

JİNEKOLOJİK ENDÖSKOPİ PLATFORMU



6. MİNİMAL İNVAZİV JİNEKOLOJİK CERRAHİ KONGRESİ

Nöropelvioloji nedir?

Prof. Ercan BAŞTU, M.D. MSc.

***Biruni Üniveritesi Kadın Hastalıkları ve Doğum ABD**

****Visiting Professor , Department of OB/GYN
University of Massachusetts**





Neuropelveology is an emerging speciality focusing on the pathologies of the pelvic nervous system.

Periferik sinir sistemi

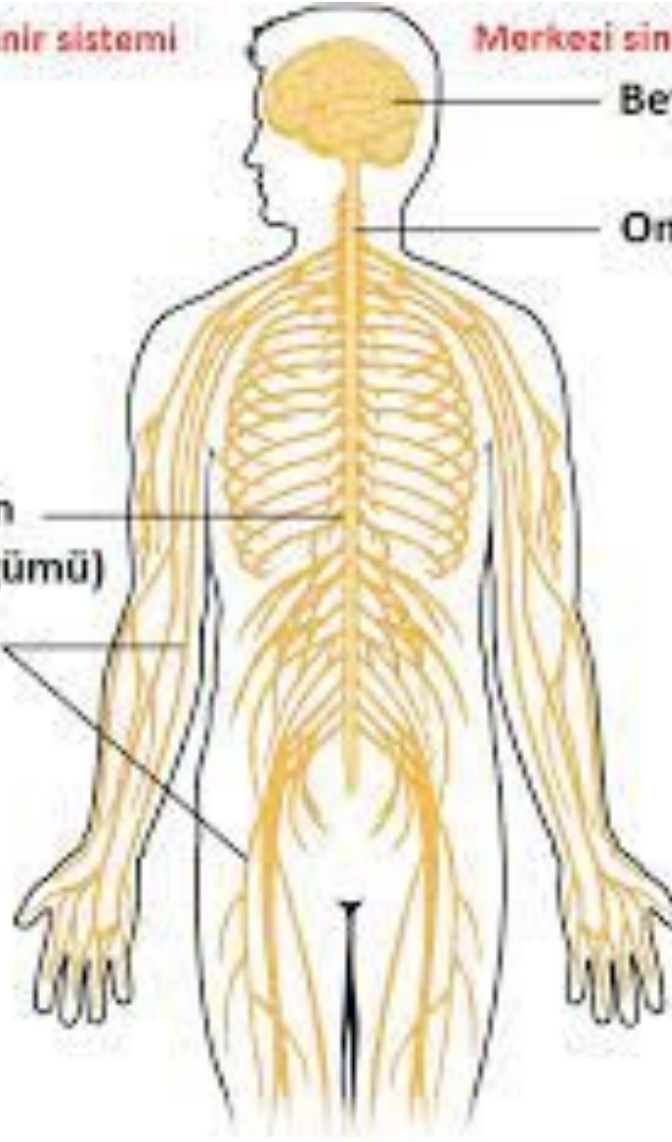
Merkezi sinir sistemi

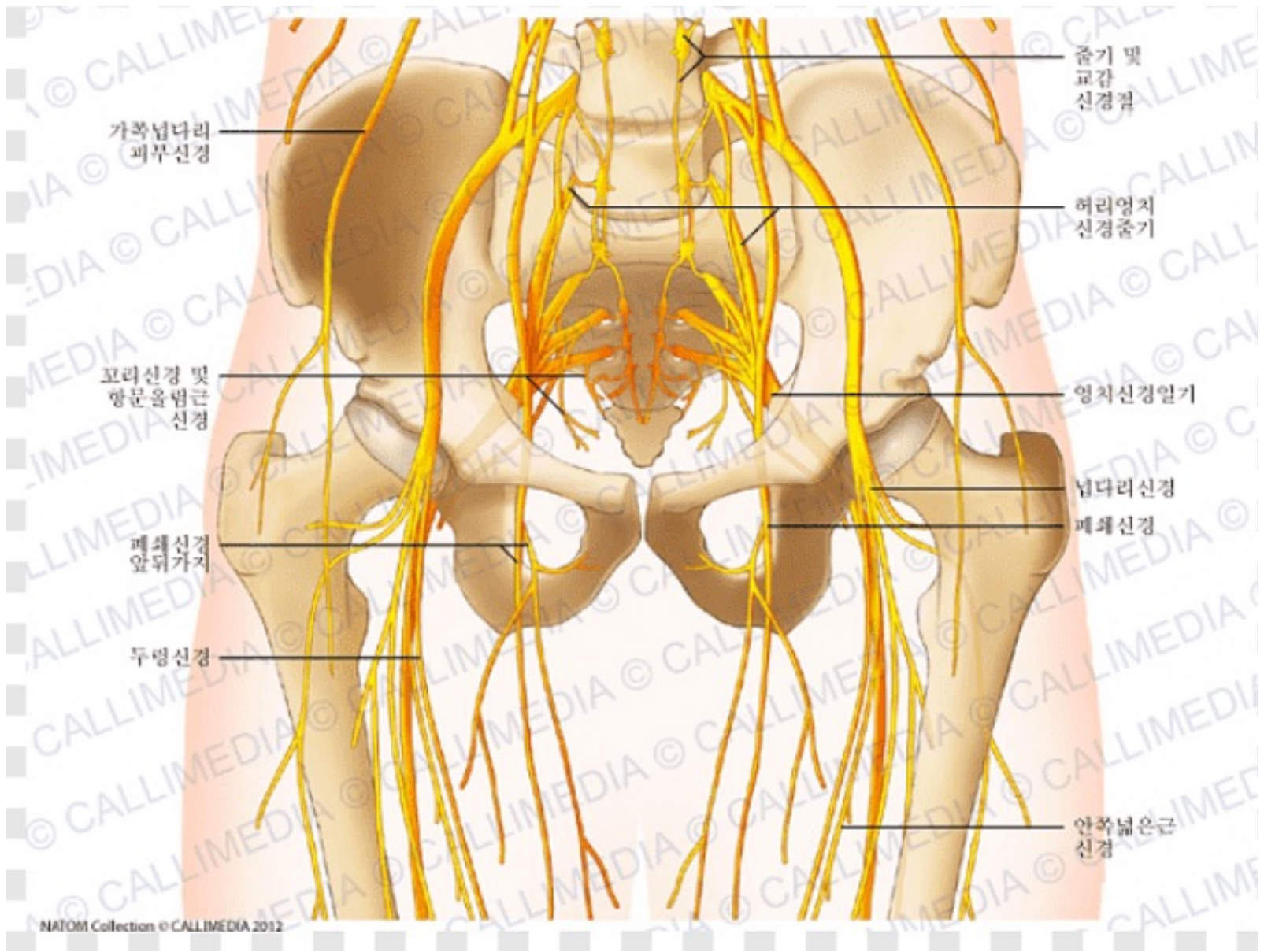
Beyin

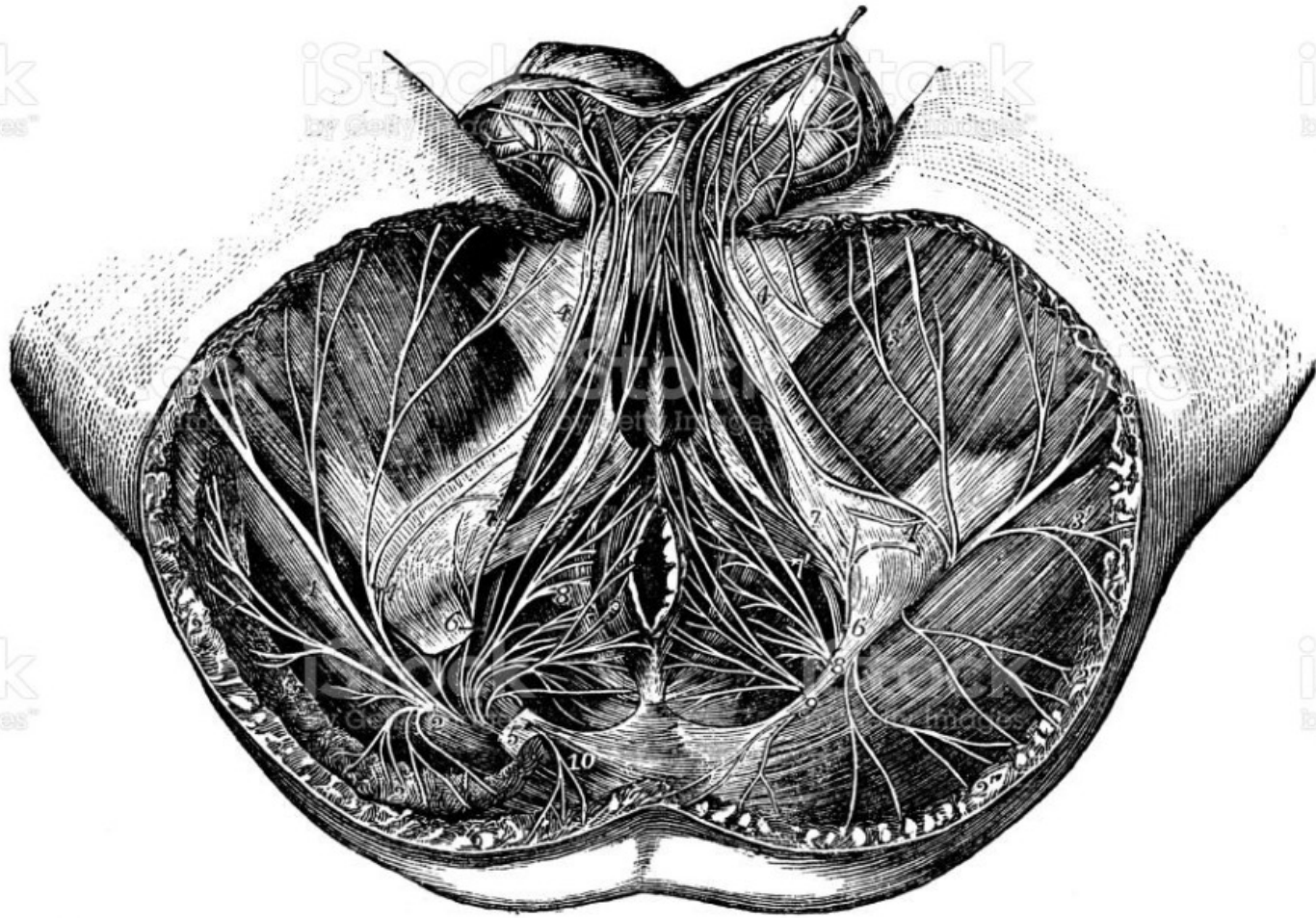
Omurilik

Gangliyon
(sinir düğümü)

Periferik
sinir







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NEUROPELVEOLOGY

- Difficulties of access for neurologists
- Difficulties of access for neurosurgeons & orthopedists



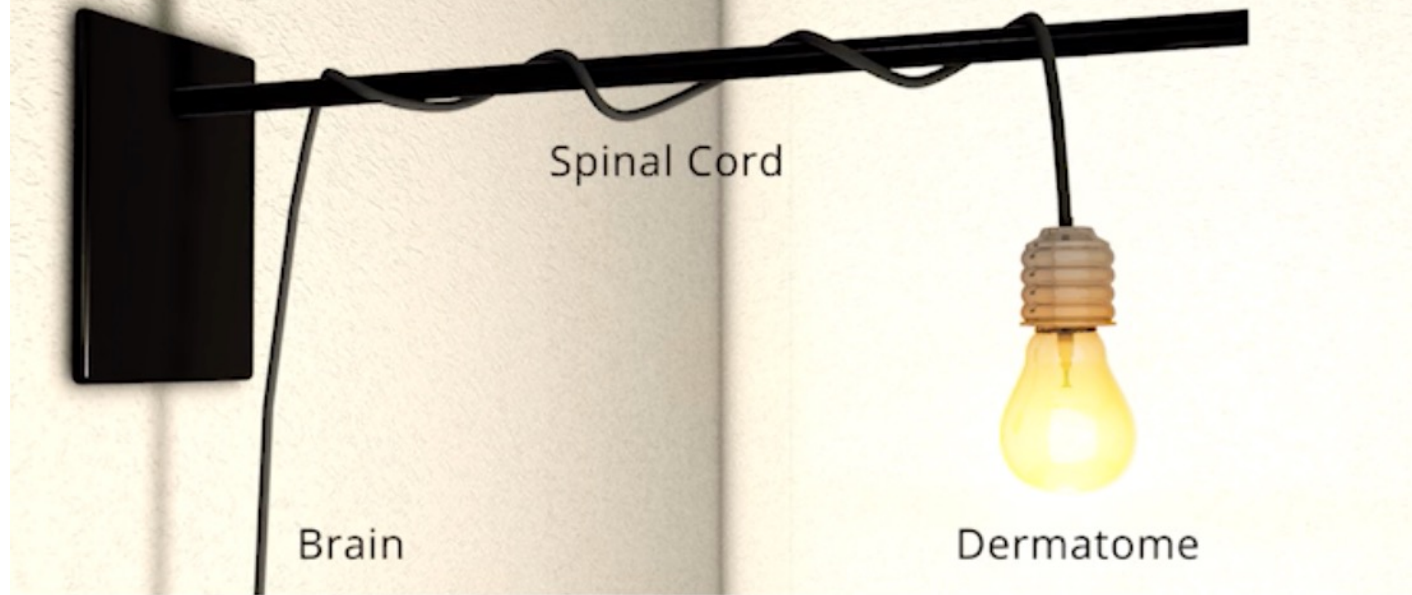
- Protection by the pelvis
- Pelvic vessels → hemorrhagia
- Deep in retroperitoneal space
- Difficulties of understanding pelvic neuroanatomy
- Lack of awareness

- Chronic pelvic pain syndrome (CPPS),
- Sciatic Pain (SP) and
- Chronic Low Lumbar Pain (LLP)
- Vulvodynia or Irritable Bowel Syndrome
- a high prevalence, varying between 10 and 39% of the population

- Most patients have a variety of further "associated" problems,
 - including bladder or bowel dysfunction,
 - sexual dysfunction and other
 - systemic or constitutional symptoms
- Because of the stigma and social isolation of these patients, it is not surprising that other associated problems may co-exist, such as depression, anxiety and drug addiction.

DIAGNOSTIC IN NEUROPELVEOLOGY

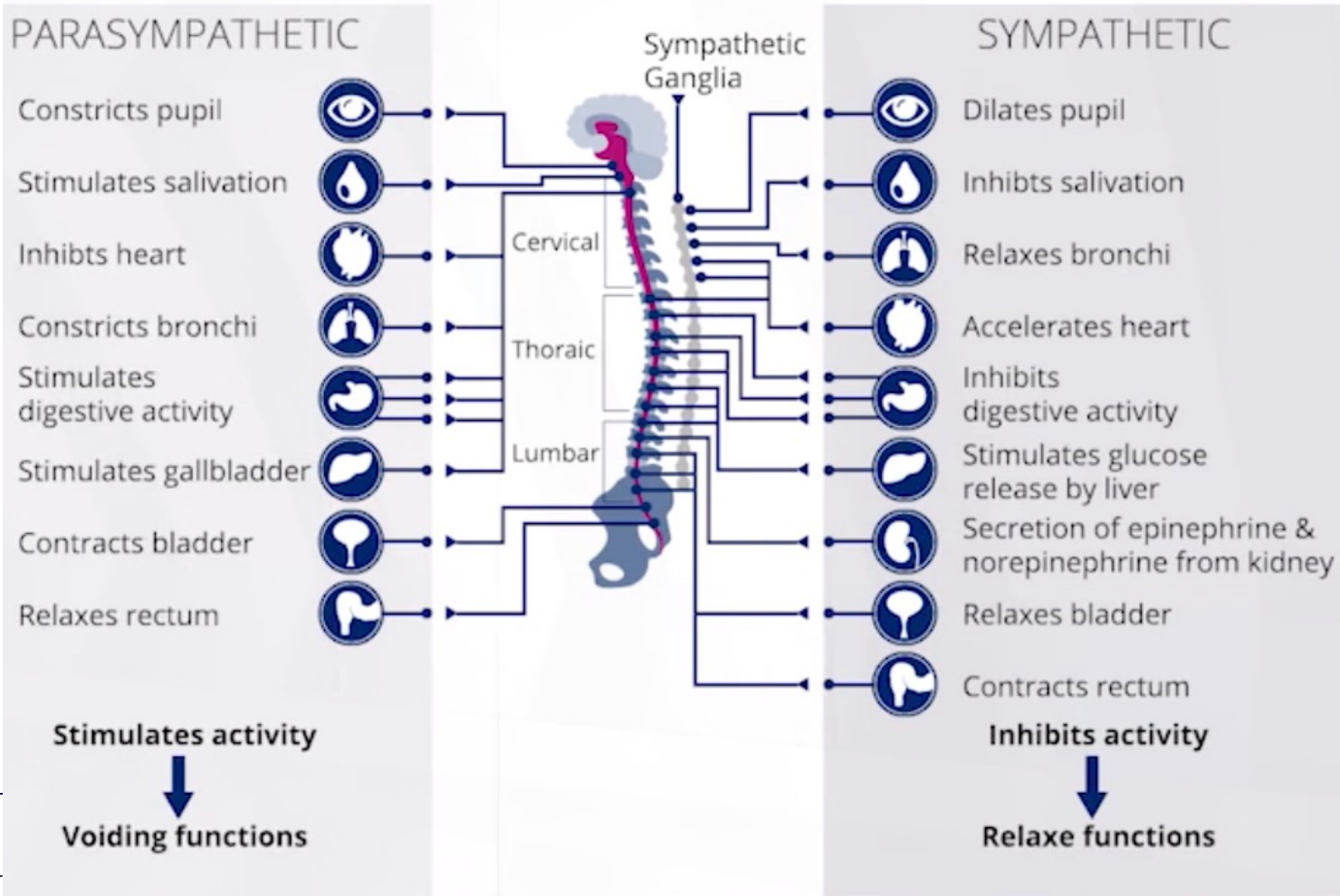
THE NEUROPELVEOLOGICAL WAY OF THINKING



The etiology for somatic pain is not always located where patient feel pain!
The first step in neuropelveological work up is the determination of pathways used by pain information's to reach the brain (patient's history!).
The second step is to determine the level where pain's informations are created.

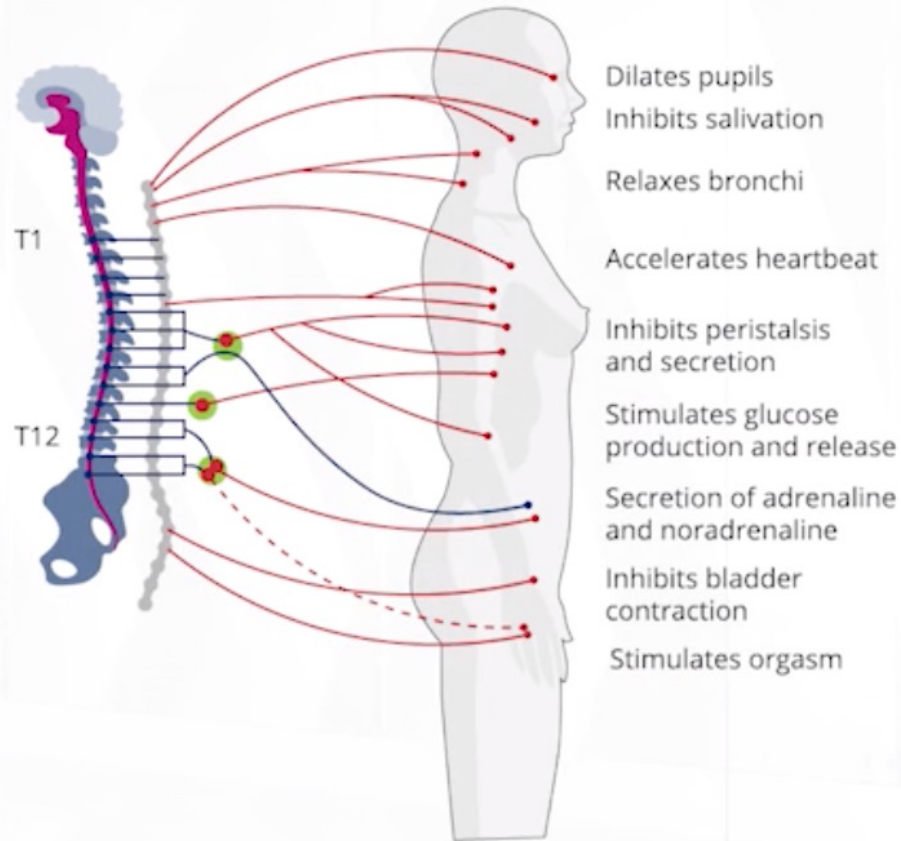
THE PELVIC SYMPATHETIC NERVOUS SYSTEM

AUTONOMIC NERVOUS SYSTEM



THE PELVIC SYMPATHETIC NERVOUS SYSTEM

PELVIC SYMPATHETIC INNERVATION



- Pupils dilation**
- Salivation inhibition → mouth dryness**
- Tachycardia**
- Nausea → vomiting**
- Pallor**
- Diaphoresis**
- Anxiety state**
- Fatigue**
- Irritability**

DIAGNOSTIC IN NEUROPELVEOLOGY

PATIENT'S HISTORY

1st question: „visceral or somatic pain?“

Visceral Pain

Pain quality:

Vague - Poorly localized in the entire low abdomen with irradiation in the lower back - Dull in nature

+ Vegetative symptoms:

Malaise/Oppression/Syncope -
Fatigue - Irritability

Pupils dilation - Salivation inhibition -
Tachycardia

Nausea/Vomiting - Pallor -
Diaphoresis - Anxiety state

Somatic Pain

Pain quality:

Allodynia - Electrical chock - very specific location, precise and clearly pain`s description, without vegetative symptoms

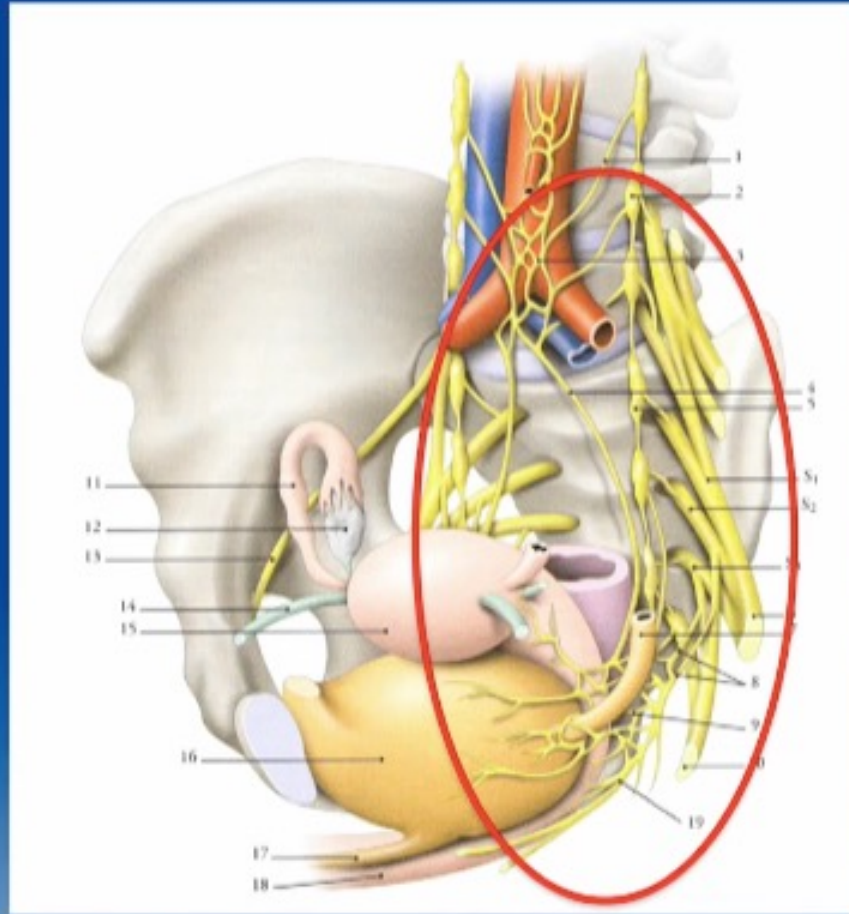
+ caudal irradiations in the dermatomes

+ pelvic motor dysfunctions:

Pelvic Organs Dysfunctions - Troubles of sexuality - Troubles of locomotion

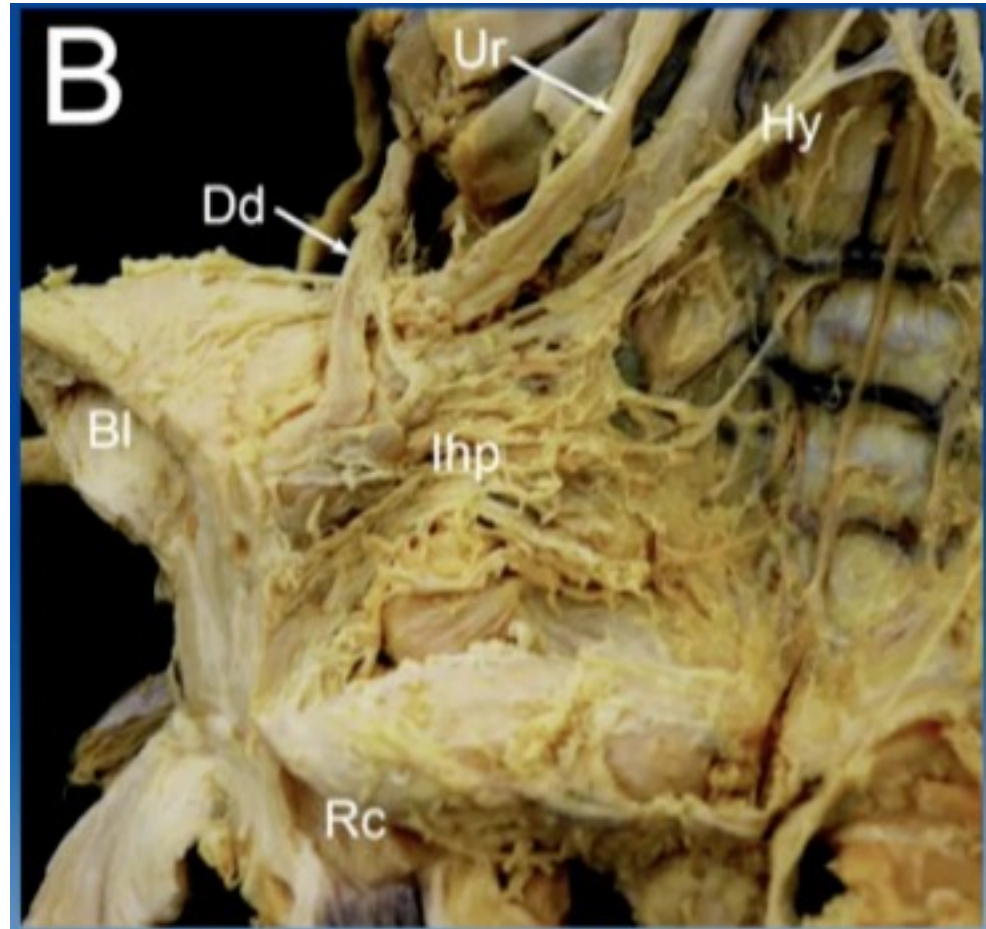
Pelvic Innervation

Autonomic Nerves, Pararectal Fossa



P. Kamina

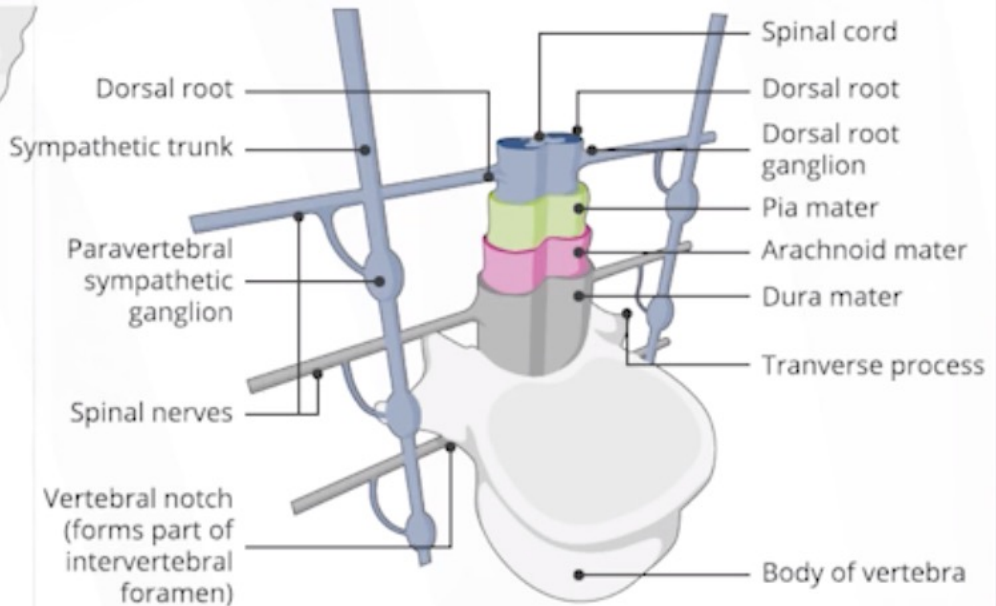
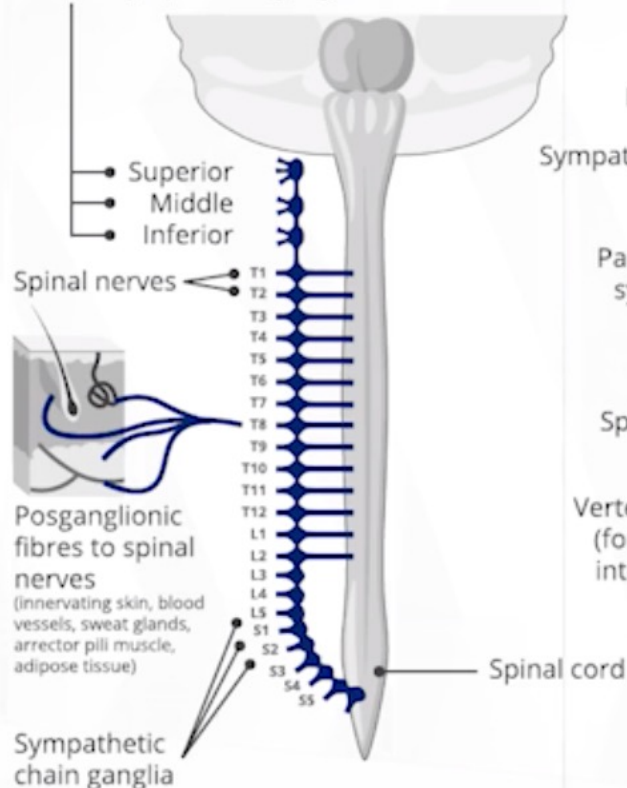
- ✓ Sympathetic system
 - Superior hypogastric plexus
 - Hypogastric nerves
- ✓ Parasympathetic system
 - ✓ Pelvic splanchnic nerves
- ✓ Inferior hypogastric plexus
- ✓ Visceral nerve branches



THE PELVIC SYMPATHETIC NERVOUS SYSTEM

PELVIC SYMPATHETIC INNERVATION

Cervical sympathetic ganglia

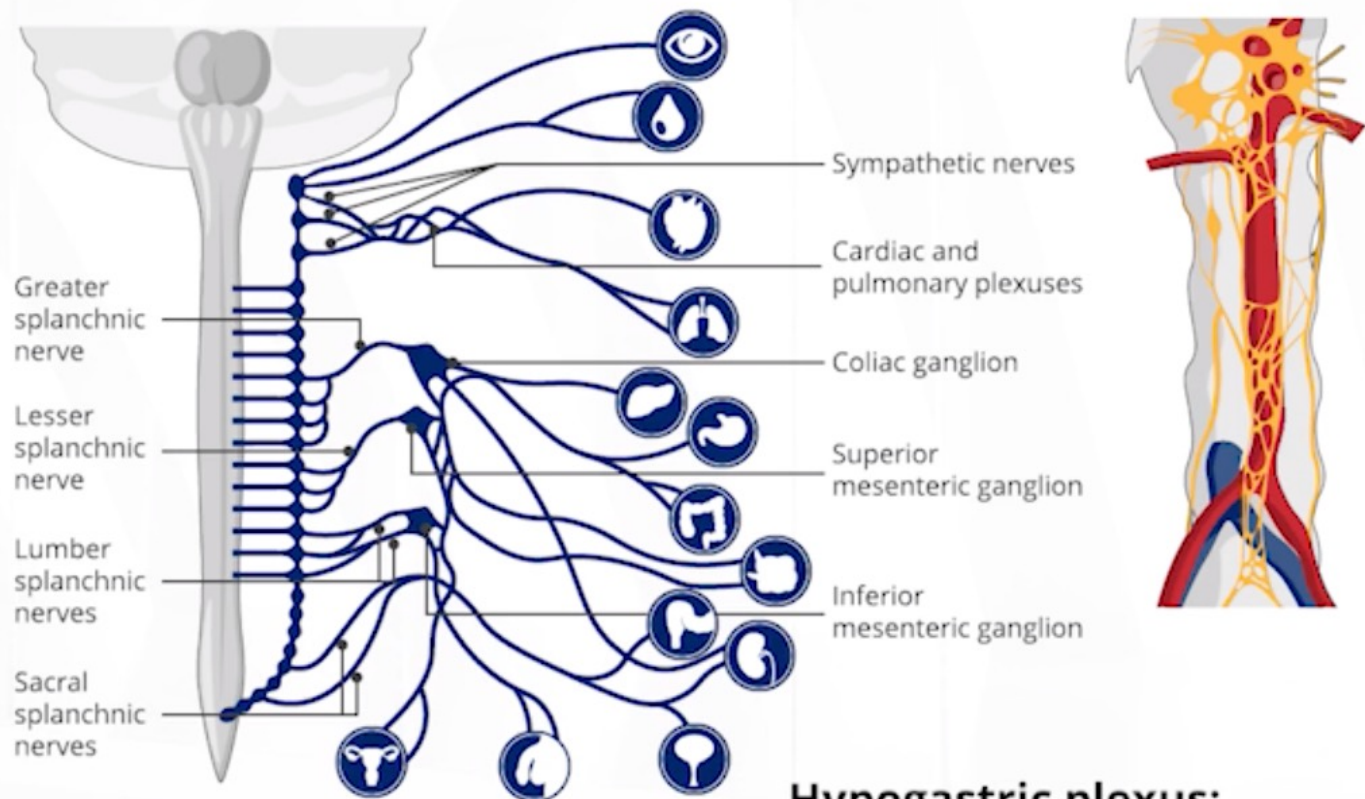


Sympathetic trunk:

- Skin
- Blood vessels
- Sweat glands

THE PELVIC SYMPATHETIC NERVOUS SYSTEM

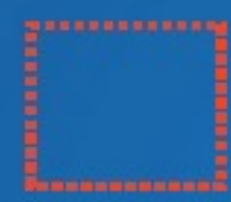
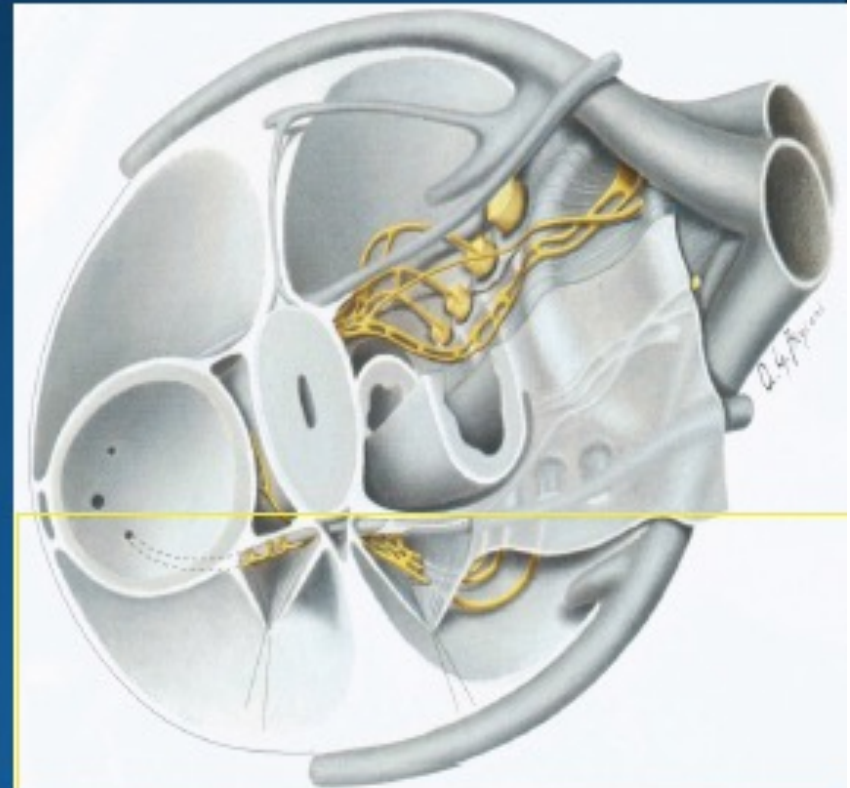
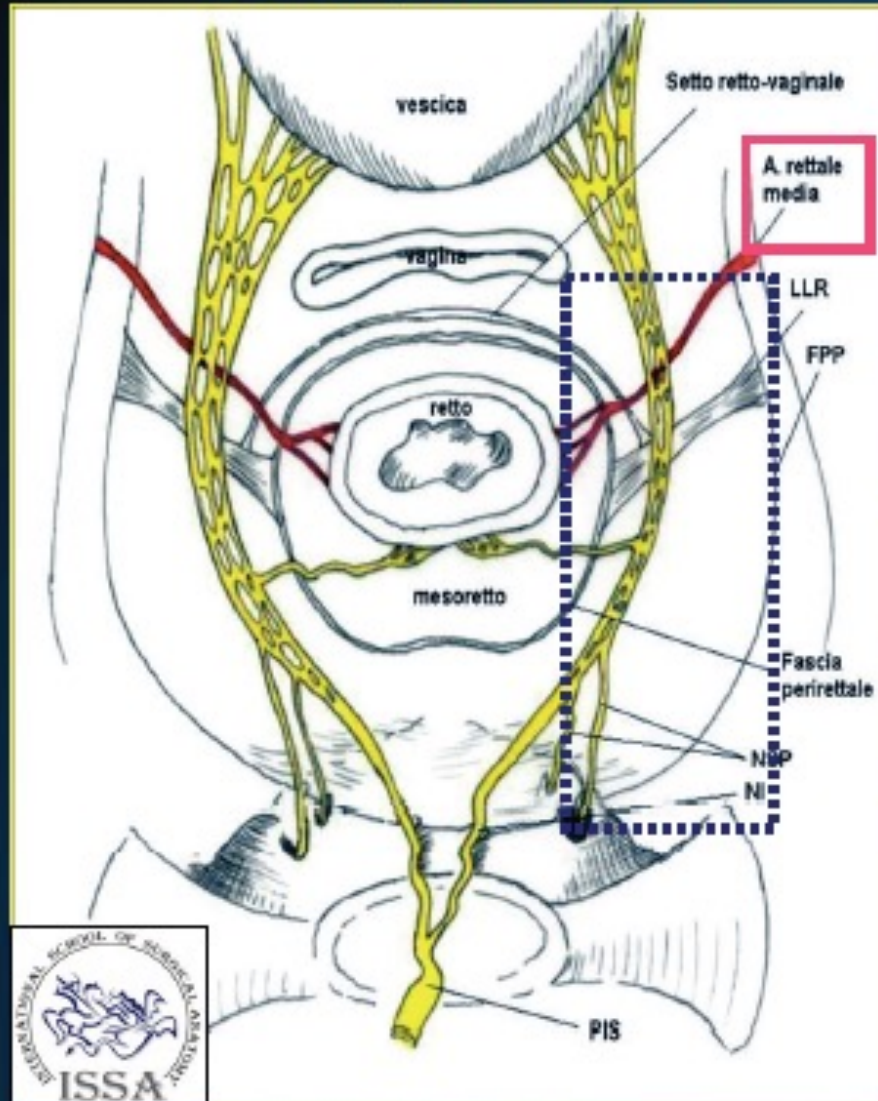
PELVIC SYMPATHETIC INNERVATION



Hypogastric plexus:

- Superior hypogastric plexus - T9-11
- Intermesenteric plexus

Postero-lateral parametrium: Recto-vaginal ligaments, Lateral Rectal Ligaments, Cardinal ligament/Paracervix



THE PELVIC PARASYMPATHETIC NERVOUS SYSTEM

AUTONOMIC NERVOUS SYSTEM

STRESS



PARASYMPATHETIC
Stimulates activity



Voiding functions

SYMPATHETIC
Inhibits activity



Relaxe functions



Pelvic Autonomic Innervation

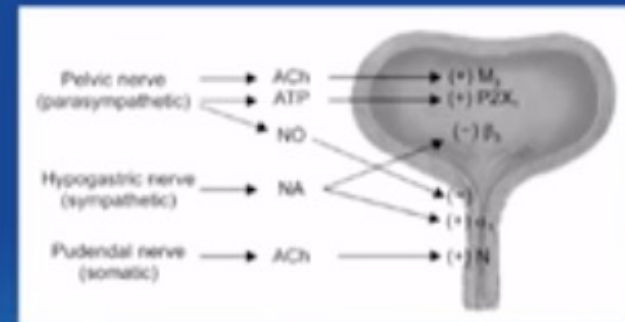
Bladder and sexual functions

✓ Sympathetic system / Adrenergic

- Compliance and storage
- Stimulation of urethral smooth sphincter
- Inhibition of detrusor muscle

✓ Parasympathetic system / Cholinergic

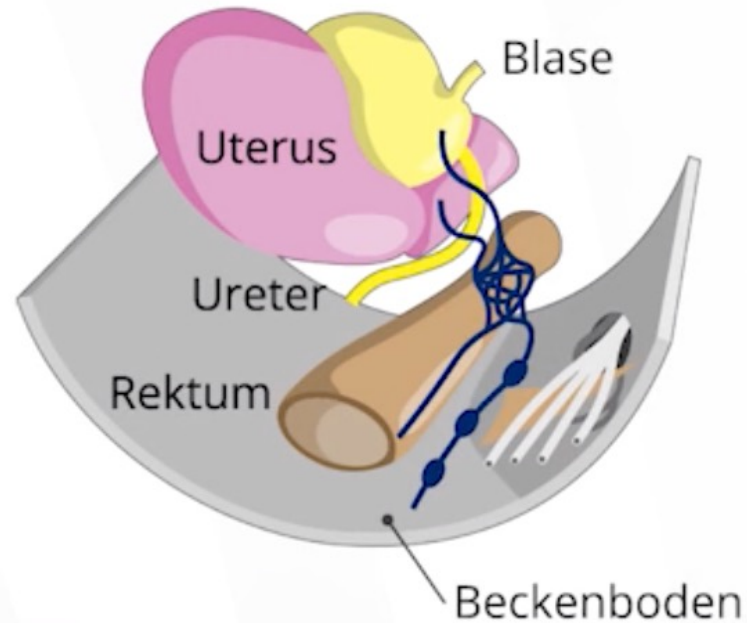
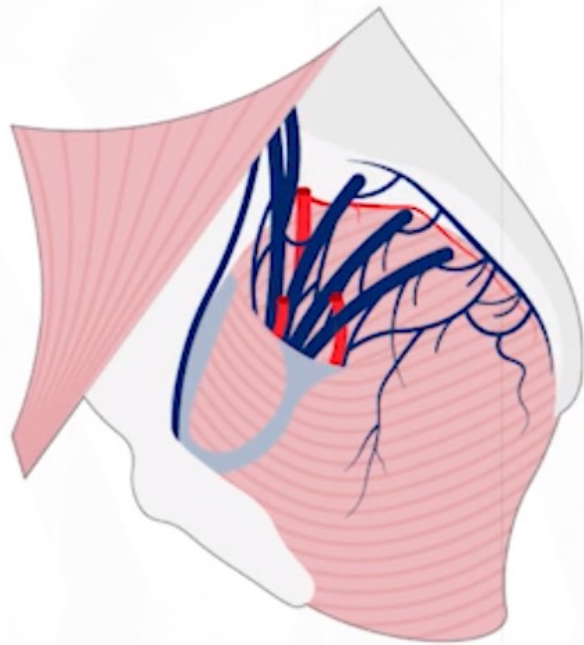
- Voiding
- Stimulation of detrusor
- Inhibition of urethral smooth sphincter
- *Vaginal lubrication and genital swelling*



Yoshimura et al. Korean J Urol 2014

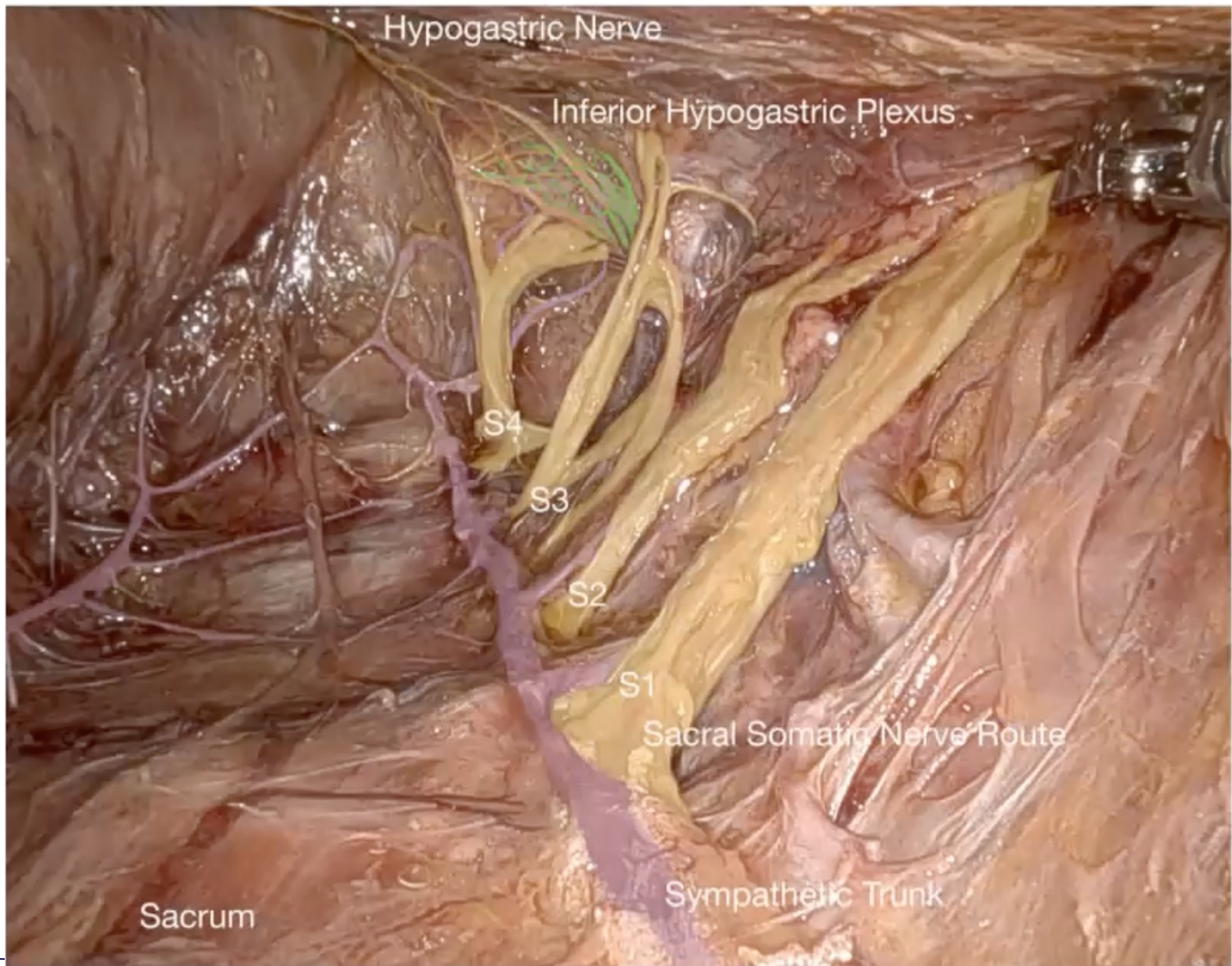
THE PELVIC SYMPATHETIC NERVOUS SYSTEM

PELVIC SYMPATHETIC INNERVATION



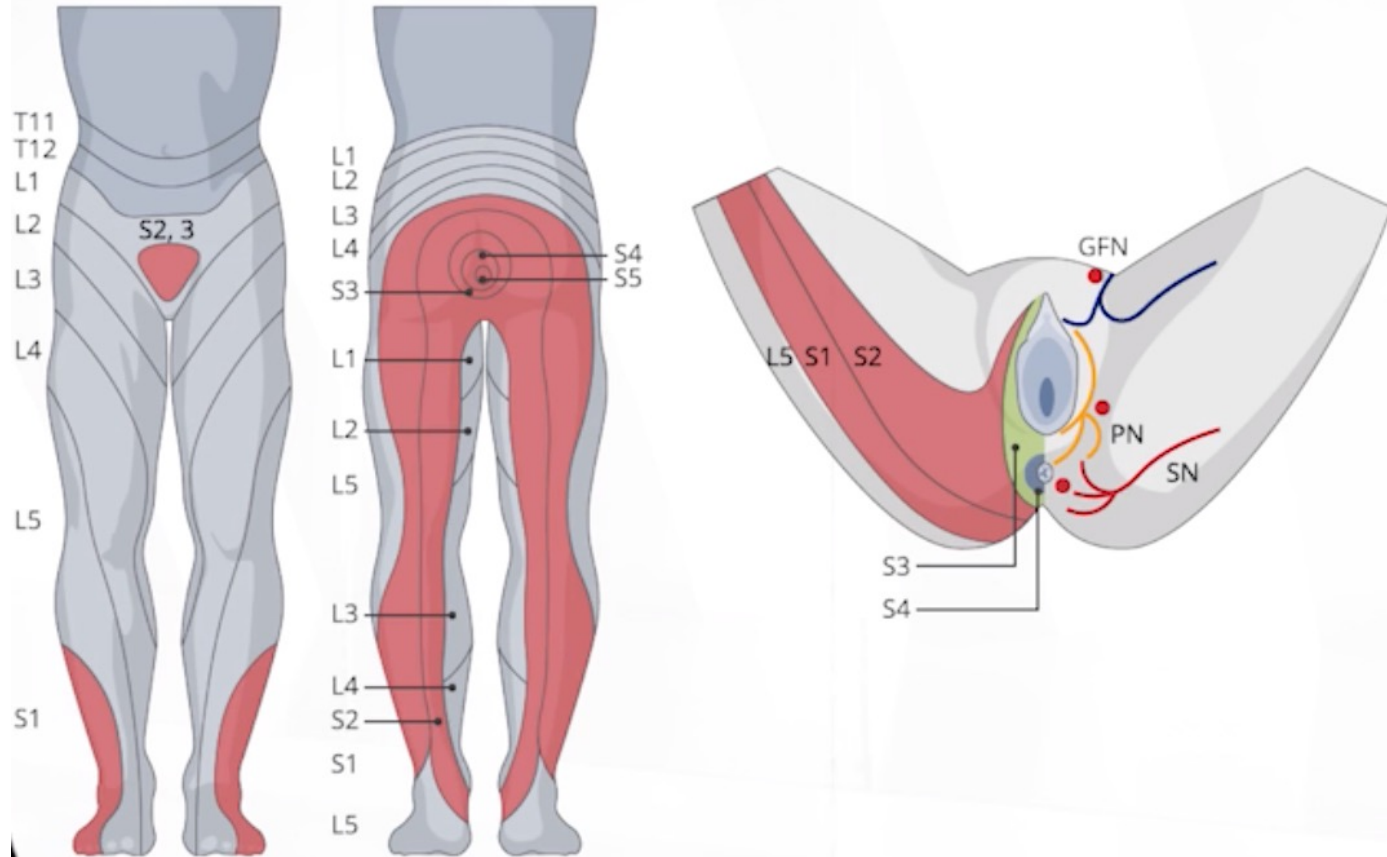
Sympathetic trunk:

- Skin
- Blood vessels
- Sweat glands



THE PELVIC SOMATIC NERVOUS SYSTEM

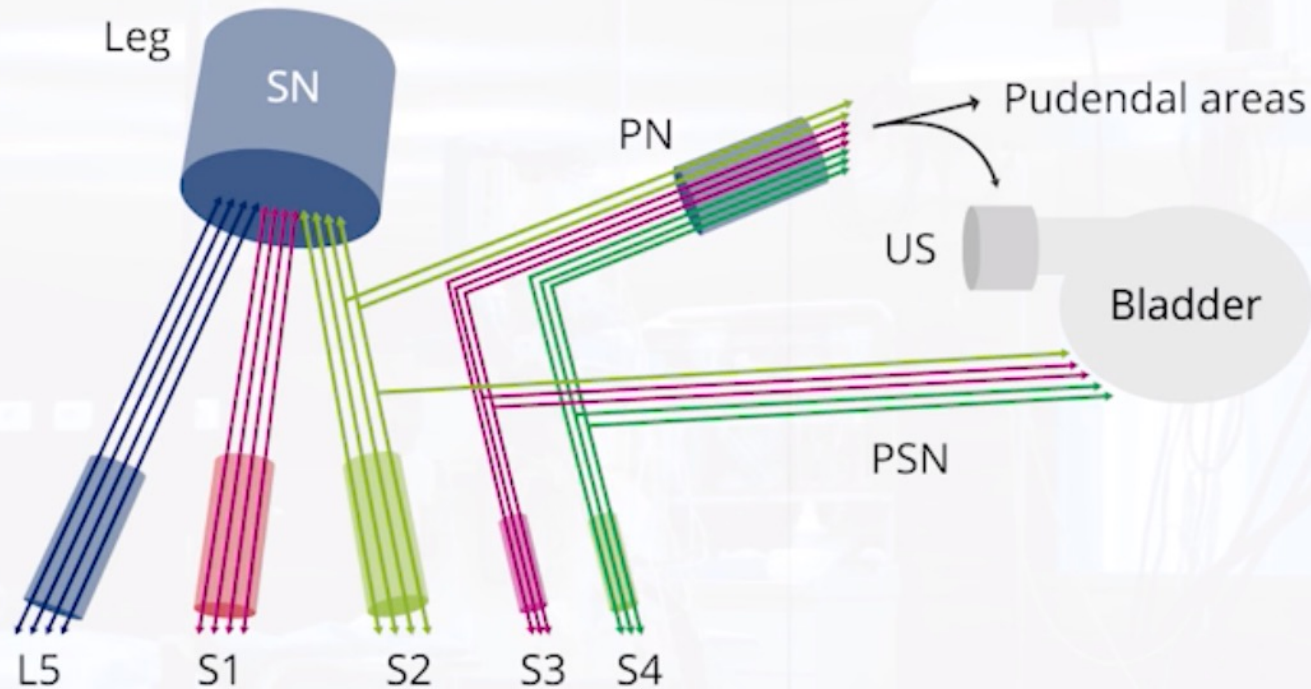
SACRAL PLEXUS



Sensory functions

DIAGNOSTIC IN NEUROPELVEOLOGY

THE NEUROPELVEOLOGICAL WAY OF THINKING



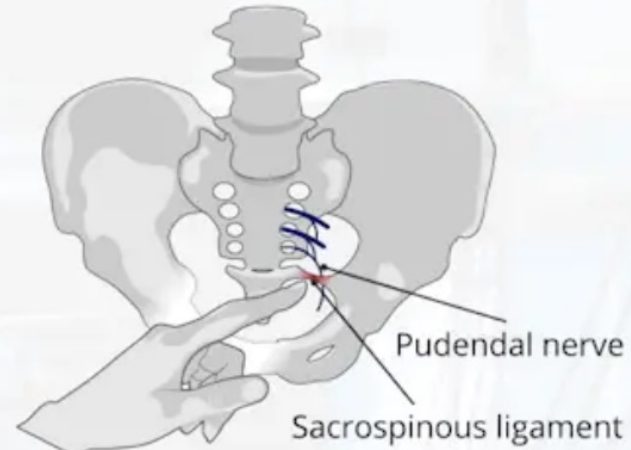
The combination of symptoms and dysfunctions is the key of the diagnosis of localization

DIAGNOSTIC IN NEUROPELVEOLOGY

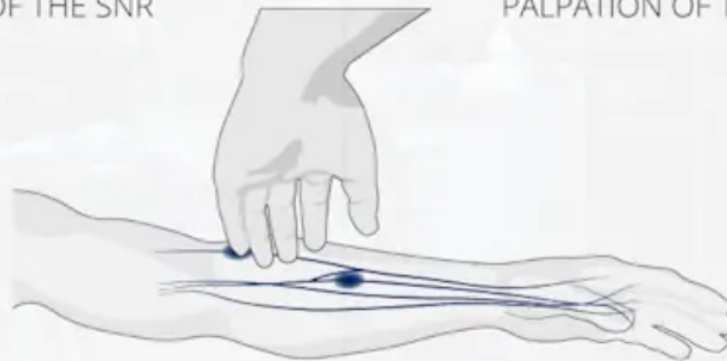
CONFIRMATION OF DIAGNOSIS!



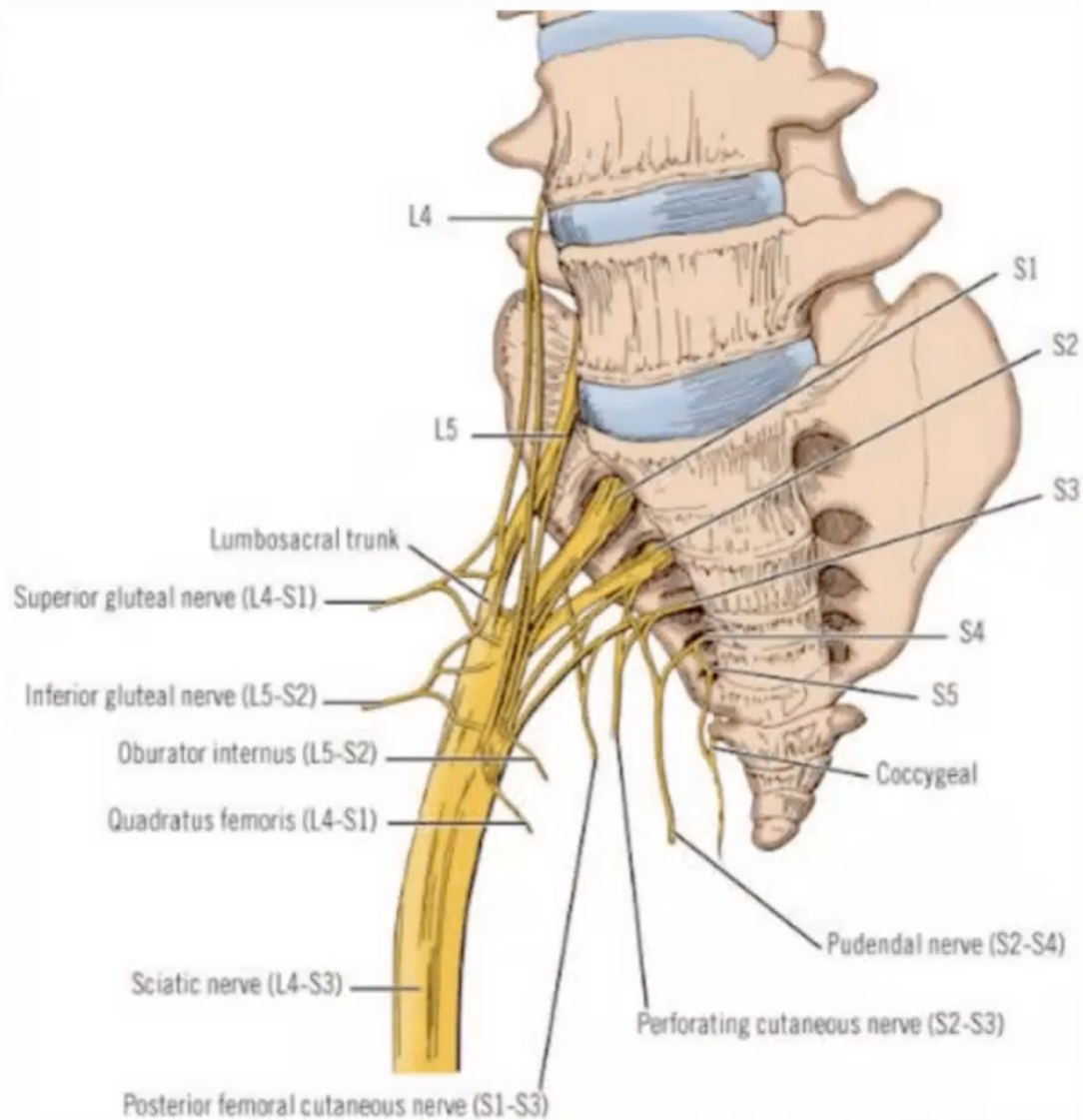
PALPATION OF THE SNR



PALPATION OF THE PN

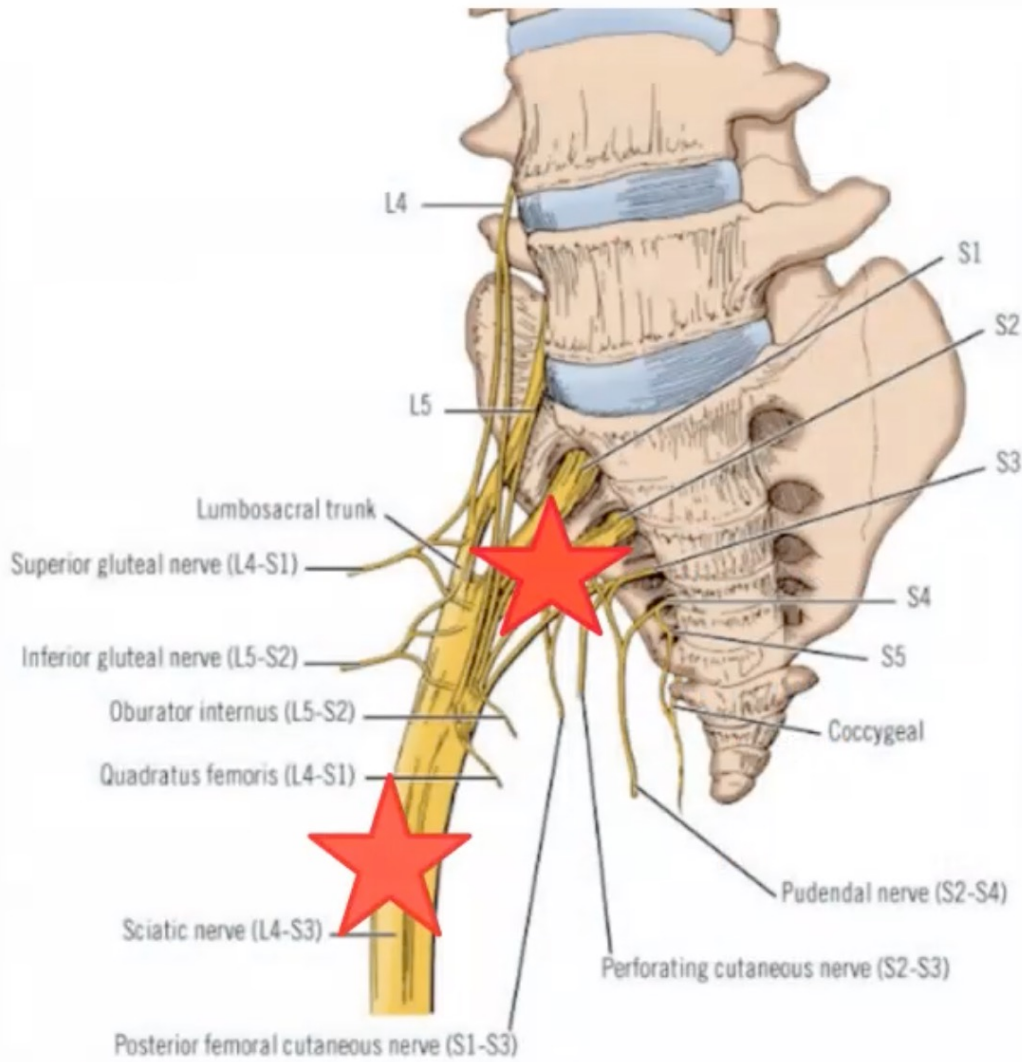


TINEL SIGNE



Sacral Nerve Roots (McGraw-Hill)

Gütes tun una es gut tun!

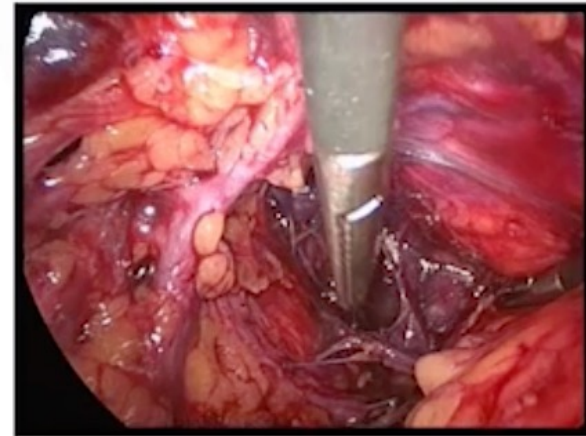
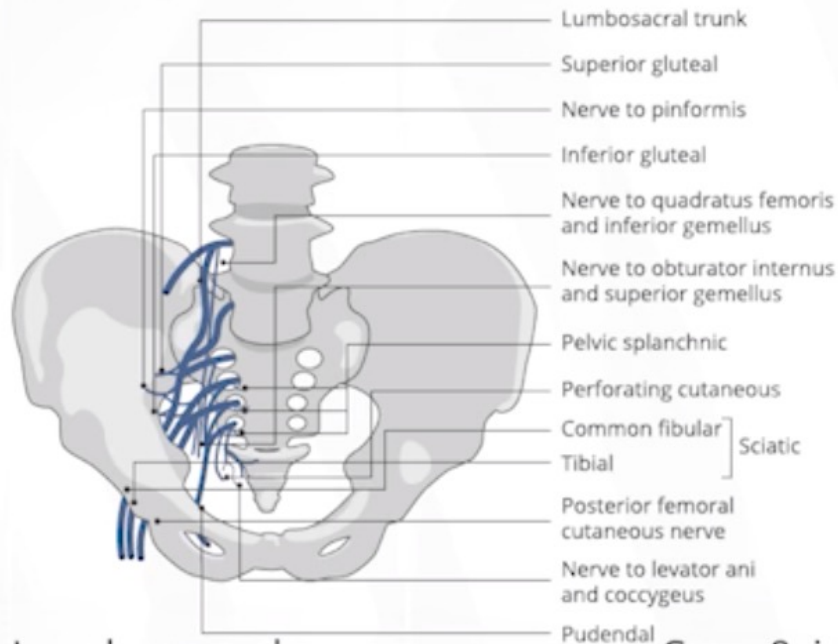


Sacral Nerve Roots (McGraw-Hill)

Gütes tun una es gut tun!

THE PELVIC SOMATIC NERVOUS SYSTEM

SACRAL PLEXUS



Lumbosacral trunk

Sup. & inf. gluteal nerves

Pudendal nerve + anal levator nerve

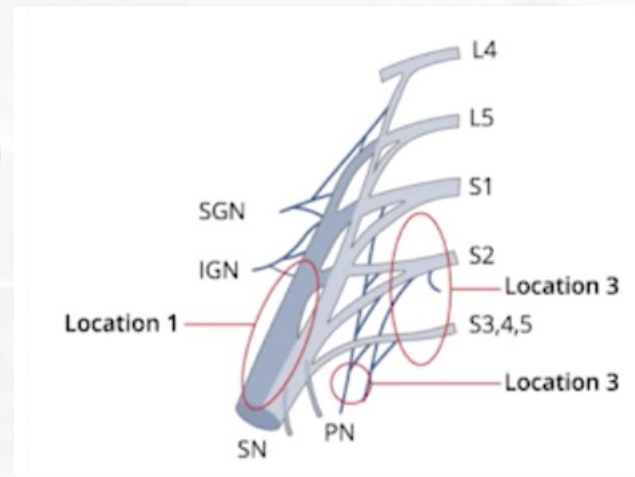
(±L4) L5 + S1 + S2 + S3 + S4

ETIOLOGIES FOR SOMATIC PELVIC PAIN

SACRAL RADICULOPATHIES

ENDOMETRIOSIS

- Supracardinal sciatic DIE (L5-S1 ±S2 Sciatica)
- Infracardinal SP-DIE (S2-S3-S4 radiculopathy)



Cyclical pain

Pain reduction under HRT (amenorrhoe)

Parametric nodule (vaginal palpation)

Infracardinal DIE → usually non-neurogenic / Supracardinal → DIE usually neurogenic

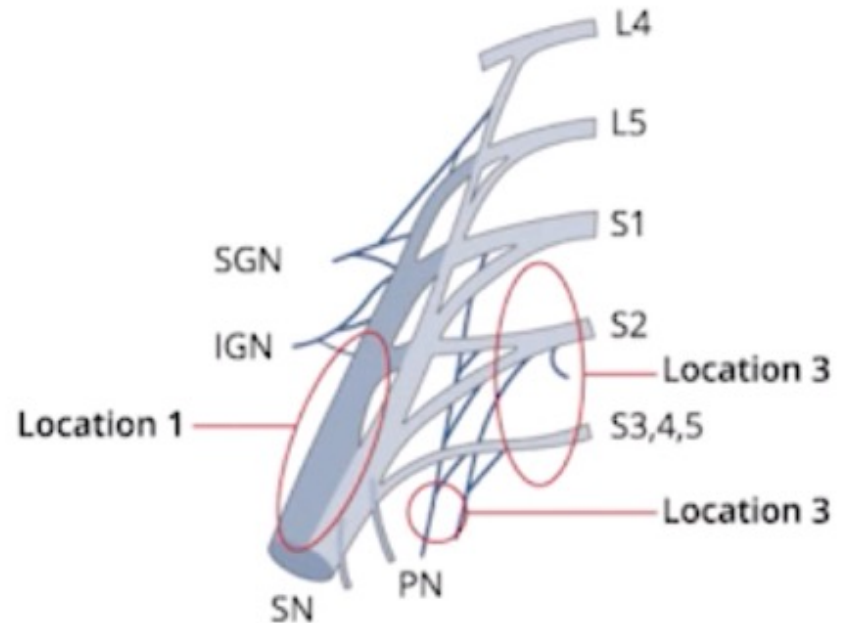
Source: Possover M. Laparoscopic therapy of endometriosis and vascular entrapment of sacral plexus. Fertility & Sterility 2011, 95: 756-758

ENDOMETRIOSIS & NEUROPELVIC DISORDERS

SACRAL NERVES DIE

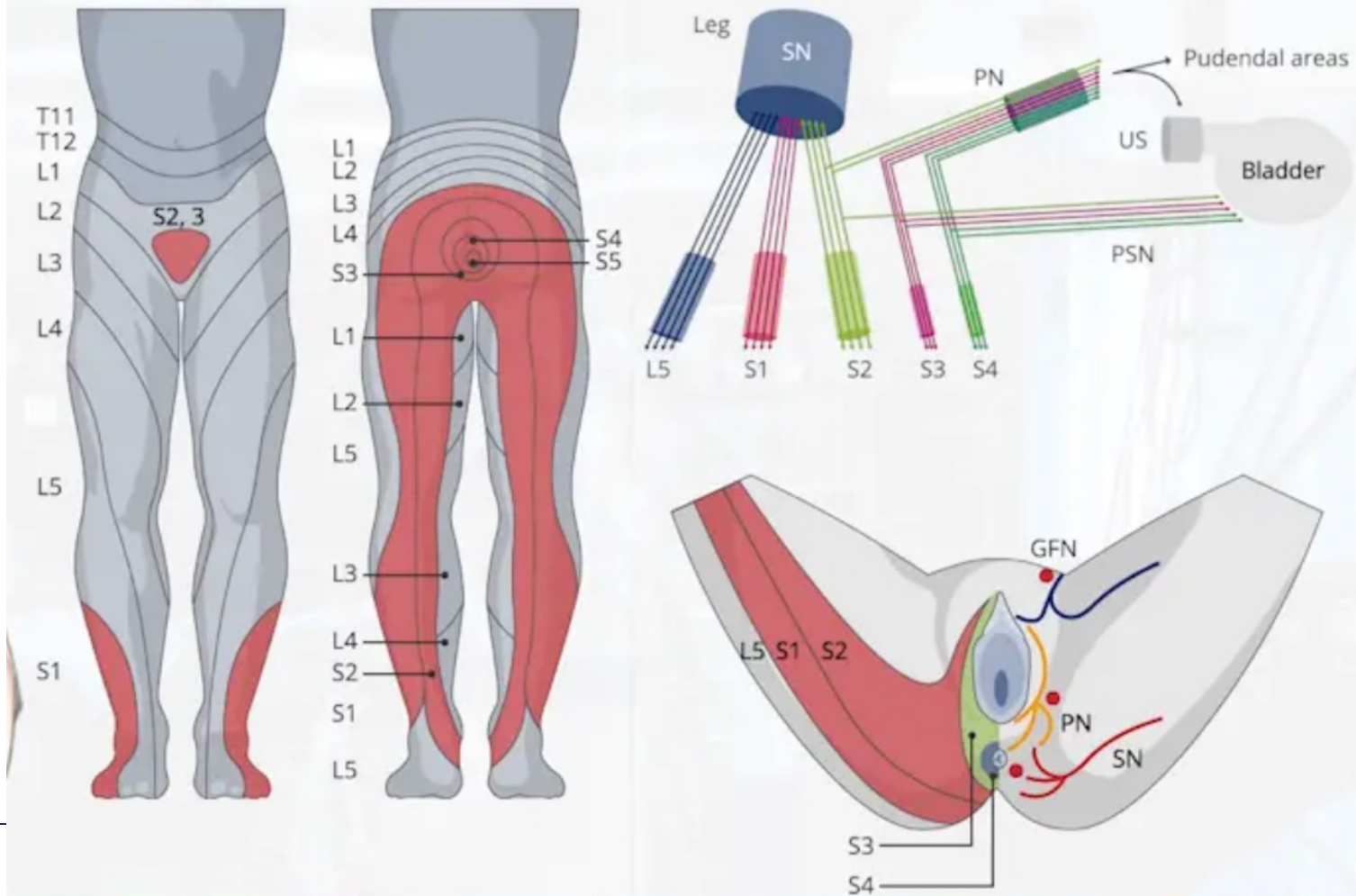
LAPAROSCOPIC TREATMENT

- Supralevator sciatic DIE (L5-S1 ±S2 Sciatica)
→ Nerve destruction
- Infralevator SP-DIE (S2-S3-S4 radiculopathy)
→ Nerve entrapment



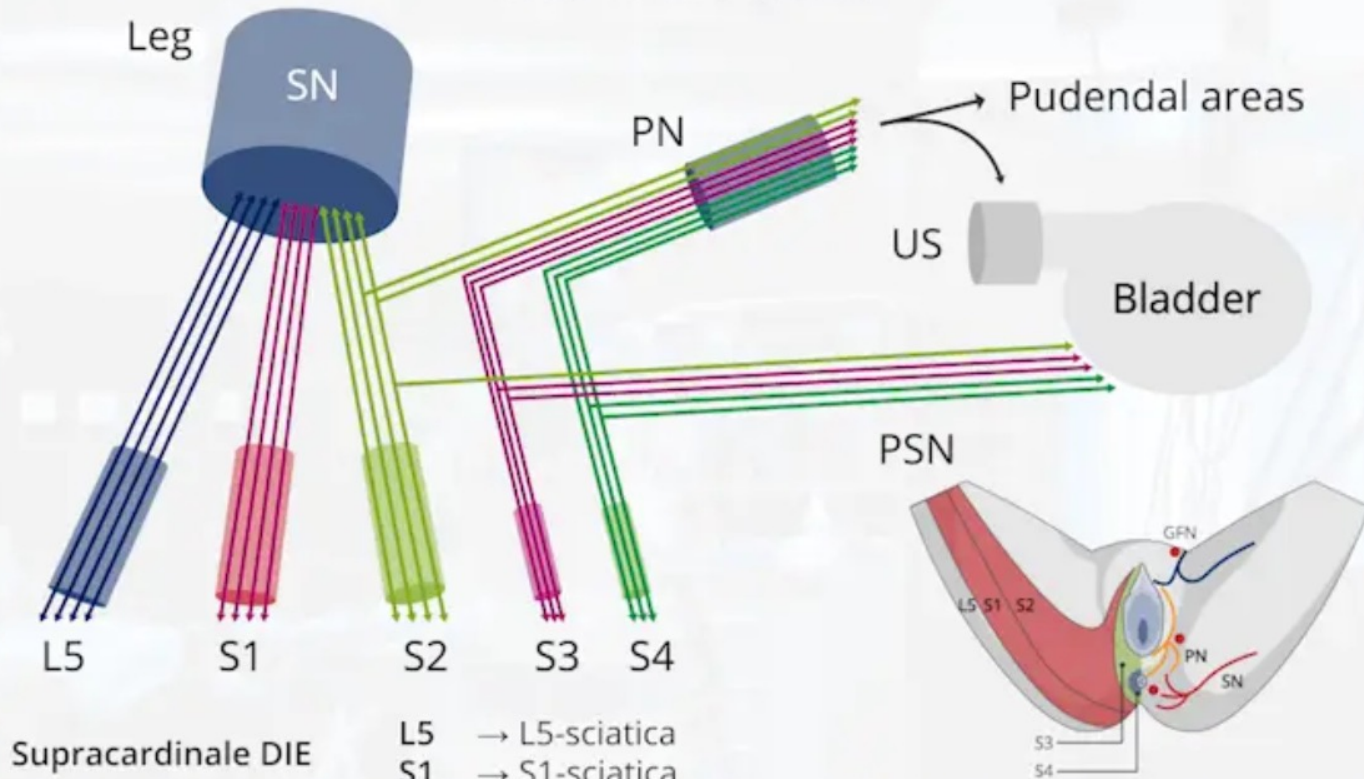
Source: Possover M. Laparoscopic therapy of endometriosis and vascular entrapment of sacral plexus. Fertility & Sterility 2011, 95: 756-758

DIAGNOSTIC IN NEUROPELVEOLOGY



ENDOMETRIOSIS & NEUROPELVIC DISORDERS

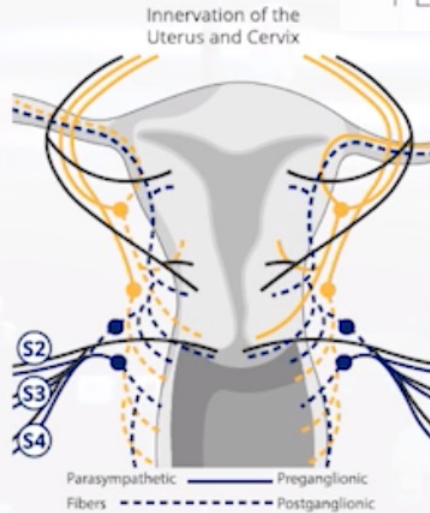
SACRAL RADICULOPATHIES SYMPTOMATOLOGY



Supracardinale DIE	L5 → L5-sciatica
	S1 → S1-sciatica
Infracardinale DIE	S2 → S2-sciatica + pudendal pain (perianal pain) ± HSB (OAB?)
	S3 → vulvodynia, perineal pain, coccygodynia, HSB (OAB)
	S4 → vulvodynia, perineal pain, coccygodynia, HSB (OAB)

ENDOMETRIOSIS & NEUROPELVIC DISORDERS

ENDOMETRIOSIS OF THE IHP PELVIC SYMPATHETIC INNERVATION



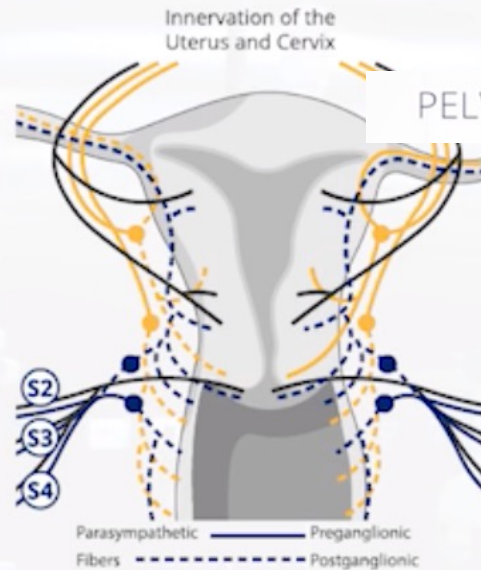
- Uterus/ovar/vagina upper 1/3
- Uterine/tube inhibition
- Ovulation inhibition / ejaculation



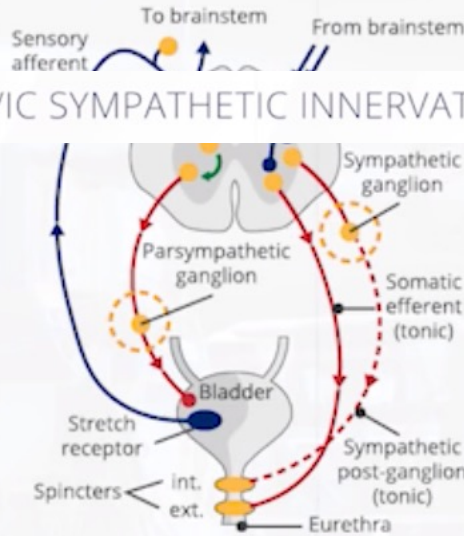
Visceral Pelvic Pain
Troubles of Fertility
Dys-/Apareunia

ENDOMETRIOSIS & NEUROPELVIC DISORDERS

ENDOMETRIOSIS OF THE IHP



PELVIC SYMPATHETIC INNERVATION



“ESCAPE NERVE SYSTEM”

- Bladder feeling
- Detrusor inhibition
- Int. Uret. Sphincter activation



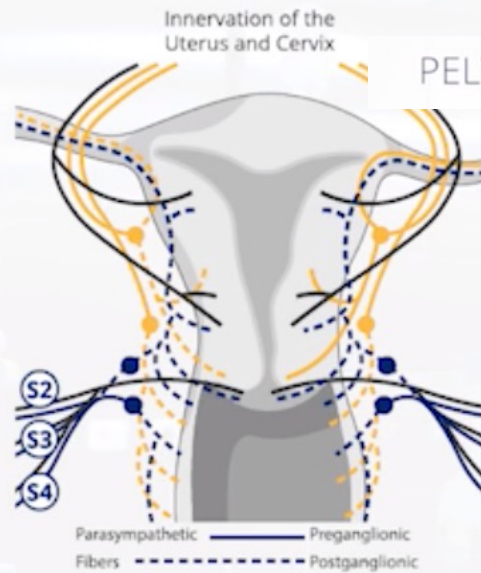
Troubles of emptying
Bladder infections
Bladder overdilation



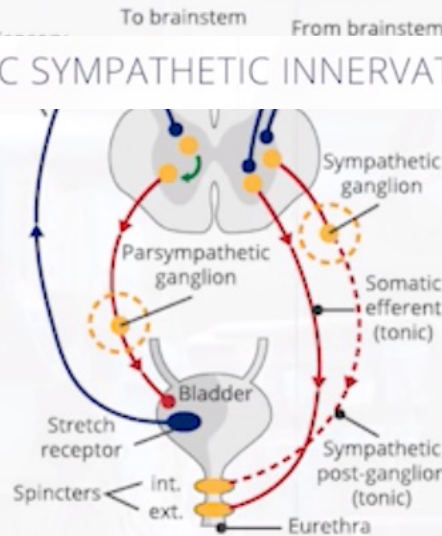
- inhibition/destruction:**
- Retrograde ejaculation
 - Urinary incontinence
 - Overactive bladder
 - Neurogenic bladder

ENDOMETRIOSIS & NEUROPELVIC DISORDERS

ENDOMETRIOSIS OF THE IHP



PELVIC SYMPATHETIC INNERVATION



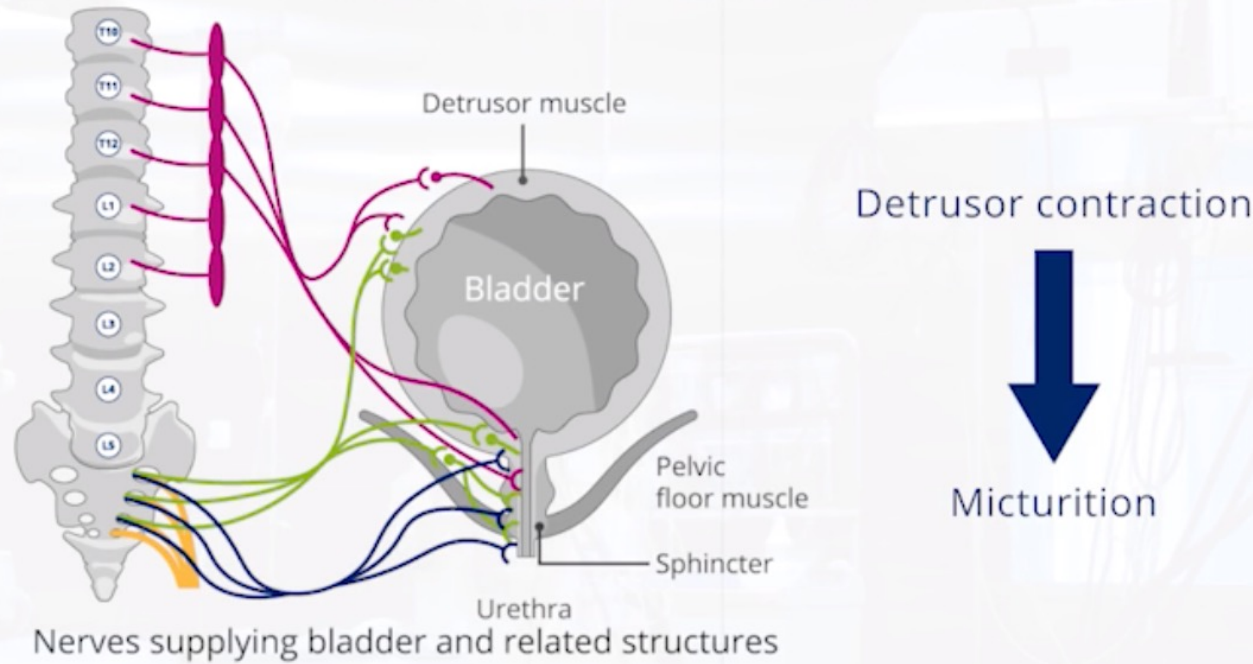
- Rectum feeling
- Rectum inhibition
- Int. Anal Sphincter activation



**Chr. Constipation
Out Let Constipation Synd.
Visceral Abdominal Pain**

ENDOMETRIOSIS & NEUROPELVIC DISORDERS

PARASYMPATHETIC PELVIC INNERVATION



Destruction



Motor Paralytic Bladder

ENDOMETRIOSIS & NEUROPELVIC DISORDERS

PARASYMPATHETIC PELVIC INNERVATION



Left colon contraction



Defecation

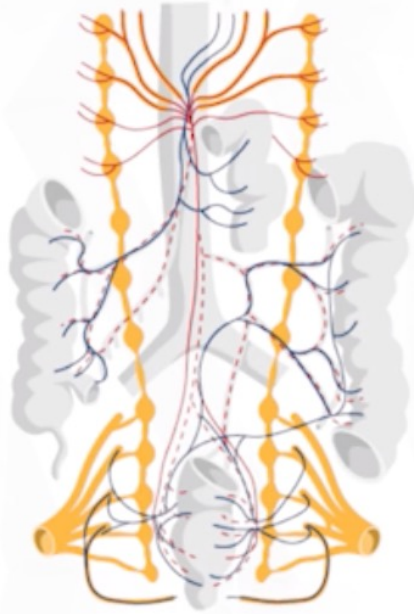
Destruction



Paralyzie of the colon ascendens

THE PELVIC PARASYMPATHETIC NERVOUS SYSTEM

PARASYMPATHETIC PELVIC INNERVATION



Left colon contraction



Defecation

Destruction

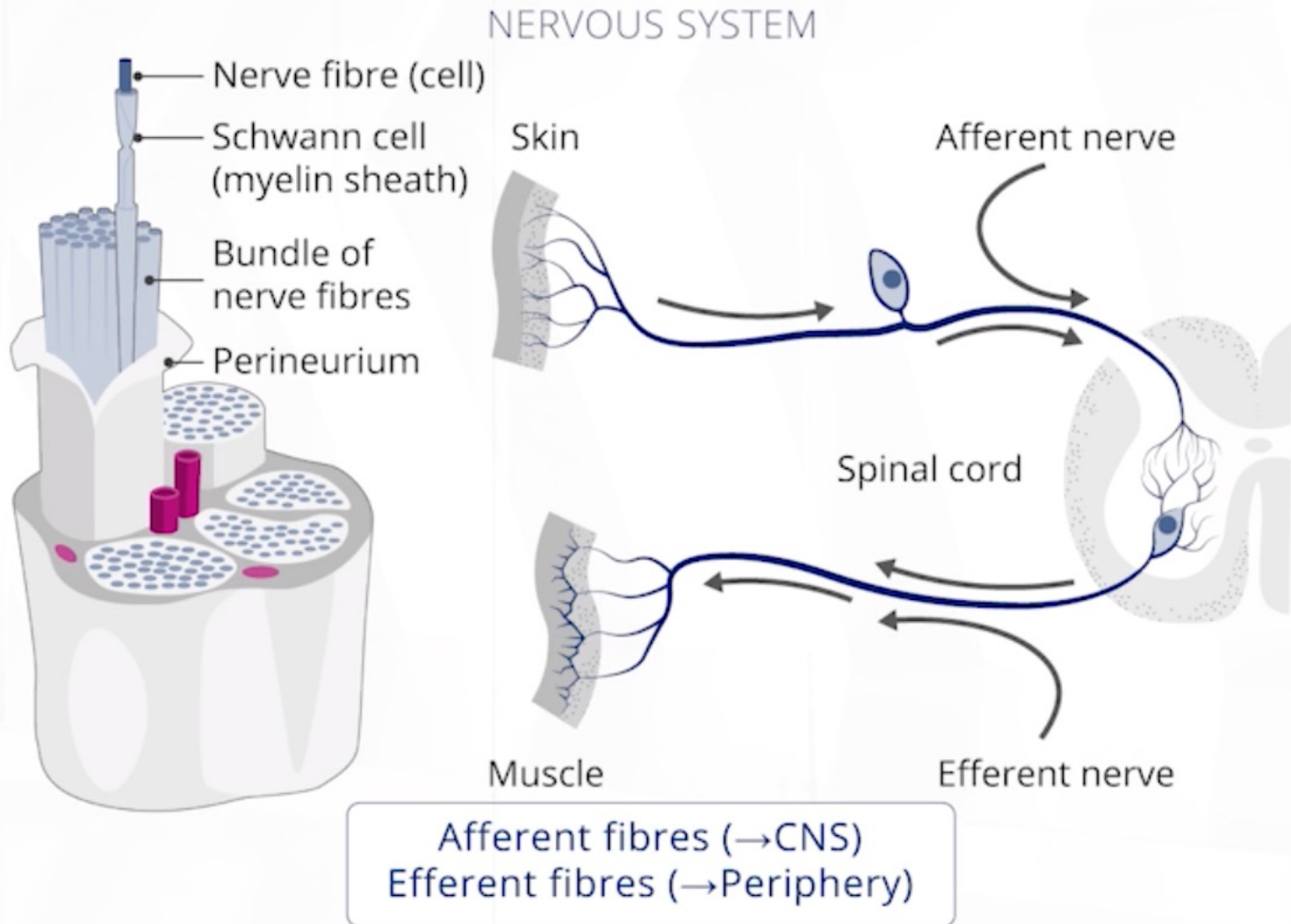


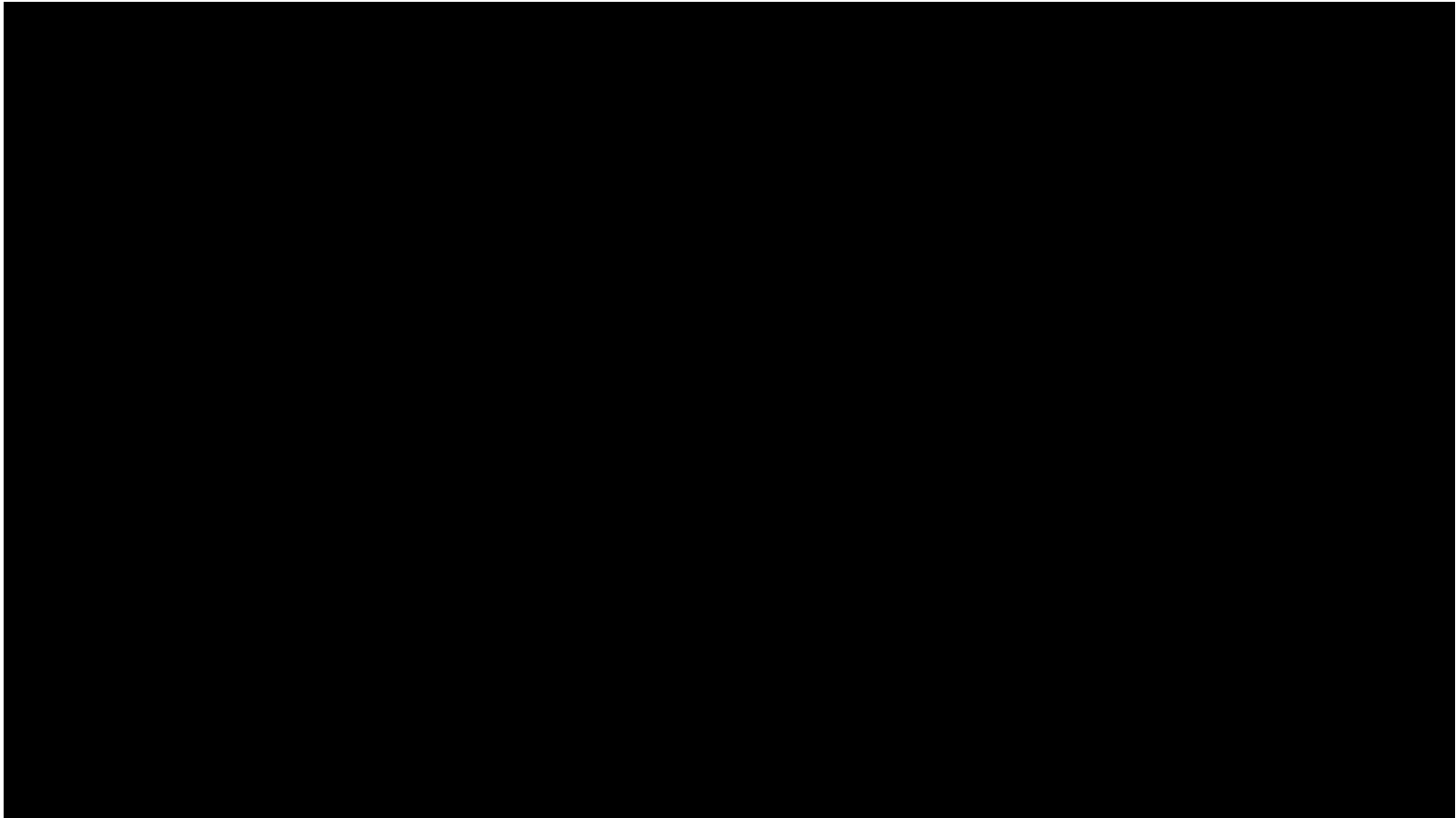
Paralyse of the colon ascendens

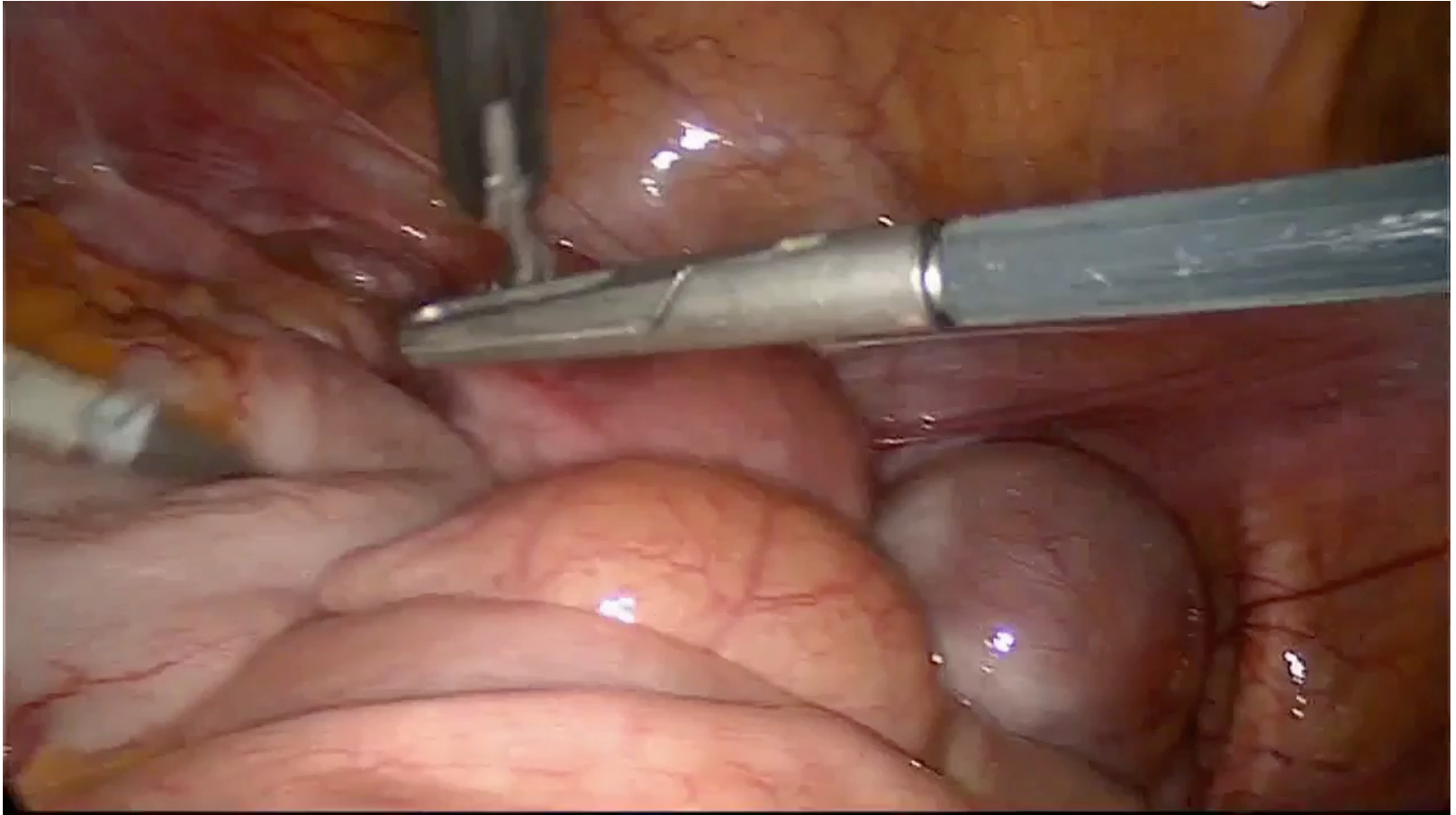
1. Determination whether the pain is visceral or somatic
2. Determination of the nerve pathways involved in the relay of pain information to the brain
3. Evaluation of the neurological level of pain (Central vs Pelvic vs Peripheral)
4. Establishment of a potential etiology
5. Confirmation and therapy for a potential etiology.

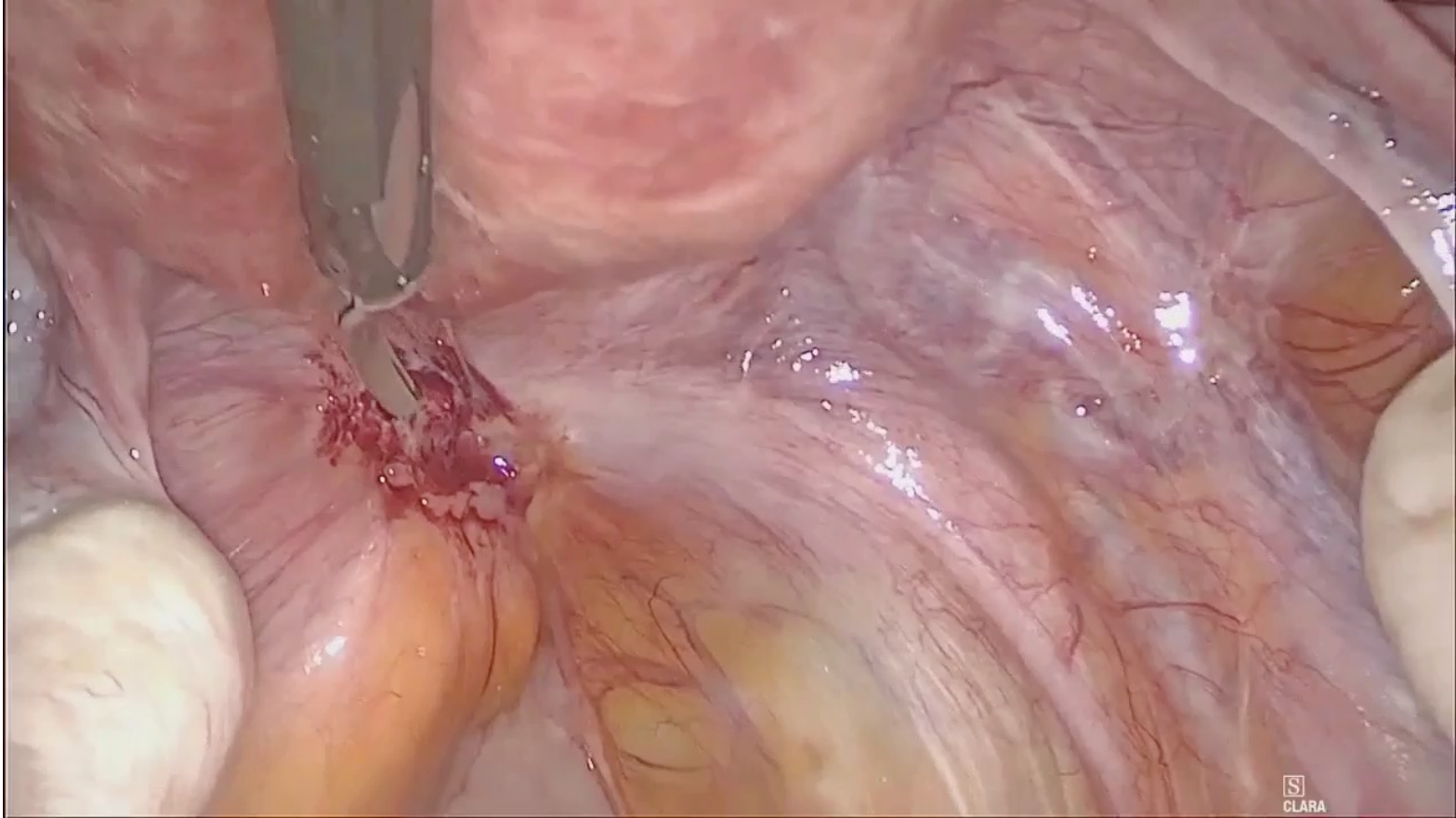
TEŐEKKÜRLER

THE PELVIC SYMPATHETIC NERVOUS SYSTEM





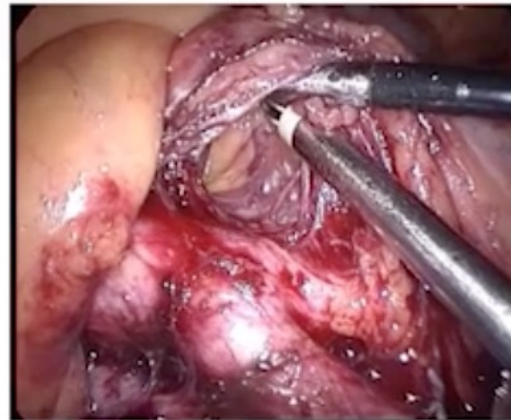






THE PELVIC SYMPATHETIC NERVOUS SYSTEM

PELVIC SYMPATHETIC INNERVATION

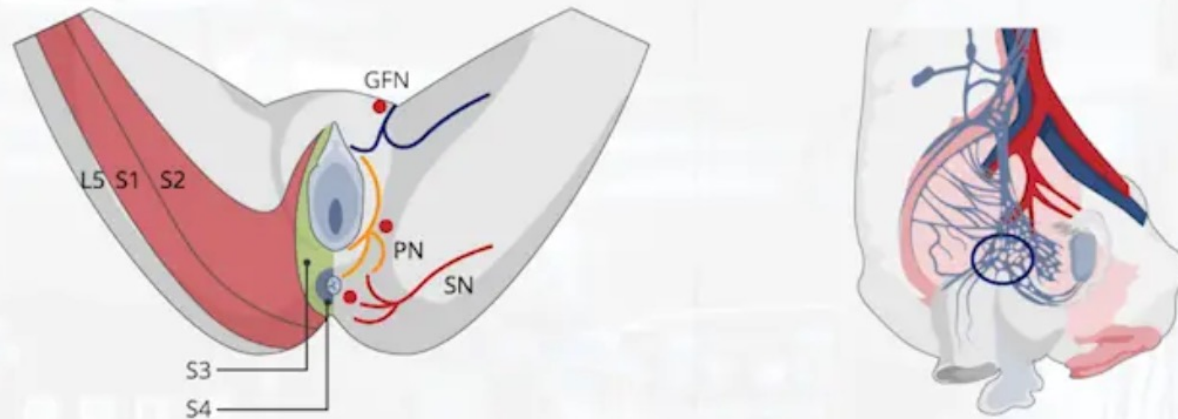


Hypogastric plexus:

- Superior hypogastric plexus - T9-11
- Intermesenteric plexus
- Inferior hypogastric plexus - T12-L2

ETIOLOGIES FOR SOMATIC PELVIC PAIN

VULVODYNIA & PUDENDAL PAIN



NEURALGY OF THE PUDENDAL NERVE 1ST SEGMENT



Vascular entrapment
Fibrosis entrapment

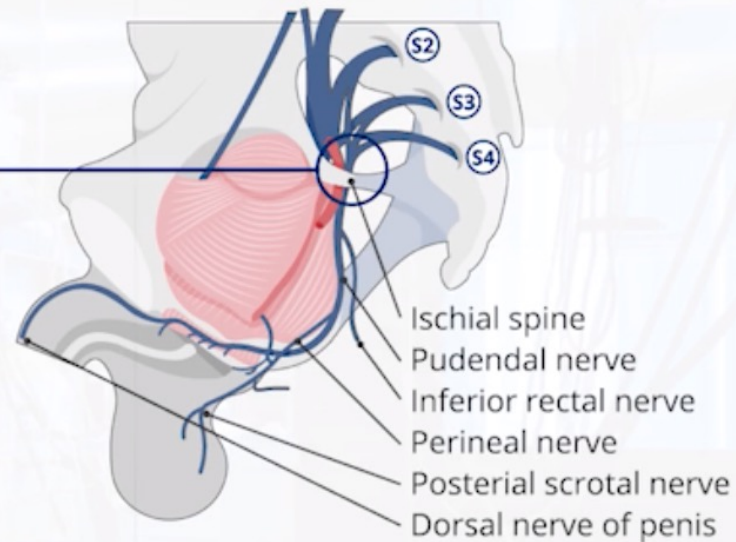
- Genital + perineal + perianal pain **with some gluteal/sacral irradiation!**
- Normal bladder functions or OAB or bladder hypersensitivity
- Urinary/fecal incontinence only in bilateral neurogenic lesions (pudendal hypoesthesia)
- Trigger point and Tinel sign by palpation of the pudendal nerve
- Diagnosis: lidocaine infiltration at the trigger point
- Therapy: corticoids/botulinum infiltration, transgluteal vs LSC neurolysis, PN-LION procedure

ETIOLOGIES FOR SOMATIC PELVIC PAIN

PUDENDAL NEURALGIES

SEGMENT 1:

- Endometriosis of the sciatic spine
- Vascular entrapment (pudendal vessels)
- Fibrotic entrapment

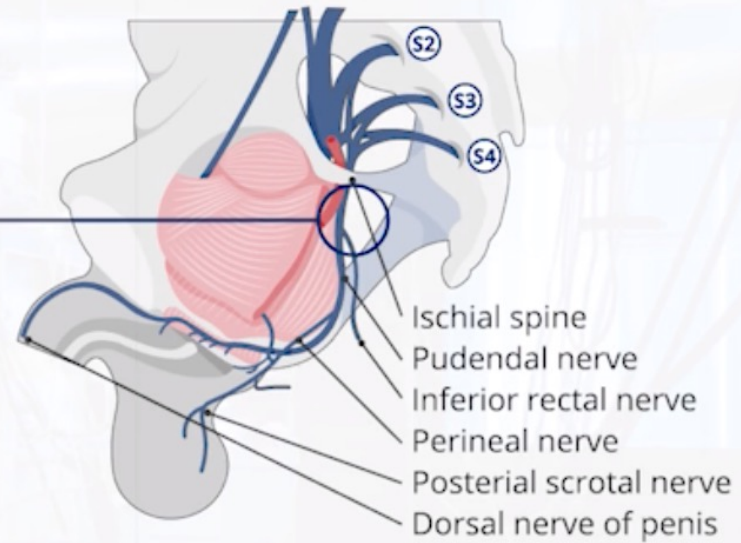


ETIOLOGIES FOR SOMATIC PELVIC PAIN

PUDENDAL NEURALGIES

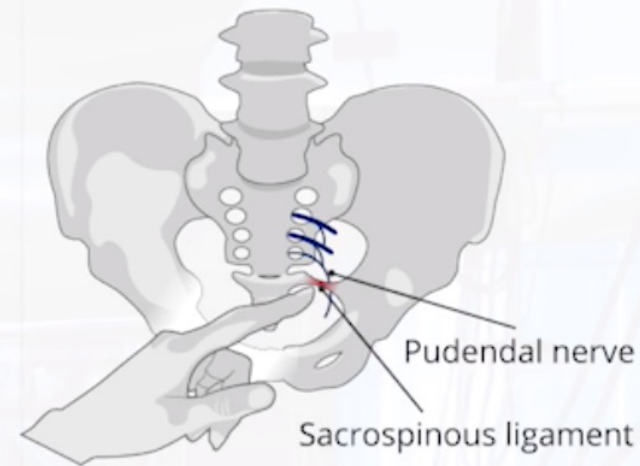
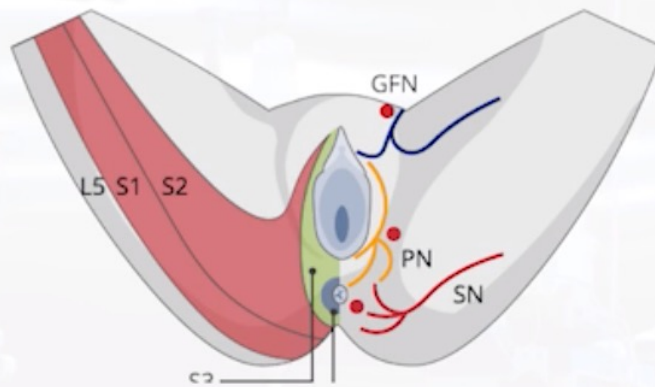
SEGMENT 2:

- Alcock's canal syndrome



ETIOLOGIES FOR SOMATIC PELVIC PAIN

VULVODYNIA & PUDENDAL PAIN



NEURALGY OF THE PUDENDAL NERVE (ALCOCK'S CANAL SYNDROME)

- Genital + perineal + perianal pain **without any further gluteal/sacral irradiation!**
- Normal bladder functions or OAB or bladder hypersensitivity
- Urinary/fecal incontinence only in bilateral neurogenic lesions (pudendal hypoesthesia)
- Trigger point and Tinel sign by palpation of the pudendal nerve
- Diagnosis: lidocaine infiltration at the trigger point
- Therapy: corticoids/botulinum infiltration, transgluteal vs LSC neurolysis, PN-LION procedure

ETIOLOGIES FOR SOMATIC PELVIC PAIN

PUDENDAL NEURALGIES

SEGMENT 3:

- Episiotomy
- Surgeries
- Endometriosis

