

TECHNICAL NOTE

Transobturator Bypass Utilizing Fluoroscopic Guidance

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Introduction: Transobturator bypass is an older and less frequently performed revascularization of the lower extremity that is useful in the setting of multiple failed lower extremity bypasses usually due to groin sepsis and infection(s). It can be a technically challenging operation due to anatomic constraints.

Report: We describe a successful transobturator bypass utilizing fluoroscopy for passage of bypass tunneler and graft through the obturator foramen.

Discussion: Live fluoroscopy is a versatile technique and in conjunction with our described surgical technique of lower extremity bypass should help increase the technical success rates of this procedure.

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Article history: Received 18 June 2016, Revised 12 September 2016, Accepted 1 October 2016,

Keywords: Obturator, Transobturator, Bypass, Technique, Fluoroscopy, Revascularization

INTRODUCTION

Obturator bypass was originally described by Shaw and Baue in 1963,¹ and remains a viable adjunct to lower extremity revascularization, particularly in the setting of groin sepsis. It remains a challenging operation technically with passage of grafts through the tight confines of the obturator foramen. Dacron, saphenous vein, polytetrafluoroethylene, bovine grafts, and human umbilical vein have all been described as conduits.²

Herein is described the transobturator bypass utilizing fluoroscopy for passage of bypass grafts. This may be a helpful technique when dissection is difficult or when difficulty passing the bypass tunneler is encountered as a result of abutment against bone due to the tight tissues of the obturator canal.

SURGICAL TECHNIQUE

Transobturator bypass graft was considered in a 65 year old woman with a history of removal of a prior prosthetic left femoral to above knee popliteal artery bypass graft due to groin sepsis. The patient presented several years later with ischaemic rest pain in the left lower extremity. The patient's

left groin was heavily scarred from previous bypass operations, including removal of the infected graft 7 years earlier. Pre-operative angiography was consistent with widely patent left common and external and internal iliac arteries; and occluded common and superficial femoral, and popliteal arteries with widely patent collaterals to a patent above knee popliteal to dorsalis pedis vein bypass graft originating at the adductor canal and extending medially and extra-anatomically.

The patient was placed in a supine position with the left lower extremity externally rotated, abducted, and flexed at the knee to relax the thigh muscles. Obturator bypass was approached through a left retroperitoneal flank incision exposing the iliac vessels. The obturator foramen was identified at the superior apex of the obturator fossa. The avascular area of the obturator membrane was identified medial to the artery and vein, and the location where the graft was to be placed medial to the obturator nerve and vessels was incised. A vertical counter incision was made on the antero-medial thigh with the sartorius muscle retracted laterally and the adductor longus muscle identified with the superficial femoral artery exposed. The site of the distal anastomosis was then selected for the proximal popliteal to dorsalis pedis vein graft.

There was difficulty passing a graft tunneler through the obturator foramen, owing to abutment against the ischial tuberosity. A C-arm was then positioned over the area and confirmed passage of the graft tunneler in multiplanar views under live fluoroscopy (Fig. 1). Utilizing a long bypass tunneler under live fluoroscopy, tapes were utilized to pass a graft directly through the canal.

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<http://dx.doi.org/10.1016/j.ejvssr.2016.10.001>

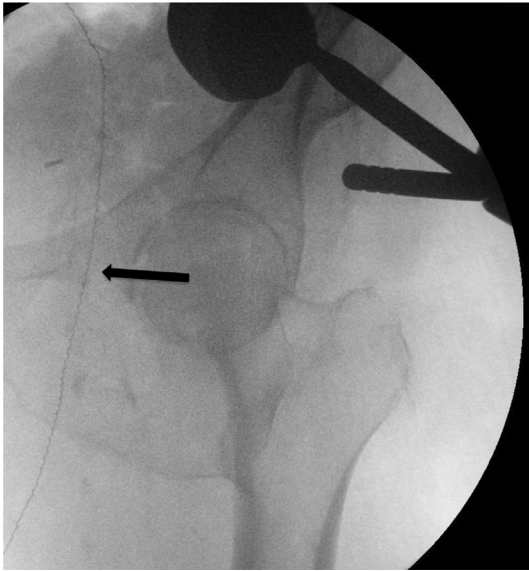


Figure 1. Intra-operative 20° left anterior oblique fluoroscopic image during transobturator bypass showing umbilical tape (arrow) passed through the obturator foramen prior to passage of a polytetrafluoroethylene graft. Several fluoroscopic views were utilized, confirming presence within the obturator canal, and the graft was then easily passed.

DISCUSSION

In closing, in a scenario where it is difficult to pass a bypass tunneller or when difficult dissection is encountered, the

transobturator bypass under fluoroscopy allows for confirmation of passage of the bypass tunneller prior to passage of the bypass graft through the correct anatomical plane of obturator canal. This technique can be performed in both a trans-abdominal or retroperitoneal approach and might help eliminate kinking or incorrect passage of bypass conduits or additional complications such as venous hemorrhage, nerve injury and paralysis, graft kinking, and bowel perforation, as described by Nevelsteen.² Multiple fluoroscopic views may be utilized to help confirm correct passage through the anatomical plane of the obturator canal.

CONFLICT OF INTEREST

None.

FUNDING

None.

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- 2 Nevelsteen A, Mees U, Deleersnijder J, Suy R. Obturator bypass: a sixteen-year experience with 55 cases. *Ann Vasc Surg* 1987;**1**: 558–63.