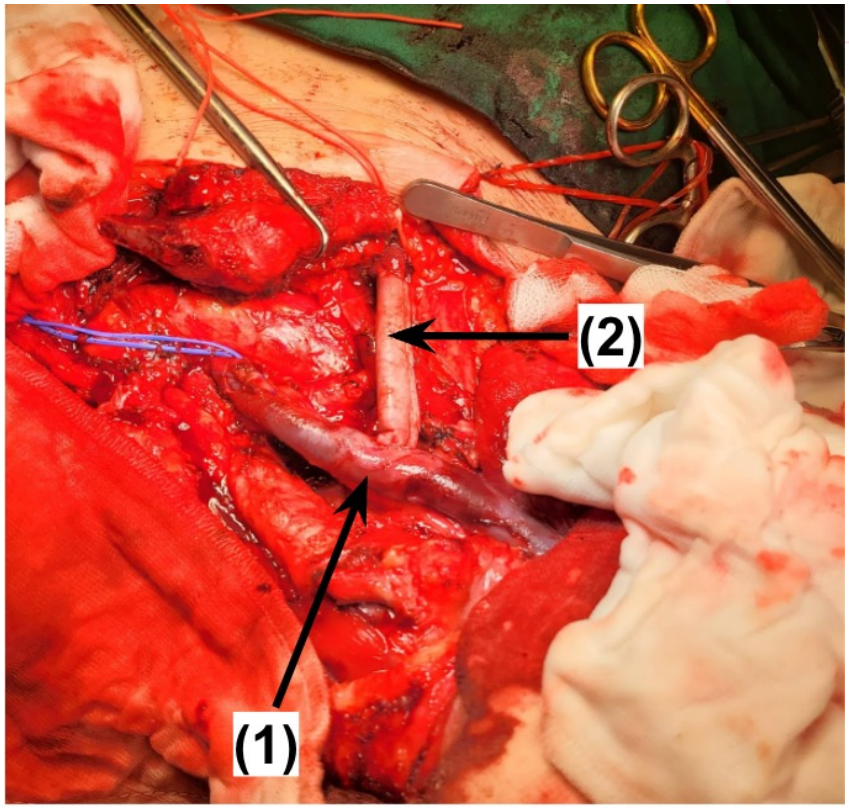

Fig. 2 Intraoperative image showing the reconstructed right subclavian vein with tubularised bovine pericardium (2), anastomosed to the IJV (1)

INTERVENTION

- In view of the low flow in the BP graft, a decision was made to perform a **right brachio-basilic arteriovenous fistula (BB-AVF)** to increase the subclavian venous return.
  - The patient's basilic vein was chosen as her cephalic vein was too small.
- There was good forward flush and backbleeding, with hemostasis achieved. A good thrill was felt at the end of the operation.

- The patient's recovery was uneventful and she was discharged well on postoperative day 10.
- The graft remained patent 9 months post-operatively.

DISCUSSION – SUBCLAVIAN VEIN RECONSTRUCTION

- Tubularised BP has shown **excellent long-term results** when used for reconstruction of large vessels such as the vena cavae[1, 5, 6, 7, 8].
- The longitudinal suture was done using a **stapler** instead of hand suturing as it is quicker, easier, and confers a more regular shape to the reconstructed vein[1].
- Other biologic grafts including spiral saphenous vein were not considered as the patient had a small long saphenous vein. . Furthermore, vein harvesting extends the operating time, thereby increasing the risk of site infection.
- Polytetrafluoroethylene (PTFE) synthetic graft was not preferred due to the need for long-term anticoagulation[9].

DISCUSSION – ADJUNCTIVE AVF

- The use of a distal AVF to increase long term venous graft patency is a debated topic in literature[10, 11].
- A 2016 meta-analysis found that those undergoing synthetic grafting with AVF experienced a **lower reintervention rate** than those without AVF, suggesting that AVF may have a role to play in reducing graft occlusion[12] Furthermore, the AVF intervention was **not** associated with increased complications or mortality.

CONCLUSION

We present a case of successful reconstruction of the right subclavian vein using tubularised BP after oncological resection, followed by creation of a right brachio-basilic AVF to improve graft patency by increasing venous flow into the subclavian vein.

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THANK YOU!