

Anatomo-radiological study of the internal pudendal perforator vessels : clinical relevance in reconstructive surgery of the perineal region

Cesare Tiengo¹, Veronica Macchi², Carla Stecco², Andrea Porzionato², Bruno Azzena¹, Raffaele De Caro²

¹Clinic of Plastic Surgery, University of Padova, Italy

²Section of Anatomy, Department of Human Anatomy and Physiology, University of Padova, Italy

Introduction. The mobilization of muscular and fasciocutaneous flaps represents a mandatory reconstructive surgery in a variety of soft tissue defects of the the pelvi-perineal area. Often oncological surgery, trauma or severe soft tissue infections such as Fournier's gangrene, produce functional and morphological deformities of this region. An appropriate soft tissue reconstruction may limit the development of scar contractures and stenosis. The possibility to better localize the main vascular perforators may help the surgeon in a safe flap mobilization.

Methods. To objectively document the topographical location of external and internal pudendal arteries and respectively perforators branches, an anatomo-radiological study on 24 CT angiographies of 12 lower limbs (multidetector CT 16 slides), and analysis of multiplanar images and 3D reconstructions (Terarecon™) were performed. The origin, number, course and location of perforators of the internal pudendal artery in vivo were recorded.

Results. Superficial landmarks (anus, external urethral meatus and ischiatic tuberosity) may describe a safe cutaneous perineal region in which is possible to localize all internal pudendal perforator arteries.

In this area the mean number of perforators was 2,6 (range: 0-4). In one case (4%) the perforators vessels originated from the inferior gluteal artery. The mean diameter of perforators was 2,3 mm (0,47SD; range 1,4-3,4). The most proximal perforator of the internal pudendal artery presented a mean caliber of 2,6 mm (range 2-3,4).

Discussion. This study confirms the presence of a rich vascular network between the internal and external pudendal artery. Moreover a reliable caliber and constant location of the perforators of the internal pudendal artery are documented. These observations are also confirmed intraoperatively during the mobilization of perforator flaps for the reconstruction of perineal area.

The knowledge of the rich vascular plexus allows to plan a variety of fascio-cutaneous perforator flaps that may guarantee better reconstruction results then the past.

Keywords: perforator flap, internal pudendal artery, reconstructive surgery, anatomo-radiologic study