

**ORIGINAL ARTICLE***Study on Predisposing Factors and Predominant Symptoms of Peripheral Vascular Diseases*Bhaskar M. Kendre<sup>1</sup>, Narayan B. Narwade<sup>2</sup>, Sachin S. Bhavthankar<sup>2</sup> and Shashikant Kaulaskar<sup>3</sup>Department of General Surgery<sup>1</sup>, Biochemistry<sup>2</sup> and Forensic Medicine & Toxicology<sup>3</sup>

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**Abstract:**

**Background:** Peripheral Vascular Disease (PVD) encompasses a range of conditions affecting blood vessels outside the heart and brain. About half of those diagnosed with PVD remain asymptomatic, while others experience symptoms such as painful leg cramping during exercise, known as intermittent claudication. **Objectives:** To investigate the symptomatology of peripheral vascular disease with a focus on its primary symptoms. **Material and Methods:** This is prospective study of medical and surgical management of peripheral vascular disease in both upper and lower limbs of 75 patients admitted in tertiary care hospital. After setting inclusion criteria's, cases were investigated as per pre-set protocol and examined using a proforma. Data was entered in Microsoft excel and analyzed using SPSS vs20. **Results:** A total 75 patient were admitted in tertiary care hospital with symptoms suggestive of arterial occlusion were clinically evaluated. The maximum number of patients 23(30.66%) of PVD were seen in age group of 51-60 years. The second most common age group was 61-70 years with 22(29.33%) patients. The youngest patient was 13 and older one was 73 years. Thirty-seven patients of had (PVD due to atherosclerosis and second most common cause was thrombosis 29 (38.66%). **Conclusion:** Early attention to these symptoms of discoloration and pain can lead to early diagnosis and management. Also, smoking is commonest predisposing factor followed by hyperlipidemia, hypertension and diabetes mellitus, smoking cessation and adequate treatment of above diseases can avoid complication of PVD.

**Keywords:** Peripheral Vascular Disease. (PVD), Buerger's disease, peripheral arterial disease.

**Introduction:**

Peripheral vascular disease (PVD), though synonymously used as peripheral arterial disease (PAD)

or peripheral arterial occlusive disease (PAOD), it involves variety of disorders of arterial and venous system. Peripheral vascular disease due to atherosclerotic occlusion causes ischemia of extremities and is a major cause of disability, loss of work, and lifestyle changes in the world. The present study deals with PVD affecting arterial system of both extremities with its etiology and management. It is defined as obstruction of blood flow into an arterial tree excluding the intracranial or coronary circulation. The decreased blood flow to extremities leads to pain in the calf or thigh and the walking pain is called intermittent claudication.<sup>1</sup> Peripheral vascular disease is mostly silent in its early stages, but when the lesion obstruction exceeds 50 % it may cause intermittent claudication with ambulation. Further disease progression typically leads to rest pain or frank tissue loss. However, some patients may remain asymptomatic with severe disease because of extensive collateralization in the lower extremity. Estimates of the prevalence of intermittent claudication vary by population from 0.6 % to 10%; the rate increases dramatically with age. Approximately, 20% to 25% of patients require revascularization, while fewer than 5% will progress to critical limb ischemia. Limb loss, although rare is associated with severe disability, and overall poor prognosis, with 30% to 40% mortality in the first 24 months after limb loss. As with coronary artery disease, the most common cause of symptomatic obstruction in the peripheral arterial tree is atherosclerosis, a systemic inflammatory process in which cholesterol - laden plaque builds up in the artery and eventually blocks lumen.<sup>2</sup> Managing patients with peripheral arterial disease requires an accurate assessment of the severity of the condition and the risk factors likely to predict disease progression. The spectrum of patient presentation ranges from asymptomatic to critical limb ischemia. Vascular surgery is becoming a distinct specialty, with few general surgeons in the India doing vascular procedures. Endovascular interventions are being used in all anatomical areas; although the relative merits are not yet

clear, we will probably see a huge increase in endoluminal interventions in the near future. With the development of the imaging modalities, the diagnosis of PVD has become more accurate. There is development of vascular surgery in last few decades with newer vascular grafts, better suture materials and instruments. Endovascular therapy is an alternative option for vascular bypass surgery and it is rapidly advancing with development of new stents and new techniques.<sup>3</sup>

The medical management of PVD is multifactorial, it includes cholesterol reduction, antiplatelet therapy, anticoagulation, peripheral vasodilators, blood pressure management, exercise therapy, and smoking cessation.<sup>4</sup> There are many drug trials going for the treatment and prevention of atherosclerosis and in future medical management will become main modality of management of PVD<sup>27</sup>. India is facing diabetes mellitus in epidemic proportions and with it there is exponential increase in the PVD. The prevalence of PAD is 2-3 times higher in person with v/s without type 2 diabetes mellitus (T2DM).<sup>5</sup> In spite of massive increase and impact of vascular diseases, the early recognition of these is still delayed by medical community and then very few are referred to vascular surgeons. One reason of course is lack of facilities of vascular surgery and dedicated specialist in vascular surgery across the India. However, another often quoted reason is the expense involved. But most fail to realize the mid- and long-term cost of the amputation is usually higher than the bypass procedures or angioplasty. There is significant delay on patient's part to seek medical help for early symptoms of ischemia, and behavioral modification in all over world. So, patient's health education alone may change outcome of management of PVD.

### Material and Methods:

In this prospective study 75 cases were selected randomly. Patients with both upper and lower limb PVD of all age categories and both sexes, with both acute and chronic symptoms, predominant arterial disease were included in this study. Patients of pure venous disease are excluded from study. The details of the patients were entered into the proforma of the study. Detailed clinical history was recorded with respect to age, sex, occupation, symptoms, severity and duration of symptoms, associated medical illnesses (if any), previous surgical intervention and habits. Thorough clinical examination carried out to find out level of arterial occlusion. Patients were investigated with routine investigation, blood investigation, chest X-ray, ECG, ABI, special investigation (Imaging studies), Peripheral arterial color doppler, Angiography (conventional! DSAJ C. T., Angiography/ M.R.

Angiography) were carried out. All data was tabulated and analyzed using Microsoft excel and SPSS vr20. Sample size selected was 75 patients.

### Results:

In the present study, 75 patients admitted in tertiary care hospital with symptoms suggestive of arterial occlusion were clinically evaluated, investigated to find out the possible etiology and extent of the disease. Depending on the etiology and extent of disease patients were managed conservatively as well as by surgical procedures. The details of the patients were entered into the proforma of the study. In this study, demographics associated with peripheral vascular disease, various predisposing factors, etiology, clinical features, diagnostic modalities and therapeutic interventions of patients with peripheral arterial disease were studied. All data was tabulated and analyzed as follows, In the present study of 75 patients, majority ,23(30.66%) of the patients of PVD were seen in age group of 51-60 years. The second most common age group was 61-70 years in which there were 22(29.33%) patients. The youngest patient was 13 years old, whereas the oldest was 73 years old. Out of 75patients, these 37 (49.33%) had PVD due to atherosclerosis making it the most common cause of peripheral vascular disease. The second most common cause was thrombosis 29 (38.66%) secondary to atherosclerosis. In this study, the peripheral vascular disease was most seen in male patients than the female patients. Out of 75 patients 65(86.66%) were males, while 10 (13.33%) were female patients. Atherosclerosis was most common cause of peripheral vascular disease in male patient. Atherosclerosis was seen in 30 male patients. In female patients most common cause was also atherosclerosis which is found in 7 patients. Thrombosis was second common seen in 27 males and 2 females. Buerger's disease was seen in 5 male patients.

Table No. 1: Frequency distribution of diagnosis of Peripheral Vascular Disease (PVD)

Diagnosis	No. of Patients	Percentage (%)
Atherosclerosis	37	49.3
Thrombosis	29	38.7
Buerger's disease	5	6.7
Embolism	1	1.3
Aneurysm	1	1.3
Cervical rib	2	2.7
Total	75	100

Most common presentation of PVD was atherosclerosis seen in 37 (49.3%), followed by thrombosis 29(38.7%), followed by burger's (6.66%) and cervical rib in upper limb.

Table No.2: Frequency distribution of predisposing factors

Predisposing factors	Total	Percentage (%)
Smoking	54	72
Hyperlipidemia	39	52
Hypertension	29	38.66
Diabetes mellitus	23	30.66
Alcohol	23	30.66
IHD	9	12
Storke	6	8

The various predisposing factors for development of peripheral vascular disease were included in this study, like smoking, alcoholism, hypertension, diabetes mellitus, and hyperlipidemia. The most common factor was smoking which was seen in 54 patients (72%), followed by hyperlipidemia in 39 (52%) of patients, hypertension in 29 patients (38.66%), diabetes mellitus in 23 (30.66%) and alcohol in 23(30.66%). Though, alcohol intake is not a proven risk factor for peripheral vascular disease, it was included in this study.

Table No. 3: Predominant Symptom

Predominant Symptom	Discoloration	Pain (intermittent claudication)	Tingling numbness	Ulcer
Atherosclerosis	29	6	1	1
Thrombosis	17	6	5	1
Buerger's disease	2	3	0	0
Cervical rib	2	0	0	0
Embolism	1	0	0	0
Aneurysm	1	0	0	0
Total	52	15	6	2

Fifty-two (69.33%) out of 75 patients presented with history of discoloration. Out of these, 29 patients (38.665%) had atherosclerotic vascular disease while 17 (22.66%) patients had thrombosis. Intermittent claudication was also seen in 15(20%) patients of which 6(8%) had atherosclerotic vascular disease and, 6 had thrombosis as cause. Two patients presented with ulcerative changes of the extremity all which were of atherosclerotic disease

### Discussion:

In this study, demographics associated with peripheral vascular disease, various predisposing factors, etiology, clinical features, diagnostic modalities and therapeutic interventions of patients with peripheral arterial disease were studied. In the present study of 75 patients, the maximum number of patients of peripheral vascular disease were seen in age group of 51-60 years, in which there were 23(30.66%) patients. The youngest patient was 13 years old, whereas the oldest was 73 years old. The peripheral vascular disease was most commonly seen in male patients than the female patients. Atherosclerosis was most common cause of peripheral vascular Thrombosis was second common seen in 27 males and 2 females. Buerger's disease was seen in 5 male patients. Most common presentation of PVD was atherosclerosis seen in 49.3%, followed by thrombosis 38.7%, followed by buerger's 6.66% and cervical rib in upper limb.

### Conclusion:

Discoloration was the most common symptom seen in 29 cases of atherosclerosis and 17 patients with thrombosis. Pain i.e. intermittent claudication was the second most common symptom seen in 6 of atherosclerosis and 6 of thrombosis. Early attention to these symptoms of discoloration and pain can lead to early diagnosis and management. Also, smoking is commonest predisposing factor followed by hyperlipidemia, hypertension and diabetes mellitus, smoking cessation and adequate treatment of above diseases can avoid complication of PVD.

Sources of supports: Nil

Conflicts of Interest: Nil

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