

The Anatomy of the Articularis Genus Muscle and Its Relation to the Extensor Apparatus of the Knee

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Background

The anatomy of the articularis genus muscle has prompted speculation that it elevates the suprapatellar bursa during extension of the knee joint. However, its architectural parameters indicate that this muscle is not capable of generating enough force to fulfill this function. The purpose of the present study was to investigate the anatomy of the articularis genus, with special emphasis on its relationship with the adjacent vastus intermedius and vastus medialis muscles.

Methods

The articularis genus muscle was investigated in 18 human cadaveric lower limbs with use of macrodissection techniques. All components of the quadriceps muscle group were traced from origin to insertion, and their affiliations were determined. Six limbs were cut transversely in the middle third of the thigh. The modes of origin and insertion of the articularis genus, its nerve supply, and its connections with the vastus intermedius and vastus medialis were studied.

Results

The muscle bundles of the articularis genus were organized into 3 main layers: superficial, intermediate, and deep. The bundles of the superficial layer and, in 60% of the specimens, the bundles of the intermediate layer originated from both the vastus intermedius and the anterior and anterolateral surfaces of the femur. The bundles of the deep layer and, in 40% of the specimens, the bundles of the intermediate layer arose solely from the anterior surface of the femur. The distal insertion sites included different levels of the suprapatellar bursa and the joint capsule. A number of connections between the articularis genus and the vastus intermedius were found. While the vastus medialis inserted into the whole length of the vastus intermedius aponeurosis, it included muscle fibers of the articularis genus, building an intricate muscle system supplied by nerve branches of the same medial deep division of the femoral nerve.

Conclusions

The articularis genus, vastus medialis, and vastus intermedius have a complex, interacting architecture, suggesting that the articularis genus most likely does

not act as an independent muscle. With support of the vastus intermedius and vastus medialis, the articularis genus might be able to function as a retractor of the suprapatellar bursa. The finding of likely interplay between the articularis genus, vastus intermedius, and vastus medialis is supported by their concurrent innervation.

Clinical Relevance

The association between the articularis genus, vastus medialis, and vastus intermedius may be more complex than previously believed, and this close anatomical connection could have functional implications for knee surgery. Dysfunction, scarring, or postoperative arthrofibrosis of the sophisticated interactive mechanism needs further investigation.

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