

The Relation of Sacral Nerve Roots to the Piriformis Muscle (Abstract #550)

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Objective: To assess the prevalence of piriformis muscle bundles originating medial to the sacral foramina which could potentially entrap intrapelvic portions of sacral nerve roots and cause pudendal neuralgia, sciatica, refractory OAB, sexual dysfunction, and fecal incontinence.

Design: A cadaveric study.

Setting: Laparoscopic neuroanatomy lab

Participants: 32 donated female cadavers.

Methods: The piriformis muscle and sacral nerve roots were dissected through a peritoneal incision at the sacral promontory, followed by the identification and incision of the presacral fascia between the internal iliac vessels and hypogastric nerve on the right. The presacral space was developed, and the hypogastric fasciae opened. Notes were taken of any anatomical variations of the piriformis muscle in relation to the sacral foramina and sacral nerve roots.

Results: Anatomical variations were seen in 12 of 32 cadavers (37.5%, 95% CI 20.73, 54.27). None had bilateral variants. Of the twelve variations, five were on the left, and seven on the right. The nerve root most involved was S3 (9/12), followed by S2 (11/12), S1 (5/12), and S4 (2/12).

Conclusion: 37.5% of the population may have piriformis muscle anatomical variations that can entrap the intrapelvic portions of the sacral nerve roots which may lead pudendal neuralgia, sciatica, refractory OAB, sexual dysfunction, and fecal incontinence. Knowledge of the possible anatomical variations can aid the differential diagnosis of these symptoms and open broader treatment options that are etiology-oriented.

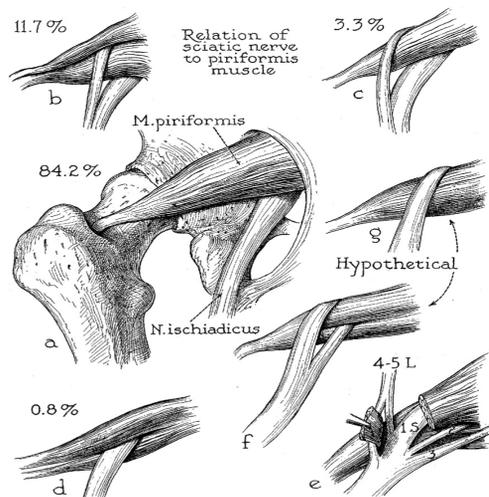


Figure 1: Anatomic variations reported by Beaton and Anson.

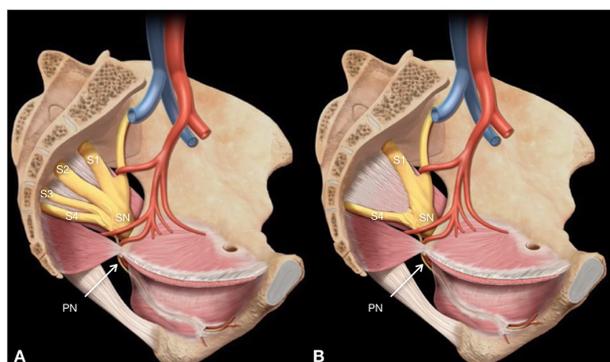


Figure 2: A shows expected anatomy; B shows anatomical variation with S2 and S3 entrapped. PN = pudendal nerve; SN = sciatic nerve

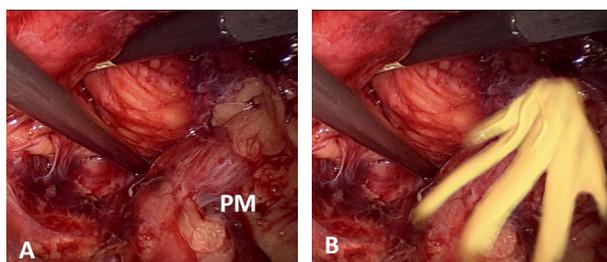


Figure 3: A shows abnormal piriformis muscle bundle; B shows the expected sacral nerve roots. PM = piriformis muscle.

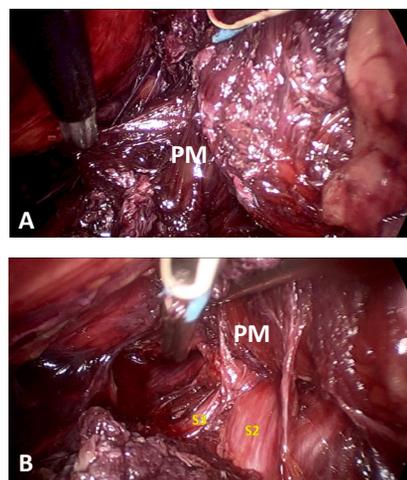


Figure 4: A shows dissection of the piriformis muscle bundle to reveal B, entrapped S2 and S3 nerve roots. PM = piriformis muscle.