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

Cancelliere L1, Li A L K1, Marcu P2, Fernandes G L3, Sermer C1, Shaubi M3, Balica A4, Morozov V5, Campian E C2, Solnik M J1, Girão M J B C3, Lemos N6

1. University of Toronto, Toronto, Canada, 2. Saint Louis University, Missouri, USA, 3. Federal University of São Paulo, São Paulo, Brazil, 4. Rutgers Robert Wood Johnson Medical School, New Jersey, USA, 5. Georgetown University, Washington DC, USA, 6. University of Toronto, Toronto, Canada; Federal University of São Paulo, São Paulo, Brazil

Abstract #549
The authors have no conflicts of interest to disclose.

Introduction

- The role of malformed or dilated branches of iliac vessels in causing pelvic pain is not well understood.1-5. 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.6-11
- Recently, compression of LS nerve roots by variant superior gluteal veins (SGV) has been identified laparoscopically in patients with sciatica.11-15,16 Such vessels may entrap nerves of the LS plexus against the pelvic sidewalls, producing symptoms not typically encountered in gynecological practice, including sciatica and refractory urinary and/or anorectal dysfunction.6-11,16
- Laparoscopic pelvic dissection was performed in 46 female partially embalmed cadavers.
- 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).

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.
- Retropitoneal 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).

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 urinary tract 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.

References

1. University of Toronto, Toronto, Canada, 2. Saint Louis University, Missouri, USA, 3. Federal University of São Paulo, São Paulo, Brazil, 4. Rutgers Robert Wood Johnson Medical School, New Jersey, USA, 5. Georgetown University, Washington DC, USA, 6. University of Toronto, Toronto, Canada; Federal University of São Paulo, São Paulo, Brazil