

SUMMARY

The semitendinosus belongs to the hamstrings. It arises from the ischial tuberosity with the semimembranosus. Together with the gracilis and sartorius it inserts centrally to the tuberosity of the tibia into the pes anserinus. The semitendinosus is the extensor of hip and internal rotator of knee. It is supplied by the tibial nerve.

The muscle belly is divided into two parts, proximal and distal, by the tendinous interruption. Such a division is observed in fetuses and many animals.

In the literature is no accurate analysis of the muscular architecture, which would take into account the arrangement of the fibers and the tendon parts. There is no evidence of morphometry of fetal muscle.

Distal tendon of semitendinosus is often used in the reconstruction surgery. The most common is the reconstruction of the anterior cruciate ligament.

Recently, it is known regeneration of this tendon after its harvesting. In Poland this fact is still unknown, there are no original works devoted to this subject.

The aim of presented project was: to examine the morphology and morphometry of the semitendinosus, with particular regard to its tendon parts; to compare the anatomy of this muscle with the fetal material; to analyze of parts of the distal tendon in terms of their usefulness as a graft; to compare of morphology in ultrasound examination. In addition, the aim was to confirm the regeneration of the distal tendon after its harvesting.

Fifty semitendinosus muscles from adults and twenty muscles from fetuses were examined using anatomical preparation methods; twenty muscles were examined on living persons via an ultrasound scanner.

The basic information about muscle anatomy derived from the literature has been confirmed. The average muscle length was 51.58 cm.

The proximal tendon was divided into two parts, one, common part - connected with the long head of biceps femoris, and second, independent part – arises from ischial tuber. The average length of the connection with biceps femoris was 9.43 cm. Five types of muscle fibers were identified. Fibers A - running between the biceps tendon and the tendinous interruption; B - between the tendinous interruption and the distal tendon; C - between ischial tuber and tendinous interruption; D - between ischial tuber and distal tendon; E - between the biceps tendon, and the distal tendon. Fibers A and E bypass the tendinous interruption.

Two main parts of the distal tendon were defined: the free part - not covered with muscle fibers, and the internal part - partially or completely hidden in muscle belly.

The average length of the distal tendon was 32.34 cm, the free part 19.65, and the internal part 12.59. The free part had a compact cylindrical structure, the internal part flattened and folded in trough-like shape, thereby reducing the tendon value as a graft material.

The fetus material was also present the both part of the proximal tendon – common and independent part, and both part of the distal tendon – the free - external part, and internal part. There was tendinous interruption present too, dividing the belly into two parts.

Correlations between selected muscle parts were done. In adult, correlation was not statistically significant in all cases, and had different strengths, usually weak or mediocre correlations. In the fetuses, all the correlated counts were statistically significant, and in the vast majority they were strong or very strong.

The proportions between the lengths of the muscular parts of the fetuses and the adults were very close.

Tendon regeneration was confirmed sixteen months after its harvesting. The tendon was visible in ultrasonography examination and palpable inspection, it was visible through the skin.