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OUTCOME ANALYSIS OF INFRAINGUINAL BYPASS IN PATIENTS WITH CHRONIC LIMB-THREATENING ISCHEMIA

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ABSTRACT Chronic limb-threatening ischemia indicates advanced stage of Peripheral arterial disease in which pain at rest in the foot or tissue necrosis has occurred with associated limb threat. These patients need early revascularization procedures for their limb salvage. Our study is Outcome analysis of infrainguinal bypass in patients with chronic limb-threatening ischemia. Total of 38 patients were included, most of our patients were male (86%) with main risk factors as smoking and diabetes mellitus. Patency rates and limb salvage rate were 92% and 97% respectively with no perioperative mortality. Statistically significant good patency rates were found for popliteal artery bypass when compared to tibial artery bypass. And also atherosclerosis patients had better patency rates compared to ThromboAngitis obliterans patients.

KEYWORDS : Infrainguinal Bypass, Limb Ischemia

INTRODUCTION:

Peripheral arterial disease (PAD), defined as chronic occlusive disease of the lower extremities, is a major and growing health problem, estimated to affect more than 200 million individuals around the globe[1]. Aging of the world's population, combined with diabetes, smoking, dyslipidemia, and hypertension are the critical risk factors and significant socio-economic disparities exist. Chronic limb-threatening ischemia indicates advanced stage of Peripheral arterial disease in which pain at rest in the foot or tissue necrosis (gangrene or nonhealing ulceration) has occurred with associated limb threat. These patients need early revascularization procedures for their limb salvage. This term connote a severe impairment of limb perfusion insufficient to maintain baseline tissue requirements[2,3].

MATERIALS AND METHODS:

This is a Prospective study which analyzes the outcome of infrainguinal bypass in patients with chronic limb-threatening ischemia. Those patients with chronic limb-threatening ischemia admitted in vascular surgery department during past two years (2018-2019) who underwent primary infrainguinal bypasses were included. Redo surgeries, intervention following endovascular procedures and sequential bypass cases were excluded from study. There were totally 38 patients included in the study. Average follow-up in our study was 6 months. Patients were regularly followed for wound healing, improvement in ankle-brachial index graft patency and limb salvage.

RESULTS AND DISCUSSION:

There were totally 38 patients in our study, most of them were male patients 33/38 (86.8%) with smoking (65.8%) and diabetes mellitus (39.5%) as main risk factors. Age group in our study range from 40 to 80 years with majority from age group 51-60 years (40%). Most of the procedures were supragenicular bypasses constituting 84.2 % and remaining 15.8% were infragenicular bypasses which includes outflow to 14 cases of distal popliteal artery, 5 cases of posterior tibial artery and 1 case of anterior tibial artery. Except for two cases of femoropopliteal bypass with Dacron synthetic graft , all other cases were preformed with reversed saphenous vein graft of same lower limb. Smoking was major risk factor which constituted 65.8% followed by diabetes mellitus 39.5%. Majority of patients had atherosclerosis as etiology 86.8%. Overall Patency and limb salvage rates were 92% (35/38) and 97% (37/38) respectively. Figure-1 shows the femoropopliteal bypass and femorotibial bypass done with saphenous vein graft. Several of features were shown in table-1.

Figure- 1: A) Femoropopliteal Bypass **B)** Femorotibial Bypass

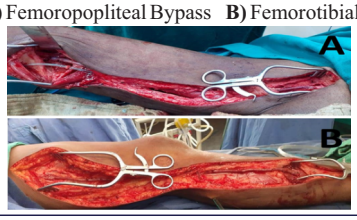

Table-1: Various Characteristics Of Patients Who Underwent Infrainguinal Bypass

S.No	Features	Number (out of 38)	Percentage (%)
1	**Gender: A)** Male	33	86.8%
	B) Female	5	13.2%
2	**Age groups: A)** 41-50 years	6	15.8%
	B) 51-60 years	15	39.5%
	C) 61-70 years	13	34.2%
	D) 71-80 years	4	10.5%
3	**Procedure: A)** Supragenicular bypass	18	47.4%
	B) Infragenicular bypass	20	52.6%
4	**Risk factors: A)**Smoking	25	65.8%
	B) Diabetes mellitus	15	39.5%
5	**Etiology: A)** ThromboAngitis obliterans	5	13.2%
	B) Atherosclerotic Occlusion	33	86.8%

Decision making in lower extremity peripheral artery disease represents one of the most challenging and nuanced algorithms in vascular surgery. Optimal management is highly individualized, tailored to patient-specific goals, factoring in clinical presentation, anatomic pattern of disease, conduit availability, functional status, perioperative risk, and long-term survival. Once revascularization is decided, open surgical lower extremity arterial bypass remains the most durable option for infrainguinal revascularization for chronic atherosclerotic occlusive disease. Although increasingly many patients are well served by endovascular therapy, it is still important to be familiar with the available techniques of lower extremity bypass so that patients aren't denied viable options for limb salvage4-6.

Infrainguinal bypass is defined as any major arterial reconstruction using a bypass conduit, whether it be autogenous or prosthetic, originating at or below the inguinal ligament. Inflow sites may include the common, deep, and superficial femoral arteries as well as the popliteal or even the tibial arteries. The bypass insertion site may be the superficial femoral, above- or below- knee popliteal, tibial, peroneal, pedal or plantar artery7, 8. In our study statistically significant good patency rates were found for popliteal artery as insertion site for bypass when compared to tibial artery bypass (100% Vs 50%). And also atherosclerosis patients had better patency rates compared to ThromboAngitis obliterans patients (100% Vs 33.3%), these were shown in detail in table-2.

Table-2: Patency With Respect To Bypass Outflow Site And Etiology

	Factors	Patent Graft	Thrombosed Graft
1)	Bypass Outflow Site: a) Popliteal Artery	32 (100%)	0

	b) Tibial Artery	3(50%)	3
		p-value 0.0024	
2)	Etiology: a) Atherosclerosis	33	0
	b) ThromboAngitis obliterans	2 (33.3%)	3
		p-value 0.0012	

There was no mortality in our study perioperatively or during followup. No peri operative complications were encountered except for serous collection in groin in three cases which recovered with drainage and antibiotics. Although graft patency and limb salvage rates are very high, major limitation in our study is shorter follow-up period of 6 months. Continuous followup for longer period will give better idea.

CONCLUSION:

Our study clearly shows infrainguinal bypass surgeries provide good patency and limb salvage rates in patients with critical limb ischemia. Also statistically significant better patency rates were found in patients undergoing popliteal artery bypass as outflow and those patients having atherosclerosis as etiology.

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