

# Anatomical variations of the intrapelvic course of the superior gluteal vessels and their relationship to the lumbosacral plexus: A cadaver study

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Abstract #549

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## Introduction

- The role of malformed or dilated branches of iliac vessels in causing pelvic pain is not well understood<sup>1,5</sup>.
- Such vessels may entrap nerves of the lumbosacral (LS) plexus against the pelvic sidewalls, producing symptoms not typically encountered in gynecological practice, including sciatica and refractory urinary and/or anorectal dysfunction<sup>6,11,16</sup>.
- Recently, compression of LS nerve roots by variant superior gluteal veins (SGV) has been identified laparoscopically in patients with sciatica with no clear spinal or musculoskeletal cause. Laparoscopic LS nerve decompression yielded a 92.3% success rate, thereby identifying this neurovascular conflict – the Superior Gluteal Vein (SGV) Syndrome – as a potential yet previously unrecognized intrapelvic cause of sciatica<sup>17</sup>.
- Descriptions of anatomical variation in the venous branching pattern of the iliac vessels, which includes the SGV, in the asymptomatic general population, are limited.

## Objectives

- To better understand the clinical significance of aberrant superior gluteal (SG) vessel anatomy we investigated the prevalence of such variants in a general population of female cadavers.
- We describe and quantify variants in the SG vessels, particularly in the SGV, to identify those potentially responsible for symptomatic LS nerve entrapment.

## Methods

- Laparoscopic pelvic dissection was performed in 46 female partially embalmed cadavers.
- Retroperitoneal entry and dissection was performed using standard laparoscopic techniques with sharp & vessel-sealing instruments
- The branching patterns of the SG vessels and their relationships to nearby LS nerve roots were documented (Figure 1)
- Main outcome measure: prevalence of variants in the cadaver population
- Secondary outcome measures: vessels involved (arterial, venous, or both) and laterality (left, right, or bilateral)
- Predefined subgroups: comparison by previous hysterectomy (yes or no) and by internal iliac branching pattern (posterior or direct)

## Results

- SG vessel variants were identified in 28.89% (95% CI 15.65 to 42.13%) of specimens (Figure 2).
- Variants were significantly more likely to originate directly from the internal iliac vessels rather than from a posterior trunk (p=0.0419)
- The presence of a variant was not significantly associated with previous hysterectomy (p=0.7925).

Figure 2. Laparoscopic cadaver dissection results

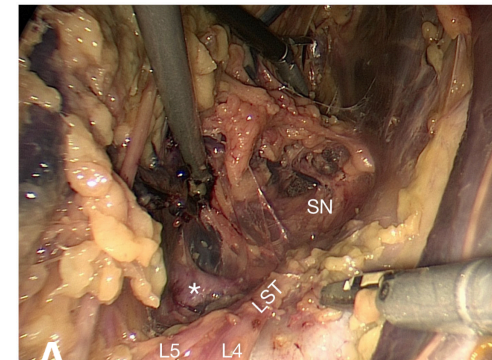
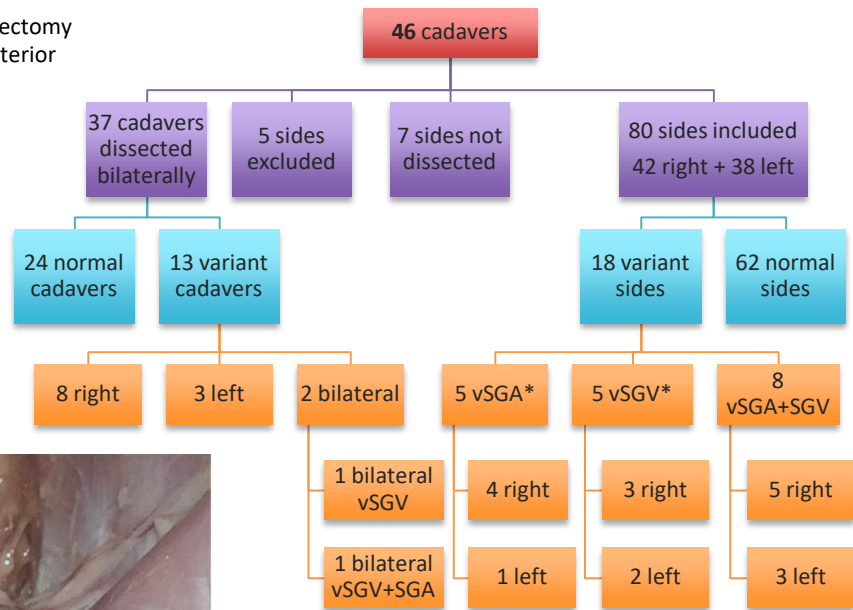
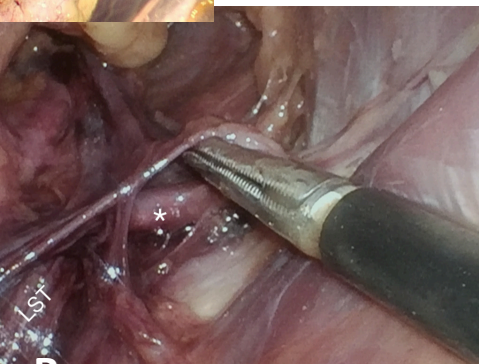


Figure 1. A: Normal superior gluteal vein (\*) – the vein enters the pelvis between the LS trunk (LST) and the underlying piriformis muscle; B: Variant superior gluteal vein (\*) – the variant vein enters the pelvis anteriorly to the LST, entrapping it against the piriformis muscle



\*vSGA (variant SGA); vSGV (variant SGV)

## Discussion

- Laparoscopic dissection of female cadavers reveals that SG vessel variants also exist in about 30% of the general population as a potential source of entrapment. Whereas all SG variants in symptomatic patients were venous, both arterial and venous variants were identified in cadavers.
- These findings support our hypothesis that variant SG vessels, particularly aberrant SGVs, can be the source of symptoms of sciatica with lower trunk symptoms, anorectal dysfunction, and/or perineal or gluteal pain by compressing the LS plexus and nerve roots. This intrapelvic neurovascular conflict – the SGV Syndrome – should be considered in cases of sciatica with no identifiable spinal or musculoskeletal etiology.
- Future directions include developing and validating MRI protocols to assist in diagnosis and surgical planning.

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