

A NOTE ON THE MORPHOLOGY OF THE ILIOFEMORAL LIGAMENT OF THE HIP-JOINT

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DURING the dissection of a female Indian Langur (*Semnopithecus entellus*) made for comparative study, a small muscle was noted on the antero-medial aspect of the hip-joint in intimate contact with the articular capsule. Its interest was increased when on reflection of the muscle it was found that the medial limb of the iliofemoral ligament was absent and the articular capsule in the position was very thin. A similar condition was noted also on the opposite side. A second animal was subsequently dissected and it confirmed the original findings. The small muscle corresponds in situation to the *m. iliacus* minor (synonyms : *m. iliocapsularis*, *m. iliotrochantericus*, *m. iliocapsulofemoralis*). This muscle occurs sometimes as a human variation. But its normal occurrence in any monkey has not been previously noted. And at the same time the associated absence of the medial band of the iliofemoral ligament seemed also significant.

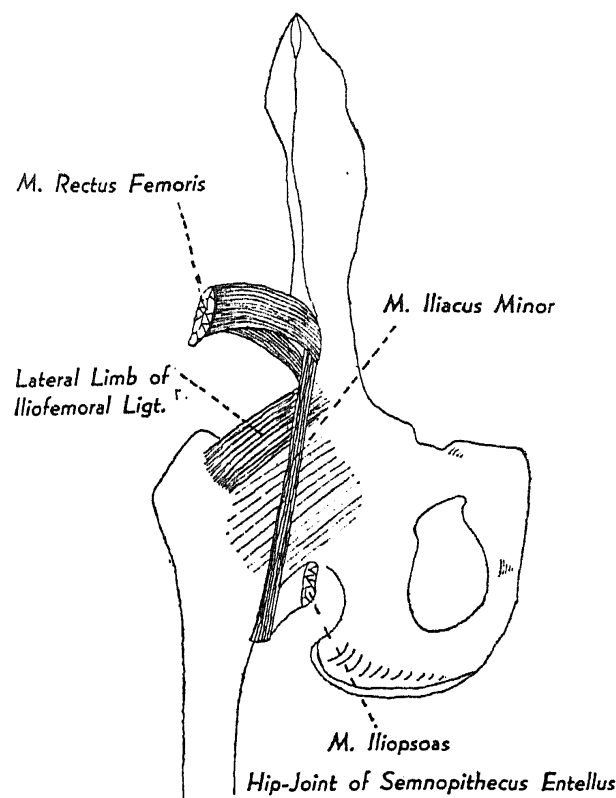
Observations

The *m. iliacus* minor in the *Semnopithecus entellus* is about half a centimetre in width and is purely muscular. Its origin is from the anterior border of the ilium above the acetabulum wedged in between the two heads of the *m. rectus femoris*. The point of origin is just above the attachment of the lateral limb of the iliofemoral ligament. The muscle is inserted to the lesser trochanter of the femur and at its insertion it is distinctly separable from the adjacent muscles. It is supplied by a twig from the femoral nerve.

The iliofemoral ligament of the hip-joint in *S. entellus* shows only the lateral limb extending from the lower part of the anterior iliac margin to the front of the greater trochanter. The medial limb is absent. The capsule is very thin in the antero-medial aspect and its distal attachment is to the femoral neck.

Comparative Anatomy of the *M. iliacus* minor

M. iliacus minor occasionally occurs in man (Bryce, 1923). It arises, when present, from the anterior inferior iliac spine and is inserted into the



lower part of the intertrochanteric line or iliofemoral ligament. Bardeen (1933) states that the lateral portion of the muscle iliacus arises from the ventral border of the ilium and is adherent to the direct tendon of the *m. rectus femoris* and the capsule of the hip-joint, and that it is sometimes more or less isolated, forming the muscle iliacus minor or iliotrochantericus.

The anthropoid apes do not show this muscle ; nor has it previously been described in any monkey. Sonntag (1924) makes no mention of it in his book on the *Morphology of the Apes and Man*. In the *Macacus rhesus* this muscle is not noted (Howell and Straus, 1933), though the iliofemoral ligament is said to be present (Sullivan, 1933). Duckworth remarks about a curious muscular slip he noted in a lemur, which was found winding spirally round the capsule of the hip-joint corresponding to the lower limb of the iliofemoral band. In the slender loris this muscle is not found.

The Morphology of the Iliofemoral Ligament

Keith (1933) holds the view that the anterior part of the capsule of the hip-joint has to withstand the strain of the body when the thigh is extended in the upright posture and that a part of it becomes specialised to form the iliofemoral ligament. This is a purely physiological explanation for its marked development. But many other authors have suggested muscular homologies for the iliofemoral ligament.

The lateral limb of the iliofemoral ligament has been said to be homologous with the muscle gluteus quartus or scansorius of the anthropoids (Sutton, 1887). Sisson (1935) describes a small muscle in the dog and horse called capsularis and says that it appears to represent the very strong iliofemoral ligament of man. But from the femoral attachment of the muscle capsularis in between the *m. vastus intermedius* and *m. vastus lateralis*, it is clear that the *m. capsularis* can only represent, if so, the lateral limb of the iliofemoral ligament. Rouviere's opinion is cited by Bryce (1915) suggesting the derivation of the iliofemoral ligament from the iliocapsulofemoral muscle. This muscle is the same as the muscle iliacus minor. Its position shows that it can only correspond to the medial limb of the iliofemoral ligament. Rouviere's view now gets a further support in the condition found in *Semnopithecus entellus*, where the muscle iliacus minor is present and the medial limb of the iliofemoral ligament is absent. It therefore appears very probable that the medial limb of the iliofemoral ligament is homologous with the iliacus minor muscle. Observations regarding the relative accentuation or feeble development of the medial limb of the iliofemoral ligament in the human subject in cases where the muscle iliacus minor occurs, as a variation, might be of value.

Summary and Conclusion

The muscle iliacus minor normally occurs in the *Semnopithecus entellus*. It takes origin from the anterior margin of the ilium between the two heads of the rectus femoris and is inserted into the lesser trochanter. The medial limb of the iliofemoral ligament is absent in this animal. This adduces additional evidence for the view that the muscle iliacus minor and the medial limb of the iliofemoral ligament are homologous structures.

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