Original Research Article

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A study on surgical intervention outcomes in chronic aorto iliac occlusion

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ABSTRACT

Background: Aorto-iliac occlusion is an advanced and late manifestation of the atherosclerotic vascular disease. Patients with this complicated and frequently multi-level disease can present with debilitating symptoms ranging from life-limiting claudication to limb-threatening ischemia. To study the results of Surgical management and complications of Aortic surgery in a patient with chronic, aortoiliac occlusion.

Methods: Our study of 22 cases, 12 patient underwent aortic bi femoral bypass, 08 cases underwent aortobi-iliac bypass and 2 of them aortic endarterectomy. This entire patient had a 64 slice CT angiogram of aorto with bilateral lower limb and offered surgical treatment after explaining the risk and complication of surgery. All patients followed post op with the clinical examination, ABI, duplex once a month.

Results: 19 patients had a patent graft at the end of the study period. The primary patency of 86%. 2 patient had graft thrombectomy, 1 patient had graft thrombectomy with extension bypass, hence the secondary patency was 95%.

Conclusions: The spectrum of aortoiliac occlusive disease ranges from short, simple stenosis to long, complete occlusions, with treatment options that vary accordingly from minimally invasive endovascular procedures to major open surgical intervention.

Keywords: Angiogram of aorto with bilateral lower limb, Chronic aorto iliac occlusion, Hypertension, Smoking

INTRODUCTION

Aortoiliac occlusive disease is the blockage of the main blood vessel-likeaorta and iliac arteries body, or the iliac arteries. The iliac arteries are the main branches of the aorta. This blockage is typically caused by a build-up of plaque within the walls of aortabi-iliac artery level. The aorta and iliac arteries are the second most common blood vessels to be affected by peripheral arterial disease (PAD) after the blood vessels in the thigh. PAD occurs in 12-20% of people over the age of 65.2 Patients with chronic aortoiliac occlusion commonly present with gluteal claudication, erectile dysfunction and gangrene, nonhealing ulcer and tissue loss associated with rest pain of lower limbs. Investigations like segmental ABI,

Duplex, CT angio, MR Angiography, Digital subtraction angiography to assess the extent of lesion also help in deciding the optimal treatment in these cases.⁴ Common patients are with a history of diabetes, hypertension, hypercholesteremia and tobacco use. Aortoiliac disease begins usually at the aortic terminus or at the common iliac artery origin and then progress proximally and distally.⁵ These lesions are amenable for surgical treatment. Advancement in surgical techniques, modern grafts, anesthesia, and ICU care help in low morbidity in chronic aortoiliac occlusion.⁶ Surgical bypass with graft remains the most effective means of revascularization method. Other options like direct anatomical reconstruction, extra-anatomical reconstruction, and endovascular treatment can be attempted.⁷

METHODS

The study was conducted in Thanjavur Medical College for a period of 1 year from July 2017 to July 2018. Our study of 22 cases, 12 patient underwent aorto bi femoral bypass, 08 cases underwent aorto bi-iliac bypass and 2 of them aortic endarterectomy. This entire patient had a 64 slice CT Angiogram of the aorta with bilateral lower limb and offered surgical treatment after explaining the risk and complication of surgery. Inclusion Criteria: Patient with aortoiliac occlusion presenting with incapacitating claudication, rest pain and tissue loss were offered surgical treatment.

Exclusion criteria

Patient presenting with abdominal aortic aneurysm with aortic occlusion aortic dissection, acute lower limb ischemia are excluded from the study. All these patient underwent routine investigations, pulmonary function test, echocardiogram, and a cardiologist opinion was obtained. This entire patient had a 64 slice CT Angiogram of aorto with bilateral lower limb and offered surgical treatment after explaining the risk and complication of surgery. All patients followed post op with the clinical examination, ABI, Duplex once a month.

Aortobifemoral bypass technique

The femoral vessels are exposed through the bilateral longitudinal incision, The PTFE or Dacron graft limbs coursed through the retroperitoneal tunnel to reach the femoral region and anastomosed to both femoral arteries. Infrarenal aortic exposure is often performed through a transperitoneal approach via a longitudinal midline laparotomy, although some prefer a transverse incision. If end-to-side repair is to do, exposing and controlling all relevant lumbar or accessory renal arteries before performing the aortotomy is needed to avoid back bleeding. The aorta should be palpated to identify the optimal sites for application of the cross-clamp. Bifurcated grafts measuring 18 x 9 mm or 16 x8 mm are used for male patients; grafts measuring 14 x 7 mm or 12 x 6 mm are usually suitable for female patients. For patients with normal femoral artery and distal runoffs, a longitudinal arteriotomy limited to the distal CFA is sufficient. More commonly, an extension of the arteriotomy across the profundafemoris origin and profundaplasty would be necessary. The distal anastomoses are completed in a beveled end-to-side fashion using 5-0 polypropylene, carrying out retrograde and antegrade flushing maneuvers before completing the anastomoses and restoring the flow. It is important to inform the anesthetic team before clamp release, to combat blood pressure drop with reperfusion.

Aortoiliacendarterectomy technique

Patient with incapacitating claudication, rest pain, and tissues loss is taken up for open surgery. Claudication or

rest pain patients usually require only a single-stage inflow operation, and simultaneous staged inflow and outflow revascularization should be considered. Proper informed consent explaining the benefit and risk of the procedure were taken before the surgical procedure. Endovascular procedures are provided to the patient with TASC A and TASC B Lesion. Endarterectomy is suited in focal stenotic lesions, especially for younger patients or those with small vessels who are less than ideal candidates for endovascular therapy, aortobifemoral grafting, and patients with erectile dysfunction. Longitudinal arteriotomy made that allows direct visualization of both endpoints as well as the entire endarterectomized surface: this technique is most commonly used for disease limited to the aorta and common iliac arteries. Extraction, eversion, and semiclosed methods are the other variants.

RESULTS

In our study population of 22 cases 12 patient underwent aortic bi femoral bypass, 08 cases underwent aortobi-iliac bypass and 2 of them aortic endarterectomy. The patients were categorized into 4 groups 35-45 yrs. group had 2 cases, 45to 55 yrs. group had 4 cases, the 55 to 65 yrs. group had 11 cases, 65-75 year group had 5 cases. The third group (55-65) had the highest population. (50%) The mean age was 49.9 years (range from 32 to 74 yrs).

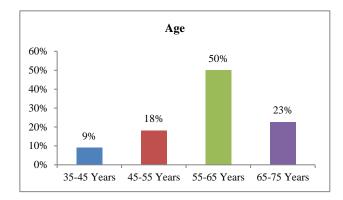


Figure 1: Age group.

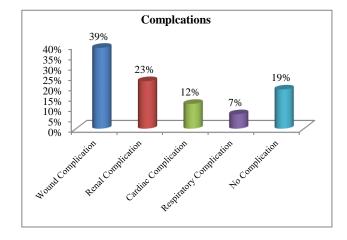


Figure 2: Wound complications.

In our study nearly 91% had smoking as the risk factor,70% had hypertension has a risk factor,50% had hyperlipidemia as a risk factor and 40% had diabetes as a risk factor. The complication in our study was, wound complication 39 %, renal complication 23 %, cardiac complication 12% and respiratory complication was 7%. Care should be taken with all wire manipulation to decrease this risk.

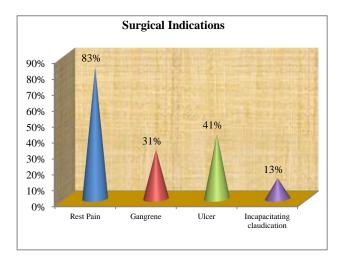


Figure 3: Surgical indications.

The indications were ischemic rest pain in 18 (83%) patient, gangrene of lower extremity in 7 (31%) patients, nonhealing ulcer in 10 (45%) patients and incapacitating claudication in 3 (13%) patients. Endovascular recanalization of aorto-iliac occlusions plays an increasing role in the management of aortoiliac occlusions, as equipment and expertise become more readily available. Detailed preoperative planning with consideration of access options, devices, and management of complications is imperative to a successful recanalization of these lesions.

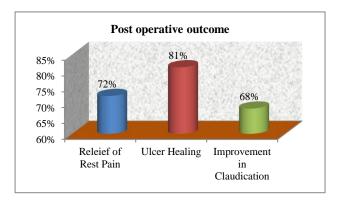


Figure 4: Postoperative outcome.

The postoperative outcome in our study was relief of rest pain in 16 patients (72%), ulcer healing in 18 patients (81%) and improvement in claudication distance in 15 (68%). Endovascular treatment of aortoiliac occlusive disease has high technical success rates of 82–98%, even in the setting of aortic occlusion. Most technical failures

are associated with failure to cross the lesion, followed by early thrombosis and iliac artery injuries. Perioperative mortality for endovascular interventions remains low, with 0% in most reports, though there are some series with mortality as high as 4%.

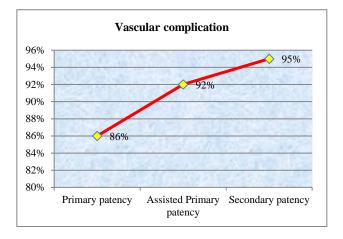


Figure 5: Vascular complication.

Out of 3 patients with graft thrombosis, 2 patients underwent graft thrombectomy and 1 had an extension bypass surgery. Hemorrhage: 1 patient had a reactionary hemorrhage on the second postoperative day, he was taken up for surgery and hemorrhage controlled. Graft patency: Primary patency: 19 patients had a patent graft at the end of the study period. The primary patency of 86%. Secondary patency: 2 patients had graft thrombectomy, 1 patient had graft thrombectomy with extension bypass, and hence the secondary patency was 95 %.

DISCUSSION

Open surgery still has a vital role in treating aorto-iliac lesions with good results, with acceptable mortality and morbidity.8 Aorto bi- femoral bypass is largest in size, since most of our cases come with ulcer /gangrene at late stages, moreover as previous studies noted that femoral anastomosis had better patency.9 Improvement in claudication distance, ABI, Ulcer healing, relief of rest pain, graft patency, a decrease in post-op complication, number of hospital stay and mortality of patients those underwent the surgery. Aortobi-iliacbypass has the advantage of avoiding the groin anastomosis, an easy tunneling of the graft and reduction in the length of the graft limb. 10 In our study most patients were male (90%), this is well in accordance witha meta-analysis of Kim et al where they had a 93% male patient in their study group.¹¹ In our study most patients belonged to the age group of 55 to 65 years, median age 51.9 years, this is well with accordance to a meta-analysis of Kim Uet al where the mean age in their study was 53 years. 12 In our study, while assessing the risk factors smoking (91.3%) was the highest risk factor followed by hypertension (70%), diabetes (40%) and hyperlipidemia (60%). 13 The commonest indication of surgery was rest pain, others

were an ulcer, gangrene and incapacitating claudication. The complication that was encountered in our study was wound complication 39%, renal complication 23 %, cardiac complication 12% and respiratory complication 7%. Optimising the respiratory status by physiotherapy, smoking cessation and bronchodilators along with aggressive post-opphysiotherapy have reduced our respiratory complications. 14 In our study patients postoperatively 72% had relief of rest pain, 81% had ulcer healing and 68% had an increase in claudication distance. ¹⁵In our study the Graft patency, primary patency was 86% and the secondary patency was 95%. In a study by Rosfors et al primary patency was 87%. ¹⁶ The primary patency in the current studies is varying from 82 to 85%. Hence our patency rates are well in accordance with other studies. Arterial duplex is another valuable imaging option for patients with renal insufficiency who cannot safely undergo CTA, as well as for the assessment of femoral and lower extremity disease. 17 Duplex, however, has its limitations, as a complete assessment of the aorta and iliac vessels can be challenging due to the patient's body habitus, bowel gas and shadowing from calcification. Nonetheless, duplex remains an important tool in assessment and planning when needed. 18 MRI is an additionally available imaging modality; however, it tends to overestimate the degree of stenosis in the presence of calcification. In our practice, angiography is only used in a therapeutic setting and not for preoperative planning. 19,20

CONCLUSION

Arto bi-femoral bypass surgeries can be considered as the first treatment for all patients with the aroto-iliac disease over endovascular approaches. The large majority of patients with the severe aorto-iliac occlusive disease have significant cardiovascular comorbidities, many of whom also have a long history of smoking, COPD and often renal insufficiency. These risk factors need to be included in decision making regarding the selection of treatment. A thorough preoperative exam and axial imaging are strongly recommended for a better outcome of the patients.

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Ethical approval: The study was approved by the

Institutional Ethics Committee

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