

Selected papers: 41st Annual Meeting

SOCIETY OF GYNECOLOGIC SURGEONS

Next annual meeting San Antonio, Texas, March 26–29, 2017

SGS



Inferior gluteal and other nerves associated with sacrospinous ligament: a cadaver study

Maria E. Florian-Rodriguez, MD; Adam Hare, MD; Kathryn Chin, BS; John N. Phelan, PhD; Christopher M. Ripperda, MD; Marlene M. Corton, MD, MSCS

Background

Reported rates of gluteal pain after sacrospinous ligament fixation range from 12–55% in the immediate postoperative period and from 4–15% 4–6 weeks postoperatively. The source of gluteal pain often is attributed to injury to the nerve to levator ani or pudendal nerve. The inferior gluteal nerve and other sacral nerve branches have not been examined thoroughly as potential sources of gluteal pain.

Objectives

The purpose of this study was to further characterize anatomy of the inferior gluteal nerve and other nerves that are associated with the sacrospinous ligament from a combined gluteal and pelvic approach and to correlate findings to sacrospinous ligament fixation.

Study Design

Dissections were performed in female cadavers that had not been embalmed with gluteal and pelvic approaches. From a pelvic perspective, the closest structure to the superior border of the sacrospinous

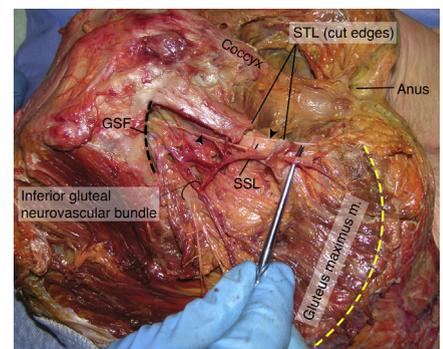
ligament midpoint was noted, and the sacral nerves that perforated the ventral surface of coccygeus muscle were examined. From a gluteal perspective, the closest distances from ischial spine to the pudendal, inferior gluteal, posterior femoral cutaneous, and sciatic nerves were measured. In addition, the closest distance from the midpoint of sacrospinous ligament to the inferior gluteal nerve and the origin of this nerve were documented. The thickness and height of the sacrospinous ligament at its midpoint were measured. Sacral nerve branches that coursed between the sacrospinous and sacrotuberous ligaments were assessed from both a pelvic and a gluteal approach. Descriptive statistics were used for data analysis.

Results

Fourteen cadavers were examined. From a pelvic perspective, the closest structure to the superior border of sacrospinous ligament at its midpoint was the S3 nerve (median distance, 3 mm; range, 0–11 mm). Branches from S3 and/or S4 perforated the ventral surface of coccygeus muscles in 94% specimens. From a gluteal perspective, the closest structure to ischial spine was the pudendal nerve (median distance, 0 mm; range, 0–9 mm). Median closest distance from inferior gluteal nerve to ischial spine and to the midpoint of sacrospinous ligament was 28.5 mm (range, 6–53 mm) and 31.5 mm

FIGURE

Nerve branches associated with sacrotuberous ligament



Superior view of dissected right gluteal region shows branches from sacral plexus piercing the transected sacrotuberous ligament or passing between the sacrotuberous ligament and sacrospinous ligament. Note that these nerves (arrowheads) either perforate the lower edge of gluteus maximus muscle or enter subcutaneous tissue lateral to the anus. The dashed yellow line indicates the cut and reflected edges of gluteus maximus muscle; the dashed black line indicates the greater sciatic foramen.

GSF, greater sciatic foramen; m, muscle; SSL, sacrospinous ligament; STL, sacrotuberous ligament.

Florian-Rodriguez et al. Nerves associated with sacrospinous ligament. *Am J Obstet Gynecol* 2016.

(range, 10–47 mm), respectively. The inferior gluteal nerve arose from dorsal surface of combined lumbosacral trunk and S1 nerves in all specimens; a contribution from S2 was noted in 46% of hemipelvises. At its midpoint, the sacrospinous ligament median thickness was 5 mm (range, 2–7 mm), and its median height was 14 mm (range, 3–22 mm). In 85% of specimens, 1 to 3 branches from S3 and/or

Cite this article as: Florian-Rodriguez ME, Hare A, Chin K, et al. Inferior gluteal and other nerves associated with sacrospinous ligament: a cadaver study. *Am J Obstet Gynecol* 2016;215:646.e1-6.

0002-9378/free
© 2016 Elsevier Inc. All rights reserved.
<http://dx.doi.org/10.1016/j.ajog.2016.06.025>

ajog.org Read this article in full at ajog.org

S4 nerves pierced or coursed ventral to the sacrotuberous ligament and perforated the inferior portion of the gluteus maximus muscle (Figure).

Conclusions

Damage to the inferior gluteal nerve during sacrospinous ligament fixation is an unlikely source for postoperative gluteal pain. Rather, branches from S3 and/or S4 that

innervate the coccygeus muscles and those coursing between the sacrospinous and sacrotuberous ligaments to supply gluteus maximus muscles are more likely to be implicated. A thorough understanding of the complex anatomy surrounding the sacrospinous ligament, limiting depth of needle penetration into the ligament, and avoiding extension of needle exit or entry point above the upper extent of sacrospinous

ligament may reduce nerve entrapment and postoperative gluteal pain. ■

Author and article information

From the Department of Obstetrics and Gynecology (Drs Florian-Rodriguez, Hare, Ripperda, and Corton), the Department of Cell Biology (Dr Phelan), and The University of Texas Southwestern Medical School (Ms Chin), University of Texas Southwestern Medical Center, Dallas, TX.

The authors report no conflict of interest.

Presented at the 42nd Annual Scientific Meeting, Society of Gynecologic Surgeons, Palm Springs, CA, April 10-13, 2016.