

Key Anatomical Concepts, Landmarks and Proposed Terminology for Nerve-sparing Gynecologic Surgery: a Narrative Review

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INTRODUCTION

- Nerve-sparing gynecologic surgery allows for complete excision of malignancy or deeply infiltrating endometriosis while preserving autonomic pelvic function¹, including bladder, bowel, and sexual function.
- Implementation of nerve-sparing techniques has been limited².
 - Inconsistency in terminology³ is a barrier, making learning nerve sparing approaches more challenging.
- Despite the existence of the Terminologia Anatomica reference⁴, clinicians and researchers continue to use a variety of names for certain structures, suggesting a possible disconnect between the anatomists' and surgeons' perspectives.
- We aim** to synthesize the terminology utilized in nerve-sparing surgical literature and propose standardized and non-conflicting terms to allow for consistent vocabulary, ultimately making nerve-sparing surgery accessible to every gynecologic surgeon.

RESULTS

- 223 articles identified, 78 included after abstract screening (**Appendix**)
- 44/78 (54%) focused on cervical cancer, 14/78 (18%) on endometriosis
 - Others: combination of both, other gynecologic cancer, or anatomy
- 27/78 (35%) cadaveric/anatomical studies, 15/78 (19%) surgical videos, 13/78 (17%) case reports/series
 - Others: reviews, observational studies, 1 RCT

Figure 1 – Pelvic Nerves

Recommended standardized name bolded, alternative names plain

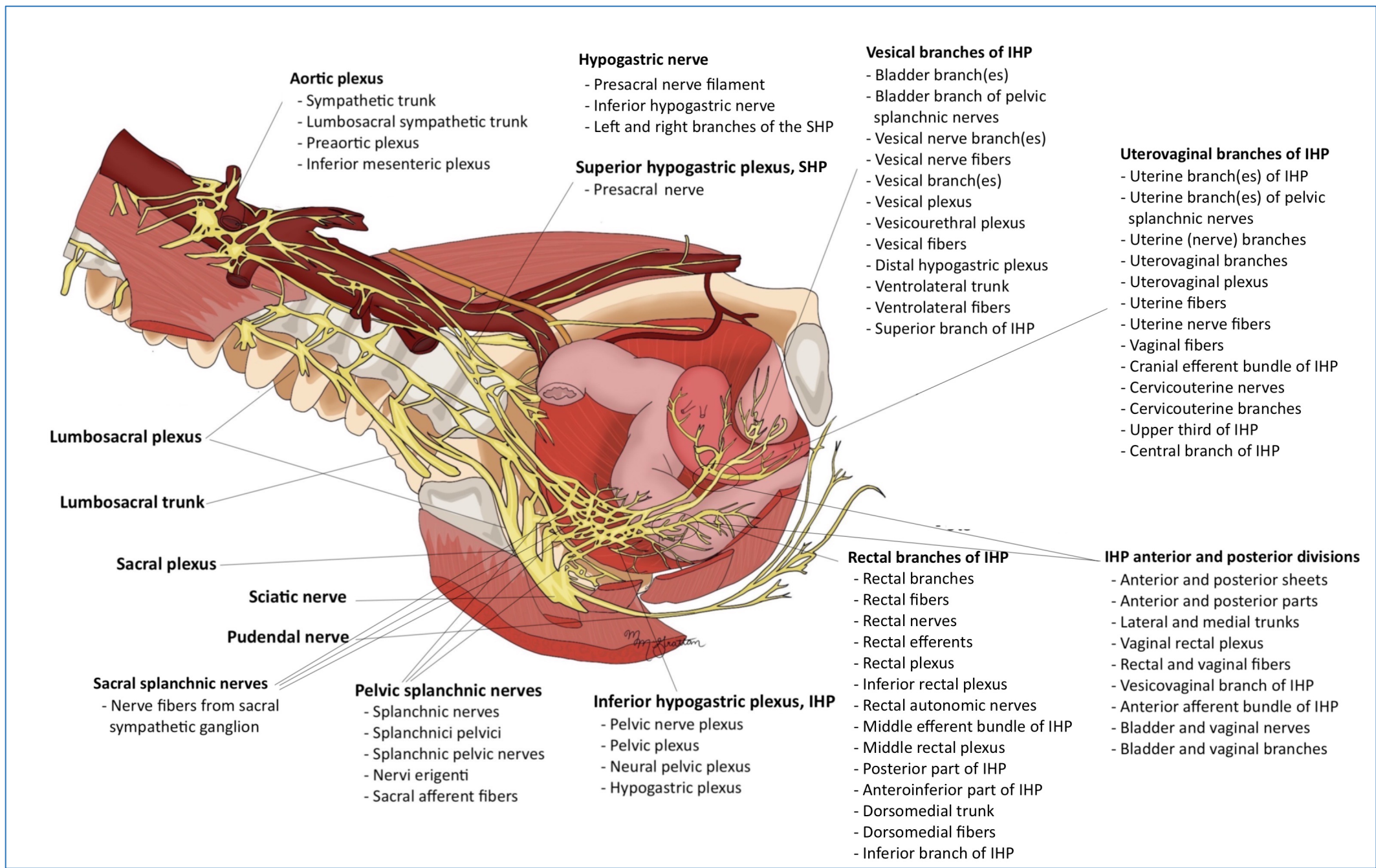


Table 2 – Pelvic Spaces

Recommended Standardized Name	Alternative Names
Retropubic space	Space of Retzius Paravaginal space
Paravesical space	
Obturator space	Obturatoric space
Vesicovaginal space	Vesicocervical space
Yabuki space	Yabuki's fourth space Fourth place Avascular space located immediately below the entrance of the ureter into the bladder
Rectovaginal space	Vaginal-rectal space Prerectal space
Presacral space	Waldeyer's presacral space Avascular layer below the hypogastric nerve Inferior retrorectal space Waldeyer's space
Retrorectal space	Pararectal space Okabayashi's space/Latzko's space Pararectal fossa (medial/lateral) Caudal/cranial chamber of pararectal space Pelvisubperitoneal space Deep retrorectal space Avascular layer above the hypogastric nerve Superior retrorectal space Holy Plane Heald's Holy Plane
Iliolumbar space	Lumbosacral space

METHODS

Literature search (PubMed): "pelvis" AND "nerve sparing"

- Included: nerve-sparing in gynecologic context
- Excluded: exclusively non-gynecologic surgeries, animal studies

Narrative review performed to synthesize terminology for:

- Nerves
- Fasciae
- Retroperitoneal spaces

Relevant additional references from these articles also included

Data extracted:

- Article type
- Surgery type
- Anatomical structure & function

Each unique term identified, categorized by structure, and reference frequency calculated

Consensus reached among all 4 reviewers for each term, considering:

- Popularity in literature
- Possibility of overlapping with other structure names

Table 1 – Pelvic Fascia & Ligaments

Recommended Standardized Name	Alternative Names
Endopelvic fascia	Pelvic fascia
Parietal fascia	Hypogastric fascia Fascia of the piriformis muscle Parietal hypogastric endopelvic fascia Uterohypogastric fascia
Presacral fascia	Rectosacral ligament Rectosacral fascia Waldeyer's fascia
Visceral fascia	Mesorectal fascia Proper rectal fascia Fascia propria of rectum
Parametrium	Paracervix
Anterior parametrium	Ventral parametrium Ventral paracervix Vesicouterine ligament Bladder pillar Vesicocervical ligament Posterior leaf vesicouterine ligament Vesicocovaginal ligament
Lateral parametrium	Cardinal ligament Lateral paracervix Lateral ligament
Posterior parametrium	Uterosacral ligament Sacrouterine ligament Rectouterine ligament Uterosacral peritoneal fold Sacrovaginal ligament Vaginosacral ligament Dorsal parametrium Dorsal paracervix Rectovaginal ligament
Rectal wings	Rectal lateral ligament Lateral ligament of the rectum Lateral rectal ligament Rectal pillars
Paracolpium	Paravaginal tissues

DISCUSSION & CONCLUSION

- A multitude of names were identified for key anatomical structures, including pelvic autonomic nerves, spaces, fasciae and ligaments
 - Terminology for branches of IHP are particularly unclear – i.e. 14 names used for rectal branches of IHP
- Significant overlap exists between alternative names for different structures, creating confusion for clinicians
- We propose consistent terminology of pelvic autonomic nerves, spaces, fasciae and ligaments to facilitate surgeons learning nerve-sparing approaches to gynecologic surgery

APPENDIX – INCLUDED STUDIES

- Possover M, Quakernack J, Chiantera V. The LANN Technique to Reduce Postoperative Functional Morbidity in Laparoscopic Radical Pelvic Surgery. *J Am Coll Surg*. 2005;201(6):913-917. doi:10.1016/j.jamcollsurg.2005.07.006
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