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# Subspine Decompression And its Influence on Proximal Rectus Femoris Integrity and Iliopsoas Excursion

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**Summary**:
Our study maps the anatomic footprint of the direct head of the rectus femoris tendon on the AIIS and confirms a previously identified bare area along the inferior aspect of the AIIS.

**Abstract**:
PURPOSE
To determine the relative influence of anteroinferior iliac spine (AIIS) or subspine decompression on proximal rectus femoris integrity and iliopsoas (IP) excursion throughout a physiologic range of motion.

METHODS
This study was conducted in two segments to answer previously defined research questions. First, the anatomic footprint of the direct head of the rectus femoris was identified at its bony origin on the AIIS in a series of cadaveric specimens, and serial 5mm resections of the AIIS were made to determine the extent of proximal tendon disruption corresponding to each resection. A total of 19 matched cadaveric hips from 10 specimens were used for this study. Type I or II AIIS morphology was confirmed radiographically for inclusion in the study. Specimens were carefully dissected in order to retain direct and indirect heads of the proximal rectus femoris tendon at their respective bony origins. The anatomic footprint of the rectus femoris direct head was then measured using calipers. In addition, “IP tendon tracking” was assessed throughout a defined range of motion to identify a possible cause for internal snapping of the hip. Excursion of the medial border of the IP was measured as it traveled from its native resting position in the “IP tunnel” to the point where it first encountered bony impingement at the subspine region. The influence of sequential AIIS decompression on “IP tracking” was subsequently measured throughout this ROM.

RESULTS
The mean proximal to distal footprint of the rectus femoris direct head was 17.95 mm (SD 2.33), the mean medial to lateral distance was 11.84 mm (SD 2.99). The total footprint area of the rectus averaged 160.26 mm² (SD 55.96). There was a consistent bare area along the inferior aspect of the AIIS that averaged 4.84 mm (SD 1.42). With each successive 5 mm resection from 5-25 mm, the average percentage of remaining footprint was 96%, 65%, 35%, 14%, and 11%. No statistically significant difference was found between initial footprint area and the area after the first 5mm of resection (p=0.78). A statistically significant difference was found at all other amounts of resection. (p=0.002). The native excursion distance of the IP tendon to the inferior aspect of the AIIS was 14 mm. With each successive 5 mm of resection, the percentage of total distance before impingement on the AIIS improved 18%, 45%, 72%, 95%, and 100% respectively. A statistically significant difference was found in excursion at all levels of resection including 5mm (p=0.01).

CONCLUSIONS
Our study maps the anatomic footprint of the direct head of the rectus femoris tendon on the AIIS. It confirms a previously identified bare area along the inferior aspect of the AIIS. Sequential compromise in the rectus femoris origin was noted to occur as greater bony decompression was performed. Standard arthroscopic burr dimensions can

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be used as a simple clinical judgment tool to guide bony decompression of the AIIS. Sub-spine decompression does significantly influence tracking of the IP tendon throughout a physiologic ROM and may be considered as a surgical adjunct when treating symptomatic IP snapping.