Case Report

Turkish Journal of Vascular Surgery 2019;28(3):191-193

DOI: 10.9739/tjvs.2019.261
www.turkishjournalofvascularsurgery.org

Long-term outcomes of unilateral iliac stenting and femorofemoral crossover bypass for bilateral extensive iliac disease

Zia Ur Rehman

The Aga Khan University, Department of Surgery, Karachi, Pakistan

ABSTRACT

In recent years, hybrid procedures are routinely used in high-risk patients with severe aortoiliac occlusive disease. However, little is known regarding their long-term results, particularly in developing countries. Herein, we report three cases of bilateral severe iliac artery stenosis presenting with critical limb ischemia. All these patients underwent unilateral iliac artery stenting with femorofemoral crossover grafting. All patients had smooth recovery and demonstrated complete resolution of symptoms. The patients were symptom-free with patent grafts during a mean follow-up of four years.

Keywords: Femorofemoral bypass grafting; graft patency; iliac stenosis.

For severe aortoiliac occlusive disease, conventional approach is aortobifemoral bypass (ABF) grafting in low-risk patients.[1] The early patency of ABF for critical limb ischemia is up to 100% and decreases to 87% at five years.[1] It is associated with major perioperative morbidity and mortality.[1] Extra-anatomical bypasses are performed for high-risk patients who are in danger of limb loss. However, they are associated with limited patency. In patients with complete occlusion of the ipsilateral common and external iliac arteries and with contralateral iliac disease, stenting of the contralateral iliac artery with a crossover femoral-to-femoral artery bypass is an alternative to surgical ABF.[2] These hybrid procedures have been increasingly performed with good results.[2] They are also effective, as they need minimal surgical dissection and exposure and with less physiological disturbance, although their durability is still under observation. There are scanty data regarding the long-term patency of these procedures, particularly in developing countries. Herein, we present three cases of ipsilateral iliac stenting and femorofemoral crossover bypass (FFB) for critical limb ischemia with their long-term follow-up results.

CASE REPORT

All patients presented with critical limb ischemia. The details of patients are given in Table 1. All patients underwent unilateral iliac stenting in radiology suite followed by FFB in the operation theater. The latter was performed under general anesthesia. Standard groin dissection was done to expose the femoral arteries. An externally supported polytetrafluoroethylene (PTFE) graft (6 or 8 mm in size) was used as the conduit. The graft was placed into the suprapubic subcutaneous space. In all patients, FFB was performed immediate after stenting on the same day. Restoration of the circulation was confirmed with palpable distal pulses at the end of the procedure. Postoperatively, all patients had smooth recovery. During a mean follow-up of four years, all patients had patent grafts with asymptomatic limbs. At discharge, at six months, and

Received: September 03, 2018 ***Accepted:*** September 24, 2018 ***Published online:*** October 22, 2018

Correspondence: Zia Ur Rehman, MD. The Aga Khan University, Department of Surgery, Stadium Road, P.O. Box 3500, 74800 Karachi, Pakistan.
e-mail: ziaur.rehman@aku.edu

Citation:
Rehman ZU. Long-term outcomes of unilateral iliac stenting and femorofemoral crossover bypass for bilateral extensive iliac disease. Turk J Vasc Surg 2019;28(3):191-193.

annually thereafter, all patients had ankle-brachial index measurements.

DISCUSSION

The ABF grafting has remained the mainstay of treatment for symptomatic aortoiliac occlusive disease, being both durable and effective.[3] The patency rate of ABF is about 85 to 90% at five years.[4] However, it is an extensive surgical procedure with a high rate of associated complications (4 to 20%) and a mortality rate of 3 to 5%.[3] Hybrid procedures have emerged as a method of revascularization in patients with critical lower extremity ischemia having multilevel arterial occlusive disease.

In the literature, for unilateral iliac disease, FFB has both good short and long results;[5] however, in practice, iliac disease is usually more extensive rather than focal, involving both the iliac orifices in most of cases. It may compromises the patency of FFB. Earlier reports showed significant donor iliac stenosis as a risk for subsequent FFB failure.[6] The advent of endovascular techniques for the treatment of arterial occlusive disease has expanded the anatomical profile of patients deemed suitable to undergo FFB. Patients with donor inflow disease are anatomically eligible for a concomitant endovascular intervention at the time of surgery. Despite this evolution in practice, the reports of outcomes of FFB with an ipsilateral intervention remain somewhat limited. Previous reports have shown mixed results using donor iliac intervention in conjunction with FFB for patients with bilateral aortoiliac occlusive disease. Lopez-Galarza et al.[7] documented the associated five-year primary patency as 51% in a review of 18 patients who underwent FFB grafting with adjunctive iliac stenting in the setting of stenosis shorter than 3 cm.[7] Aburahma et al.[6] reported a series of 41 patients who underwent FFB, in whom 92% underwent iliac stenting in the setting of iliac lesions >5 cm in length, compared to with 14% who underwent associated stenting in the setting of a lesion <5 cm in length. For the durability of crossover grafting, it is important to handle contralateral iliac disease. There are series showing that selected iliac artery stenting has also improved the outcome of crossover bypass in patients with a suboptimal donor iliac artery.[8] Similar results were duplicated in our case patients.

Furthermore, conduit for FFB is always a concern in terms of its long-term results. We used the PTFE as conduit in all patients. We believe using native venous

Table 1. Details of patients treated with unilateral iliac stenting and femorofemoral crossover bypass grafting

Patient	Age (years)/Gender	Co-morbidities	Presentation	Pre-operative investigation	Size of iliac stent	Graft material	Primary patency (months)	Secondary intertervention	Limb salvage	Outcome
1	83/Female	Hypertension DM CKD Ex-smoker	Tissue loss	CTA	Self expanding 10×94 mm nitinol	8 mm PTFE	48	No	Yes	Alive and well, graft patent
2	60/Male	Hypertension DM IHD Congenital solitary Kidney Smoker	Rest pain	CTA	Self expanding 8×120 mm	6 mm PTFE	56	No	Yes	Alive and well
3	63/Male	Hypertension DM Smoker	Rest pain	CTA	Self expanding 14×80 mm	8 mm PTFE	46	No	Yes	Died (MI), graft patent

DM: Diabetes mellitus; CKD: Chronic kidney disease; CTA: Computed tomography angiography; PTFE: Polytetrafluoroethylene; IHD: Ischemic heart disease; MI: Myocardial infarction.

grafts may add more operative time and can be at the cost of associated wound morbidity.

In conclusion, early and long-term results are encouraging with donor iliac stenting with FFB bypass in patients with symptomatic severe bilateral iliac disease.

Declaration of conflicting interests

The author declared no conflicts of interest with respect to the authorship and/or publication of this article.

Funding

The author received no financial support for the research and/or authorship of this article.

REFERENCES

1. de Vries SO, Hunink MG. Results of aortic bifurcation grafts for aortoiliac occlusive disease: a meta-analysis. J Vasc Surg 1997;26:558-69.
2. Aho PS, Venermo M. Hybrid procedures as a novel technique in the treatment of critical limb ischemia. Scand J Surg 2012;101:107-13.
3. Sachwani GR, Hans SS, Khoury MD, King TF, Mitsuya M, Rizk YS, et al. Results of iliac stenting and aortofemoral grafting for iliac artery occlusions. J Vasc Surg 2013;57:1030-7.
4. Chiu KW, Davies RS, Nightingale PG, Bradbury AW, Adam DJ. Review of direct anatomical open surgical management of atherosclerotic aorto-iliac occlusive disease. Eur J Vasc Endovasc Surg 2010;39:460-71.
5. Park KM, Park YJ, Kim YW, Hyun D, Park KB, Do YS, et al. Long Term Outcomes of Femorofemoral Crossover Bypass Grafts. Vasc Specialist Int 2017;33:55-8.
6. Aburahma AF, Robinson PA, Cook CC, Hopkins ES. Selecting patients for combined femorofemoral bypass grafting and iliac balloon angioplasty and stenting for bilateral iliac disease. J Vasc Surg 2001;33:93-9.
7. Lopez-Galarza LA, Ray LI, Rodriguez-Lopez J, Diethrich EB. Combined percutaneous transluminal angioplasty, iliac stent deployment, and femorofemoral bypass for bilateral aortoiliac occlusive disease. J Am Coll Surg 1997;184:249-58.
8. Criado E, Burnham SJ, Tinsley EA Jr, Johnson G Jr, Keagy BA. Femorofemoral bypass graft: analysis of patency and factors influencing long-term outcome. J Vasc Surg 1993;18:495-504.