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Case Study

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# A RARE ANATOMICAL VARIATION IN ORIGIN OF PSOAS MINOR MUSCLE: A CASE REPORT

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## ABSTRACT

There is a lesser-known muscle located deep within the human body that has piqued the interest of medical professionals including anatomists due to its unusual characteristics although playing an important function in stability and movement. Located in the abdominal region, the psoas minor muscle is a thin band of tissue that is frequently left unnoticed due to its larger counterpart, the psoas major muscle. The psoas minor plays a significant role in the complex balance of the musculoskeletal system and thus has the ability to affect many facets of health and wellbeing. An additional split of the psoas minor muscle was noticed at the National Institute of Ayurveda in Jaipur during the routine dissection of the posterior abdominal wall of a 96-year-old cadaver of North Indian origin. The psoas minor muscle origin variation is the main subject of this study, which also focuses on the importance of an extra split origin of muscle.

**KEYWORDS:** Posterior abdominal wall, Psoas minor muscle split, vertebrae Abbreviations: Right psoas minor muscle (RPMM), Left psoas minor muscle (LPMM), Thoracic vertebrae 12$^{th}$ (T12), Lumbar vertebrae 5$^{th}$ (L5).

## INTRODUCTION

The Psoas minor muscle is located next to the iliopsoas muscle group, deep within the abdominal cavity. It enters the iliopectineal eminence and the pectineal line of the pubis after emerging from the sides of the bodies of the twelfth thoracic (T12) and first lumbar vertebrae (L1). It inserts into the pectineal line of the pubis and the iliopectineal eminence by descending medially and anteriorly from its origin and crossing the pelvic brim. This muscle is innervated by lumbar plexus branches, principally via L1's anterior rami. The Psoas minor muscle is a small but interesting part of the human musculature that varies in terms of its origin and insertion places in addition to its presence. This variation makes a substantial contribution to our knowledge of anatomical diversity and how it affects clinical practice.

### Biomechanical Function of Psoas minor muscle

Stabilizing the pelvis and lumbar spine is the main job of the Psoas minor muscle. It is a component of the iliopsoas muscle group, which is essential for hip flexion and trunk stabilization, together with the larger Psoas major and iliacus muscles. The Psoas minor muscle aids in maintaining good alignment and posture during a variety of activities, including standing, walking, and lifting, by supporting the lumbar spine. It aids the Psoas major and iliacus muscles in producing force and regulating movement when engaging in hip flexion exercises like climbing stairs or pulling the knee to the chest. Its activation assists in regulating the pelvic and lumbar vertebrae's orientation, limiting excessive movement and preserving the integrity of the spine.

## CASE REORT

The dissection was done in the department of Rachana Sharir, National Institute of Ayurveda, Jaipur. These variations were found while dissecting approximately 96-year-old formalin fixed male cadaver of North Indian origin. Morphology of muscle was noted in the subject during routine dissection.

## MATERIAL AND METHODS

A routine dissection of posterior abdominal wall was performed on the cadaver and observed that an extra split was present in the Left Psoas minor muscle at the L5 vertebrae level with insertion at pectineal line and iliopectineal eminence via the iliopectineal arch was observed as depicted in the figures 1, 2 and 3.


**Figure 1: Depicting an extra split of Psoas minor at a level of L5.**


**Figure 2: showing the belly of Right Psoas Minor Muscle (RPMM) and Left Psoas Minor Muscle (LPMM) with extra split of LPMM origin.**

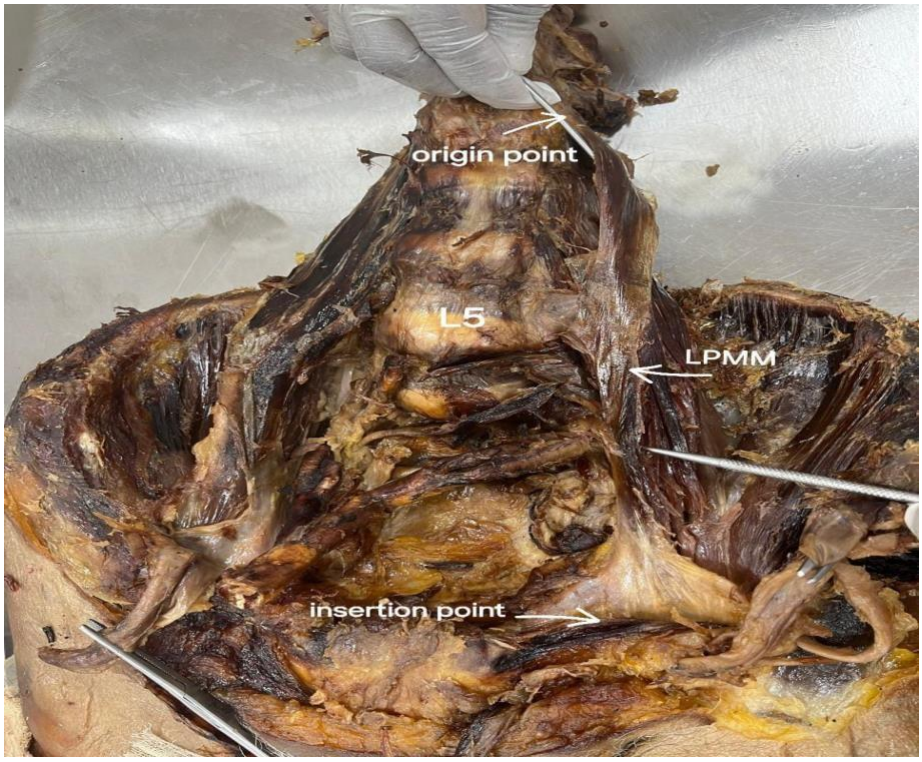


**Figure 3: showing origin and insertion point of Left Psoas Minor Muscle (LPMM) with the belly of muscle.**

## RESULT

Anatomical deviations that cause the muscle's attachment to differ from the normal include an additional split in the psoas minor muscle's origin. An extra point of origin, such as an extra lumbar vertebra or an unusual attachment to nearby structures, is usually involved in this deviation. These variances are typical in human anatomy and frequently represent the diversity and complexity of the human body.

In this cadaver psoas minor muscle was present on the either side while an extra split in the origin of left sided psoas minor was noted. Due to this split the muscle involved an additional point of origin which ranged from its normal origin T12 to L5 in its variant stage. The right sided psoas minor was observed to be normal in its origin.

### Clinical significance

These anatomical variances have important therapeutic ramifications, especially in the domains of radiography, physical therapy, and orthopedic surgery. In order to prevent unintentional harm to the lumbar spine or adjacent structures during treatments, surgeons need to be aware of these variances. To ensure the best possible recovery and functionality for their patients, physical therapists may also need to modify rehabilitation exercises. Our general understanding of human anatomy and evolution is improved by being aware of these variances. It emphasizes how flexible and varied the human body is by showing how even minor changes can affect structure and function.

## DISCUSSION AND CONCLUSION

The intriguing complexity of human anatomy is best illustrated by the additional split of the psoas minor muscle origin. This anomaly reminds us of the ongoing research and learning that anatomy is doing to better comprehend both normal and deviant anatomical systems.

Enhancing clinical procedures and improving human health and wellness are made possible by the in-depth exploration of these complexities by researchers and medical professionals.

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