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ANATOMICAL VARIABILITY OF THE PSOAS MINOR MUSCLE: A CADAVERIC CASE REPORT

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ABSTRACT

The psoas minor muscle is a slender, fusiform muscle located anterior to the psoas major and is considered an inconstant structure with limited functional significance in humans. Its presence shows marked anatomical variability across populations. The present cadaveric case report documents the bilateral presence of the psoas minor muscle in one cadaver and its bilateral absence in two other cadavers observed during routine dissection. In Case 1, a well-formed psoas minor muscle was identified bilaterally with typical origin, insertion, and nerve supply. In Case 2 and Case 3, the muscle was completely absent on both sides. This report highlights the morphological variability, evolutionary significance, and clinical relevance of the psoas minor muscle, emphasizing its importance in differential diagnosis of lower abdominal pain and retroperitoneal surgical procedures.

KEYWORDS: *Psoas minor muscle, Anatomical variation, Posterior abdominal wall, Cadaveric study.*

INTRODUCTION

The posterior abdominal wall musculature primarily consists of the psoas major, iliacus, and quadratus lumborum muscles. The psoas minor muscle, when present, lies anterior to the psoas major and is considered as a weak flexor of the trunk. It is well developed in quadrupeds and certain primates where it assists in pelvic flexion; however, in humans, its functional significance has diminished due to erect posture and bipedal locomotion.

The incidence of the psoas minor muscle varies widely, with reported absence rates ranging from 40% to 70% depending on ethnicity and population. Because of its variability and potential clinical implications such as psoas minor syndrome and radiological misinterpretation documentation of its presence and absence remains relevant. The present study reports a comparative cadaveric observation involving three cadavers to highlight this anatomical variability.

MATERIALS AND METHODS

The observations were made during routine anatomical dissections conducted for undergraduate medical students and during PG dissection as part of thesis works in the Department of Rachana Shareera at Shri Dharmasthala Manjunatheswara College of Ayurveda, Hassan, Karnataka. Dissections were carried out according to standard procedures described in Cunningham's Manual of Practical Anatomy.

After opening the abdominal cavity, the abdominal viscera were removed, and the posterior abdominal wall was exposed by reflecting the anterior layer of thoracolumbar fascia. The psoas muscle group was carefully dissected from origin to insertion to identify the presence or absence of the psoas minor muscle. Morphology, attachments, and nerve supply were documented.

CASE PRESENTATION AND OBSERVATIONS

Case 1: Bilateral Presence of Psoas Minor Muscle

In a male cadaver aged approximately 52 years, the psoas minor muscle was present bilaterally. On both sides, the muscle originated from the lateral surfaces of the bodies of the twelfth thoracic (T12) and first lumbar (L1) vertebrae along with the intervening intervertebral disc. The muscle belly was slender and fusiform, situated anterior to the psoas major.

Distally, the muscle continued as a long, flat tendon that descended anterior to the psoas major, positioned lateral to the external iliac artery, and inserted into the iliopubic eminence and pectineal line of the pubis. The tendon blended with the iliac fascia near its insertion. The muscle was innervated bilaterally by the ventral ramus of the first lumbar spinal nerve (L1).

Morphometric Observations (Average)
Total length: ~6.3 cm
Tendon length: ~14 cm
No additional variations were observed in surrounding neurovascular structures.

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Case 2 and Case 3: Bilateral Absence of Psoas Minor Muscle
In two other cadavers (both male), the psoas minor muscle was completely absent on both sides. In these cases, the psoas major muscle occupied the posterior abdominal wall in its usual anatomical position with no overlying fusiform muscle belly or tendinous structure corresponding to the psoas minor.
The absence was symmetrical and complete, supporting previous reports that describe a high prevalence of psoas minor agenesis in humans.

DISCUSSION

Anatomical and Evolutionary Perspective
The psoas minor muscle is an inconstant muscle of the human body, similar to the palmaris longus and plantaris muscles, showing considerable variation in its occurrence among different populations. Its regression is attributed to evolutionary adaptation toward upright posture and bipedal gait. Seib (1934) reported the presence of the psoas minor in 50% of Orientals, 43% of Caucasians, and 33% of Afro-Caribbean individuals. Sonali et al. (2013) observed bilateral presence in 35% of cadavers and unilateral presence in 5%. Joshi et al. (2010) reported absence of the muscle in 70% of their study sample.

The contrasting findings of bilateral presence in one cadaver and bilateral absence in two cadavers reinforce the marked variability of the psoas minor muscle and reflect its regressive evolutionary trend.

Clinical Significance
Although functionally weak, the psoas minor muscle holds considerable clinical importance. Hypertonicity or fibrosis of the muscle may result in psoas minor syndrome, characterized by pain in the iliac fossa, lower abdomen, or inguinal region. This pain may mimic conditions such as acute appendicitis, inguinal hernia, or gynecological pathology.

Radiologically, the presence of the psoas minor may be mistaken for lymphadenopathy or retroperitoneal masses in CT or MRI imaging. Surgically, unawareness of this muscle may lead to misidentification during retroperitoneal or pelvic procedures.

Toxicological / Medico-legal Perspective
When present, the psoas minor muscle demonstrates a short, slender muscle belly measuring approximately 7–12 cm with a comparatively long tendon of about 12-20 cm, a morphology that contributes to its marked anatomical variability.

From a medico-legal and toxicological standpoint, the psoas minor muscle assumes importance primarily as a normal anatomical variant rather than a structure of direct pathological relevance. During medico-legal autopsies, awareness of its frequent absence, unilateral presence, or asymmetrical development is essential to avoid misinterpretation as traumatic disruption, pathological atrophy, or post-mortem artifact. In cases involving retroperitoneal hemorrhage, decomposition, or chemical tissue changes, the slender muscle belly and long tendon of the psoas minor may be difficult to identify and should not be mistaken for fibrotic bands or abnormal soft-tissue structures. Although the muscle has no direct role in determining cause of death, documentation of its presence or absence contributes to accurate anatomical reporting and supports forensic identification by highlighting normal human variability.

Comparative Summary

Feature	Case 1	Case 2 & 3
Presence of PMM	Bilaterally present	Bilaterally absent
Morphology	Slender belly with long tendon	-
Insertion	Iliopubic eminence & pectineal line	-
Clinical relevance	Possible psoas minor syndrome	None

CONCLUSION

The present cadaveric case report demonstrates marked variability of the psoas minor muscle, ranging from bilateral presence to complete bilateral absence. This inconstant muscle of the posterior abdominal wall exhibits considerable individual variation, underscoring the importance of awareness among anatomists, clinicians, radiologists, and surgeons. Importantly, absence of the psoas minor does not result in any functional impairment in daily activities, as its role is minimal and effectively compensated by adjacent musculature. Recognition of such variability aids in accurate interpretation of imaging, diagnosis of lower abdominal pain, and avoidance of misinterpretation during surgical procedures.

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Fig.1: Cadaver1- Psoas Minor muscles with tendinous insertion.



Fig.2: Cadaver1- Psoas Minor muscle with tendinous insertion (left).

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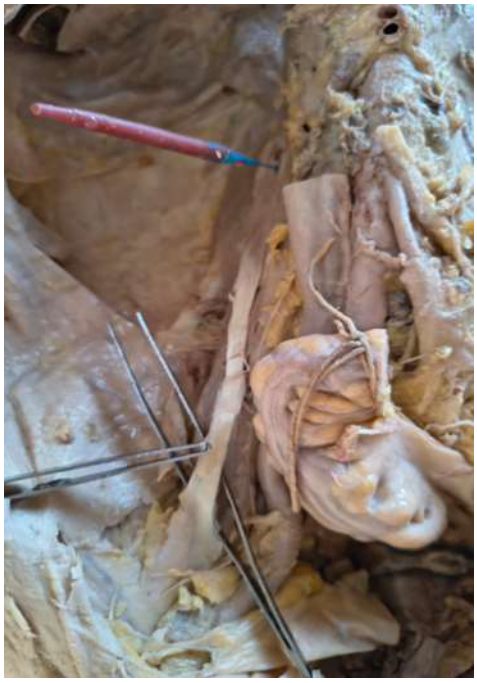


Fig.3: Cadaver1- Psoas Minor muscle with tendinous insertion (right).



Fig.4: Cadaver 3- Psoas Minor muscle absent bilaterally.

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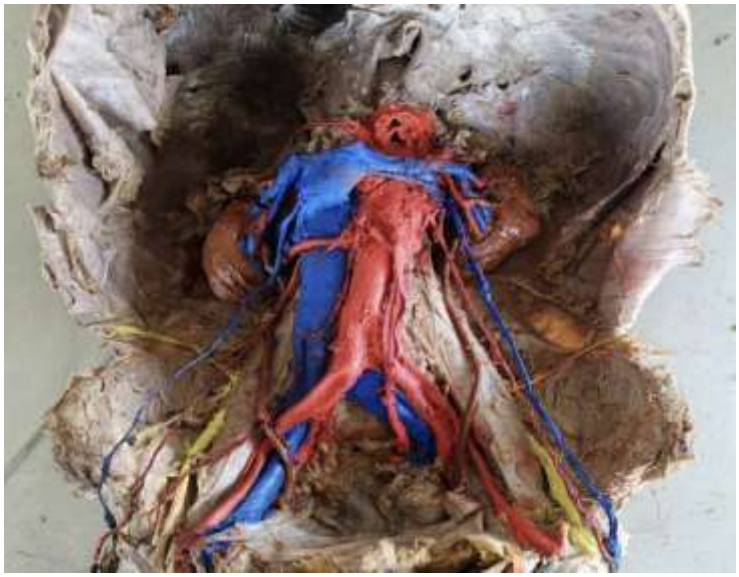


Fig.5: Cadaver 4- Psoas Minor muscle absent bilaterally

REFERENCES

1. *Deepa Somanath, Shivali Srivastava. Bilateral Occurrence of the Vestigial Muscle Psoas Minor: A Case Report. Int J Anat Res. 2015;3(1):963–965. DOI:10.16965/ijar.2015.132.*
2. *Amit Raj Sharma, Kunal Chawla. A Case Report on the Bilateral Psoas Minor Muscles with Clinical Significance. Int J Adv Res. 2023;11(8):545–547. DOI:10.21474/IJAR01/17419.*
3. *Sonali A, Sontakke Y, Joshi SS, Joshi SD. Morphology of Psoas Minor Muscle – Reviewed. J Evol Med Dent Sci. 2013;12(31):5867–5874.*
4. *Hanson P, Magnusson SP, Sorensen H, Simonsen EB. Anatomical Differences in the Psoas Muscles in Young Black and White Men. J Anat. 1999;194(2):303–307.*
5. *Gandhi S, Gupta N, Mehta V, Rath G. Anatomical and Clinical Insight of Variant Morphologies of Psoas Minor Muscle: A Case Report. Int J Curr Res Rev. 2013;5(14):106–110.*
6. *Seib GA. Incidence of the M. Psoas Minor in Man. Am J Phys Anthropol. 1934;19:229–246.*
7. *Joshi SD, Joshi SS, Dandekar UK, Daimi SR. Morphology of Psoas Minor and Psoas Accessorius. J Anat Soc India. 2010;59(1):31–34.*