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# A Case Study of Popliteal Artery Thrombosis treatment with Interdisciplinary Approach

Dr. Vikram V. Ramtirth<sup>1</sup>, Prof. Dr. Rashmi A. Kale<sup>2</sup>

<sup>1</sup>Post Graduate Scholar, <sup>2</sup>Professor & HOD, Dept. of Shalya Tantra, Sumatibhai Shah Ayurved Mahavidyalaya, Hadapsar, Maharashtra, INDIA.

## ABSTRACT

Arterial thrombosis or occlusion is a common arterial disease. It is mainly caused by atherosclerosis, emboli or trauma. In various places the symptoms produced by arterial occlusion are different e.g. in lower limb it causes intermittent claudication, rest pain and gangrene,<sup>[1]</sup> Prostaglandin has been reported with significant peripheral vascular diseases and limb threatening ischemia.<sup>[2]</sup> The route of infusion may be either intra-venous or intra-arterial. In Ayurveda there is no direct resemble term for arterial thrombosis but the term 'Dhamani - Praticaya' (Arterial thrombosis) describe under *Kaphaja-Nanatmaja-Vikara* can be correlated with arterial thrombosis.<sup>3</sup> According to Ayurveda arterial thrombosis is the *Rakta-Dhatu-Dustijanya* (vitiated blood) disease, *Raktamokshan* (Blood-letting) is ancient and important Para surgical procedure for the treatment of *Rakta-Dustijanya* diseases (vitiated blood). A case study of 66 years female having left popliteal artery thrombosis with complaint of severe leg pain, wasting of lower limb and intermittent claudication visited to hospital who was treated with prostaglandin and *Jalaukaavacharan* (blood letting by leech application) is discussed.

**Key words:** Popliteal Artery Occlusion, Prostaglandins, Raktadusti, Jalaukavacharan, Leech Therapy.

## INTRODUCTION

Peripheral artery thrombosis is caused by the atherosclerosis of the arteries of the leg, an important manifestation of systemic atherosclerosis.<sup>[4]</sup> The age adjusted prevalence of peripheral arterial thrombosis is approximately 12%, and the disorder affects man and women equally.<sup>[5]</sup> Patient with peripheral arterial disease, even in the absence of history of myocardial infarction or stroke, have approximately same relative

risk of death from cardiovascular as do patients with a history of coronary or cerebrovascular diseases.<sup>[6]</sup> The major risk factors for peripheral artery thrombosis is old age, cigarette smoking and diabetes mellitus, hyperlipidemia, hypertension and hyperhomocysteinemia are also important risk factors.<sup>[7]</sup>

Patient with peripheral artery thrombosis have typical claudication, defined as pain in one or both leg on walking, that doesn't go away with continued walking and is relieved by rest, severity of pain increases slowly.<sup>[8]</sup> Prostaglandins have been evaluated primary for the treatment of patient with critical leg ischemia. It reduces the rate of amputation.<sup>[9],[10]</sup>

*Dhamani Praticaya* is a *Raktadoshaja* (vitiated blood) disease is caused due to accumulation of *Kapha* (biological humor) and *Medha* (fat) in blood. This excess accumulation of *Kapha* (biological humor) and *Medha* (fat) in blood is called as "Shonitabinshandan" (thickness of blood) which leads to *Sirajgranthi*<sup>[11]</sup> (clot in artery). In *Charaka Samhita*, *Dhamani Sankoch*,

### Address for correspondence:

Dr. Vikram V. Ramtirth

Post Graduate Scholar, Dept. of Shalya Tantra, Sumatibhai Shah Ayurved Mahavidyalaya, Hadapsar, Maharashtra, INDIA.

E-mail: tusharpardeshi10@gmail.com

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*Gambhir Vatarakta* is not only related to thrombosis but can be correlated to vasospasm.<sup>[12]</sup>

## CASE REPORT

A 66 years female patient residing in India, presented with complaints cramping pain at left lower limb below left knee joint since five month with intermittent claudication. The pain was increasing per day. Patient has taken treatment in other hospital and visited to current hospital with same complaints and diagnosed as a left popliteal artery thrombosis. Patient has a history of diabetic( Type II) and hypertension. Patient had a surgical history of Haemorrhidectomy one year ago.

Local examination shows tenderness below left knee joint along the left leg, no signs of discoloration of left leg, dorsalis pedis artery pulsation and anterior tibial artery pulsation were feeble. Laboratory investigation suggest normal leucocyte (9100) with urine report trace albumin, sugar three plus pus cell 2 to 3, epithelial cell 4 to 5. Bleeding time - 1.20sec. Clotting time 5.00sec. PTINR-T-18.0sec. INR-1.33sec, Serum CPK - 46, homocysteine - 12.67. The arterial and venous color Doppler suggest atherosclerotic changes in left lower limb arteries seen as thickening of intima-media complex with calcified plaque and there is thrombosis of left mid and distal superficial femoral, popliteal, profunda, tibio peroneal trunk with near complete absence of flow in these arteries. There is poor recanalization in these arteries.

CT lower limb Angiogram suggests (left leg) proximal superficial artery shows normal contrast opacification. Non enhancing filling defect causing near complete luminal occlusion is seen involving mid and distal part of left superficial and popliteal arteries, multi segmented patchy filling defect causing minimal luminal occlusions are seen in distal aspect of deep femoral artery. Secondary collateral formation around knee joint, hypoperfusion of distal third of anterior tibial, posterior tibial, peroneal, dorsalis pedis arteries seen.

After thorough clinical examination and lab reports it leads to definitive treatment of prostaglandin

intravenous infusion for popliteal artery occlusion. For this patient admitted in intensive care unit, injection prostaglandin in 500ml normal saline at the rate 50 ml /hour in 12 hours for 5 day given to the patient along with this, injection clexan 0.6 unit subcutaneous twice a day, tablet Ecosprin 650 mg once a day, tablet clopitrogril 75 mg once a day, tablet atorvac (atorvastatin) 40 mg at night, was given.

*Jalauka-avacharan* (blood-letting) done for five days, on each alternate day at calf region. For this *Jalauka* smeared with paste of turmeric, kept in water pot for 15 minutes all the turmeric paste removed. Patient was made to lie down, the active *Jalauka* (Leech) kept over the left leg calf muscle region to bite and suck the blood. A soft white wet cotton cloth kept over the *Jalauka*. With the appearance of pricking pain and itching at the site of bite, it is understood that *Jalauka* is sucking pure blood. *Jalauka* were detached automatically. If not then *Jalauka* removed from the site of bite by sprinkling turmeric powder over the mouth of *Jalauka*. At the site of bite turmeric powder applied to arrest the bleeding.

## DISCUSSION

A female patient with severe left leg pain and she was known case of diabetic mellitus. She was on regular hypoglycemic medicine and regularly giving follow-up for diabetes. Fluctuation in diabetes and increased level of triglycerides was causative factor for the occlusion of popliteal artery<sup>[13]</sup> popliteal artery occlusion and the disease process leading upto it causes morbidity and mortality by decreasing or completely blocking blood supply through the popliteal artery and into the lower leg and foot.<sup>[14]</sup> As a result of tissue ischemia, the patient had a significant reduction in the ambulatory activity, daily functional capacity, and quality of life. Lower extremity ischemia can manifest as claudication, rest pain or tissue loss (gangrene).

Most prostaglandin acts locally, for instance, they are powerful locally acting vasodilators. Vasodilation occurs when the muscle in the wall of blood vessel relax so that the vessel dilates. This creates less resistance to blood flow<sup>[15]</sup> an important example of

vasodilatory action of prostaglandins is found in the kidney, in which widespread vasodilation leads to an increase in the flow of blood to the kidney and an increase in the excretion of sodium in urine.

*Dhamani Praticchaya* (Arterial thrombosis) is a *Margavarodha-Janya* (obstructive) disease where *Dhamani Avarodh* occurs due to *Dusta Rakta Dhatu*<sup>[16]</sup> (vitiated blood). *Dhamani* (artery) is a *Upadhatu* (made up of) of *Rakta Dhatu* (Blood). *Jalaukavacharan* (blood-letting) is the key treatment for the management of *dustharakta* (vitiated blood).

## CONCLUSION

In present study *Jalaukavacharna* (blood-letting) or leech therapy or hirudin therapy applied in a case of popliteal artery thrombosis, found to be effective. The saliva of leech contains more than 100 bioactive substances including coagulation inhibitor, platelet aggregation inhibitor, vasodilators, antimicrobial anti-inflammatory agents and hirudine which inhibit blood coagulation by binding to thrombin, increases interstitial viscosity, histamine of saliva of the leech act as vasodilator, increases the flow of blood at the site of bite. Leech therapy is beneficial in reduction of pain, tenderness in the patient of popliteal artery thrombosis and there is no any adverse reaction found with *Leech* therapy. With *Leech* therapy patient of popliteal artery thrombosis shows significant result in above case prostaglandin intravenous infusion was given to the patient of popliteal artery thrombosis for five days under intense care unit. The pain in the left lower limb below knee joint was reduced after five days. Follow-up was taken for 2 months. Patient did not show pain and other complaints.

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