



Total replacement of inferior gluteal artery by a branch of superior gluteal artery

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Surekha D SHETTY

Abhinitha P

Sapna MARPALLI

Satheesha NAYAK B +

Department of Anatomy, Melaka Manipal Medical College (Manipal Campus), International Centre for Health Sciences, Manipal University, Madhav Nagar, Manipal Karnataka, INDIA.



+ Dr. Satheesha Nayak B.
Professor and Head
Department of Anatomy, MMMC
Int. Centre for Health Sci.
Manipal University, Madhav Nagar,
Manipal, Udupi District
Karnataka, 576 104, INDIA.
☎ +91 820 2922519
✉ nayaksathish@yahoo.com

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Abstract

Knowledge of vascular variations in the gluteal region is important for orthopedic surgeons, radiologists and anatomists. We report a rare case of absence of inferior gluteal artery. The structures normally supplied by the inferior gluteal artery were supplied by a branch coming from the superior gluteal artery.

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Key words [inferior gluteal artery] [superior gluteal artery] [variation] [gluteal region]

Introduction

Inferior gluteal artery is the larger terminal branch of anterior division of internal iliac artery and principally supplies the buttock and the thigh. It arises from the anterior division of internal iliac artery in the lower part of the pelvis. It enters the gluteal region by passing through the lower part of the greater sciatic foramen, below the piriformis muscle, accompanied by the inferior gluteal vein and inferior gluteal nerve. It gives muscular and cutaneous branches in the gluteal region. Its other branches include a branch to hip joint, a branch to the cruciate anastomosis and the artery accompanying the sciatic nerve.

The superior gluteal artery is the terminal branch (continuation) of the posterior division of the internal iliac artery. It enters the gluteal region by passing through the upper part of the greater sciatic foramen along with the superior gluteal vein and the superior gluteal nerve. In the gluteal region it divides into a superficial and a deep branch. The superficial branch supplies the gluteus maximus muscle and the deep branch divides into a superior and an inferior branch. The superior branch takes part in the anastomosis at the anterior superior iliac spine and the inferior branch takes part in the trochanteric anastomosis apart from supplying the gluteal muscles.

Case Report

During regular dissections for medical undergraduate students, we observed a very rare variation of the inferior gluteal artery. The inferior gluteal artery was entirely absent. The absence was compensated by a branch coming from superior gluteal artery. The variation was found on the right gluteal region of a male cadaver approximately aged 65 years and it was unilateral. The superior gluteal artery took origin from the posterior division of internal iliac artery, passed through the greater sciatic foramen and appeared in the gluteal region above the piriformis muscle. The artery divided into superficial and deep branches. The superficial branch passed between the gluteus medius and maximus muscles and supplied both of them, it also gave an unusual branch which replaced the inferior gluteal artery and accompanied the inferior gluteal nerve. The unusual branch ran downwards superficially to the piriformis muscle, supplied the adjacent muscles and took part in cruciate and trochanteric anastomoses (Figure 1).

Discussion

Though the variations in the gluteal region are common, total absence of the inferior gluteal artery is extremely rare. The inferior gluteal artery may be doubled or form a common trunk with superior gluteal artery [1]. In a study by Gabrielli

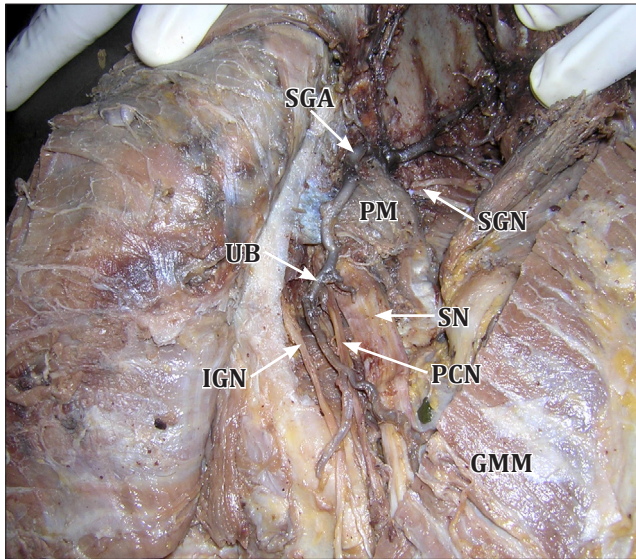


Figure 1. Photograph of dissection of the right gluteal region. (**SGA**: superior gluteal artery; **SGN**: superior gluteal nerve; **UB**: unusual branch replacing inferior gluteal artery; **IGN**: inferior gluteal nerve; **SN**: sciatic nerve; **PCN**: posterior cutaneous nerve of the thigh; **PM**: piriformis muscle; **GMM**: gluteus maximus muscle)

et al., the inferior gluteal artery or one of its branches pierced the sciatic nerve in 22.5% of cases [2]. The incident was more common in males and on the left side. This kind of variations might result in nerve compression.

Developmentally the inferior gluteal artery, popliteal artery and the artery accompanying sciatic nerve represent the axis artery of the lower limb [3]. In the current case, as the inferior gluteal artery is absent; the superior gluteal artery represents the axis artery. The superior gluteal artery in most of the cases gives a superficial and a deep branch. In the current case the superficial branch continued as the inferior gluteal artery. The deep branch supplied the rest of the areas that are to be supplied by the superior gluteal artery. The superior gluteal artery is known for stenosis either due to atherosclerosis or compression in the greater sciatic foramen above the piriformis muscle. This in turn can lead to claudication of buttock [4, 5]. One case of absence of inferior gluteal artery has been reported recently by Sreenivasulu et al., [6] which is somewhat similar to the one we are reporting here.

The knowledge of variations of gluteal vessels is of utmost importance to the orthopedic surgeons dealing with the fractures and dislocations of the hip.

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