



## Incidence Of Psoas Minor Muscle In Nnewi, South-East Nigeria

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### ABSTRACT

The psoas minor [P.minor] muscle is one of the paired muscles of the posterior abdominal wall. It arises with the highest fibres of psoas major from T12-L1 vertebrae and the intervertebral disc. It inserts by a long tendon at or near the iliopubic eminence and iliac fascia. Various authors describe different percentage incidences and differing modes of insertion. Some authors add it only as a footnote while some quote it just as not always present and some stated that it is unimportant. We decided to document its incidence and characteristics in our environment.

We found psoas minor muscle in only one cadaver out of twenty (20) cadavers dissected over a two-year period, October 2003 to September 2005. This gives only a five percent (5%) incidence as against 40%-60% quoted in most literature. In this cadaver, we also discovered that its development was different on the two sides.

**Key Words:** Psoas minor, Anatomic variation, Incidence, Posterior abdominal wall.

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The posterior abdominal wall is formed in the midline by the five lumbar vertebrae and their intervertebral discs. It is bounded above and laterally by the diaphragm and twelfth ribs and below by the upper parts of the bony pelvis [wings of the ilium]. It contains sets of muscles, fasciae, neurovascular bundles including the lumbar plexus and other structures. Four paired muscles are located here-psoas major, psoas minor, iliacus and quadratus lumborum. These muscles act on the vertebral column and the hip joint. Most textbooks describe only three of these preferring to either totally ignore the psoas minor muscle or add it only as a footnote [Snell 1995]. Various incidences are also quoted (Ellis 2002, Sinnatamby 2000, Romanes 2004, Rosse 1997, Romanes 1981, Warwick & Williams 1973) Some others avoided quoting any figures (Singh 2002, Frick et al 198). Various anatomic variations both in origin and insertion and also the side present have also been documented (Bergman et al 1984). All these show that there is yet no generally accepted incidence of psoas minor muscle in humans. These documentations are in foreign literatures. We are yet to document incidence rates in our environment. We hope that this report will serve as a basis on which other studies in our environment will depend. In this era of improvement and increase in reconstructive

surgeries and need for muscle flaps and transfers, such a muscle with a very long tendon and little function can serve as a veritable tool for the reconstructive and orthopaedic surgeon. Our knowledge of muscle phylogeny will also be improved by studies such as this. Our present study yielded a 5% incidence and difference in degree of development on the two sides of the same individual.

### MATERIALS AND METHODS

The cadaver in which this muscle was found was that of a middle-aged male black Nigerian. Dissection was as outlined by Cunningham's Manual of Practical Anatomy (Romanes 2004). In the dissection of the posterior abdominal wall; all the other named muscles were found to be normal on both sides. This was also the same in nineteen [19] other cadavers previously dissected. The subject under study also has the psoas minor muscle but with different anatomical arrangements on the left and right sides. Measurements and photographs were taken of the muscles.

### RESULTS

The Psoas minor muscle was more developed on the left side than on the right of the same cadaver. Both received innervation via L1 fibres-Fig I  
**On the Left (Fig I & II)**

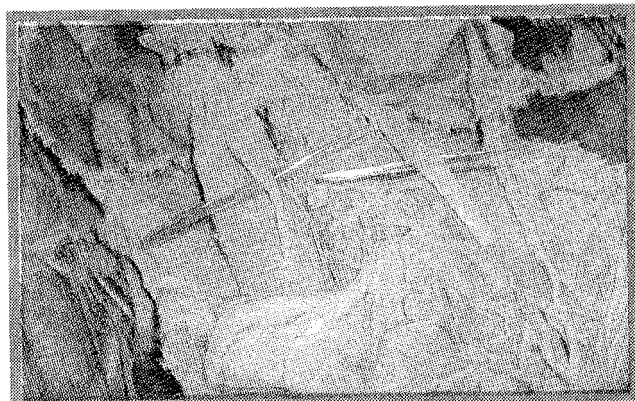


Fig. 1 Psoas minor muscle

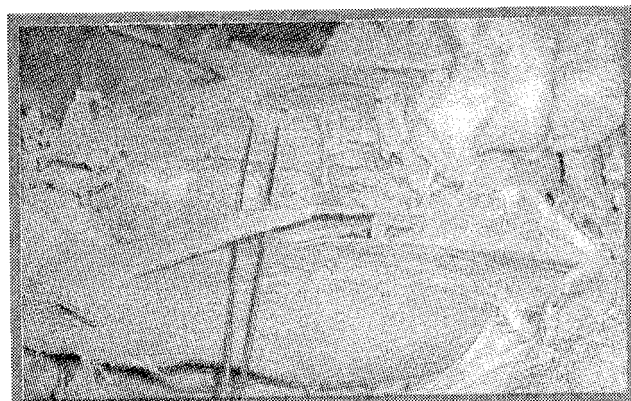


Fig. 2 Psoas minor muscle (left)

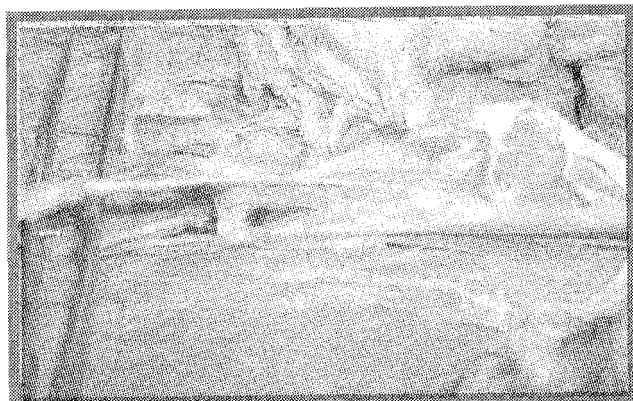


Fig. 3 Psoas minor muscle (right)

- Origin-L12-L1 together with upper fibres of Psoas major but with separate heads.
- Insertion- together with Psoas fascia into the lesser trochanter of femur.
- Muscle bulk -5.5cm at the greatest part.
- Muscle length-11.5cm
- Tendon length- 16.0cm

**On the Right (Fig I & III)**

- Origin- T12- L1 together with Psoas major.
- Insertion- Fuses with Psoas fascia in the pelvis.
- Muscle bulk -3.6cm at the greatest part.
- Muscle length-8.0cm
- Tendon length- 7.00cm

**DISCUSSION**

On the posterior abdominal wall of man are paired groups of muscles which take origin from the lumbar vertebral column, intervertebral discs, spines and transverse processes, the twelfth rib and iliac bone. These includes the

Psoas major. Iliacus, quadratus lumborum and psoas minor. They exert their actions on these bone helping in stabilization and bending movements. The psoas minor muscle is a weak flexor of the lumbar vertebral column (Sinnatamby 2000, Singh 2002, Romanes 1981, Warwick & Williams1973). The psoas minor is known to be absent in certain individuals. Our observation over a two year period 2003 2005 revealed a 5% incidence, one out of twenty cadavers. Bergman et al (1984) reported that this muscle is not constant in man. They stated that out of 182 subjects, it was present on both sides in 70 subjects, on the right side in 12, on the left in 8 and absent on both sides in 92. They also reported variations in its origin and insertion which agrees with our finding on this subject where the left inserted with psoas major into the lesser trochanter while the right fused with the psoas fascia. The origin on both sides and innervation from L1 fibres are also in agreement with finding of Bergman and other authors.

The variability in the reported incidence of psoas minor muscle is glaring. While some authors avoided quoting figures (Frick et al 1987, Singh 2002), others gave various percentages. Snell (1995), Ellis (2002) and Romanes (1986), Romanes 1981, Warwick & Williams1973) all gave 40% absence and Bergman (1984) gave a 56% presence. (Sinnatamby 2000) stated that it is present in two out of every three cadavers while (Rosse 1997) stated that it is present in less than half of the subjects. The variability in its origin and insertion and development is however not in doubt as depicted by this subject under

discussion.

Unusual findings in cadavers and patients have variously been reported in the literature with some having marked clinical implications (Chukwuanukwu et al 2005, Asomugha et al 2004, Montex 2002, Prasado 2001, Igbigbi et al 1995, Thorek 1985). Further studies involving more subjects and centres in our environment will surely establish the true incidence of this muscle.

The knowledge will be of immense value to Anatomists interested in muscle phylogeny and human evolution/development. In addition, Reconstructive and Orthopaedic Surgeons will also find the muscle a valuable tool when faced with a deficit that requires muscle flaps and transfers in the region of this muscle.

### CONCLUSION

The incidence of psoas minor muscle in our environment is yet to be determined and further studies are required to establish this.

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