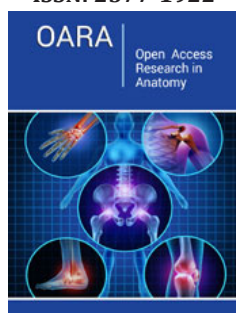


# Anatomical Features of Thin Muscle and its Neurovascular Bundle from the Position of Use in Autotransplantation

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## Introduction

Transplantation of a free flap based on m. Gracilis is increasingly used in modern reconstructive surgery. In such operations as prosoplegia of facial musculature, brachial plexus lesions, plastic closure of upper lip defects and even treatment of pelvic sepsis. The surgeon's scrupulous knowledge of the anatomic-topographic relationships of the neurovascular bundle with the surrounding formations and its variants of individual anatomical variability are the key to successful surgical intervention. M. Gracilis is one of the drive muscles of the thigh, which is located most superficially. Its function is adduction and flexion of the hip, flexion of the knee, and internal rotation of the knee. However, if it is taken as a donor in reconstructive surgery, its function is quickly and easily compensated by the agonist muscles and does not cause significant motor deficit [1-3]. Its shape is flattened, wide from above and gradually narrowing downwards. It originates from the lower branch of the pubic bone and the adjacent part of the sciatic bone; its tendon connects to the tendons of the tail and semi-tendon muscles and attaches to the upper part of the tibia medial to its tuberosity. Due to its size, shape, and length, it provides a good cosmetic result, forming an adequate facial contour in persistent prosoplegia. The anatomico-topographic features of m. Gracilis have been described by a number of authors, but until now a number of unresolved problems related to blood supply disturbances of the transplanted muscle flap, peculiarities of muscle flap modeling, "donor zone disease" persist. A more in-depth study of the anatomico-topographic features of m. Gracilis, its vascular pedicle will help to solve these issues.

## Materials and Methods

Anatomo-topographic features of m. Gracilis was performed on a sectional study on unfixed cadaveric material of 50 lower limbs. During the study we measured the length, width, thickness of the thin muscle, the length of its muscular and tendon parts. Special attention was paid to the peculiarities of its blood supply. We studied the number of vascular legs, the entry point of each of the vascular legs and their sources, length, diameter of vessels, nerve in the main neurovascular bundle, number of terminal nerve branches.

## Results and Discussion

The results of our study revealed that the length of the lower limbs averaged 904.4(871.1;930.0)mm, the length of M. gracilis was 452.25(439.7;462.0)mm, its muscular and tendon parts were 225.3(208.1;239.0) mm and 230.5(213.0;244.4)mm. This study showed that the number of vascular legs included in m. gracilis varied from 1 to 5, namely, in 46% of observations there was one leg, in 34% two, in 14% three, in 4% four and very rarely, in 2% of observations the blood supply to the muscle was of the scattered type and there were at least five vascular legs. These results were about the same as in the observations of

Rajeshwari MS & Roshankumar BN [4] and Vigato E [5], in which they mentioned that their number was 1-5 (most 1-3). But our study revealed that in all cases there was one main neurovascular bundle including an artery, two draining veins and a nerve, which is an anterior branch of the obturator nerve. Its entry point into the muscle from the pubic bone averaged 100.5(90;110)mm. The main feeding artery was 109(76;134)mm long and had a diameter of 1.9(1.8;2.0) mm. Its source was most often the deep femoral artery. The nerve averaged 108.5(96;117)mm in length and 2.1(1.9;2.2) mm in diameter. In 82% of cases the nerve was represented by a single main trunk, in 10% it was represented by 2 trunks, and in 8% a scattered type of nerve structure was recorded.

### Conclusion

The anatomical structure of the M. gracilis neurovascular bundle is highly variable; despite this, even the most extreme cases of individual anatomical variability do not prevent its use as

a donor in reconstructive surgery. This study provides important information about the anatomical features of m. Gracilis and may be useful at the stage of preoperative planning.

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