



Ectopic Fibres of Articularis Genu

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ABSTRACT: Articularis genu is a vestigial muscle considered as the 5th part of the quadriceps. This is represented as the detached fibre bundles from the vastus intermedius. Morphologically the muscle is flat, thin, wispy. It shows highly variable attachments taking origin from the lower 1/4th of anterior surface area of the femoral shaft. Articularis genu may be considered as 5th head of quadriceps femoris. The variant morphology of the muscle may prevent incidental removal during total knee replacement, investigating osteoarthritis and so more.

KEYWORDS: Articularis genu, Quadriceps femoris, Wispy.

INTRODUCTION

Articularis genu is a vestigial muscle considered as the 5th part of the quadriceps. This is represented as the detached fibre bundles from the vastus intermedius. Morphologically the muscle is flat, thin, wispy. It shows highly variable attachments taking origin from the lower 1/4th of anterior surface area of the femoral shaft. Usually, it consists of 3 or 4 slips. This muscle is present between the vastus intermedius and pre-femoral pad of fat. This muscle gets innervated by the nerve to vastus intermedius branch from the femoral nerve and arterial supply from the lateral femoral circumflex artery branch from the profunda femoris artery. It is said to be inserted on the suprapatellar bursa and elevates the apex of the synovial fluid thus keeps the bursa in position. It also prevents the entrapment of the bursa. This muscle may act as synergist to the vastus medialis. Articularis genu may be considered as 5th head of quadriceps femoris. The variant morphology of the muscle may prevent incidental removal during total knee replacement, investigating osteoarthritis and so more.

CASE REPORT

We Followed the steps from Cunningham's manual of practical anatomy. After careful dissection of the cadaver without damaging any structure, we made an incision through the lateral and medial patellar retinaculum along the lateral and medial border of the patella. Then we reflected the capsular ligament along with the synovial membrane from the inner surface. Now the knee joint cavity has been exposed. Turning the patella, where the Quadriceps muscles are attached. Clearly the Articularis genu muscle distally showed separate muscle completely detached fibres from any of the quadriceps fibres. Here it showed two layers: superficial and deep layers. The superficial layer of the muscle is totally flat and blending with the capsule. Proximally the muscle fibres take origin from the deep surface of vastus intermedius principally but some fibres are also attached to the vastus medialis and lateralis. It is represented by thin detached fibres attached to the suprapatellar bursa. Then we detached the fibres from the bursa and found comparatively a strong thicker muscle layer was present which completely surrounds the anteromedial, anterolateral and anterior surface of the lower part of the shaft of the femur. The muscle is attached to vastus medialis but not attached to the intermedius and vastus lateralis fibres. These muscle bundles showed a total of 8 strips whereas the usual representation is 3 to 4 strips.

PICTURES:

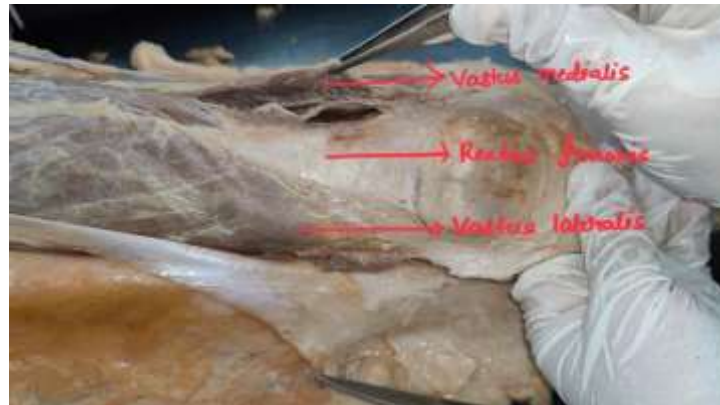


FIG 1: showing the superficial muscle layer of quadriceps femoris.



FIG 2: showing Vastus intermedius after reflecting the rectus femoris, articularis genu from superficial aspect deep to the vastus intermedius.



FIG 3: showing the femoral pad of fat.



FIG 4: showing the articularis genu muscle



FIG 5: showing the superficial layer of the articularis genu after detaching the fibres from the suprapatellar bursa.



FIG 6: showing the deep stratum of the articularis genu attached to the deep layer of suprapatellar bursa.



DISCUSSION

A morphological study by Sakuma E et al (2014) described the branching pattern of deep layer of the muscle. They opined the role of the articularis genu in preventing the lateral dislocation of patella.¹

Karl Grob MD et al (2017) conducted a study on the Anatomy of articularis genu muscle on 18 specimens and reported 3 to 6 muscle bundles in all specimens.²

Reportedly the articularis genu muscle is present in 80-100% individuals. Types of fibres present in the muscle was described by a study conducted by Kobayashi et al (2018). They also reported the vastus intermedius and articularis genu muscles contain similar type of fibres.³

In a comparative study of Articularis genu in cadavers and preoperative bone tumour patients by MRI to understand the morphology and its significance, Caterson J et al (2020) concluded the usefulness of the muscle to provide anterior soft tissue margin in distal femoral resection surgery.⁴

Cruz Ayala et al (2022) reported that changes in myofibers of articularis genu is associated with range of movement, specifically flexion contracture. In depth knowledge of the muscle bundles with highly variable morphology of the muscle is important to avoid incidental removal of the muscle during total knee arthroplasty.⁵

In our study we have reported a variant morphology of the articularis genu unilaterally. This kind of variant has not been reported so far.

CONCLUSION

In present study we have reported the multiple slips of articularis genu in two layers. This kind of case has not reported so far. Knowledge of such variation may prevent avoid incidental removal of the muscle during total knee arthroplasty. The muscle is useful provide anterior soft tissue margin in distal femoral resection surgery.

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CONFLICTS OF INTEREST

Our study doesn't show any conflict of interest.

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