AN ABNORMAL UNILATERAL ORIGIN OF DORSALIS PEDIS ARTERY- A CASE REPORT

Authors:- Dr. Hetal Vaishnani, Dr.Subhsh Gujar, Dr.Savita Gadekar, Dr.K.V.Bondre, Dr.G.V.Shah
Department of Anatomy
S.B.K.S. Medical Institute & Research Center
Sumandeep Vidyapeeth
At: Piparia TA: Waghodia, Dist: Vadodara

e-mail:- drhetal24@gmail.com

Dr. Hetal Vaishnani, Dr.Subhsh Gujar, Dr.Savita Gadekar, Dr.K.V.Bondre, Dr.G.V.Shah
S.B.K.S. Medical Institute & Research Center, Sumandeep Vidyapeeth, Piparia, Vadodara, Gujarat.

Abstract: - During routine dissection of cadavers allotted to first MBBS students, we came across certain variation in the origin of dorsalis pedis artery. Normally the dorsalis pedis artery is a continuation of the anterior tibial artery. Here we found that the dorsalis pedis artery was a continuation of the large perforating branch of the peroneal artery on the right side of lower limb. Awareness of the anatomical variation in anatomy of the dorsalis pedis artery is important for angiographers, vascular surgeons and reconstructive surgeons and also helpful for the pulsation of the dorsalis pedis artery.

Key words: - Dorsalis Pedis artery, anterior tibial artery, peroneal artery.
Introduction: - The Dorsalis pedis artery is the major source of blood supply to dorsum of the foot. The dorsalis pedis artery as a continuation of the anterior tibial artery distal to the ankle and passes forward along the medial side of the dorsum to the gap between the two heads of the first dorsal interosseous muscle. Here the artery enters the sole and forms the plantar arch by joining with the deep branch of lateral plantar artery. The artery may be larger, to compensate for a small lateral plantar artery, or may be replaced by a large perforating branch of the peroneal. It often diverges laterally from its usual route.

The Dorsalis Pedis artery passes beneath the extensor retinaculam, the artery rests successively on the capsule of ankle joint, talus, navicular and intermediate cuneiform bones, the artery above covered by skin, superficial fasciae and is crossed close to its termination by the tendon of extensor hallucis brevis, and lies in between the tendon of extensor hallucis longus and medial terminal branch of deep peroneal nerve, and digital tendon of extensor digitorum longus for the second toe.

The dorsalis pedis artery gives off the tarsal, arcuate and first dorsal metatarsal arteries.

Surface anatomy- The dorsalis pedis pulse is sought by palpation immediately lateral to the tendon of extensor hallucis longus against the underlying tarsal bones.

Material & method: -
This case was observed in Department of Anatomy S.B.K.S.Medical Institute & Research center, Piparia. During the dissection of lower limb of anterior tibial artery an abnormal origin of Dorsalis pedis artery was found. Common variation of Dorsalis Pedis artery is that it may be large, in relation to the long tendon of
dorsum of foot. The dissection was carefully done to clean the artery and this abnormal origin of artery was found. The specimen was preserved in the department.

Discussion:

The Dorsalis pedis artery is a continuation of the anterior tibial artery distal to the ankle anteriorly. Distal to the ankle, the dorsalis pedis artery travels lateral to the extensor hallucis tendon along its course to the great toe. Previous studies have reported the dorsalis pedis pulse impalpable in 3.1% to 13.8% of healthy patients.

Examination of pedal pulse remains a useful clinical tool when evaluating peripheral circulation. Although a correlation between the ability to palpate pulses and the degree of systolic perfusion pressure has been established, controversy surrounds its accuracy. Unreliance among investigators stems from discrepancies related to arterial size, amount of subcutaneous fat, edema, or neurovascular diabetic changes.

The Dorsalis Pedis artery is an often overlooked, but important artery that can be utilized for limb salvage surgery. It is especially useful in the diabetic patient in whom disease at the level of the bifurcation of the popliteal artery is common. The unique anatomic location and communication with the pedal arch makes a good outflow vessel.

The knowledge of the variations of the dorsalis pedis artery is also important in different vascular surgeries and orthopedic surgeries of the foot. A diminished or absent dorsalis pedis pulse usually suggest vascular insufficiency resulting from arterial disease. The five “P” signs of acute arterial occlusion are pain, pallor, paraesthesia, paralysis, and pulselessness. Some healthy adults (and even children) have congenitally non-palpable dorsalis pedis pulse the variation is usually bilateral.

Reconstruction of the arteries of the foot in patients with severe chronic arterial occlusive disease has become a routine and valuable procedure. However, it is frequently difficulty to select the optimal site for the distal arterial anastomosis.

Anomalies of vessels are incidentally found in the anatomy dissection hall. They cause confusion in interpretation of imaging study, for angiographers, vascular surgeons, who operate upon these regions. It can create confusion in the pulsation of the Dorsalis pedis artery.

Conclusion:- This case is a rare abnormal origin where the dorsalis pedis artery is continuation of the large perforating branch of peroneal artery on the right side and on the left side was normal origin. The peroneal artery reached the anterior compartment by piercing the interosseous membrane at its lower part and ran as the dorsalis pedis artery. Awareness of the anatomical variation in anatomy of the dorsalis pedis artery is important for angiographers, vascular surgeons and reconstructive surgeons and also helpful for the pulsation of the dorsalis pedis artery.

References:-
Yamada T. et al, Division of vascular surgery, J. Anatomy Society of India.

Fig: 1 peroneal artery is continue as Dorsalis pedis artery on the right side
ATA: - Anterior tibial artery  
PA: - Peroneal artery  
DPA: - Dorsalis pedis artery.

Fig: 2 Left side Dorsalis pedis artery originates normally.