

ORIGINAL RESEARCH ARTICLE

Study of Clinical Outcome of Peripheral Vascular Disease Following Angioplasty.

Rishika Saraf¹, Shivaji Pole², D. B. Dahiphale³ & Harshul Sharma⁴

¹Chief Resident, ²Associate Professor, ³Professor & Head, ⁴Resident, Department of Radiology, MGM Medical College & Hospital, Aurangabad [MS], India.

Abstract:

Introduction: Peripheral artery disease (PAD) increases the risk for cardiovascular events. Considering benefits of Angioplasty over surgery this study was undertaken to find outcomes of a lower limb angioplasty in Peripheral artery disease (PAD).

Material and Method: All the patients undergoing lower limb angioplasty during the period of Sept 2019 to Sept 2021 were included in the study.

Result: A total of 100 angioplasties were studied. Majority of the procedures were performed in men (n=317, 67.3%). Mean age of the patient was 52.15 years with range between 32 to 72 years. Complication rate was 13(13%). However, no one required emergency operation, intervention or a blood transfusion

Discussion: Unfavourable outcome was found in 15% with death (1%), bypass surgery (6%), stenting (2 %), amputation (2%) and recurrence (4%). However, the proportions of critically ischaemic patients were higher amongst these without complications suggesting patient rather than technical factors as the cause of the increased unfavourable outcome.

Conclusion: Present study demonstrated that angioplasty for peripheral vascular disease can be performed efficiently in a tertiary care centre setting with minimum complications involved.

Keywords: PAD, SET.

Introduction:

Peripheral artery disease (PAD) is caused by plaque in the arteries which supply blood to the whole body. It generally is a result of systemic atherosclerosis which increases the risk for cardiovascular events. Risk groups are people with diabetes, with addiction, elderly and those with cardiovascular disease. Peripheral artery disease (PAD) is a result of build-up of plaque (fatty deposits) and calcification in the walls of the arteries. Most commonly it affects the arteries which supply blood to the legs and feet [1,2,3].

In addition to narrowing and blocking the arteries the walls are stiffen, preventing them from dilating to increase blood flow. This can result in cramping, leg pain and muscle fatigue which makes difficult in

walking affecting quality of life [4,5]. Chief symptoms in patients with peripheral artery disease (PAD) are

Intermittent claudication: It includes leg pain in the calf, sometimes in the hip, buttock muscles or lower back as well. It occurs while walking or exercising which can cause limping [6]. The pain is relieved after taking rest [7,8].

Critical limb ischemia: It is inadequate blood flow resulting in insufficient oxygen supply. It is manifested by leg pain present even at rest. There is numbness, coldness or pain in the feet and legs. There occurs non-healing leg or foot ulcers [7]. It may need limb amputation [9,10,11].

Address for correspondence:

Dr. D. B. Dahiphale,
Professor & Head,
Department of Radiology,
MGM Medical College & Hospital,
Aurangabad, [MS], India.
Email ID: rishikasaraf01@gmail.com

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However, most of the patients are asymptomatic who are at an increased risk for heart disease and stroke [12,13]. Endovascular treatment of Peripheral artery disease (PAD) nowadays involves many new as well as new generations of older devices [14,15]. Balloon Angioplasty with Stenting also called as percutaneous transluminal angioplasty is a procedure that uses a balloon tipped catheter which is advanced over a thin guide wire. It is filled with contrast fluid to push the plaque against the wall of the artery which widens the opening to increase blood flow. Some of the newer angioplasty techniques also use drug-coated balloon to reduce post-treatment cell proliferation or restenosis [16]. Considering benefits of Angioplasty over surgery this study was undertaken to find outcomes of a lower limb angioplasty in Peripheral artery disease (PAD).

Material & Method:

Patients for the present study were recruited from the angiology centre at tertiary care hospital. Patients with Peripheral artery disease (PAD) who required endovascular treatment for severe claudication or rest pain and met all inclusion criteria were selected as participants. Approval of institutional ethics committee were taken prior to commencement of

study. Written informed consent was obtained from all the participants.

Inclusion Criteria

All the patients undergoing lower limb angioplasty during the period of Sept 2019 to Sept 2021 were included in the study.

Exclusion Criteria

Patients undergoing primary stenting procedures or treated conservatively by supervised exercise therapy (SET) or treated by surgical intervention as the primary intervention were excluded

Data collected from patient records were Indications for angioplasty, cardiovascular risk factors, location, number and nature of lesions, complications of angioplasty.

Statistics Analysis:

Data analysis was performed using SPSS v15.0 (SPSS Inc, Chicago, Illinois, US). Statistical significance was assessed at the 5% level. The Kaplan–Meier method was used to assess the overall survival. A univariate analysis was performed to assess for a significant difference in factors believed to be of importance in relation to overall survival.

Observation & Results:

A total of 100 angioplasties were studied. Majority of the procedures were performed in men 317(67.3%). Mean age of the patient was 52.15 years with range between 32 to 72 years. The cardiovascular risk factor profiles are summarised in Table 1 which shows maximum patients have addiction either smoking or alcohol (47 %).

Table 1: cardiovascular risk factor profiles

Risk Factor	Present N (%)	Absent N (%)
Addiction (Smoking/Alcohol)	47 (47 %)	53 (53 %)
Diabetes	31 (31 %)	69 (69 %)
Dyslipidemia	35 (35 %)	65 (65 %)
IHD	34 (34 %)	66 (66 %)
Stroke	21 (21 %)	79 (79 %)
Renal Failure	6 (6 %)	94 (94 %)

The indications for angioplasty are summarised in Table 2 which shows almost equal percentage of Critical ischaemia (52 %) and Lifestyle-limiting intermittent claudication (48 %).

Table 2: indications for angioplasty

Indication	Number of Case (N)	Percentage (%)
Critical ischaemia	52	52 %
Lifestyle-limiting intermittent claudication	48	48 %

Distribution of type lesions subjected to angioplasty as shown in Table 3 is stenosis found in 80 % patients whereas occlusion in 20 %.

Table 3: Distribution of type lesions

Type of lesion	Number	Number of Case (N)	Percentage (%)
Stenosis	Single	55	55 %
	Multiple	25	25 %
Occlusion	Single	12	12 %
	Multiple	8	8 %

Distribution of site of lesions as summarised in Table 4 shows in maximum cases it was Superficial femoral artery 36 %.

Table 4: Distribution of site of lesions

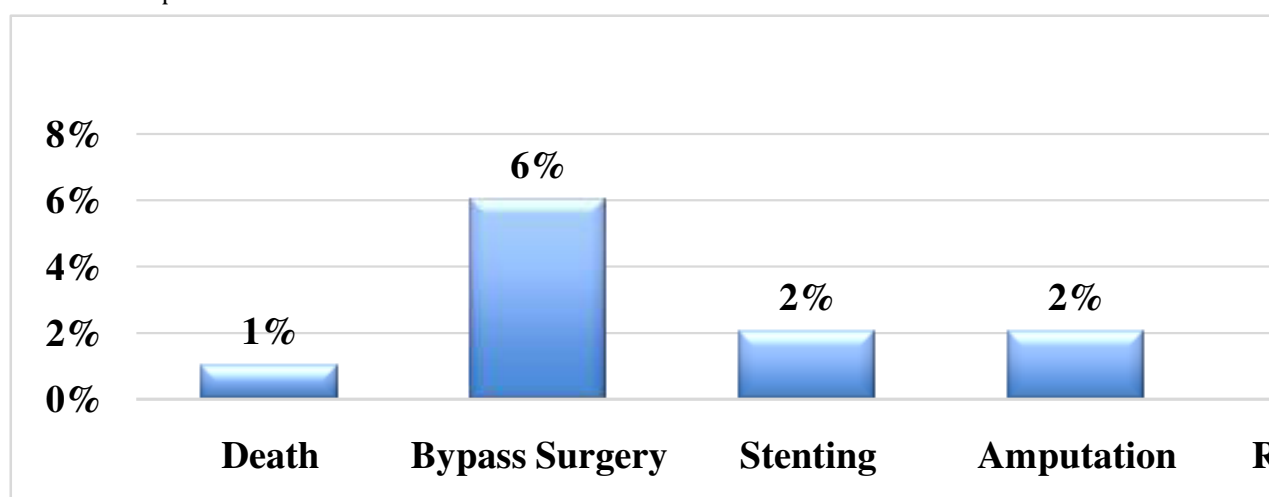
Site of lesion	Number of Case (N)	Percentage (%)
Superficial femoral artery	36	36 %
Common iliac artery	21	21 %
External iliac artery	16	16 %
Popliteal artery	16	16 %
Common femoral artery	5	5 %
Other sites	6	6 %

Complication rate was 13/100 (13 %). However, no one required emergency operation, intervention or a blood transfusion.

Table 5: Distribution of Complication

Complication	Number of Case (N)	Percentage (%)
Small haematoma	3	3 %
Dissection	2	2 %
Spasm	2	2 %
Sub-intimal dissection	1	1 %
Thrombosis	1	1 %
Pain	1	1 %
Embolization	1	1 %
Extravasation	1	1 %
Perforation	1	1 %

In present study, Small haematoma was reported in 3(3%) of patients. Whereas 2(2%) of patients reported Dissection & Spasm.



Graph 1: Unfavorable Outcome.

6(6.0%) of patients found unfavourable outcome as a bypass surgery, 4(4.0%) patients observed recurrence and 1(1%) of patient reported death.

Discussion:

The proportion of patients of peripheral vascular disease (PDA) undergoing angioplasty due to critical ischaemia were (52%). These findings are higher compared to findings obtained in previous studies of angioplasty of iliac [17] and femoropopliteal disease [18,19]. In present study majority of angioplasties were performed for stenoticlesions (80%) similar to other studies [11–14]. Complication rate in present

study found as 13 % whereas study by Davies et al (2005) [20] found it as less than 10%. Unfavourable outcome was found in 15 % with death (1 %), bypass surgery (6 %), stenting (2 %), amputation (2 %) and recurrence (4 %). However, the proportions of critically ischaemic patients were higher amongst these without complications suggesting patient rather than technical factors as the cause of the increased unfavourable outcome. Hence, as the

number of patients requiring bypass surgery or amputation were small the main factor determining outcome is the extent of the atherosclerotic cardiovascular disease. Further demographic factors and co-morbidity factors need to be evaluated along with these.

Conclusion:

Present study demonstrated that angioplasty for peripheral vascular disease can be performed efficiently in a tertiary care centre setting with minimum complications involved. The results of angioplasty in patients of peripheral vascular disease are positive in terms of complication rates, graft patency, low rates of recurrence and minimal requirement for further treatment like stenting, surgical bypass or amputation. Long term survival found to be better than expected.

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