Le Préjudice Sexuel

Les Explorations Neurophysiologiques

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GRC UPMC 01 GREEN

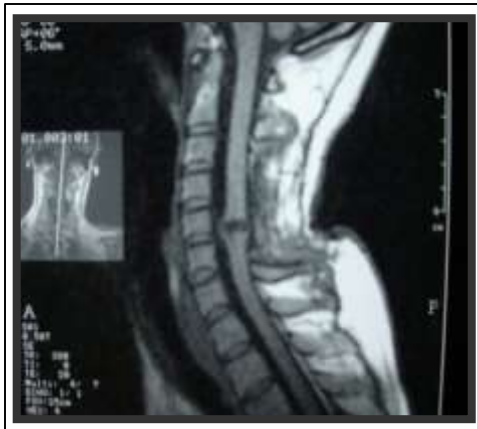
49ème Congrès de la Fédération Française des Associations

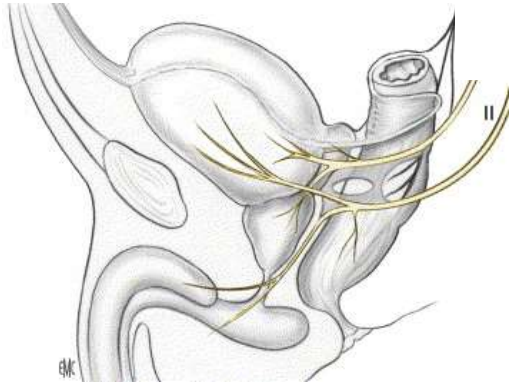
De Médecins Conseils Experts

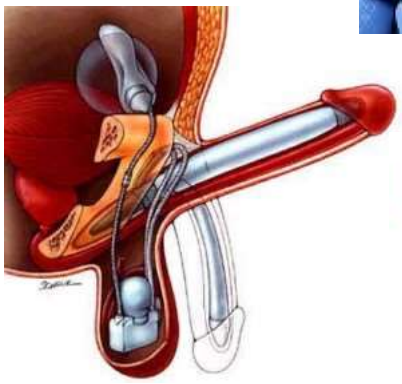
Lille, 21-22 Mars 2013

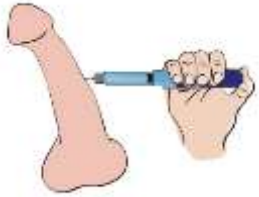
GREEN Group of clinical REsEarch in Neurourology
Pierre and Marie Curie University

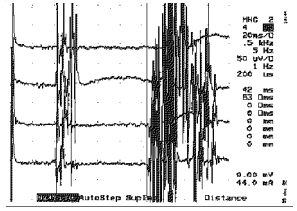
Troubles sexuels ... Préjudice … Expertise => polymorphes / fréquents / intriqués / ≠ neuro

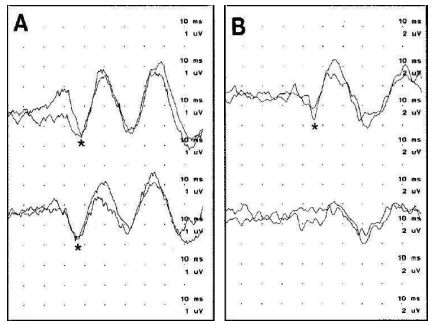


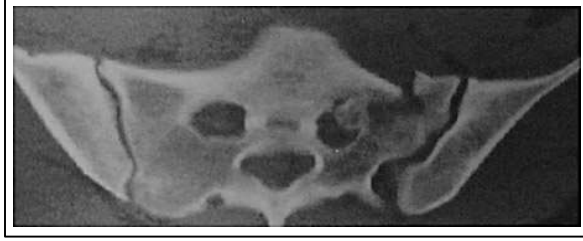


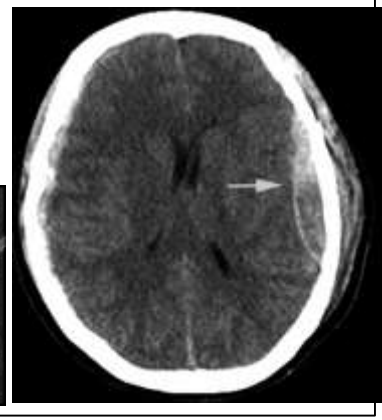












Préjudice sexuel et Explorations Neurophysiologiques

- **Il existe un contrôle neurologique des fonctions sexuelles**

- **Nombre de circonstances pouvant donnant lieu à réparation peuvent donner lieu à une lésion neurologique (traumatismes, lésions per-opératoires, modalités d'accouchement, exposition toxiques, contaminations infectieuses, ...)**

- **Les explorations électrophysiologiques peuvent elles investiguer l'ensemble des voies neurologiques impliquées dans le contrôle génito-sexuel ? Sensibilité, spécificité ?**

- **Ces explorations permettent d'apprécier :**
  - **la topographie de l'atteinte**
  - **son importance (≅ pronostic)**
  - **son ancienneté**
  - **des facteurs associés ou ... Confondants**

Préjudice sexuel et Explorations Neurophysiologiques

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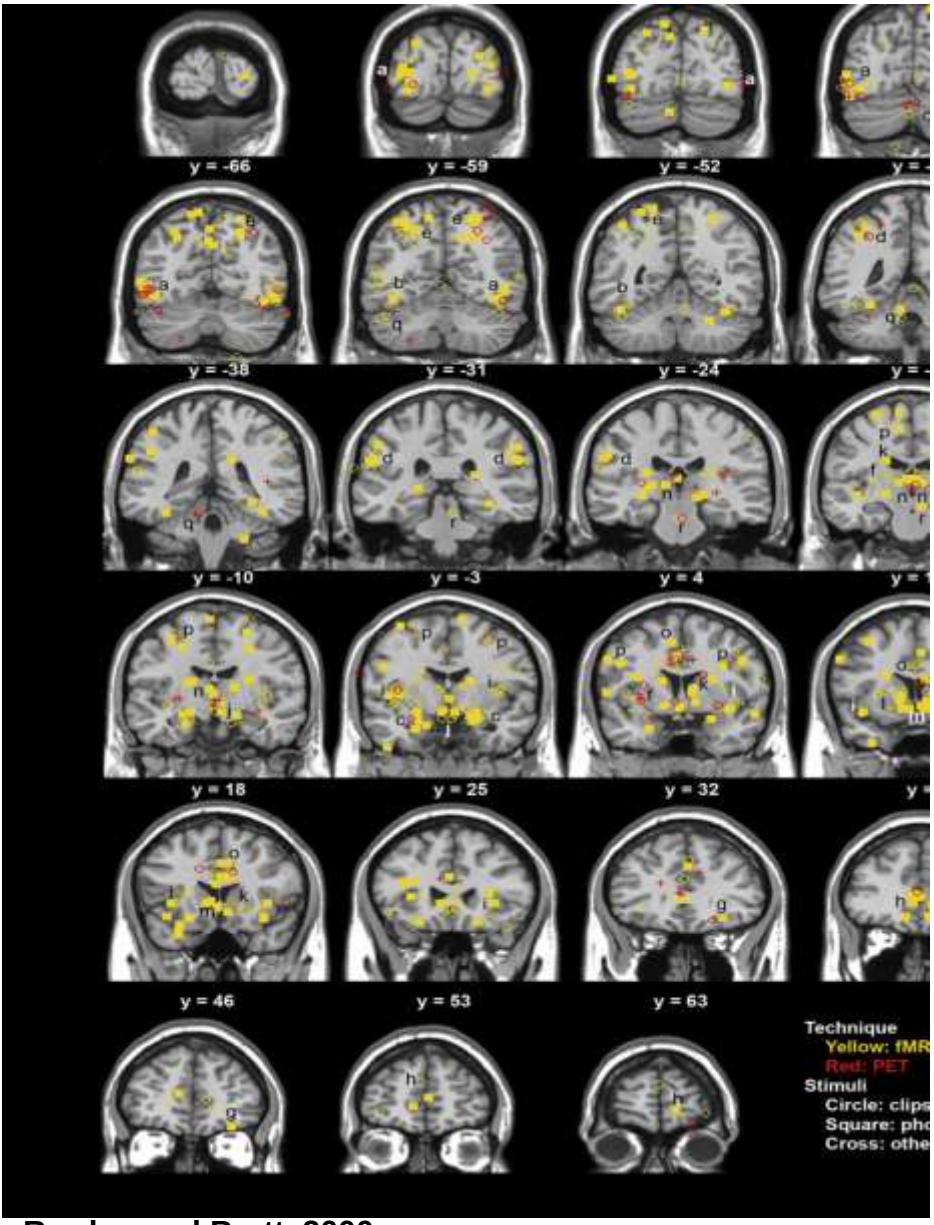
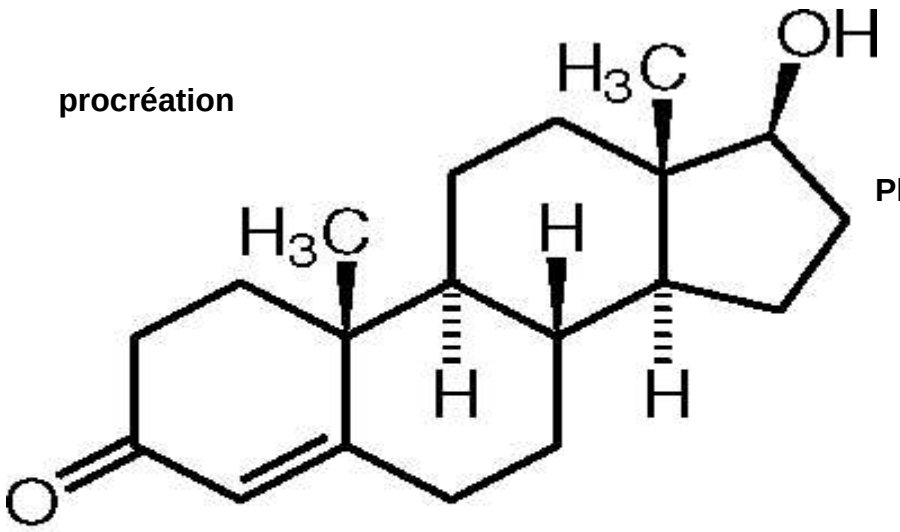
✓ **Désir / érection / éjaculation / orgasme**



Rorden and Brett, 2000

Douleur / sensibilité

procréation



Plaisir de l'autre

fertilité

Satisfaction / image de soi

testosterone

confiance

Douleur / sensibilité

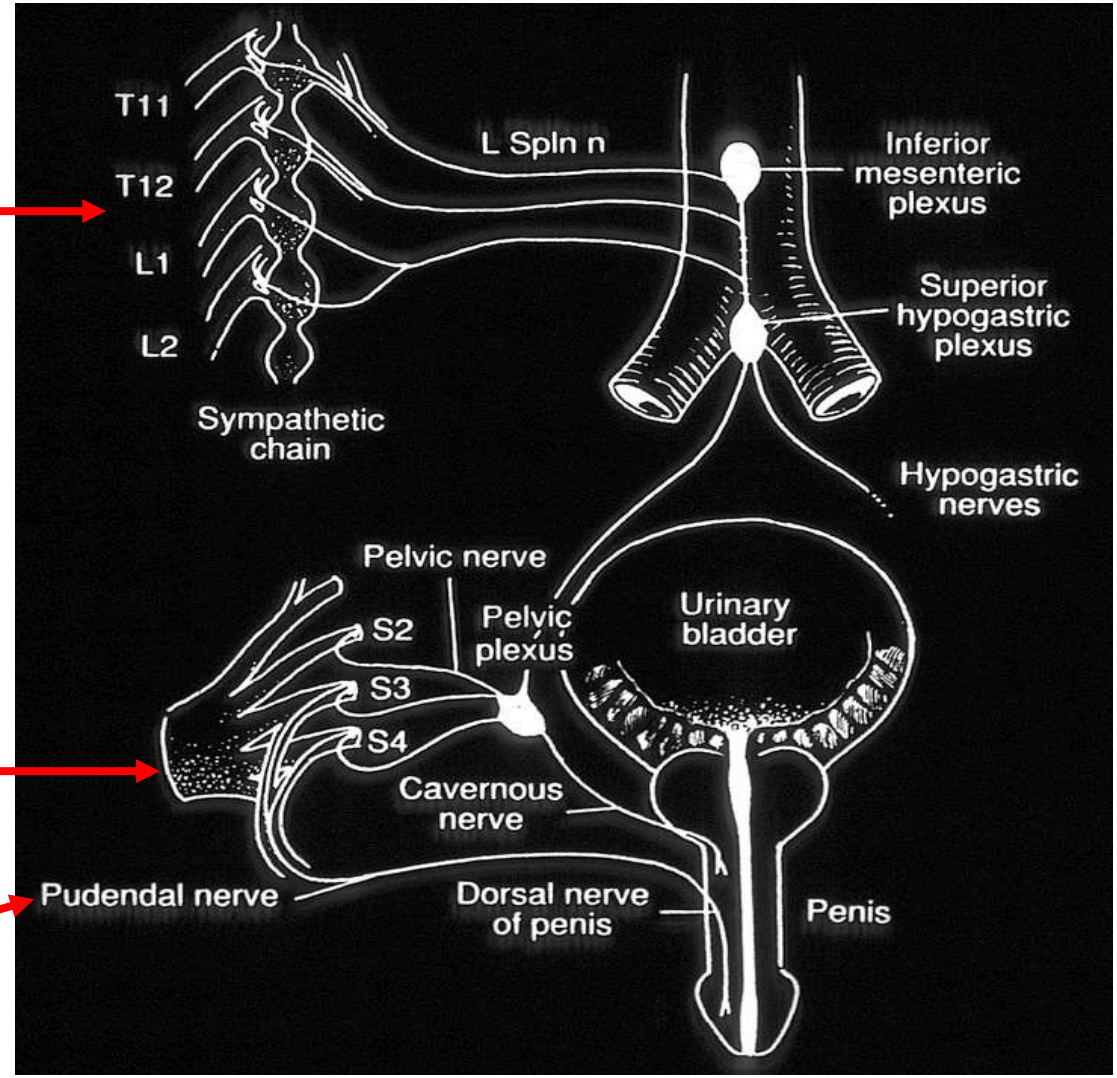
✓ **Désir / excitation/ lubrification / orgasme**

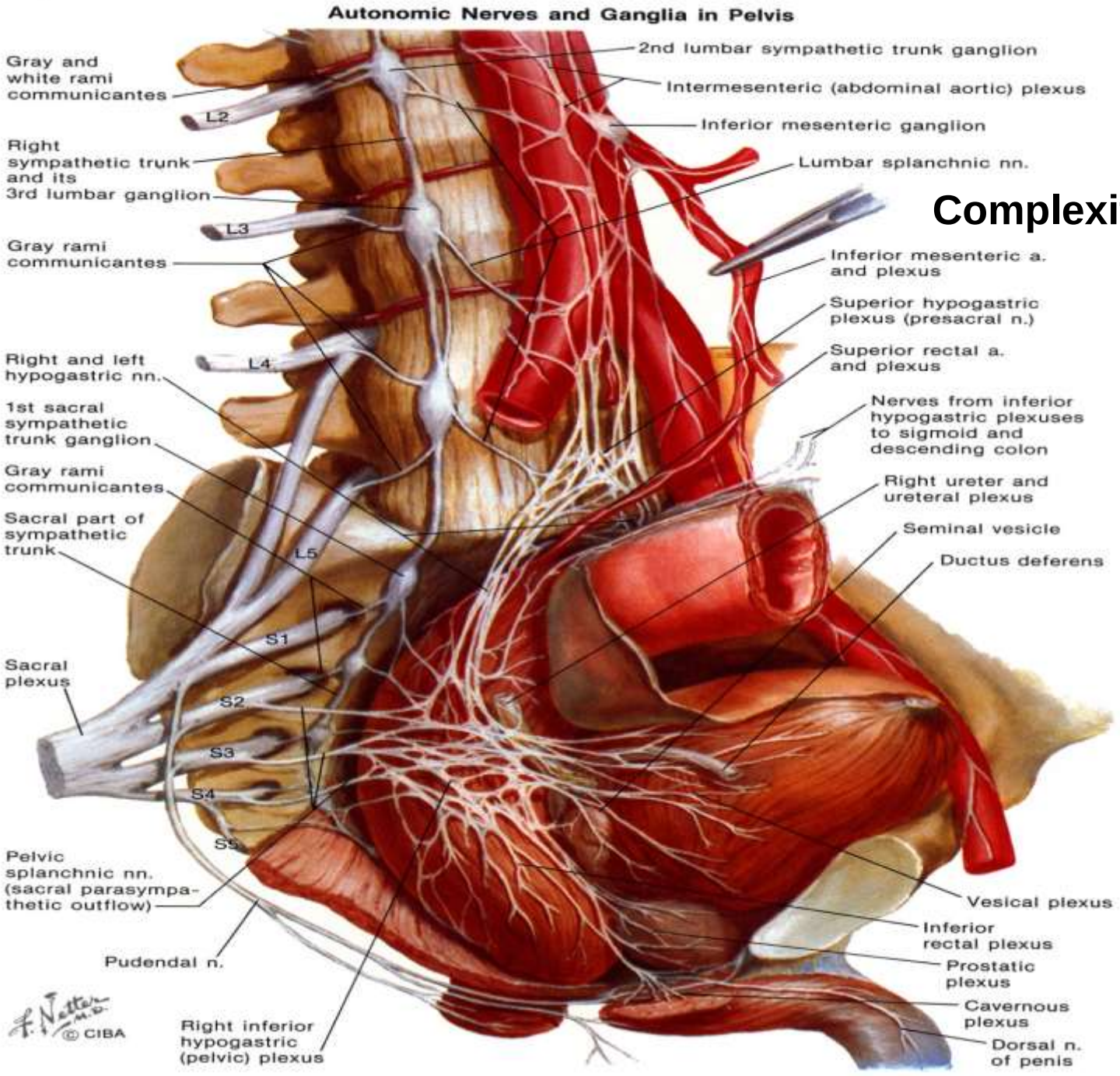
La triple innervation de l’appareil génital

Chaîne ortho-sympathique

Nerfs para-sympathiques

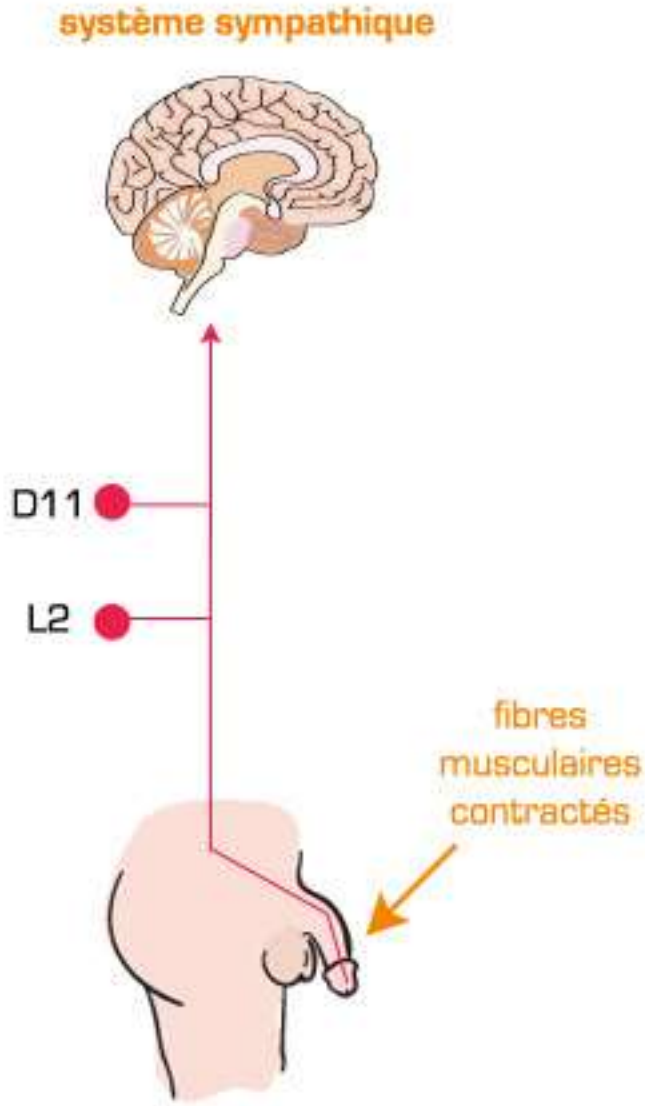
Nerfs somatiques



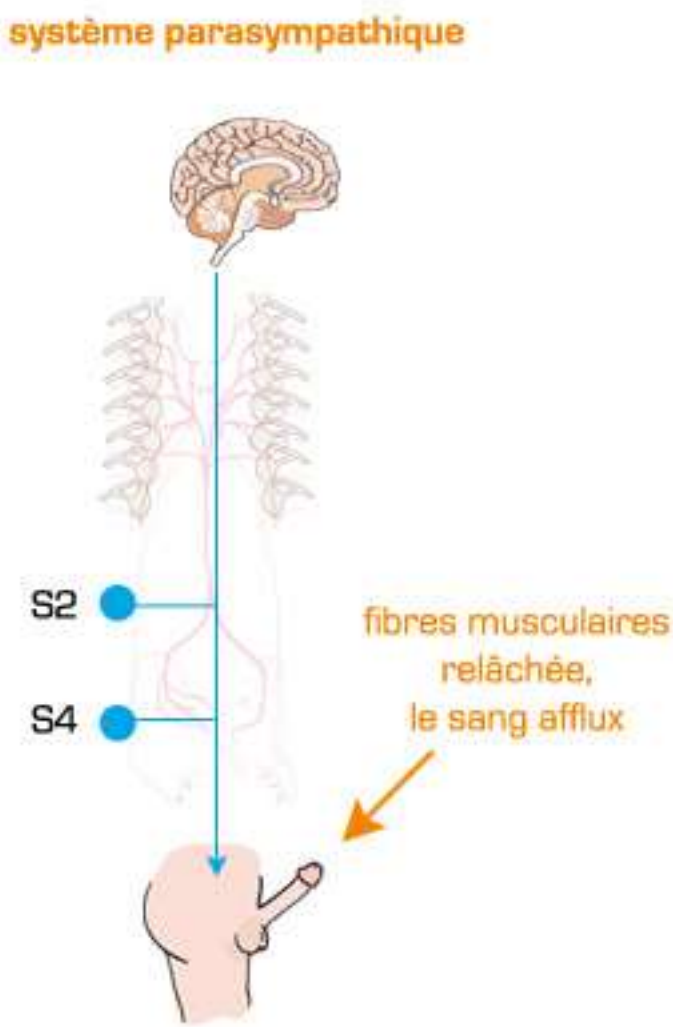


Complexité innervation

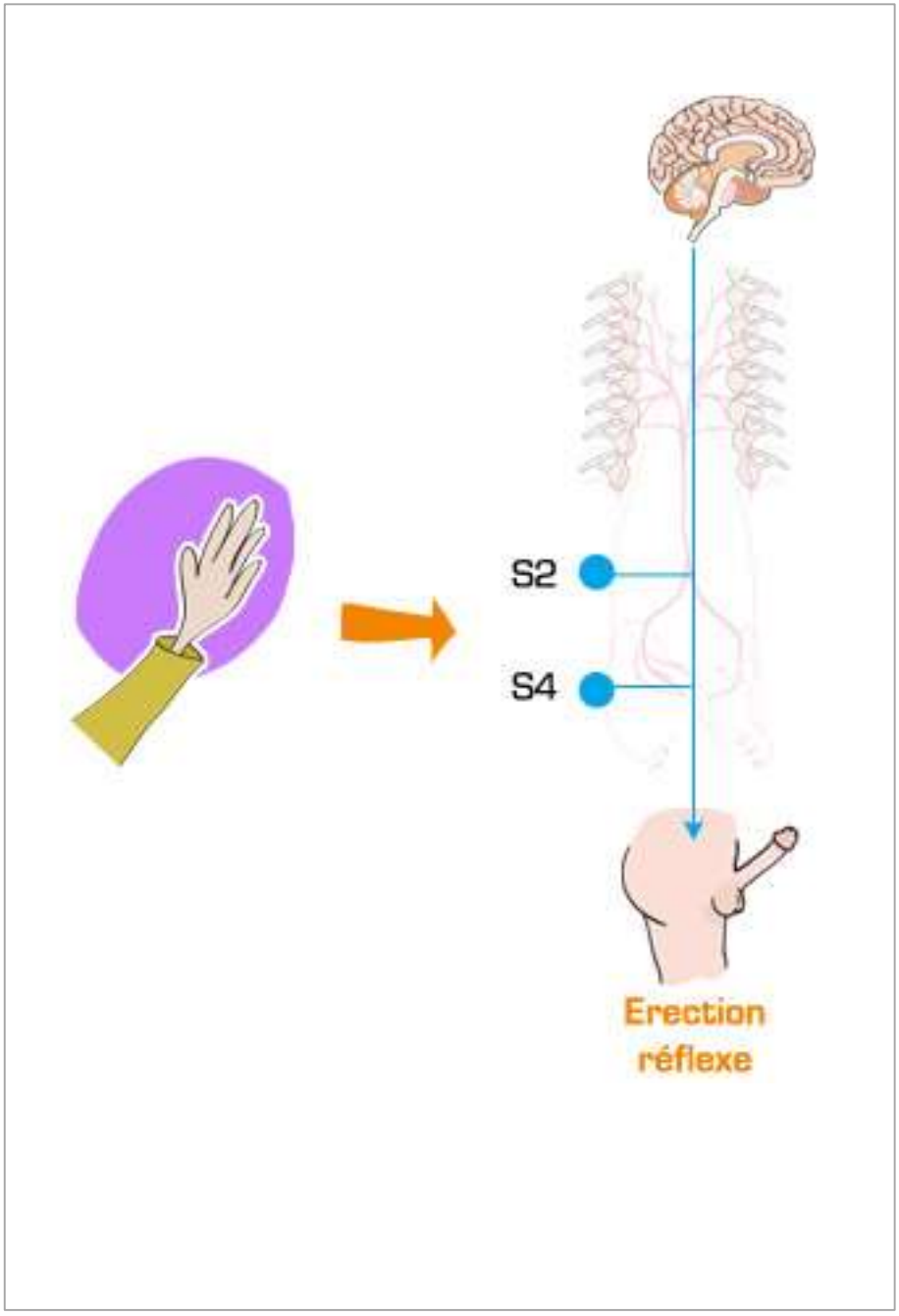
Dysfonctions post-chirurgie

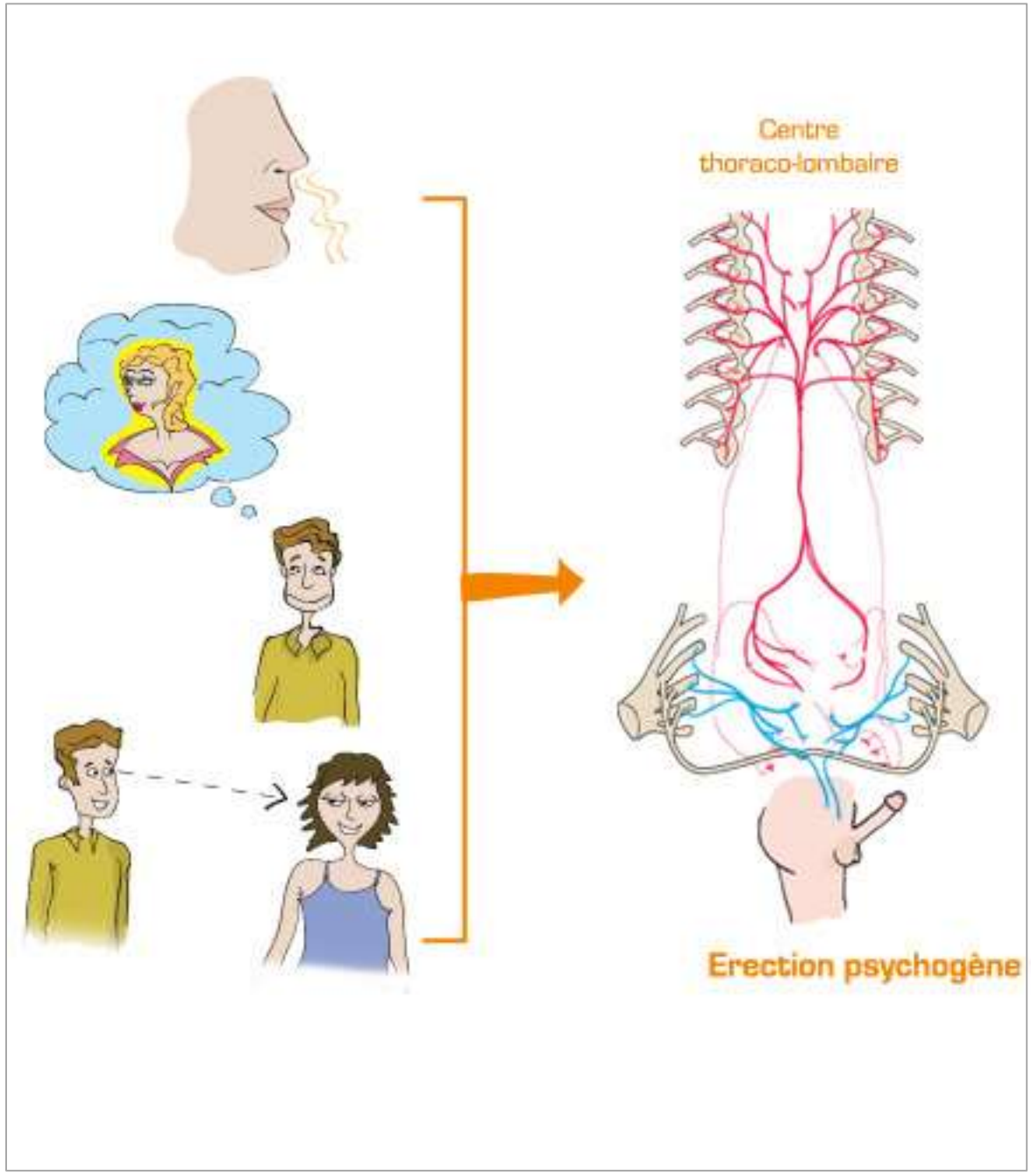


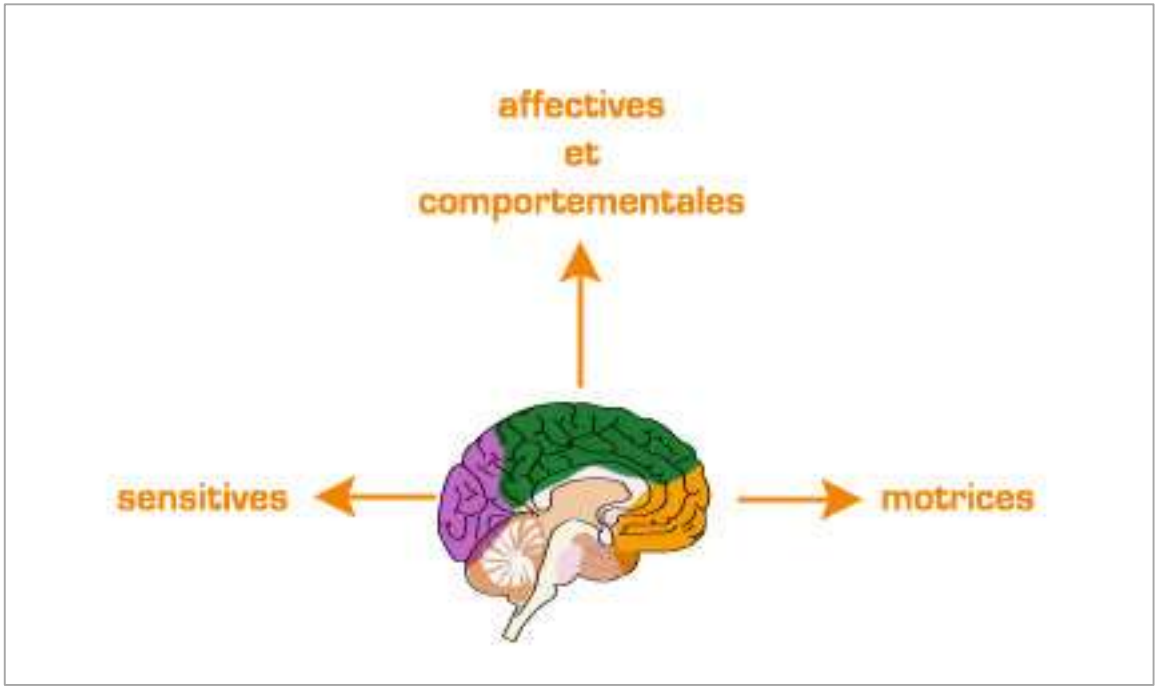
flaccidité

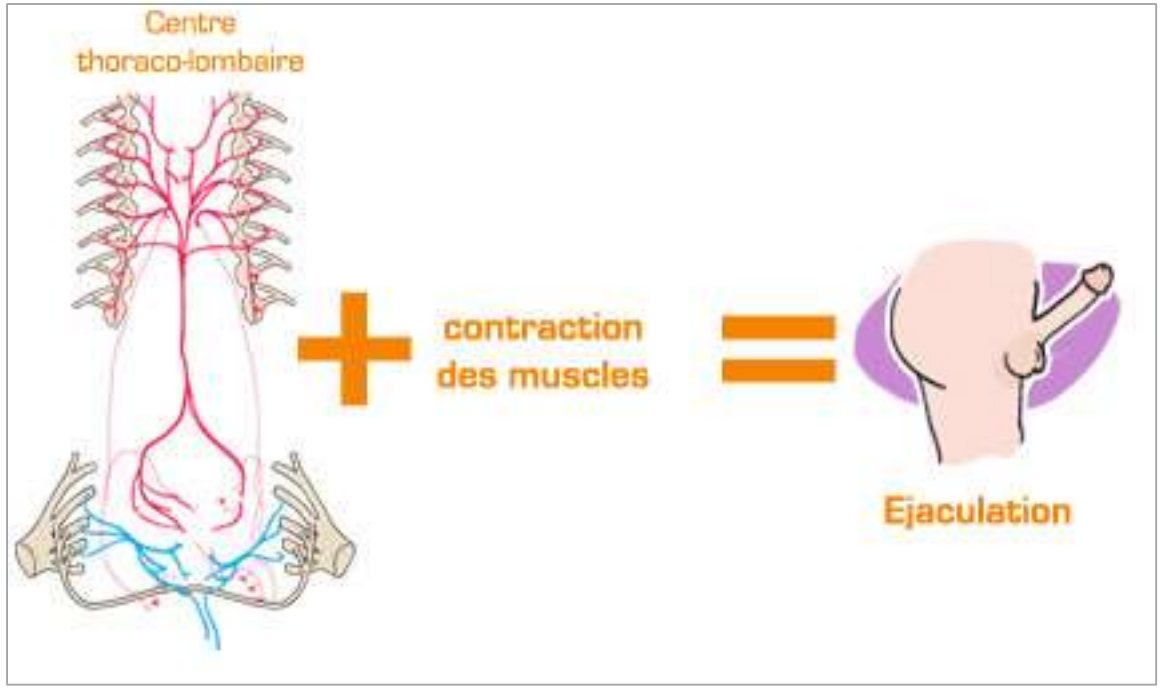


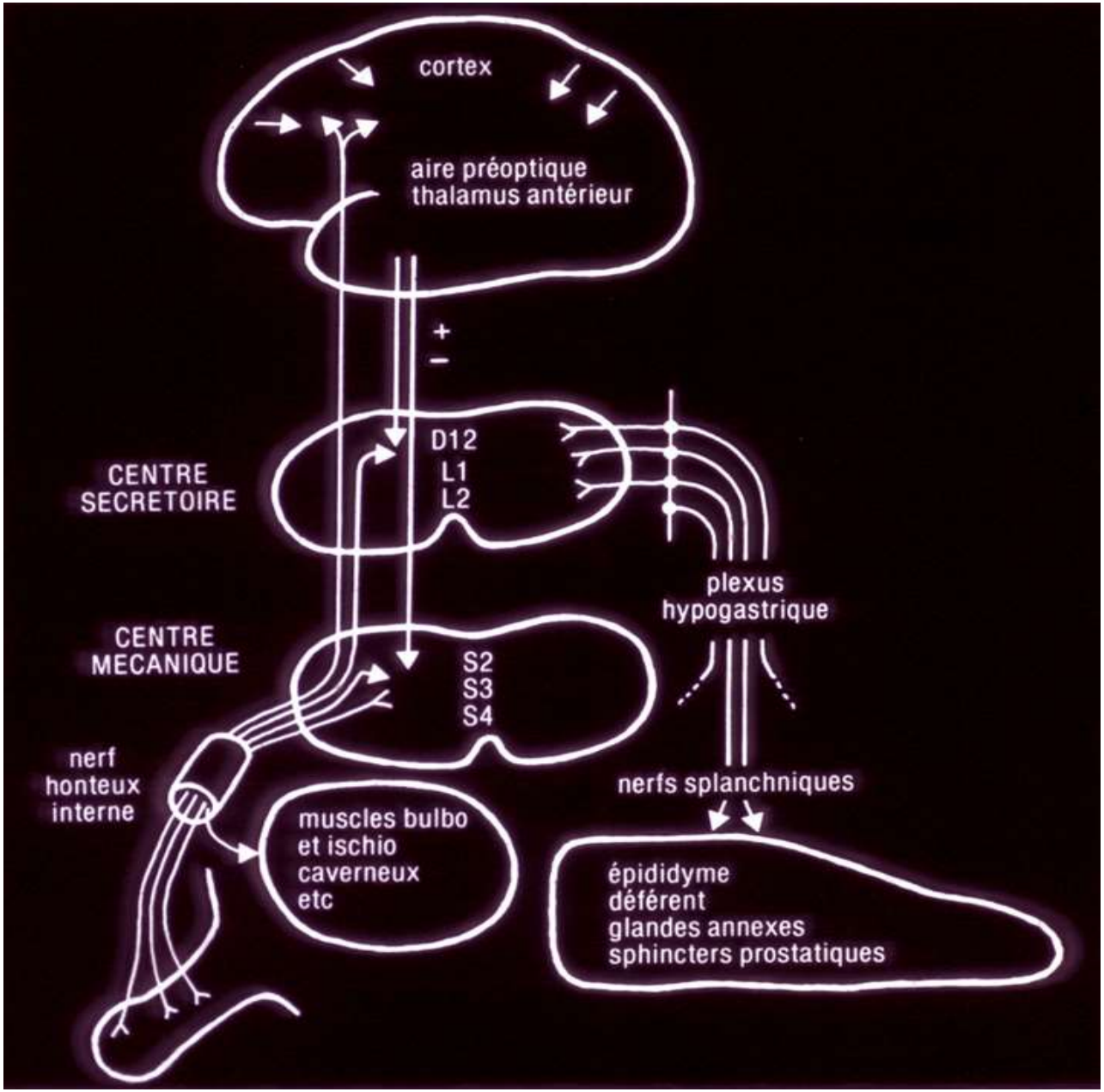
érection


S2
S4
Erection
réflexe


Centre
thoraco-lombaire
Erection psychogène


affectives
et
comportementales
sensitives
motrices

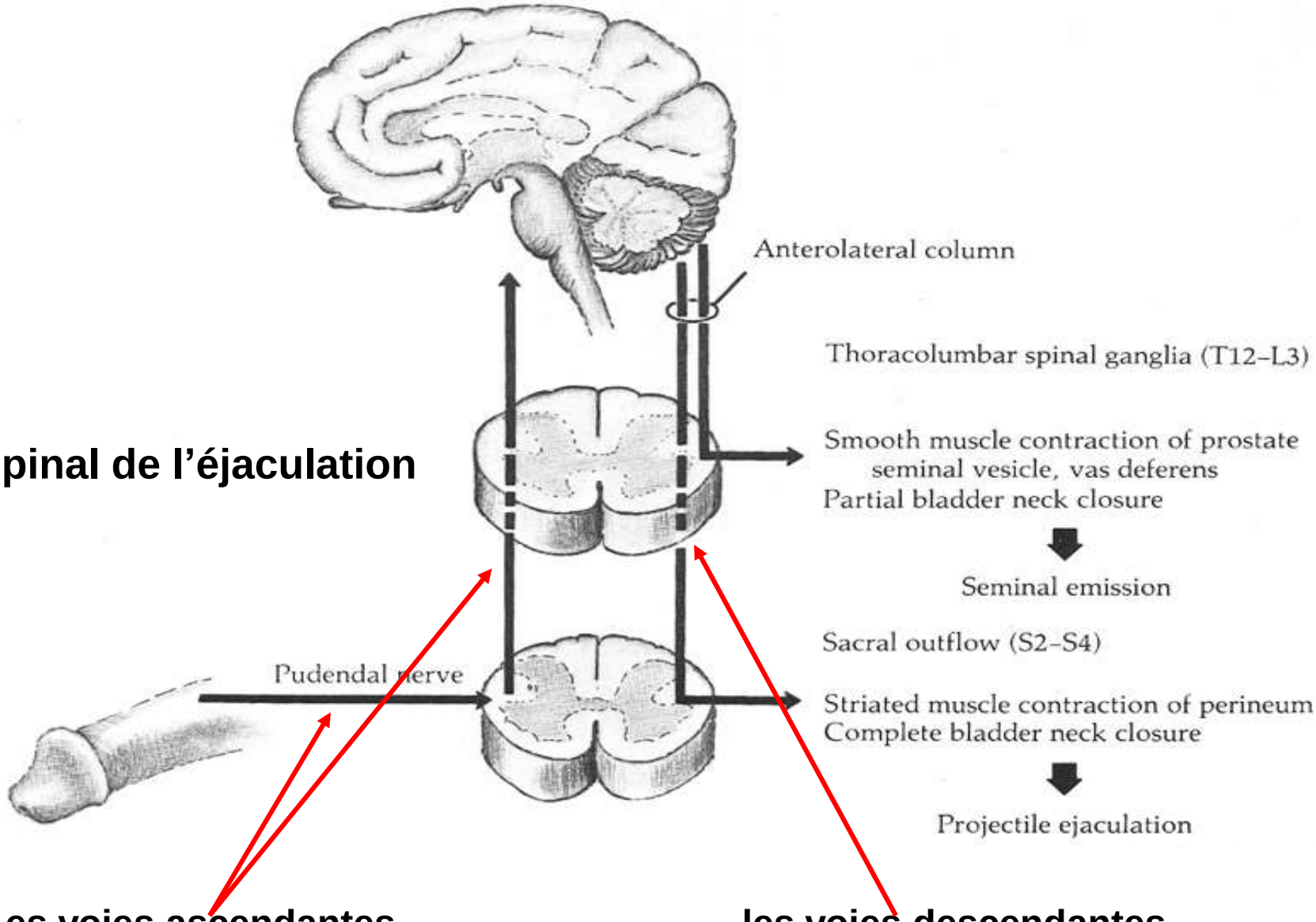

Centre
thoraco-lombaire
contraction
des muscles
Ejaculation



Le réflexe éjaculatoire : voies et centres

sur le plan moteur:
2 phases:

- **émission**
- **éjection**



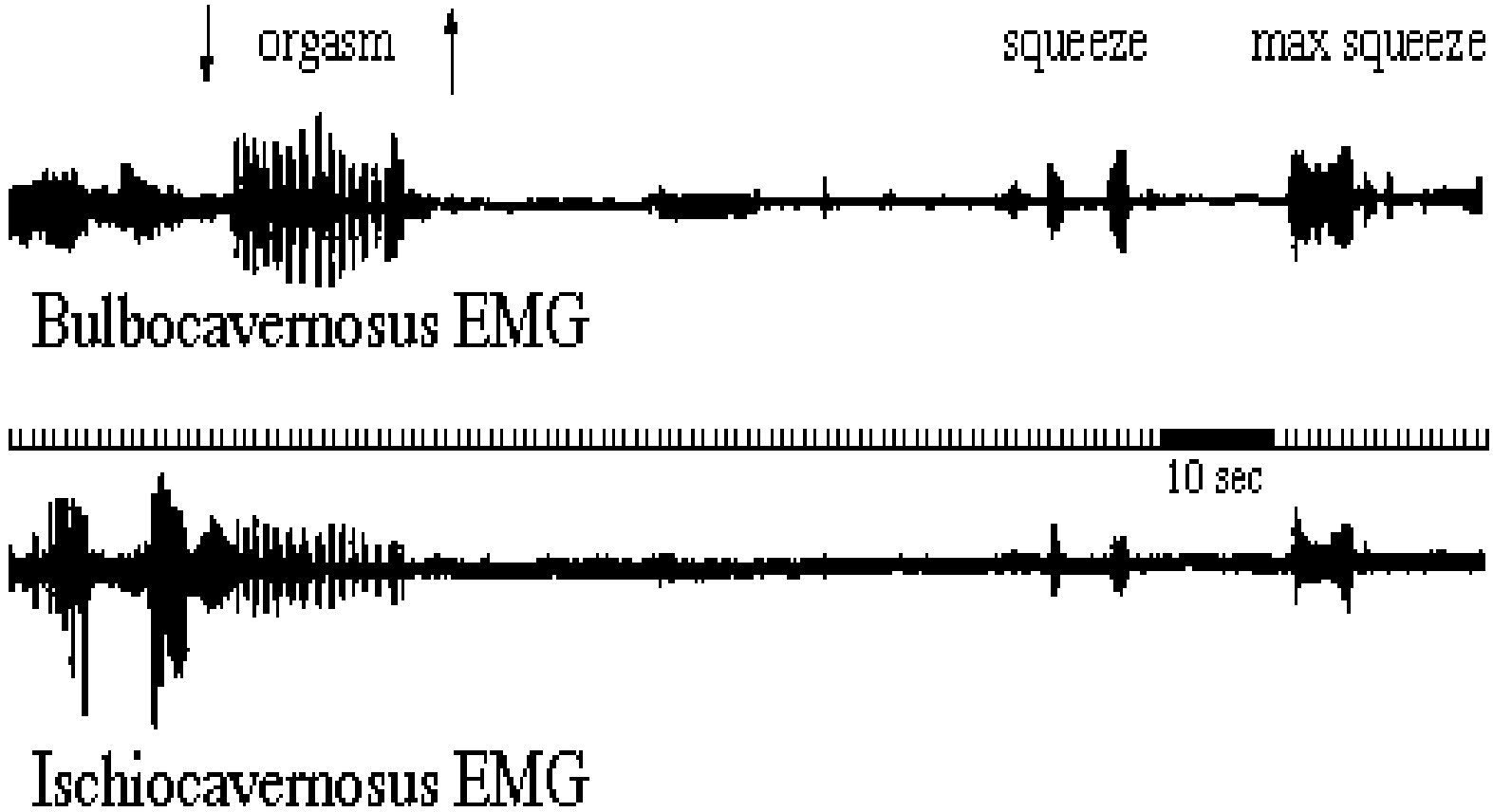
Centre spinal de l'éjaculation

Les voies ascendantes

les voies descendantes

Le réflexe éjaculatoire

ACTIVITES MUSCULAIRES STRIEES COORDONNEES BULBOSPONGIEUX ET ISCHIOCAVERNEUX
DURANT LA PHASE D'EXPULSION



Gerstenberg et al., Br J Urol, 1990, 65: 395-402.

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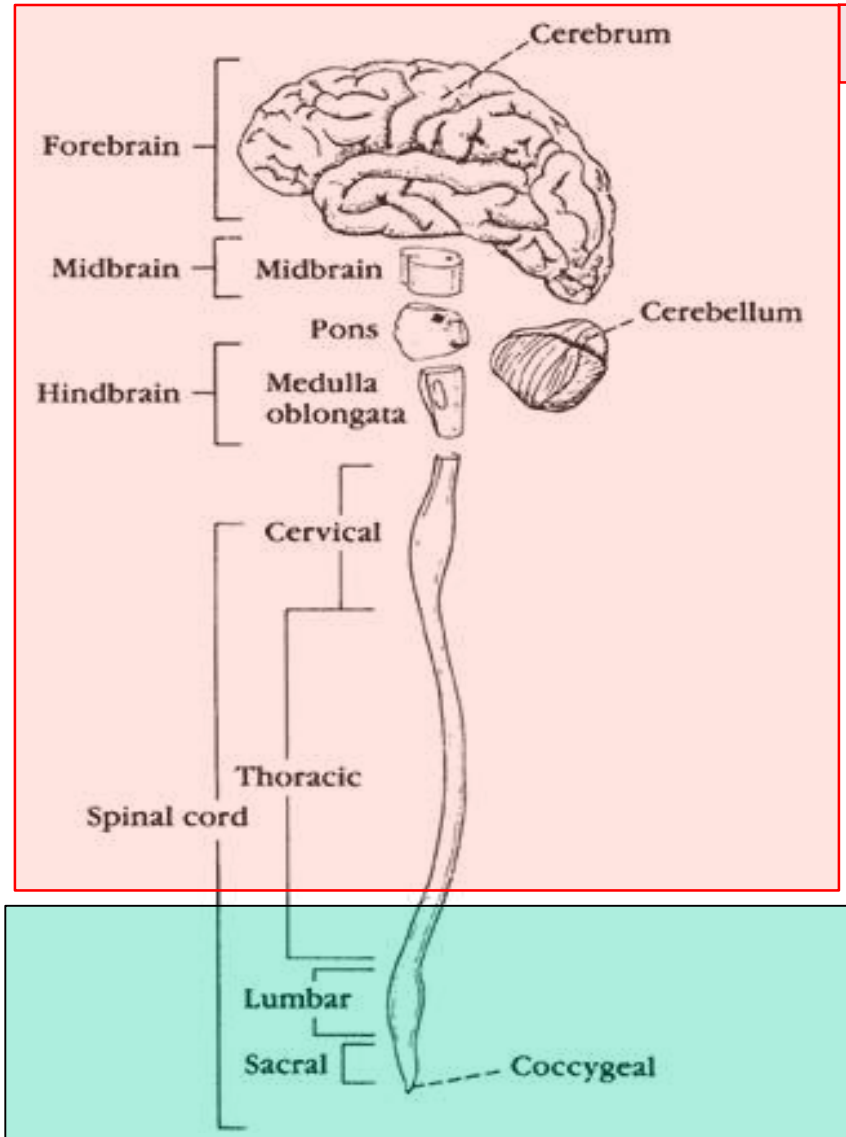
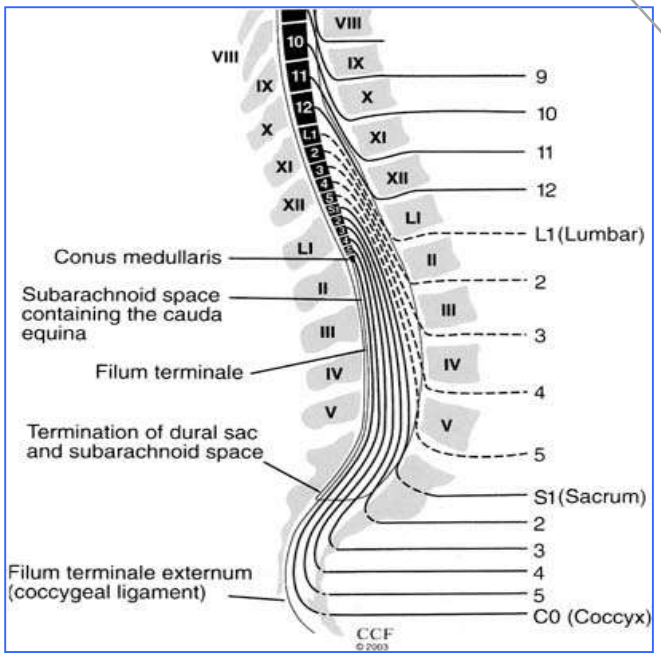
Central nervous system

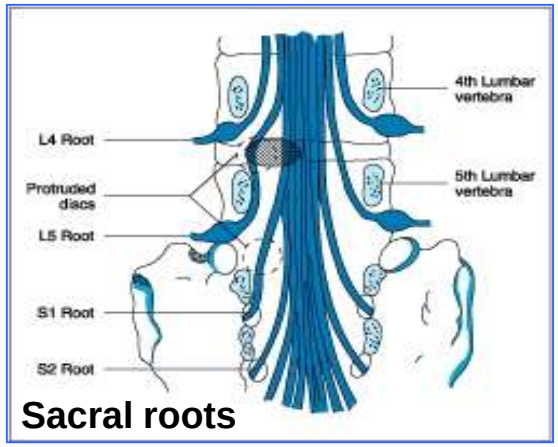
Nervous system split in central/peripheral levels



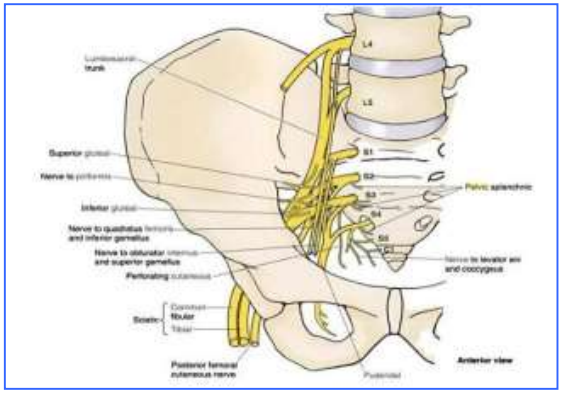
Peripheral nervous system

Includes : plexus, roots, sacral spinal cord, peripheral nerve (pudendal nerve)



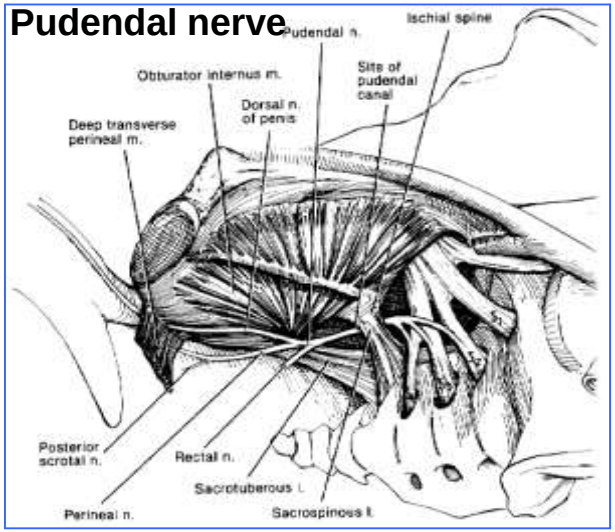


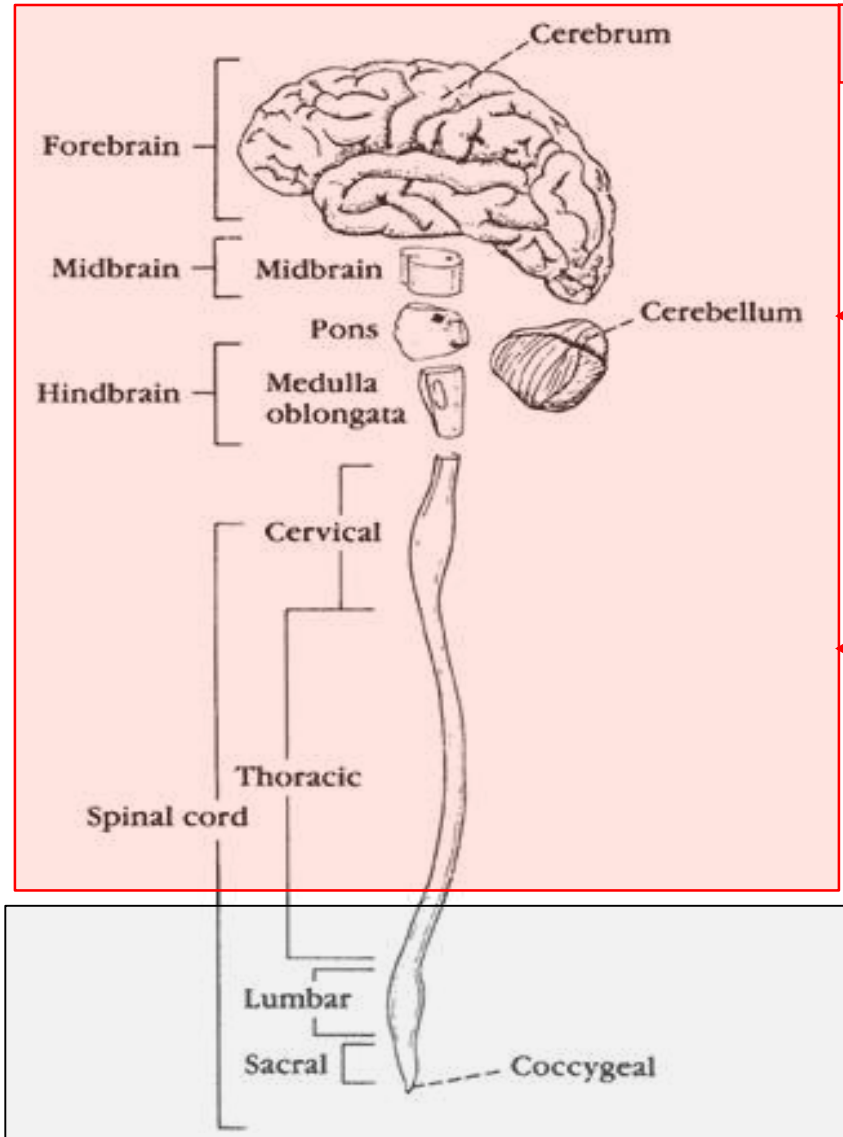
Sacral roots



Sacral plexus

Pudendal nerve





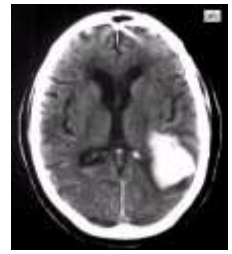
Central nervous system

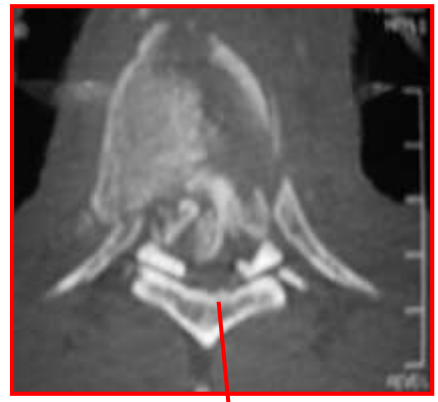
Brain lesions :

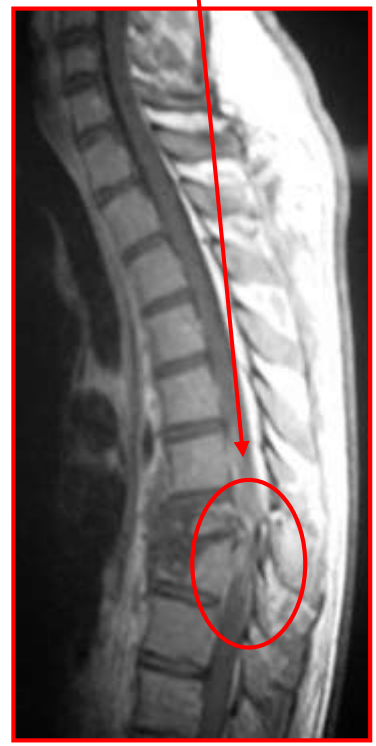
- stroke
- Parkinson (±)
- tumors
- infectious (abscess, encephalitis,...)
- trauma

Spinal cord lesions :

- vascular
- trauma (SCI)
- tumors
- infectious (abscess, myelitis,...)
- MS / arthrosis
- post surgery







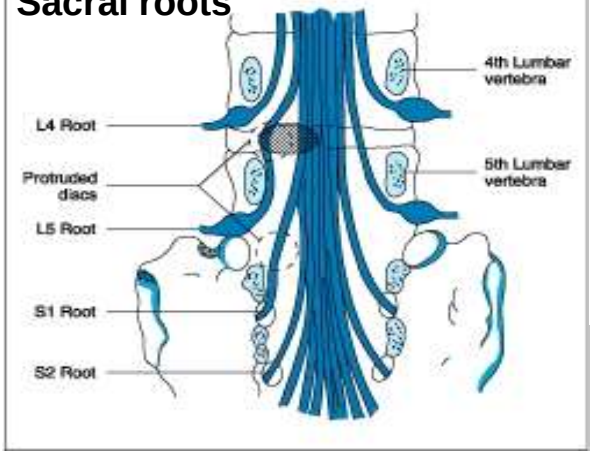
Etiologies of neurogenic sexual L. in central nervous system lesions

Peripheral nervous system

Includes : plexus, roots, sacral spinal cord, peripheral nerve (pudendal nerve)

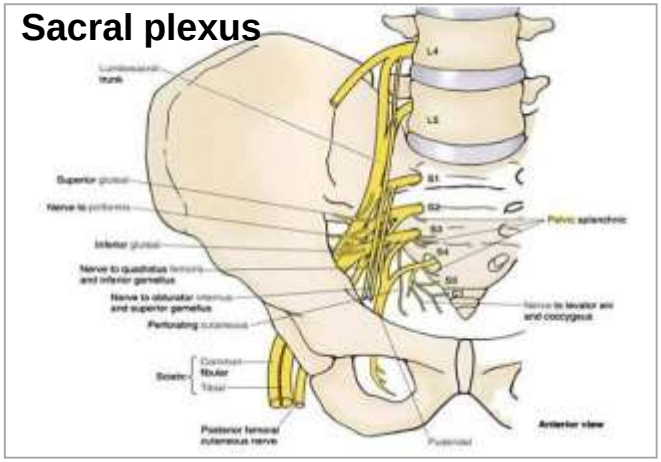
Etiologies of neurogenic sexual alteration in peripheral nervous system lesions

Sacral roots

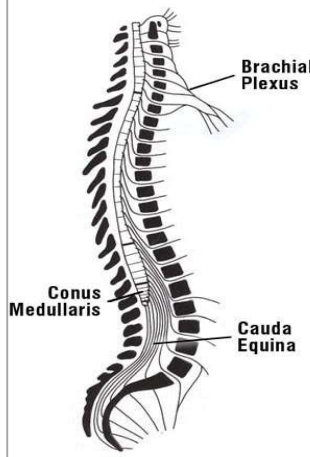


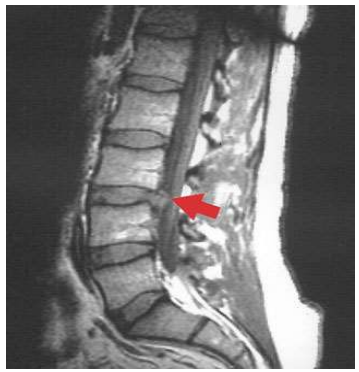
Peripheral neuropathies

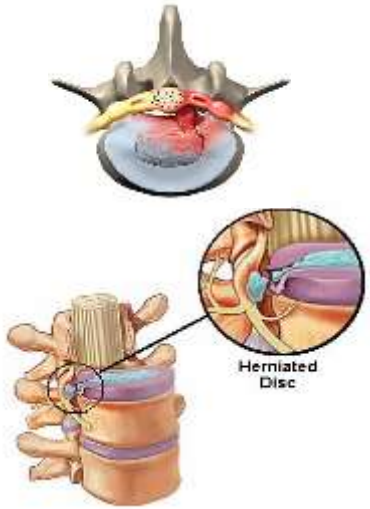
Sacral plexus



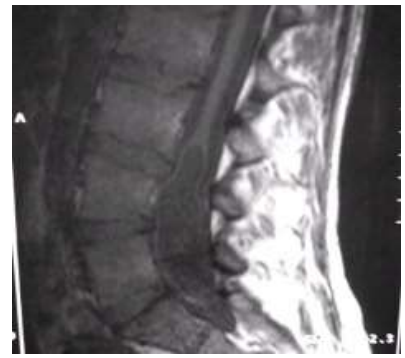
Disk herniation

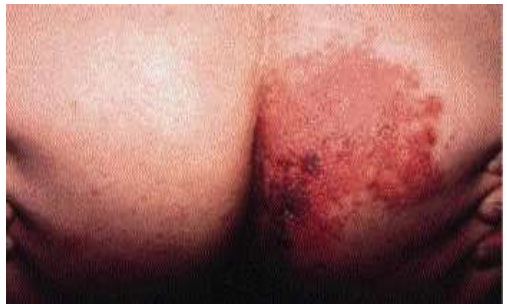






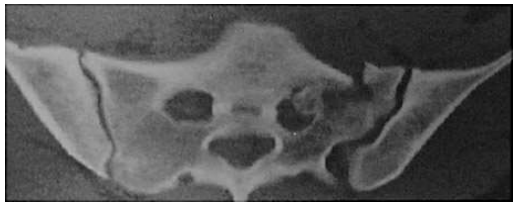
Hemorragic lesions



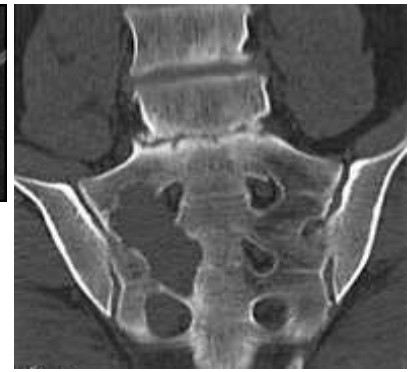


sacral myelitis (herpes zoster, Lyme …)

sacral plexus injury (traumatic, radiotherapy, tumors)

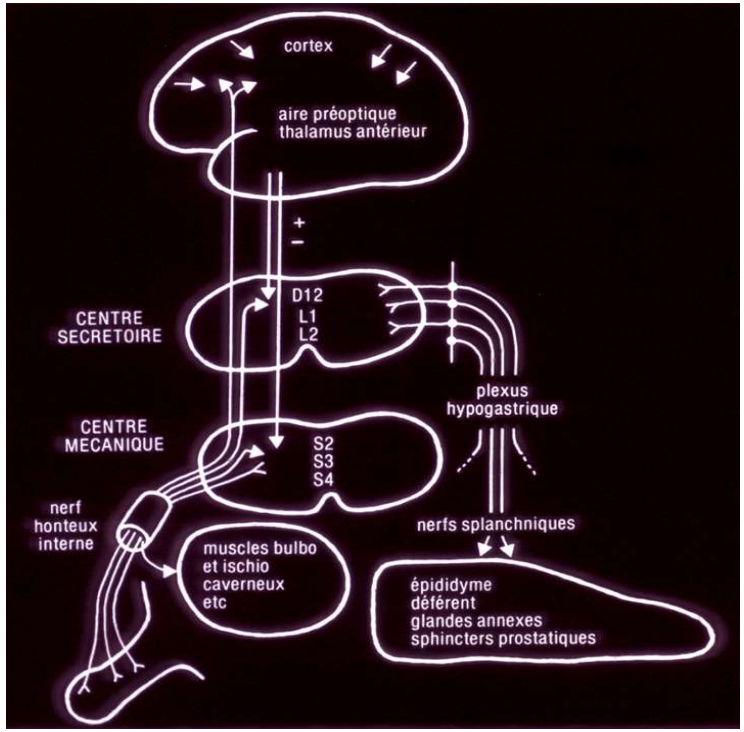


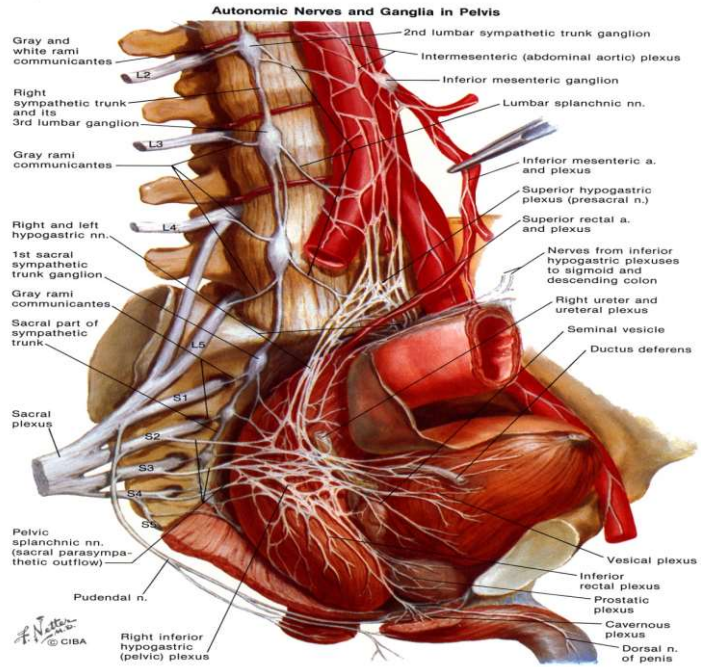
Sacrum fracture



≠ Sacral tumors

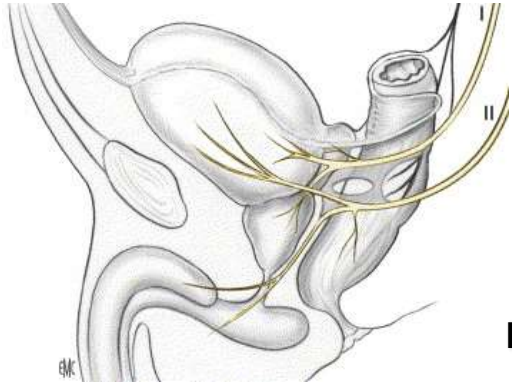
Troubles sexuels lors des atteintes du système nerveux autonome





Post chirurgie

Neuropathies périphériques



Post traumatiques

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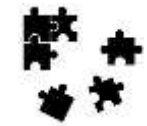
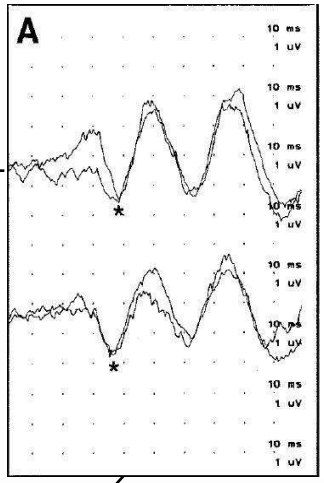
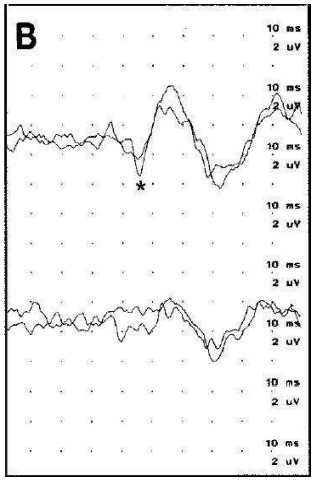
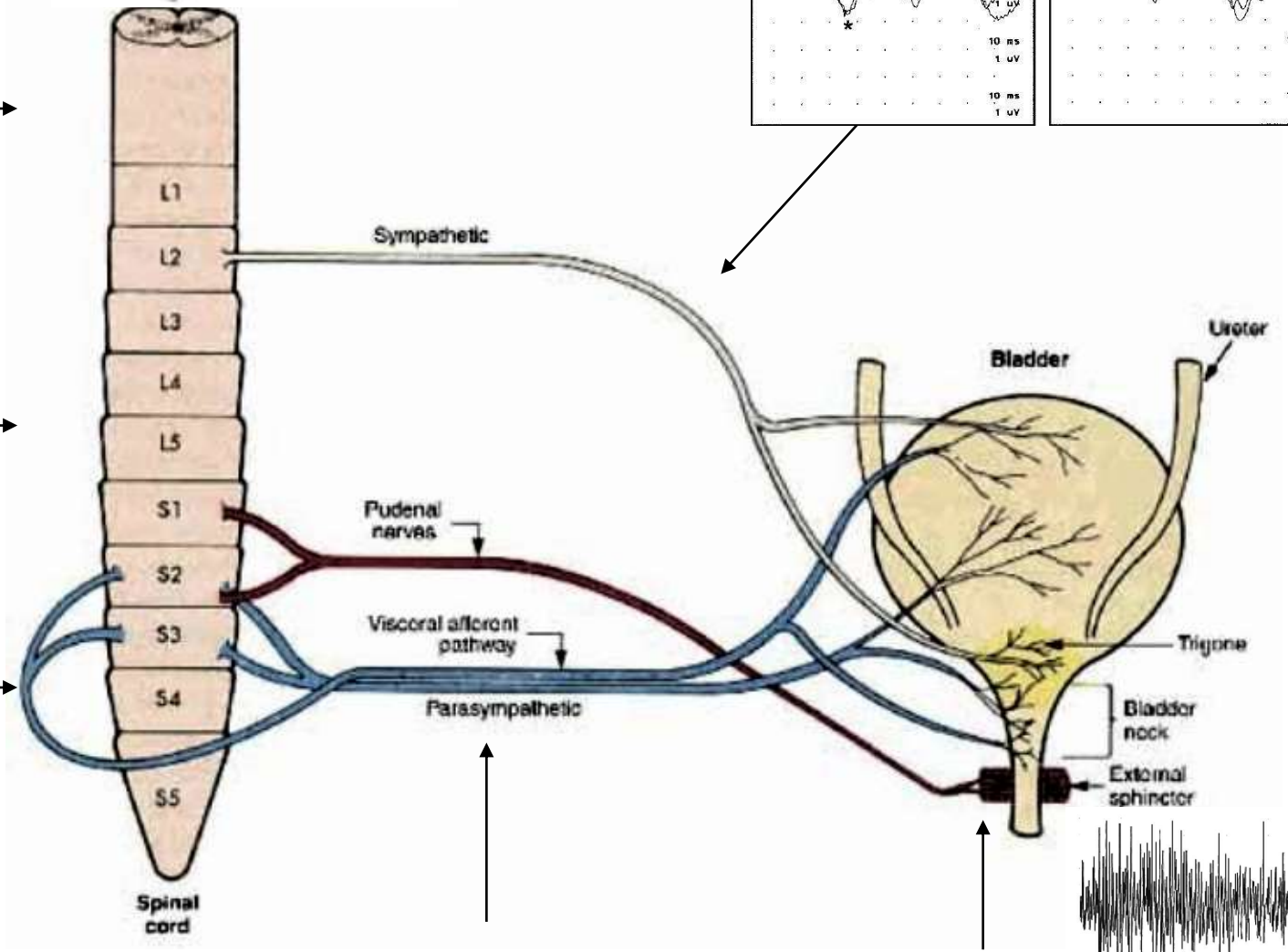
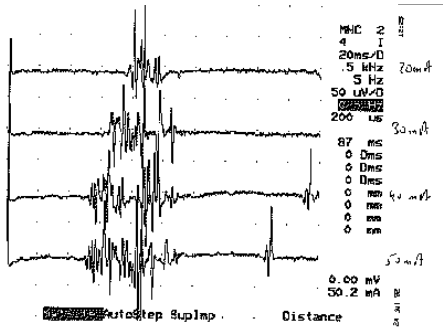


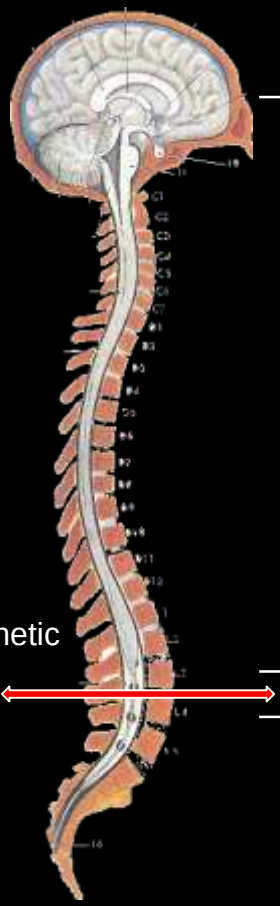
Electrophysiologie : exploration de l'ensemble du névraxe







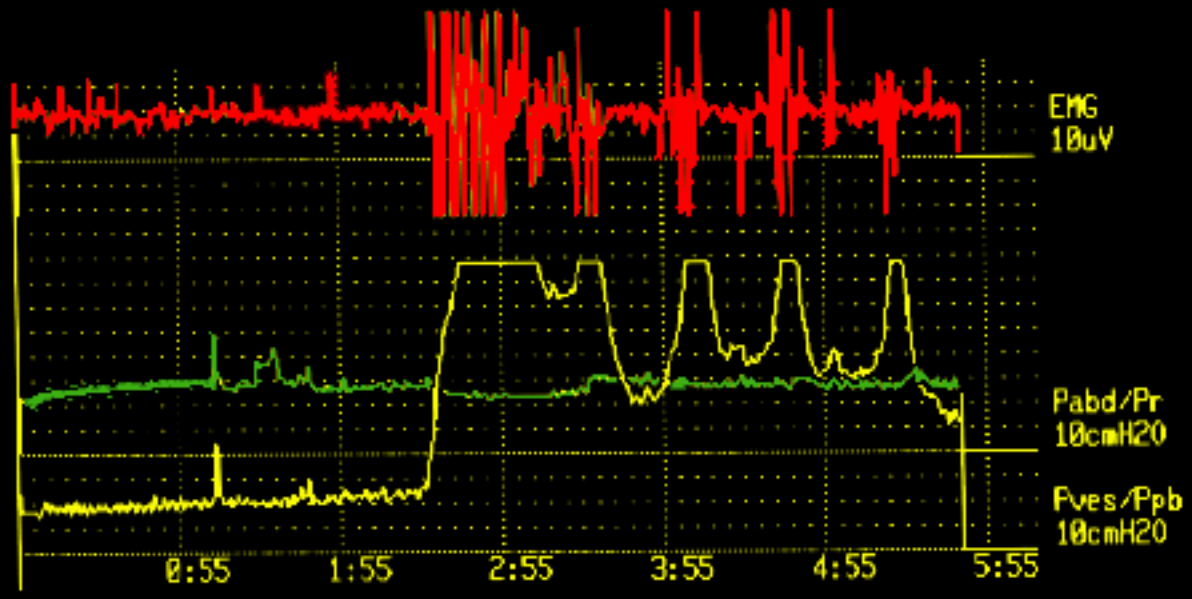




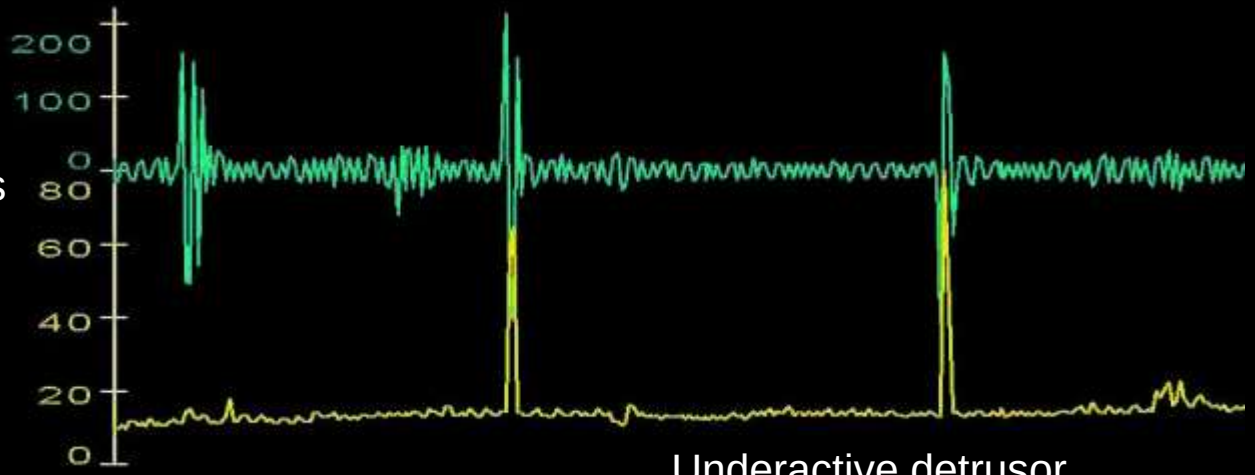
Upper motor neuron lesions

Sacral Parasympathetic center

Lower motor Neuron lesions



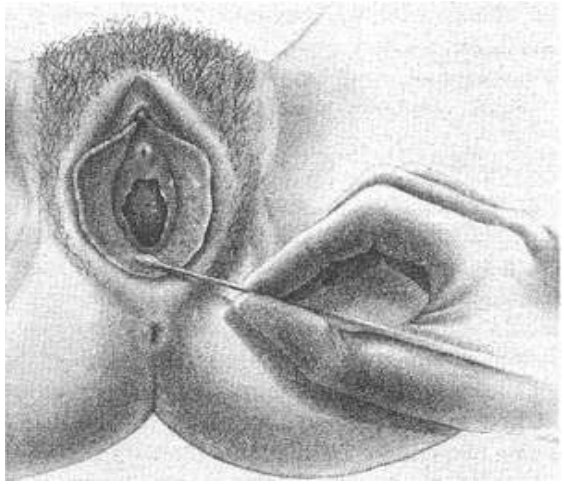
Overactive detrusor



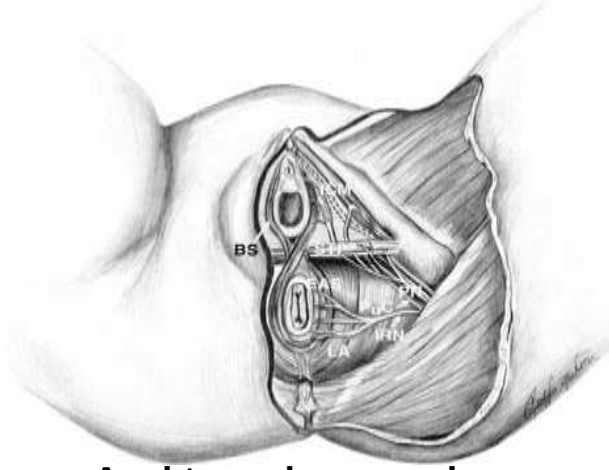
Underactive detrusor

ASSOCIATIONS +++
Sexual / Urinary / Anorectal

Neurologic examination

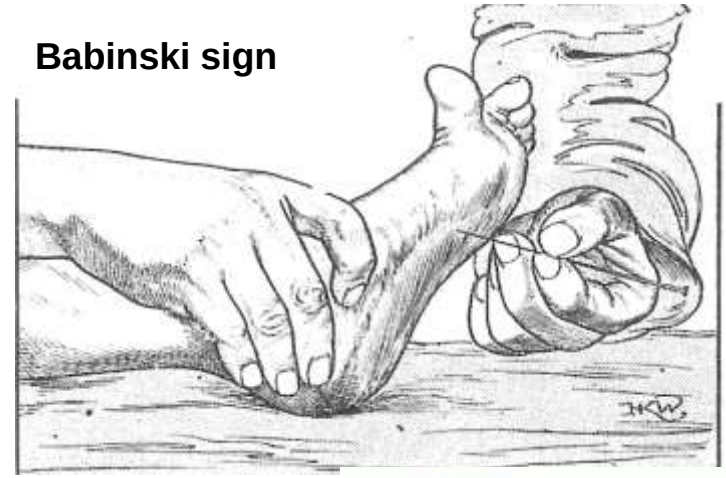


Loss of touch sensation

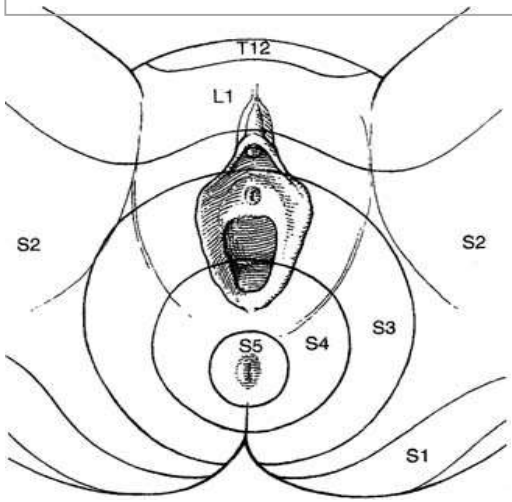


Anal tone decreased

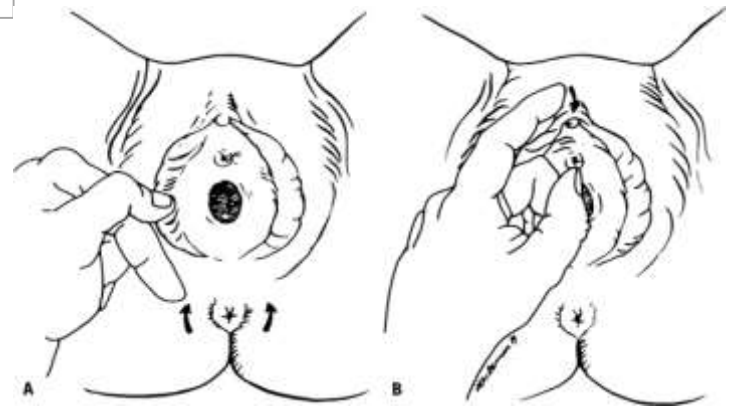
Babinski sign



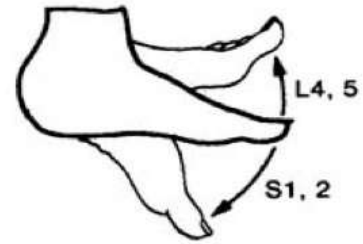
Sensory function is evaluated by testing the lumbar-sacral dermatomes



Motor function is evaluated by testing the muscle strenght and tone



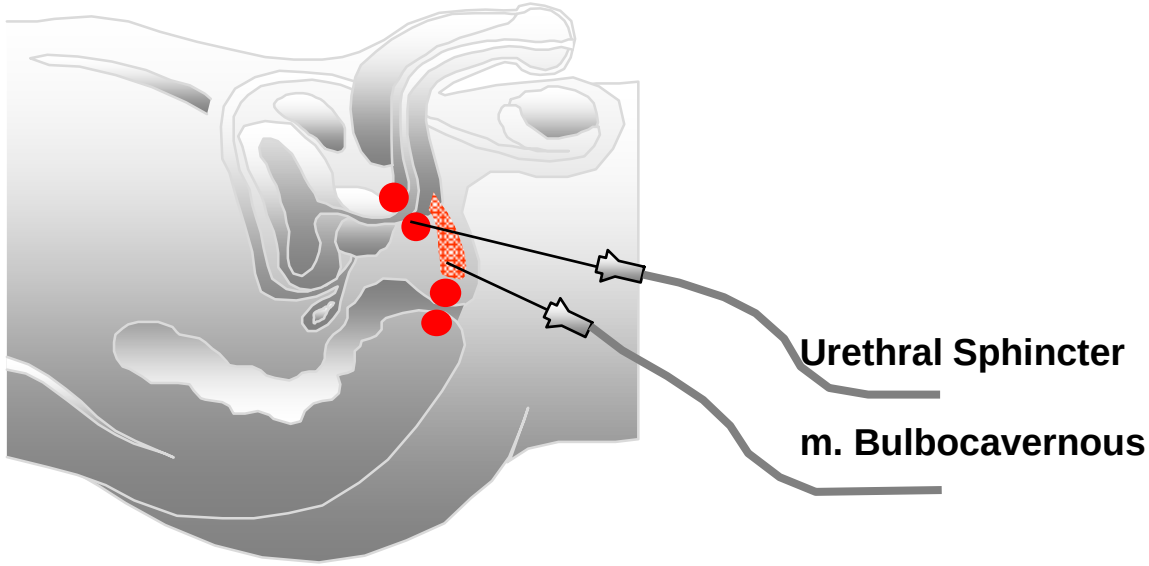
Abolition of BC reflex

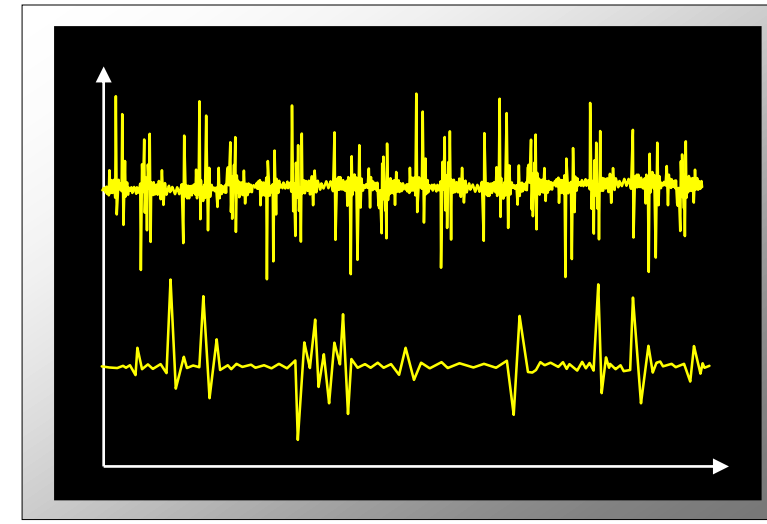


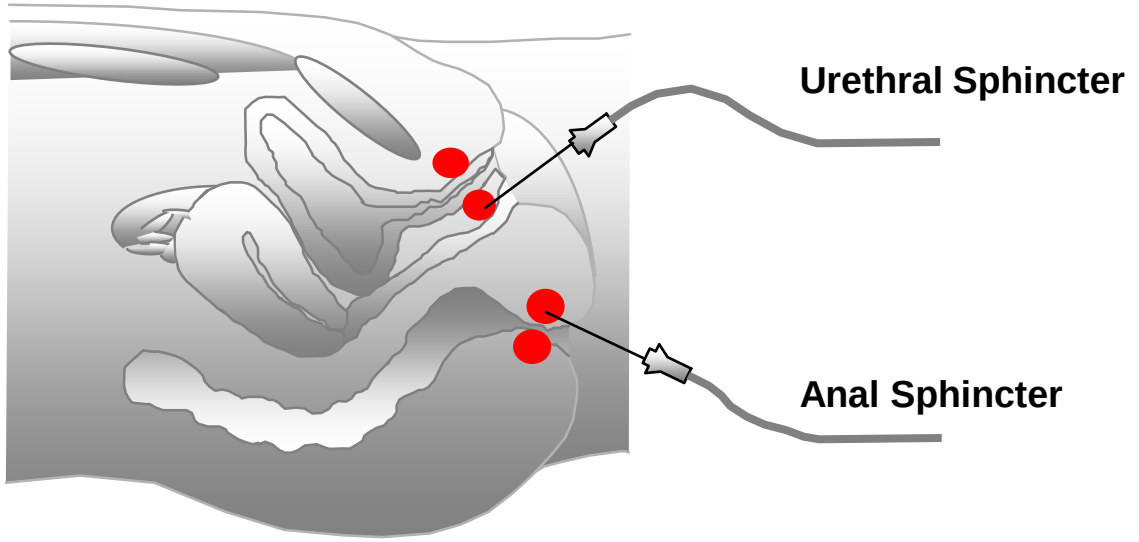
Abolition of ankle reflex

Muscle strenght (plantar Flexion) decreased

Electromyography

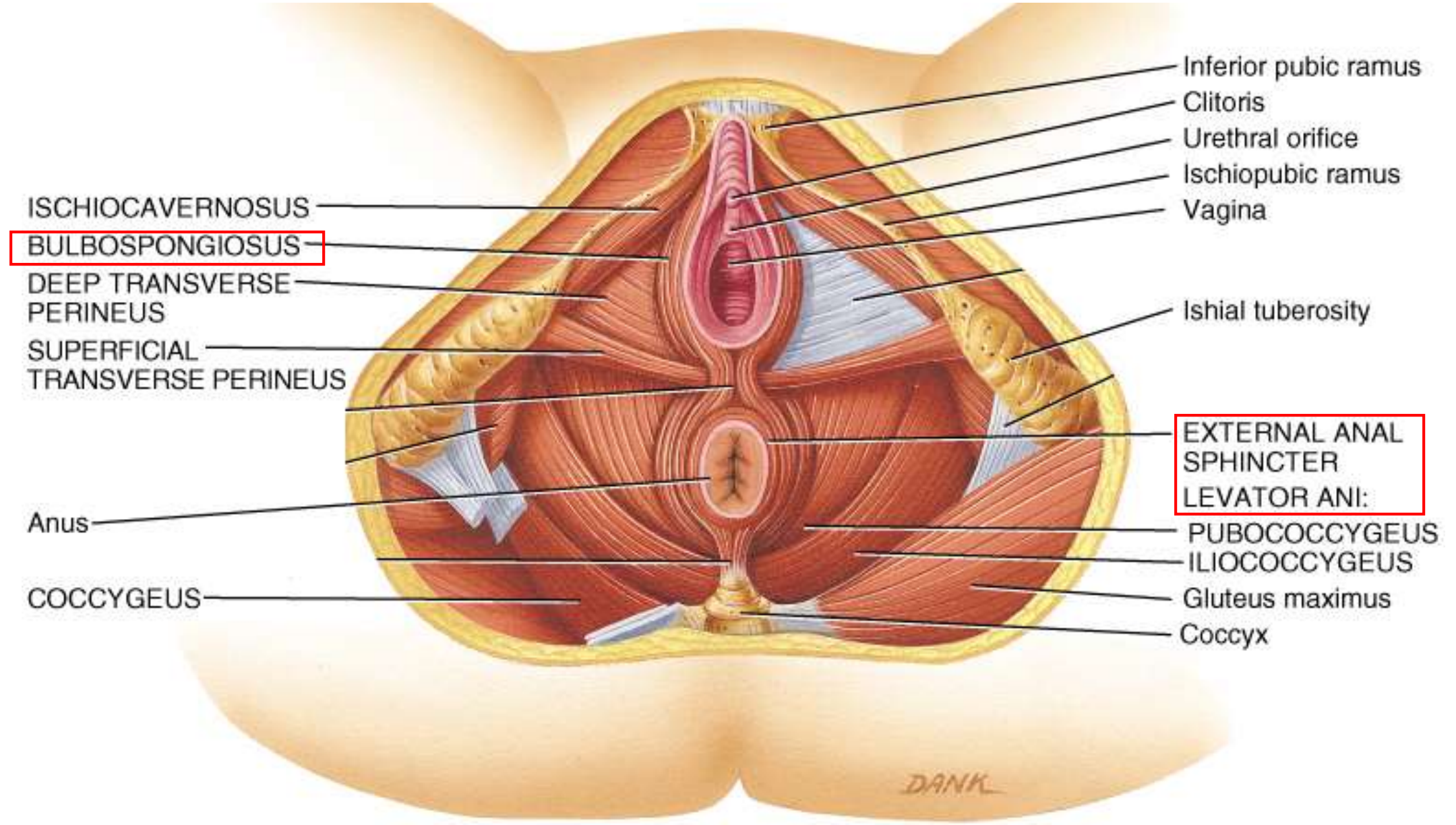




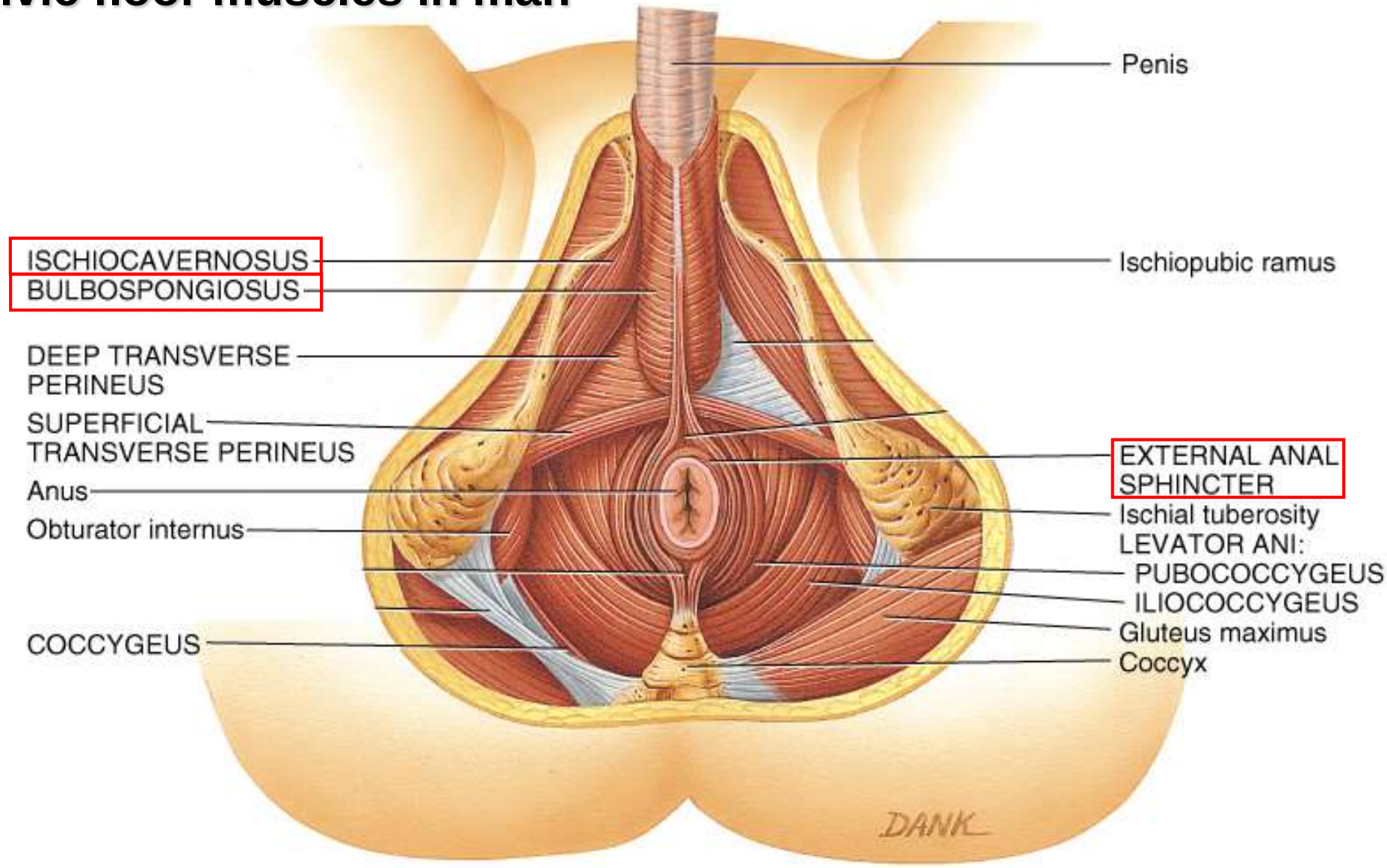


Recording EMG

Pelvic floor muscles in woman

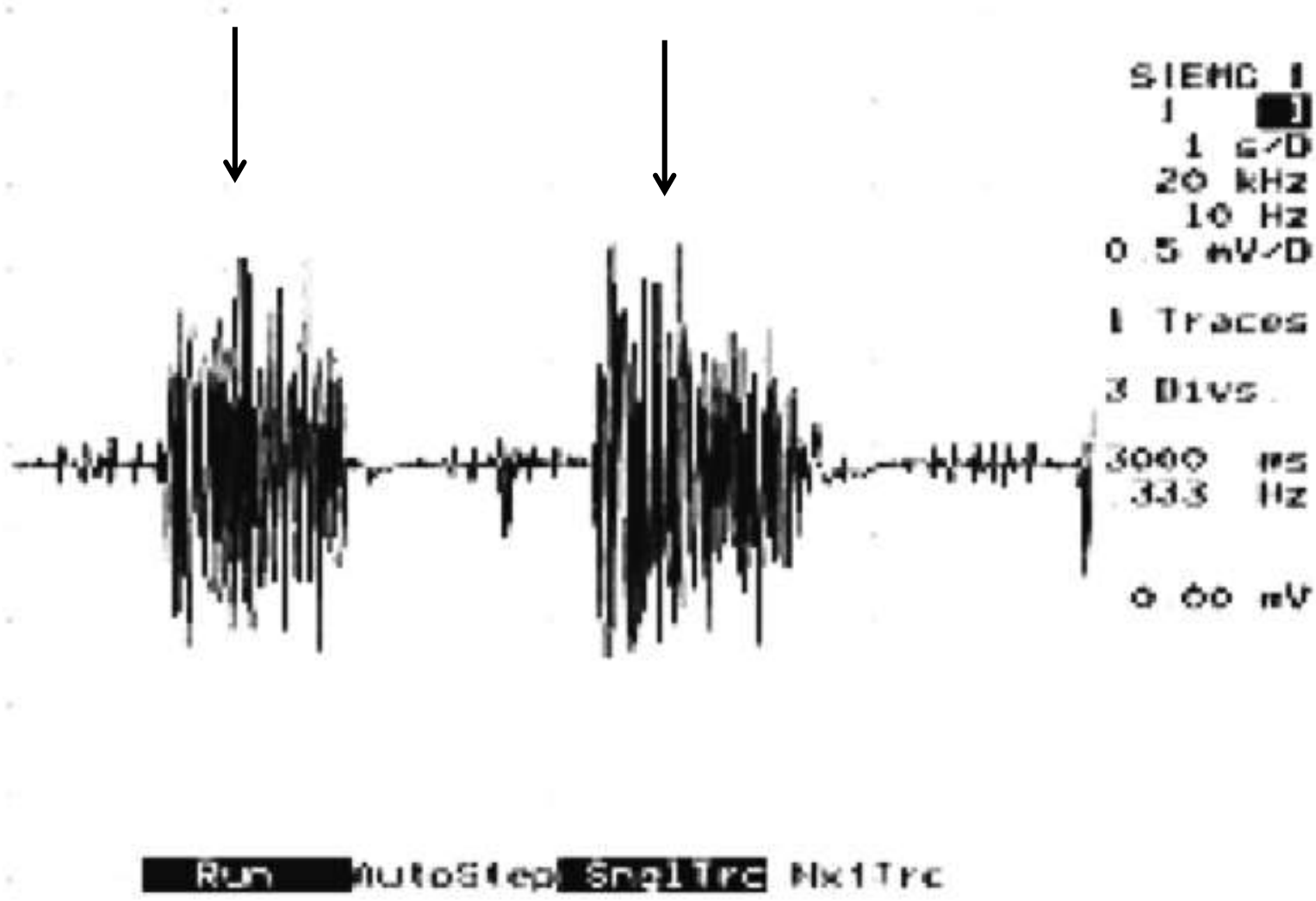


Pelvic floor muscles in man

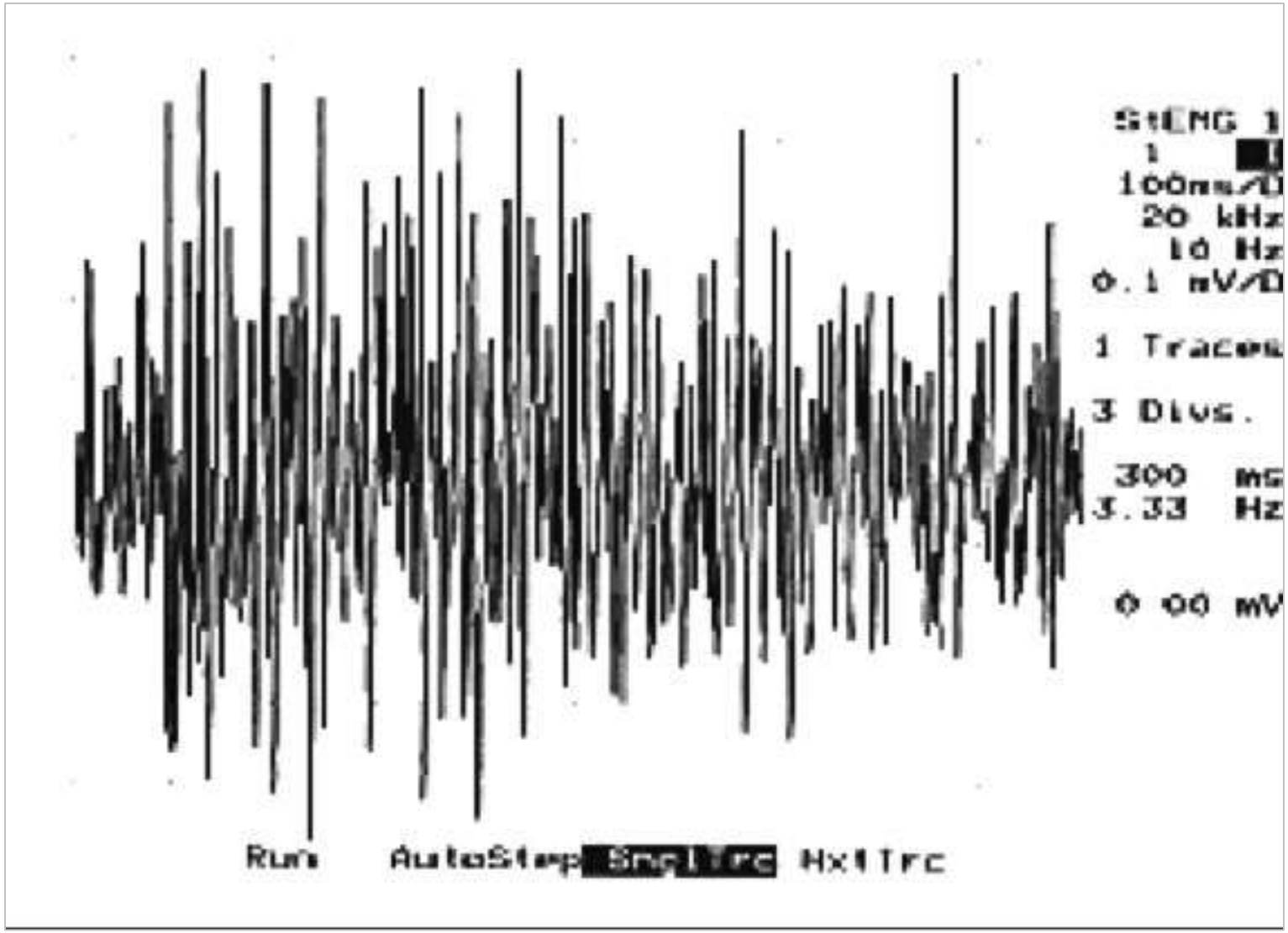


Inferior superficial view

Bulbocavernosus muscle : voluntary contraction

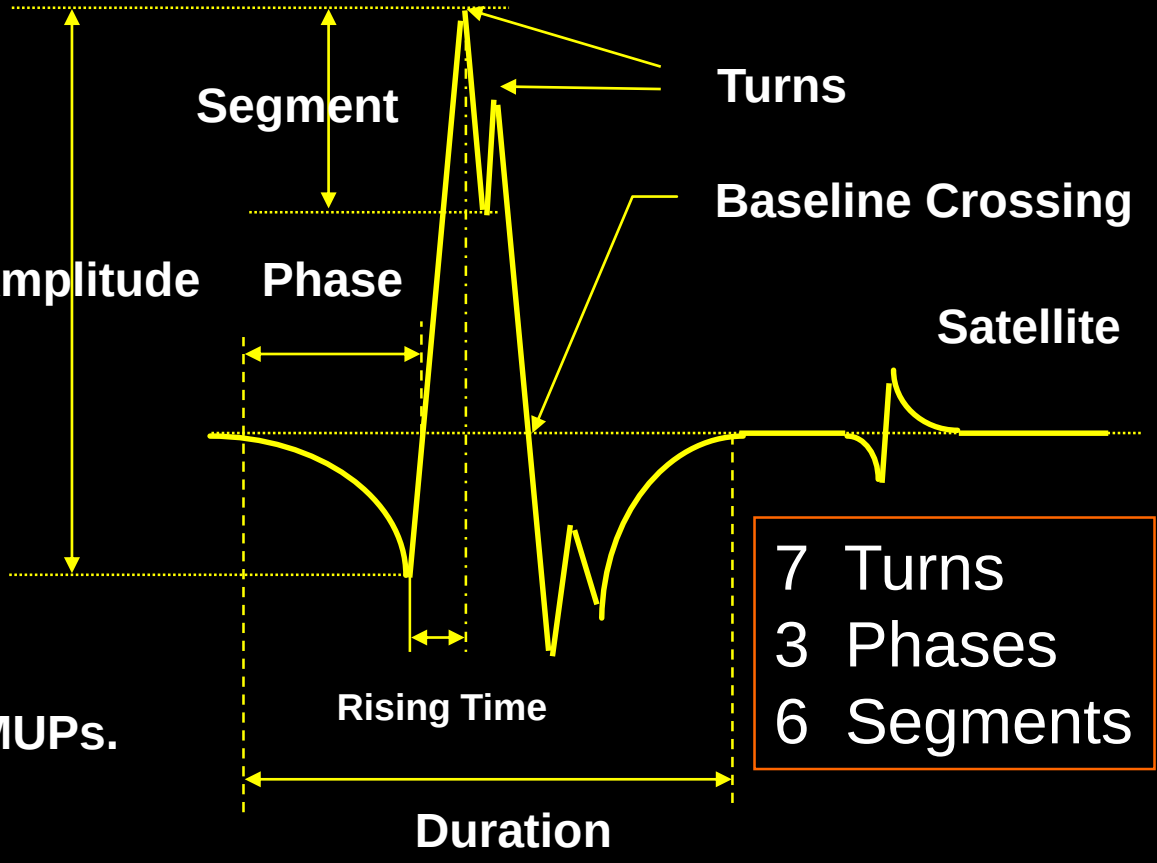


Anal sphincter : voluntary contraction



Motor Unit Potential (MUP)

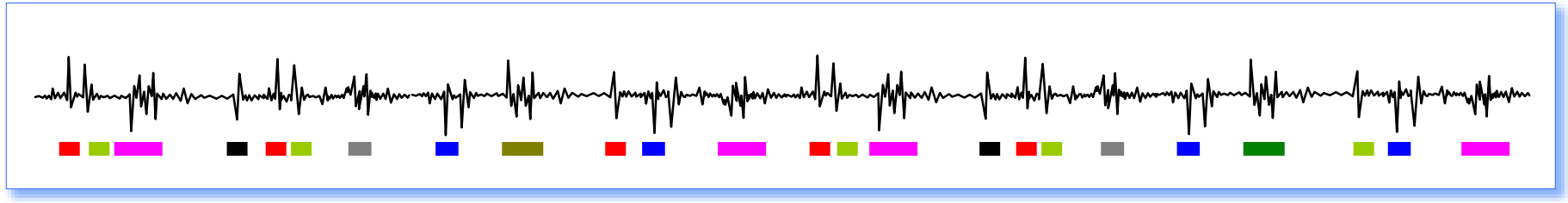
Single Potential, Phases < 3
Polyphasic Potential, Phases > 3



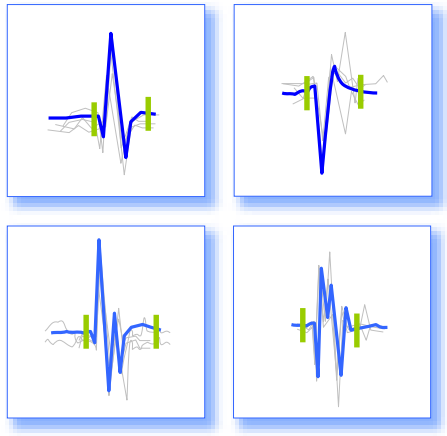
Group of Muscle Fibers generate MUPs.

Different Fibers different MUPs.

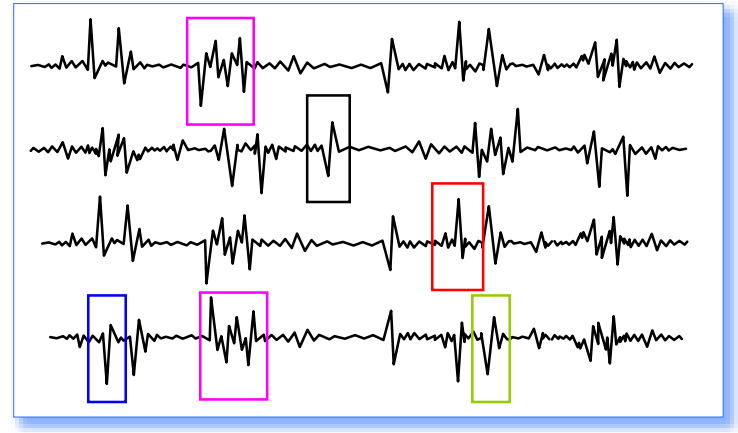
MUP Analysis



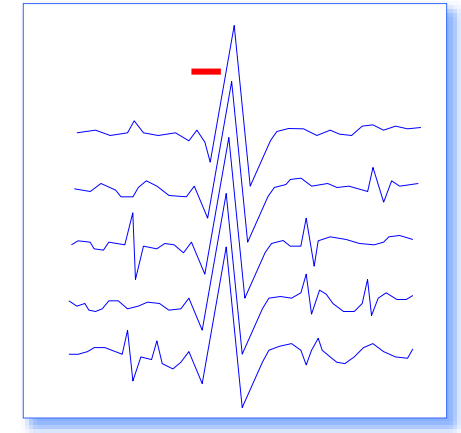
Multi-MUP - Averaging



Manual Selection



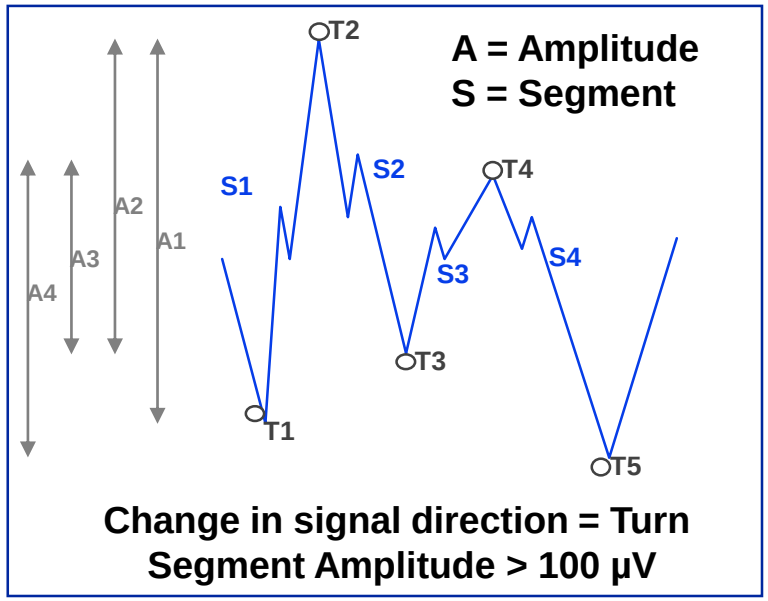
Single - Triggering

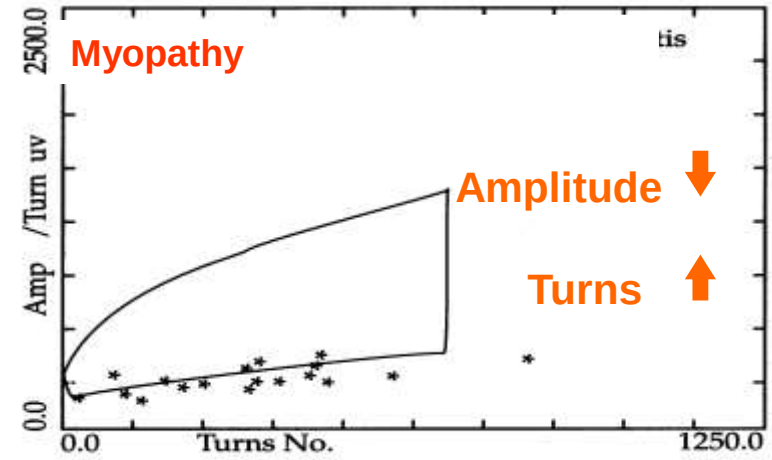


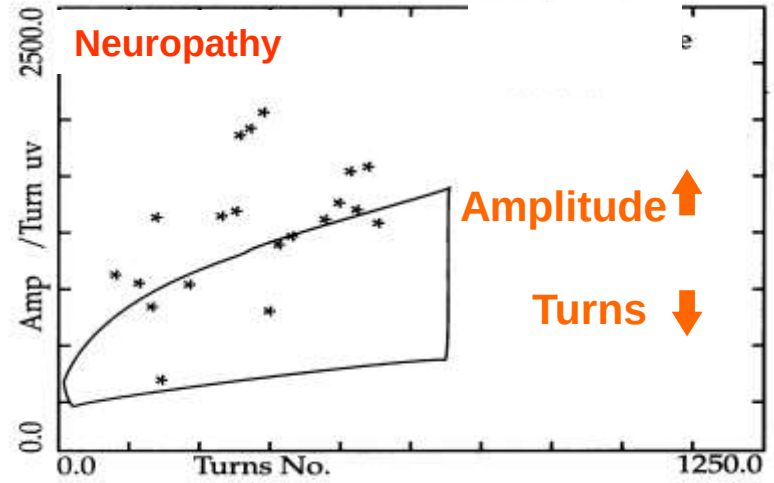
- **Moderate Contraction**
- **Simple/Polyphasic Potentials Ratio**
- **Amplitude**
- **Duration**

Turns/Amplitude

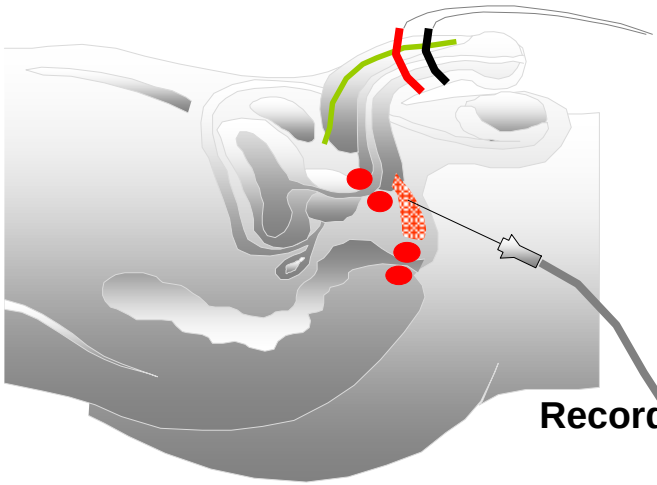
- 1 seconde EMG signal
- Concentric or Monopolar Needle
- Few sites in same muscle
- 20 measurments at diff. force
- Number of Turns > 100 µV
- Mean Amplitude of Turns







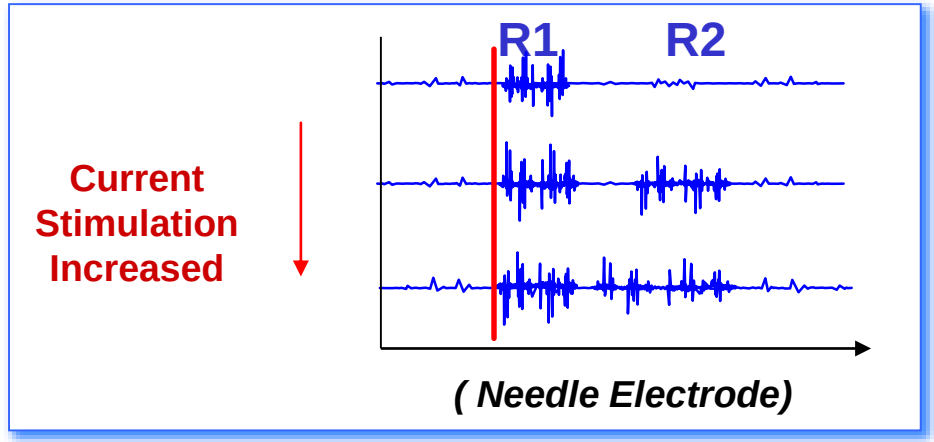
Bulbocavernous Reflex

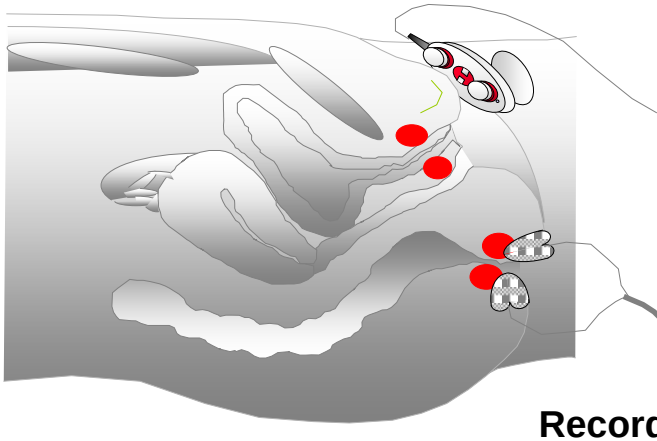


Stimulation
Penil Nerve

Recording Needle

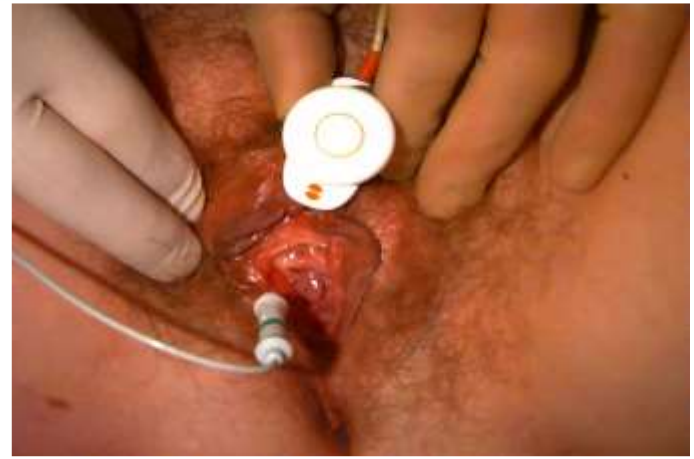
m. Bulbocavernous

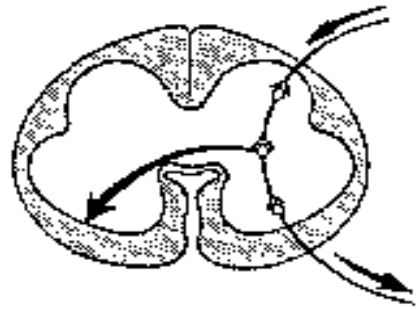


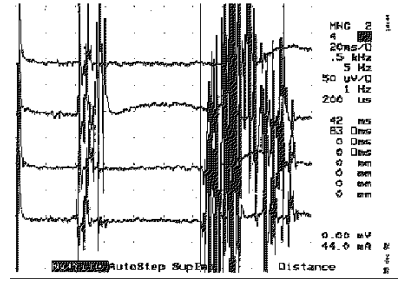


Stimulation
Clitoral Nerve

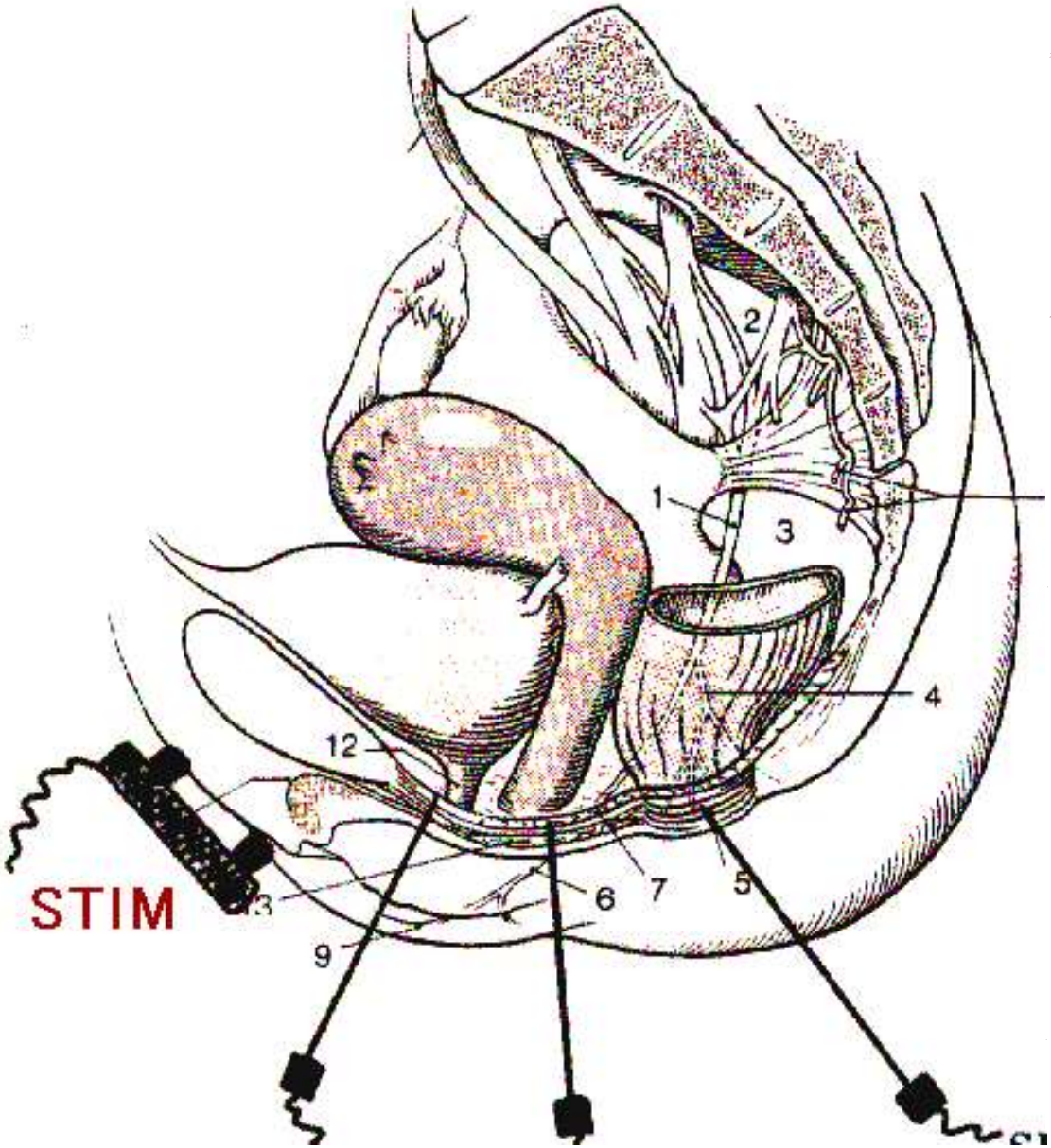
Recording Surface

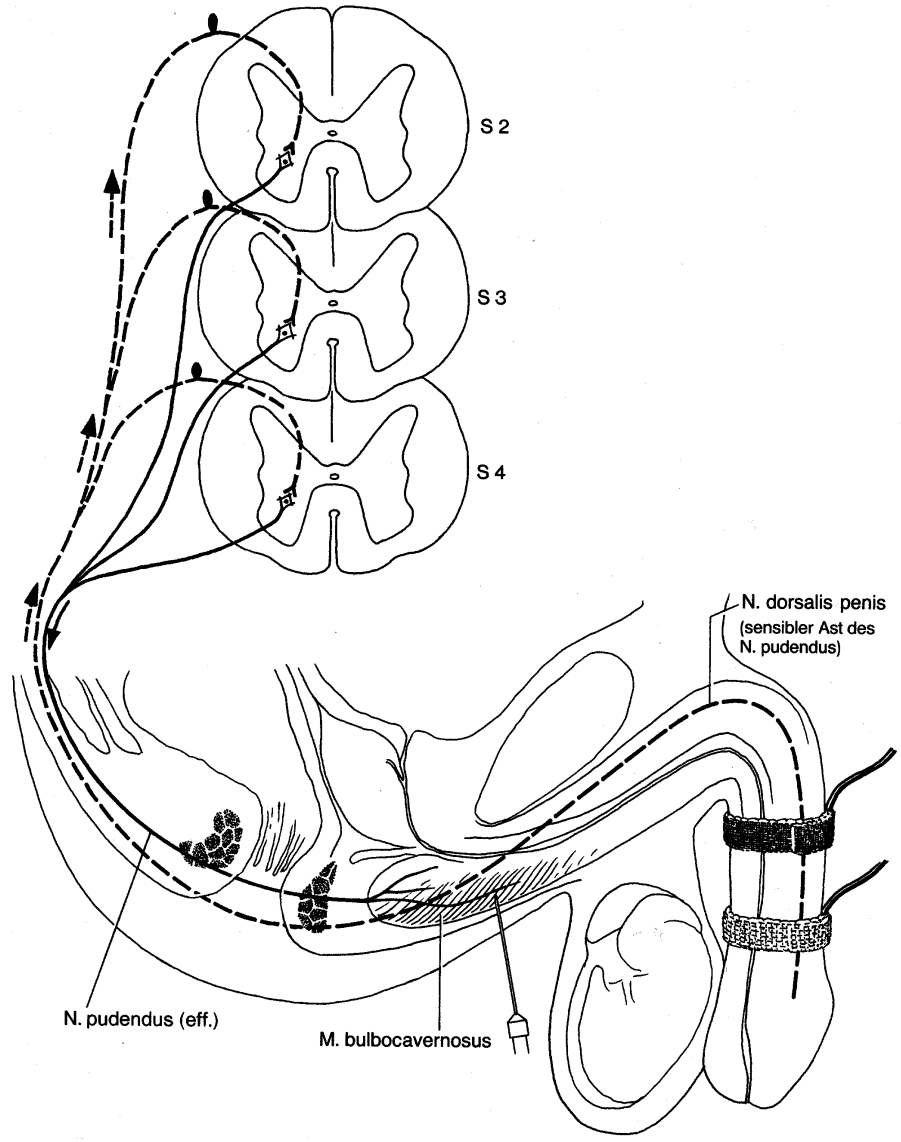




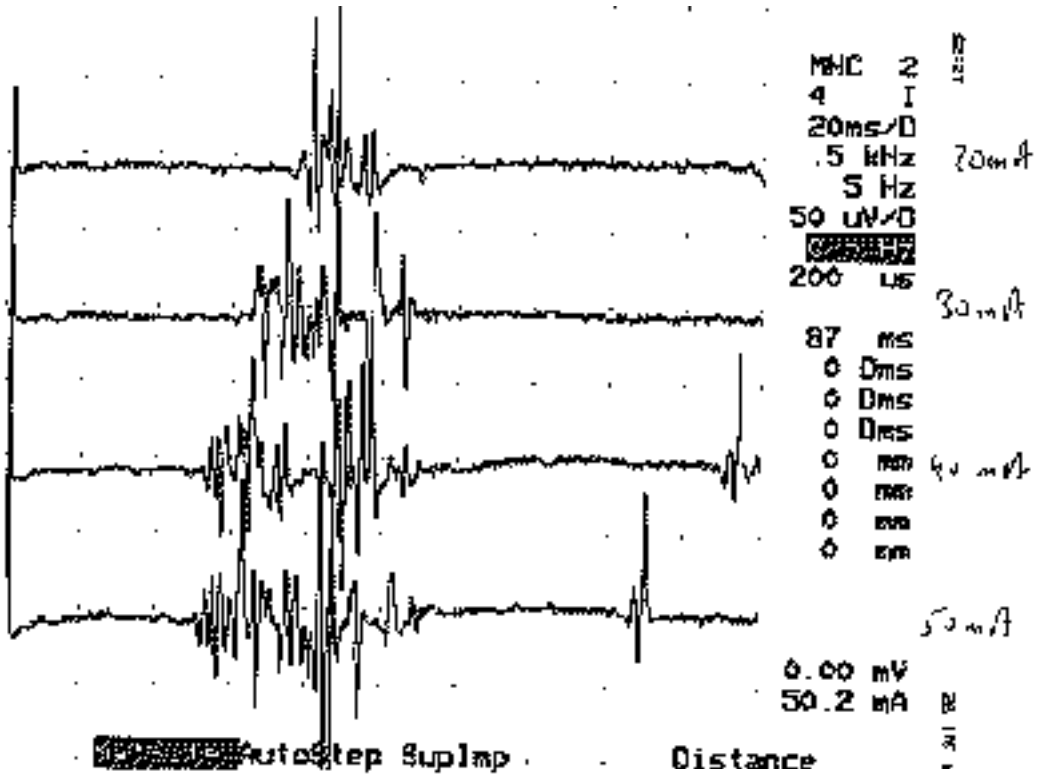


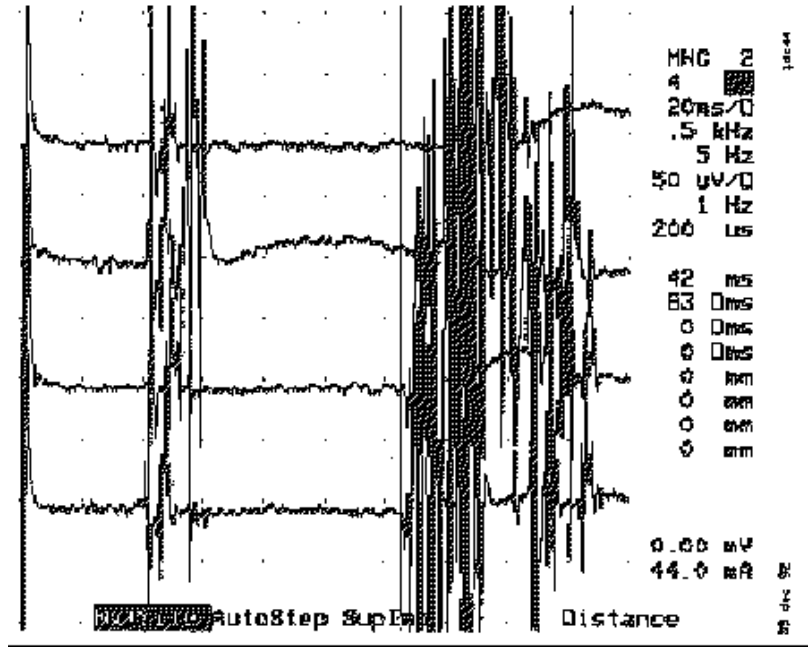
Bulbo-cavernosus reflex : different sites of record

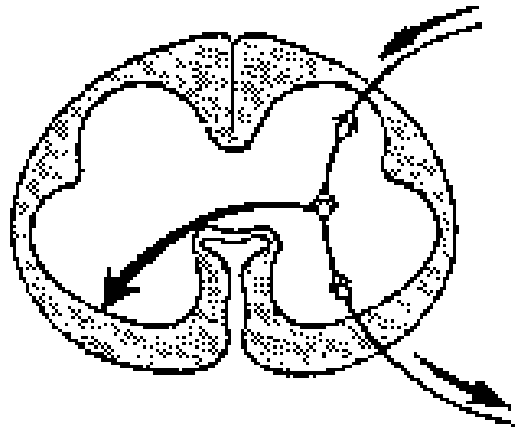




Bulbo-cavernosus reflex : polysynaptic reflex

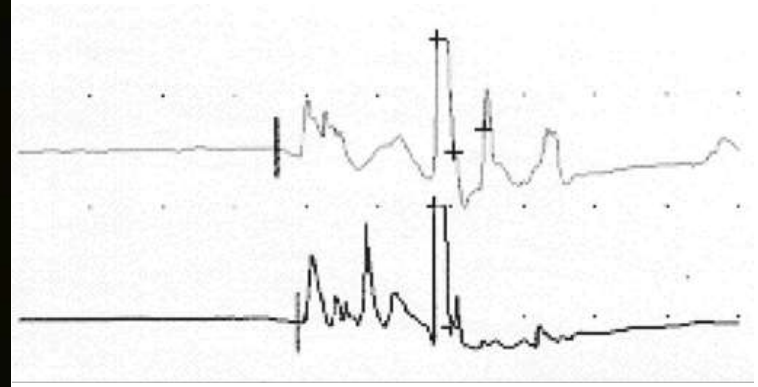




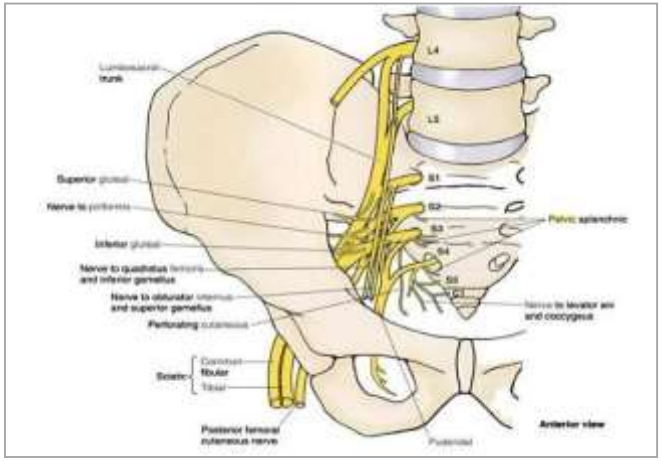


Bulbo-cavernosus reflex elicited by mechanical stimulation

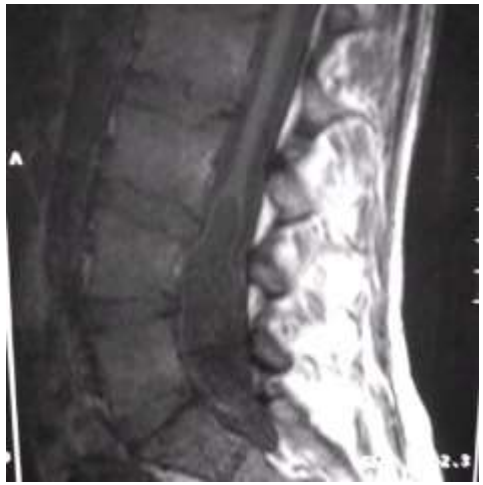
percussion



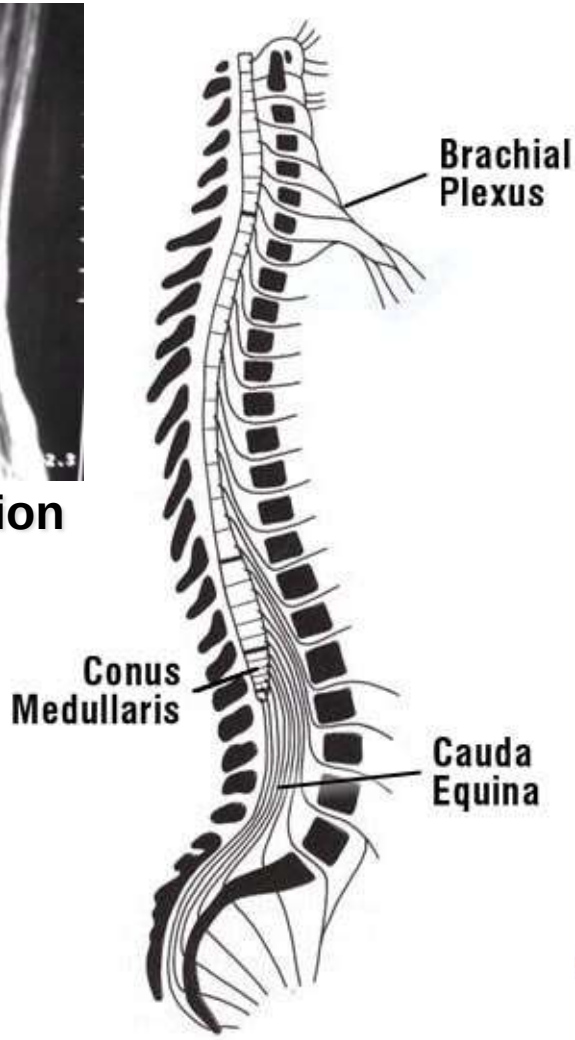
Interest of bulbo-cavernosus reflex

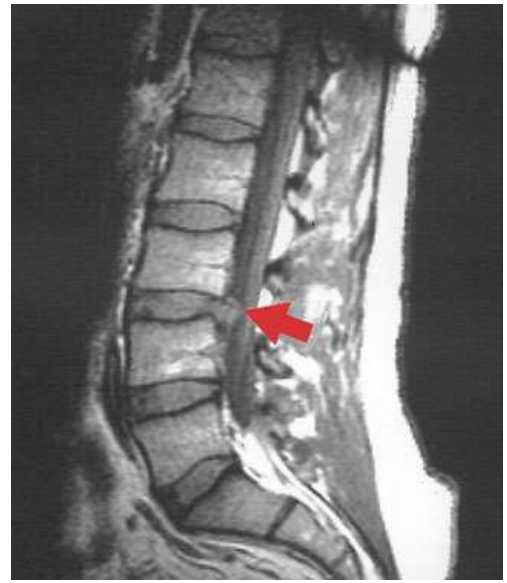


Sacral plexus

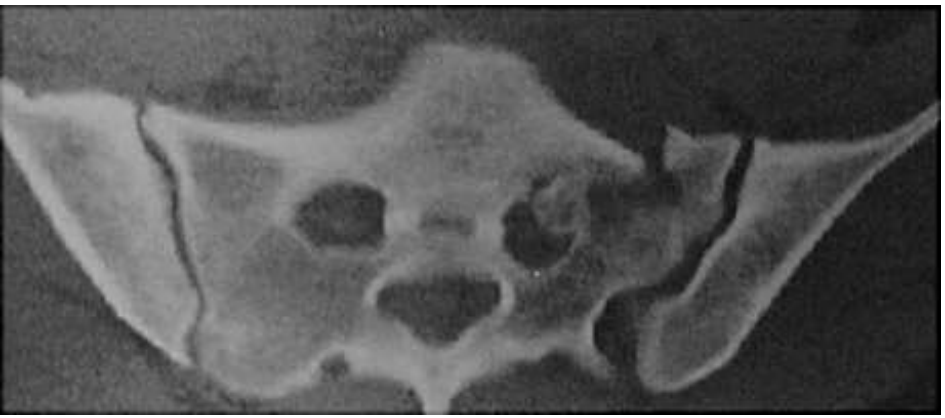


Hemorragic lesion



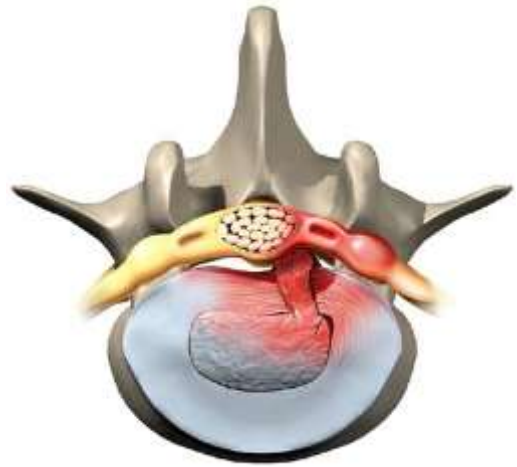


Disk herniation



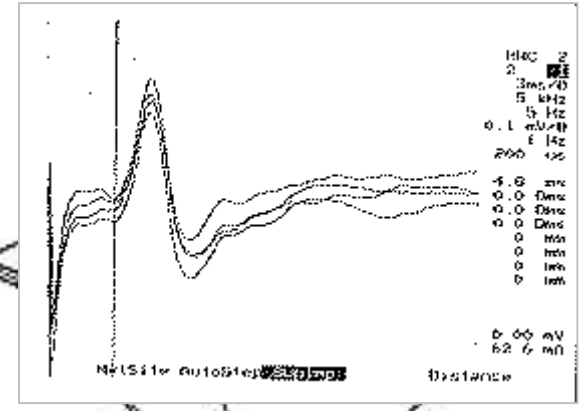
Sacrum fracture

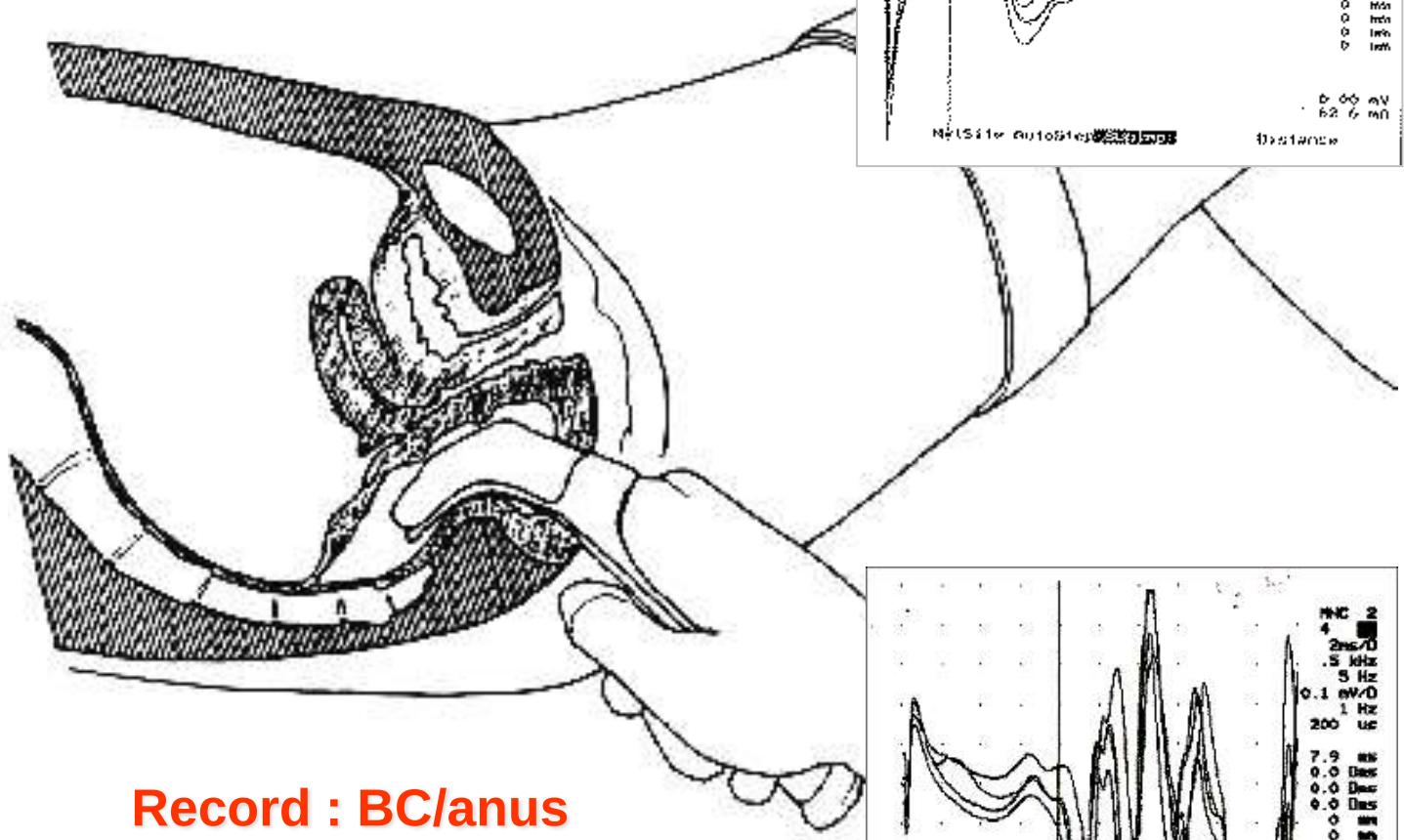
- diagnosis
- prognosis

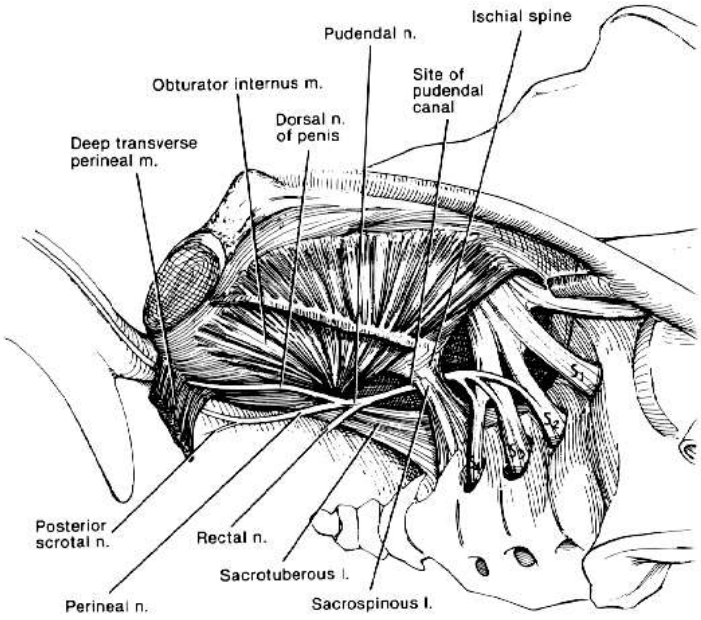


Pudendal nerve terminal motor latency

Stimulation of pudendal nerve

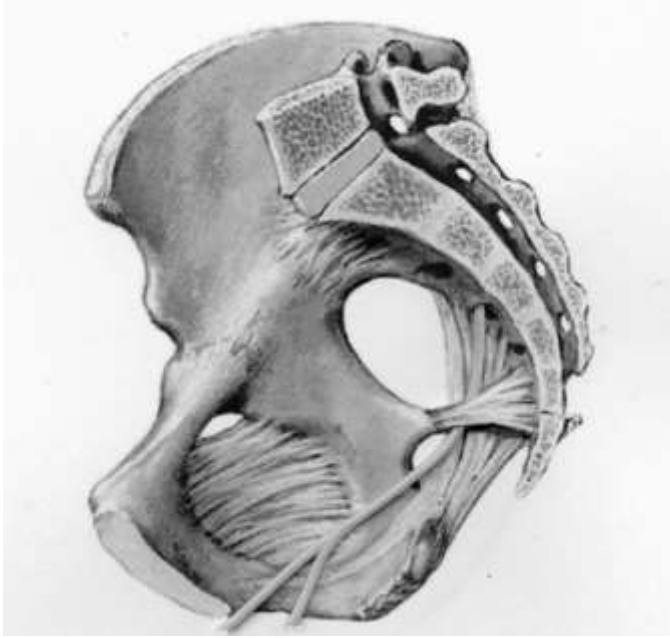


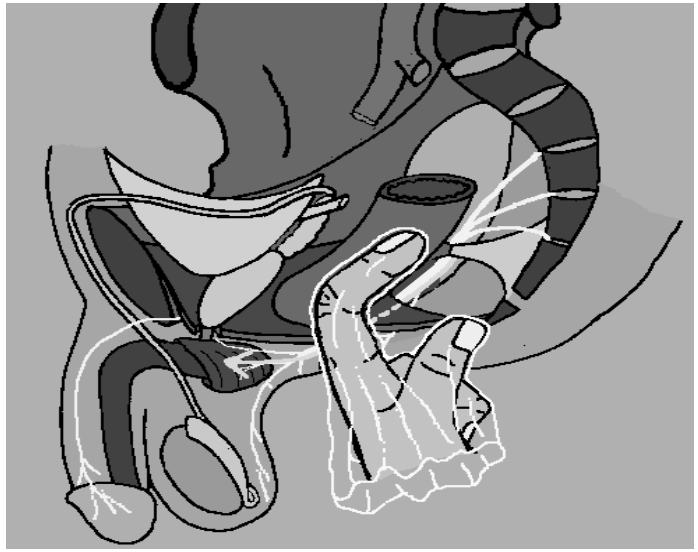


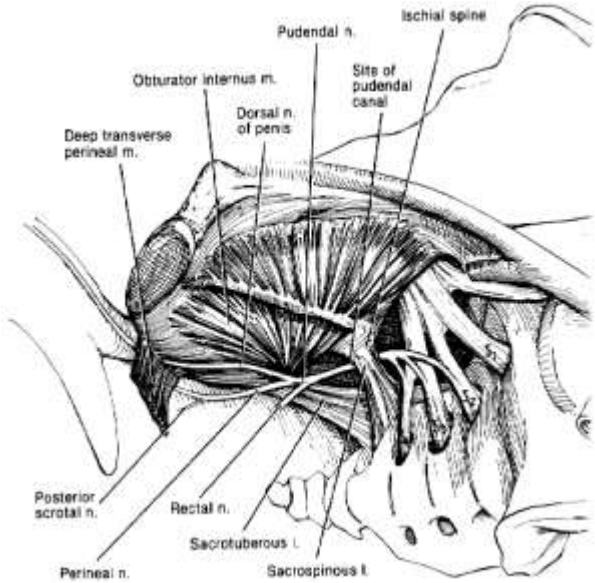


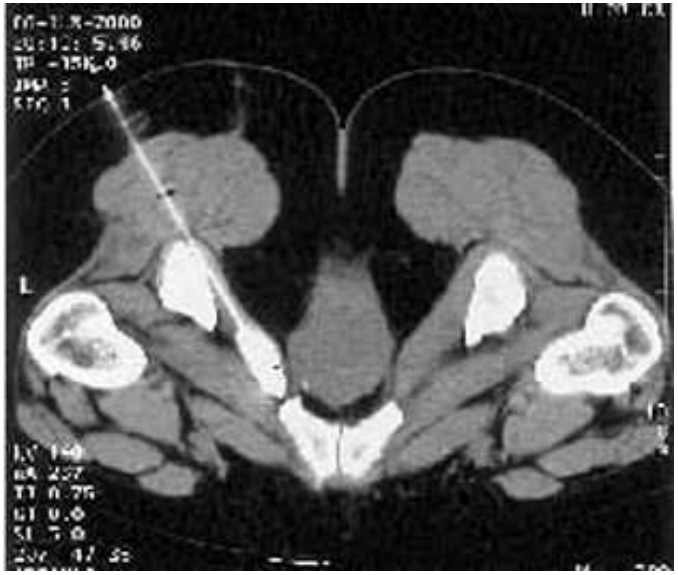
Record : BC/anus

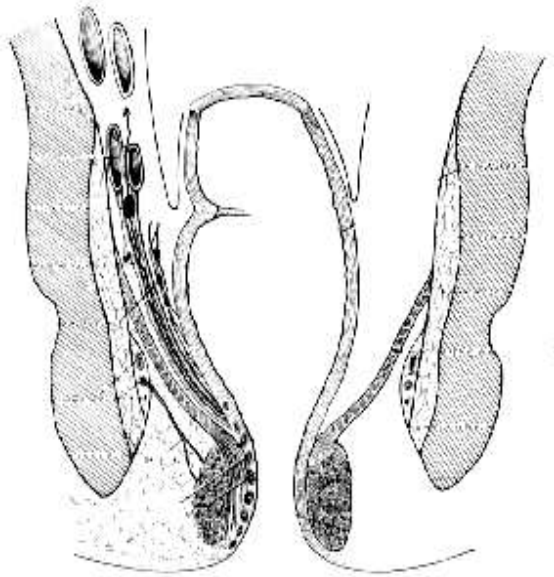
Interest of PNTML : pudendal neuralgia / peripheral neuropathy

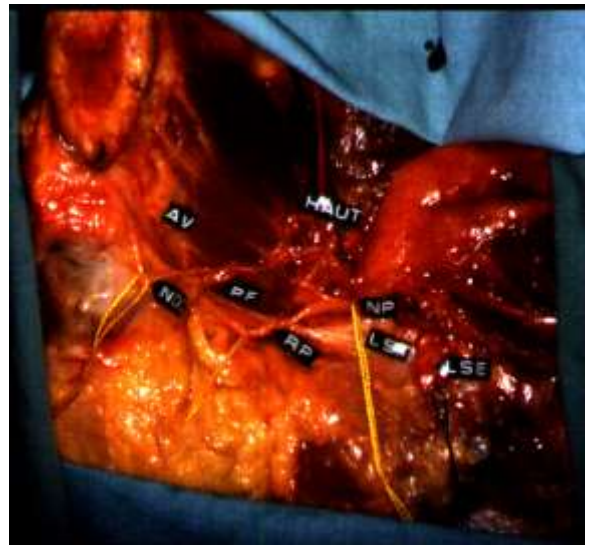




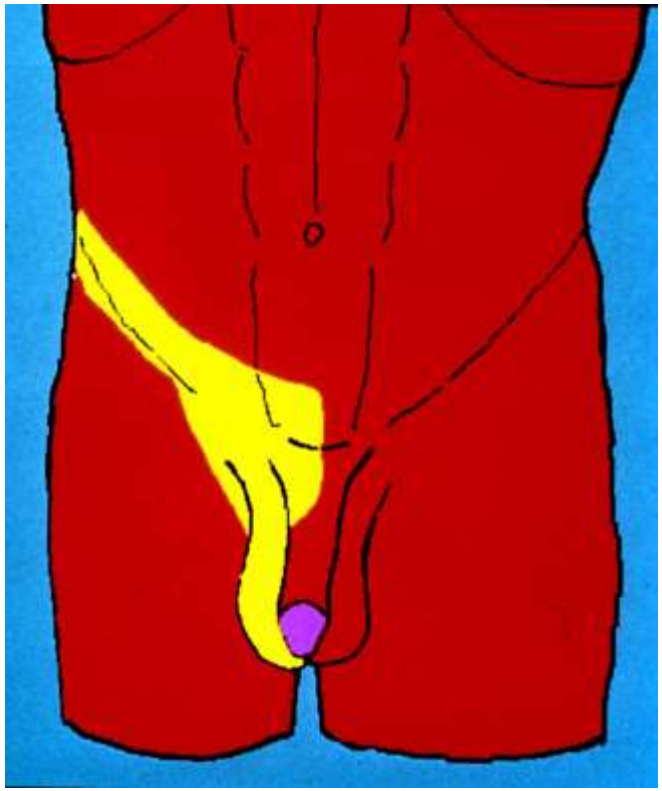




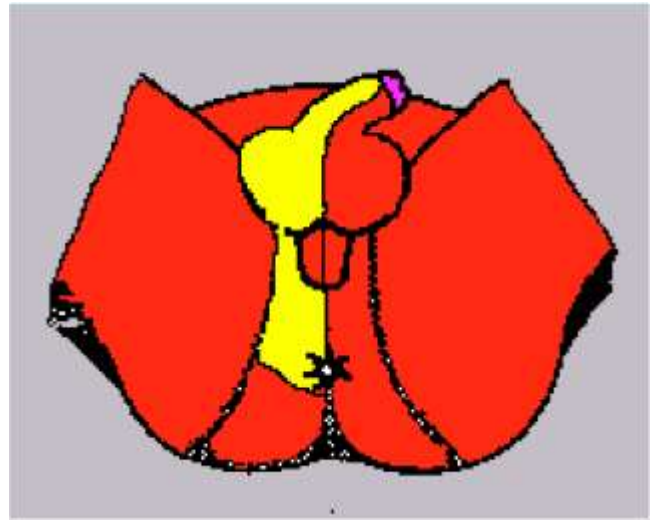




Interest of pudendal nerve terminal motor latency (and cortical responses)



Ilio-inguinal nerve

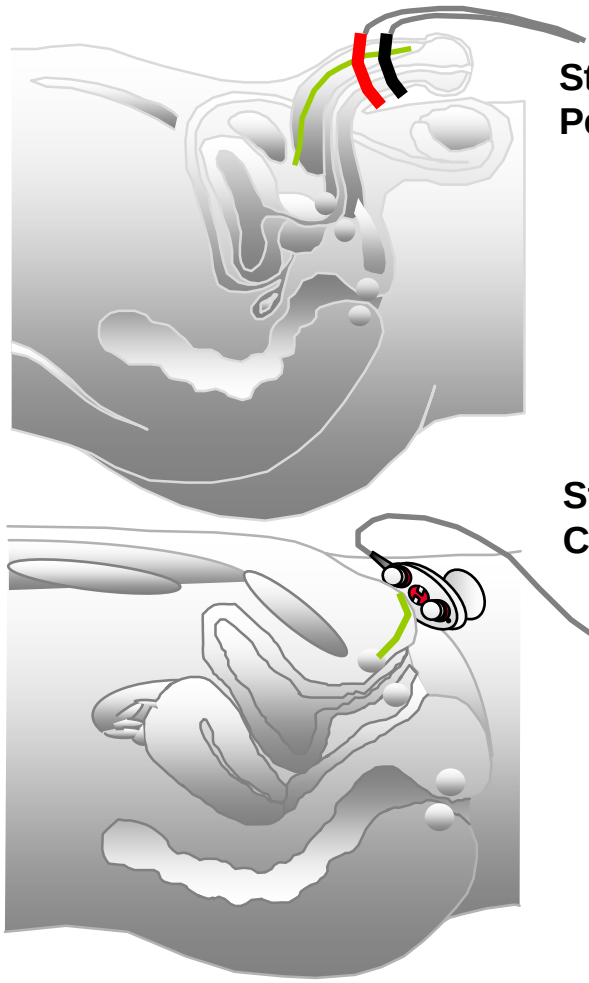


pudendal nerve

Ilio-hypogastric nerve

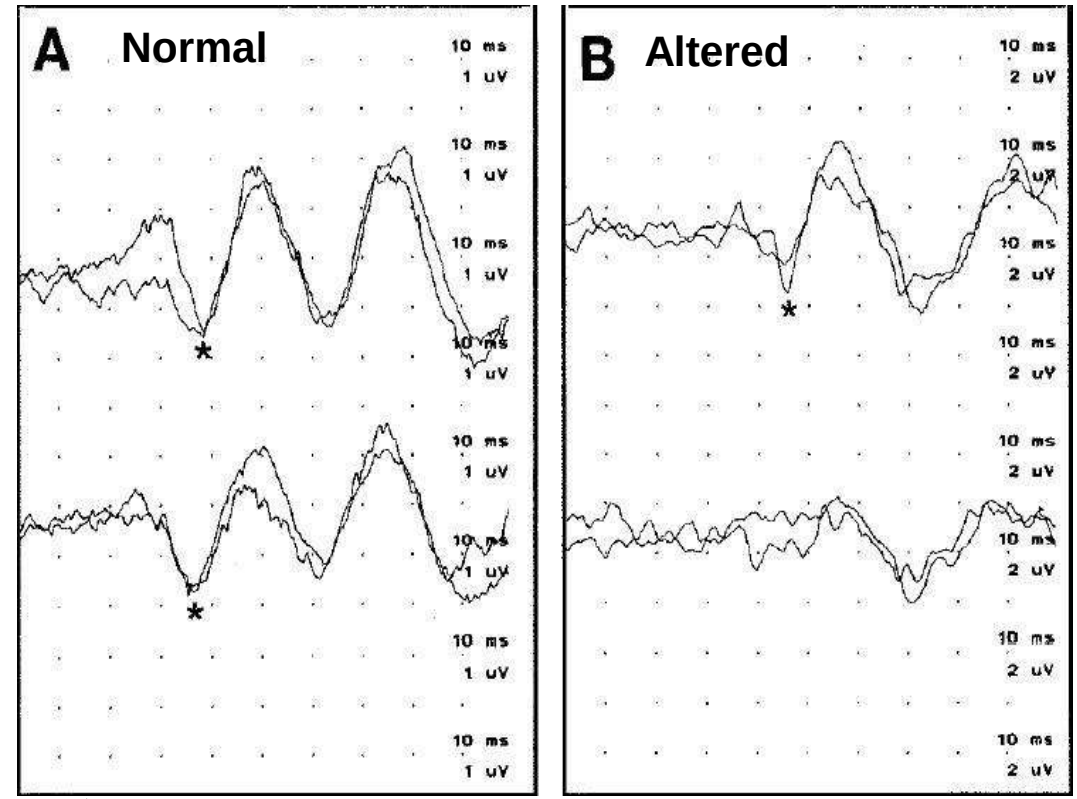
- abdominal / pelvic / perineal PAIN
- sexual disorders / loss of sensation
- previous surgery

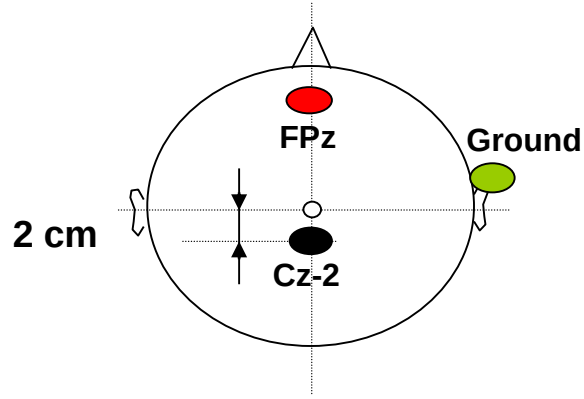
Evoked Potential



Stimulation
Penil Nerve

Stimulation
Clitoral Nerve

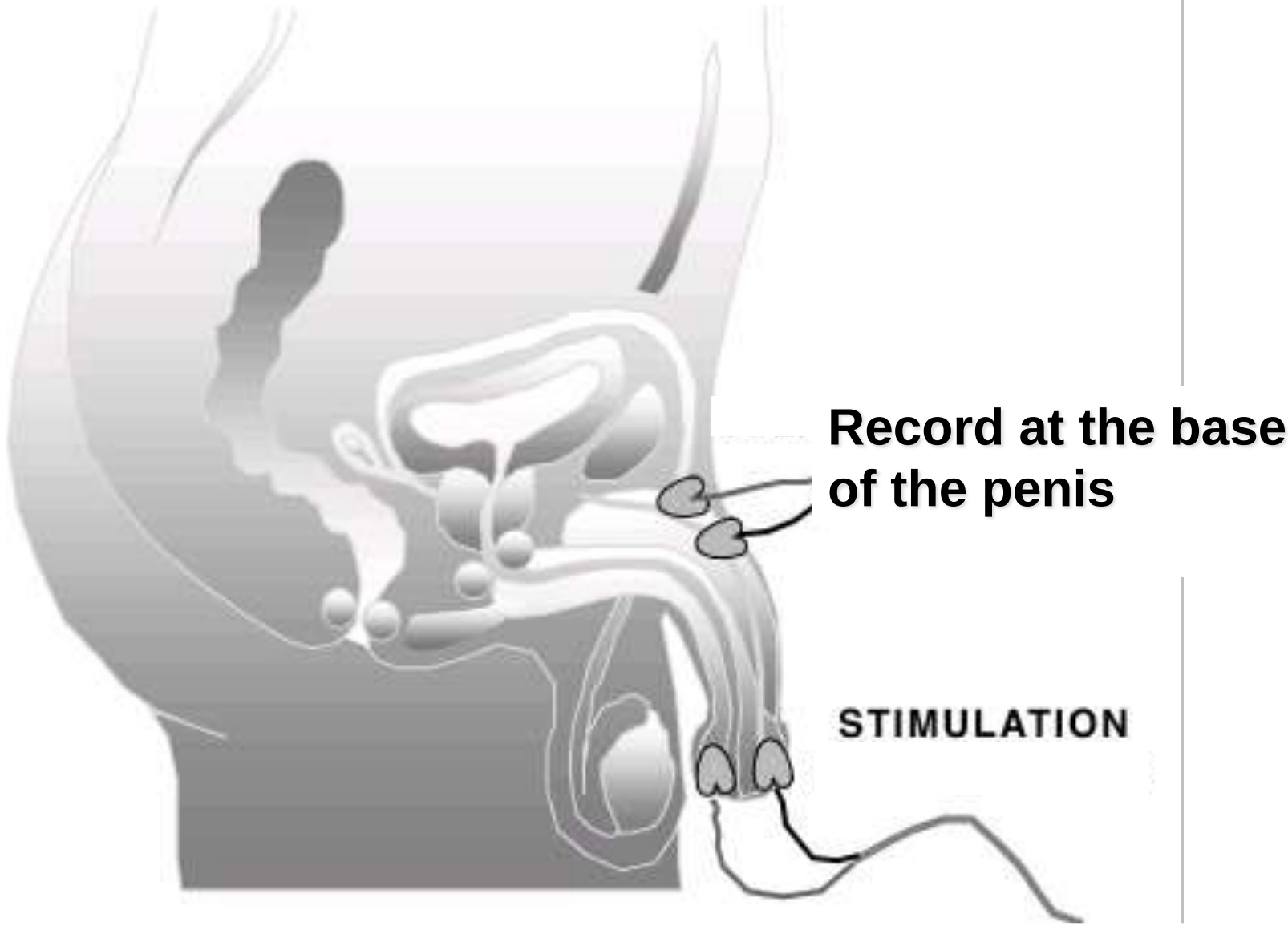




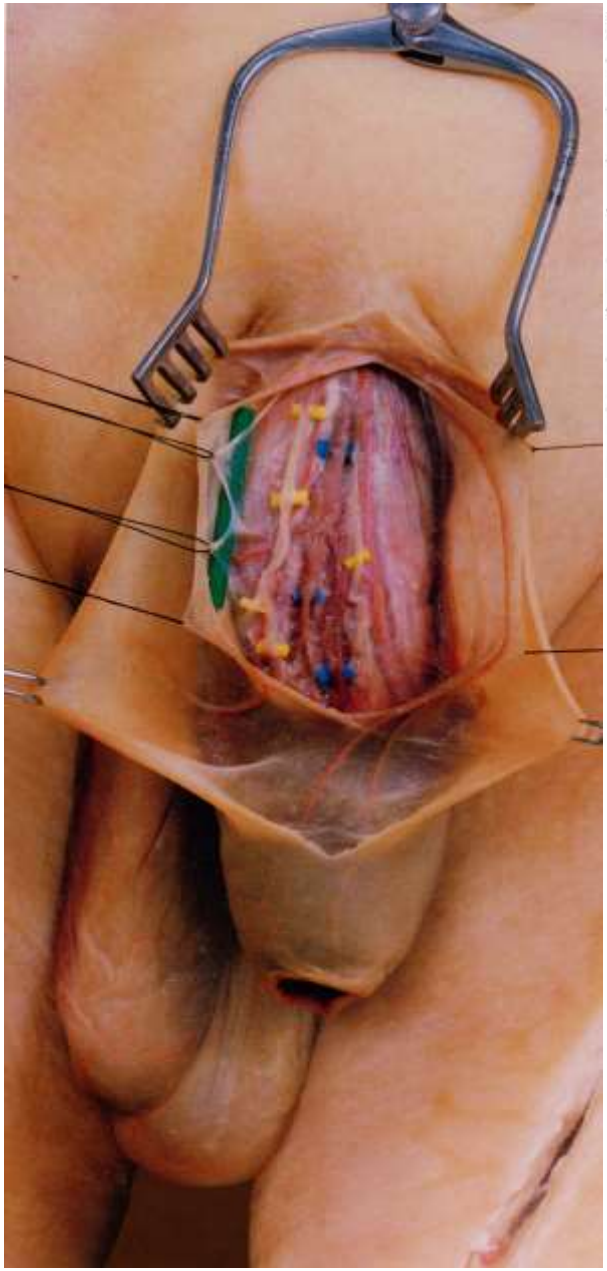
Record on Scalp with Scalp Needle
or Surface Electrode
Averaging : 200

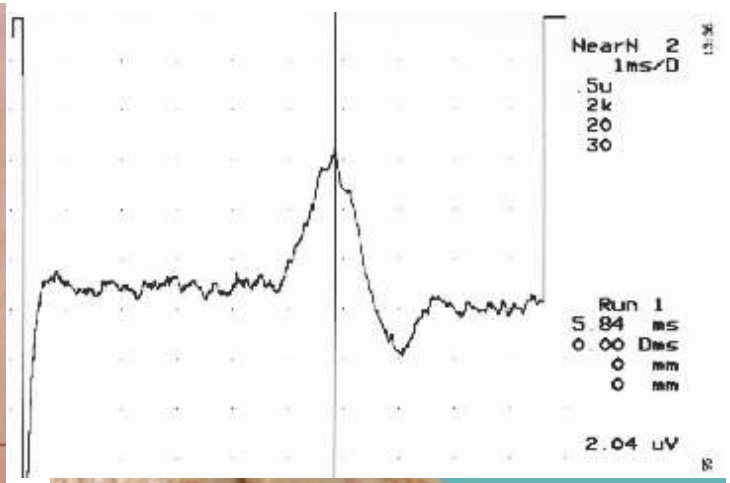
Latency P40
(nl < 44 ms)

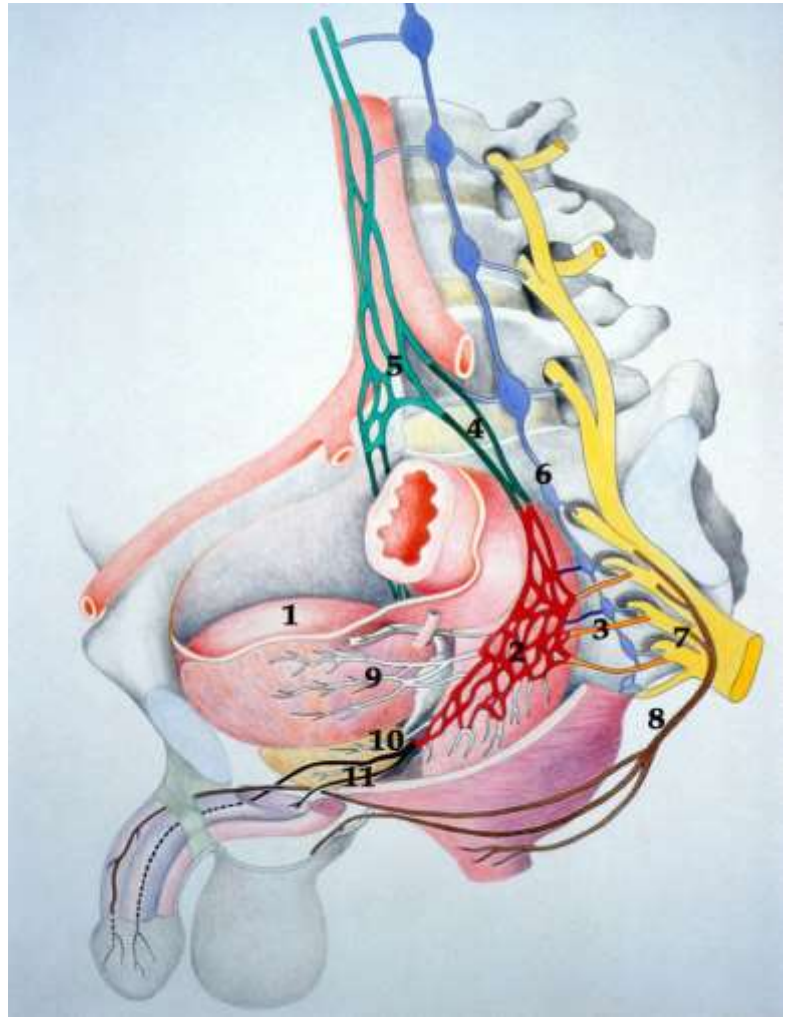
Sensory velocity of dorsal nerve of penis



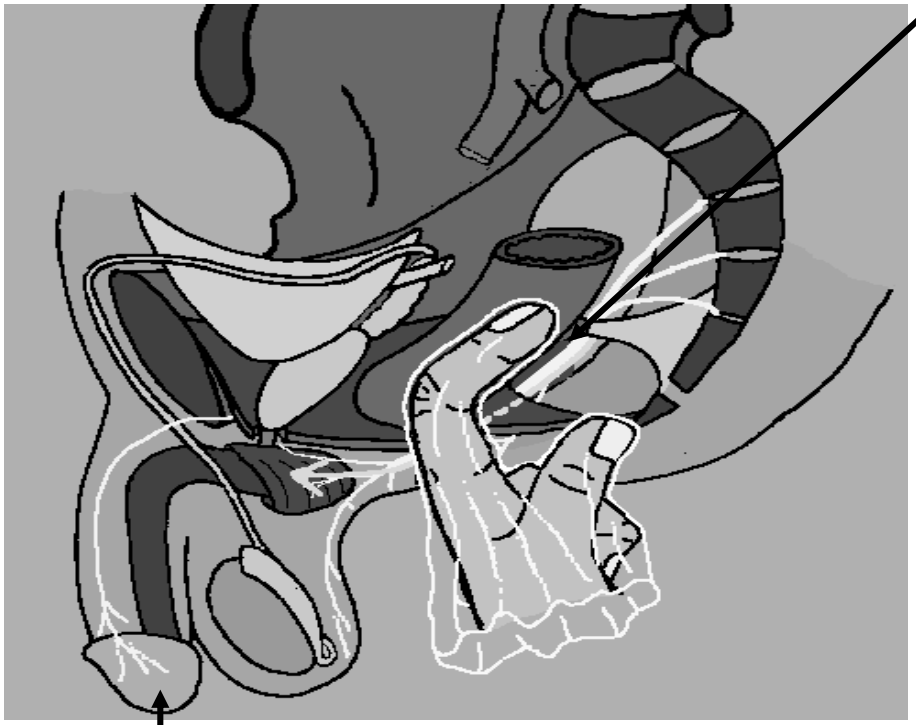
Sensory velocity of dorsal nerve of penis



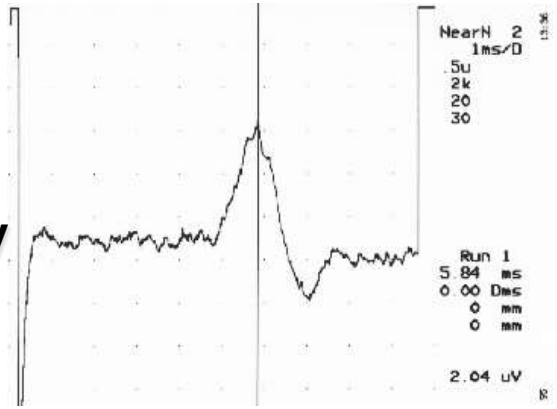




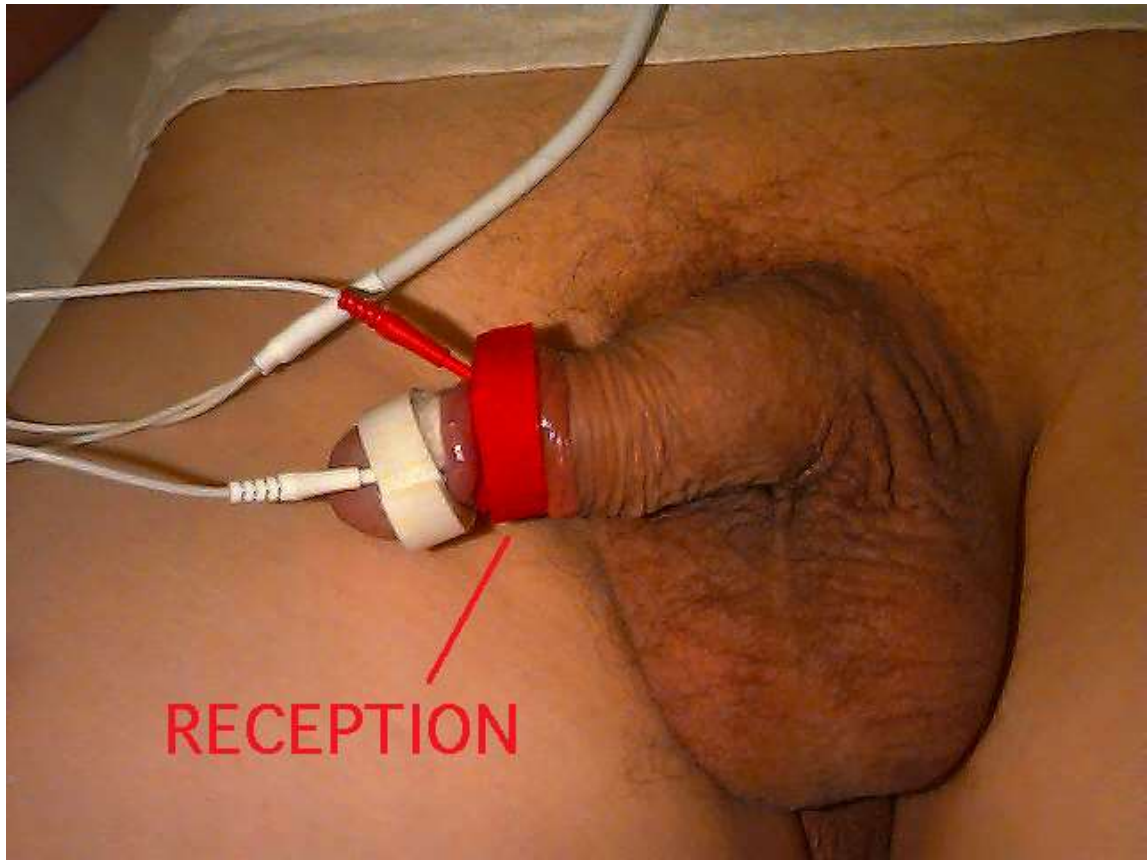
Stimulation of pudendal nerve within the rectum



Record of sensory potential

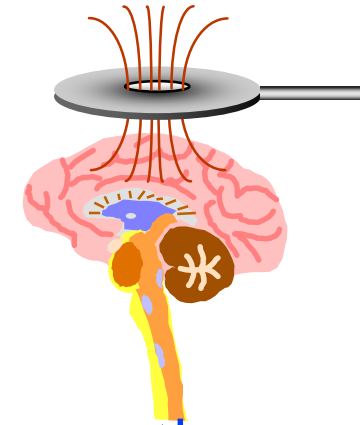


Terminal sensitive latency of pudendal nerve

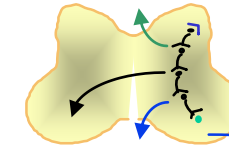


Motor E.P.

Magnetic Stimulation

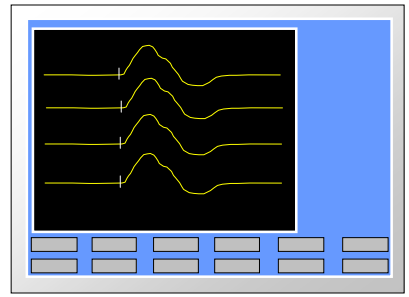


Descending



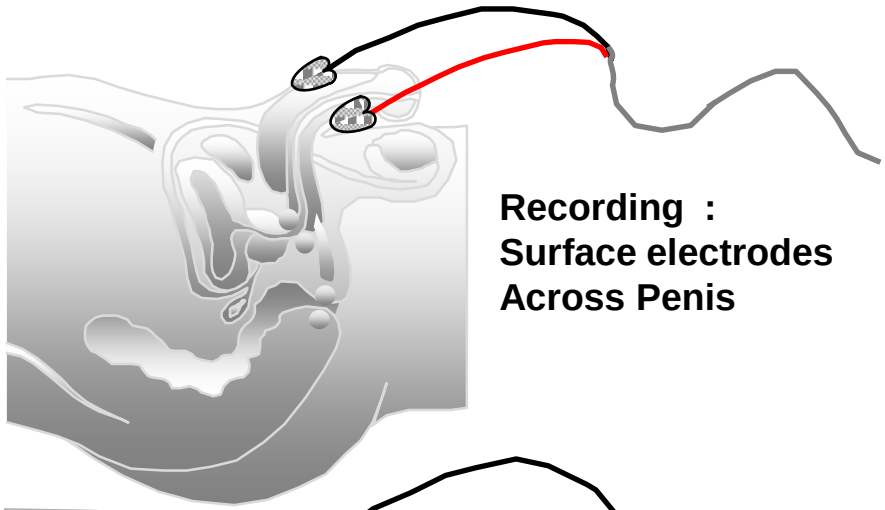
Motor
Nerve

Trigger

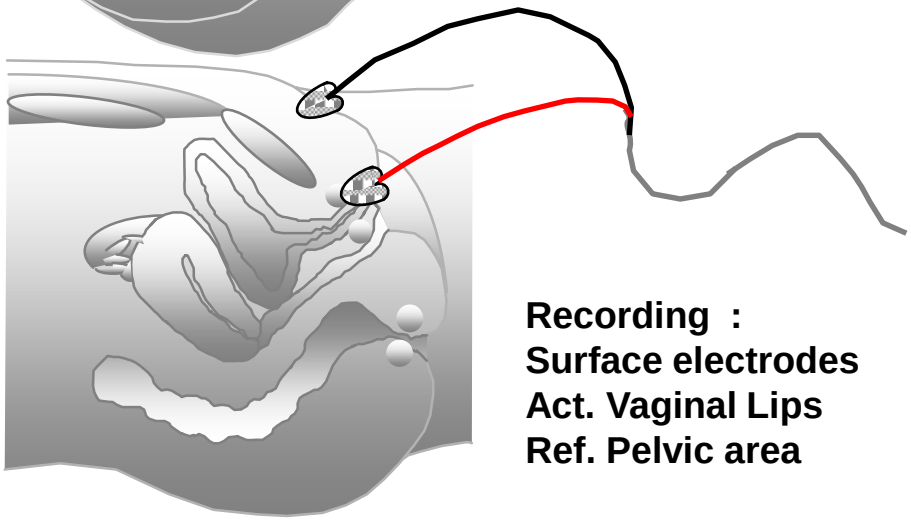


Record

Sympathetic Response

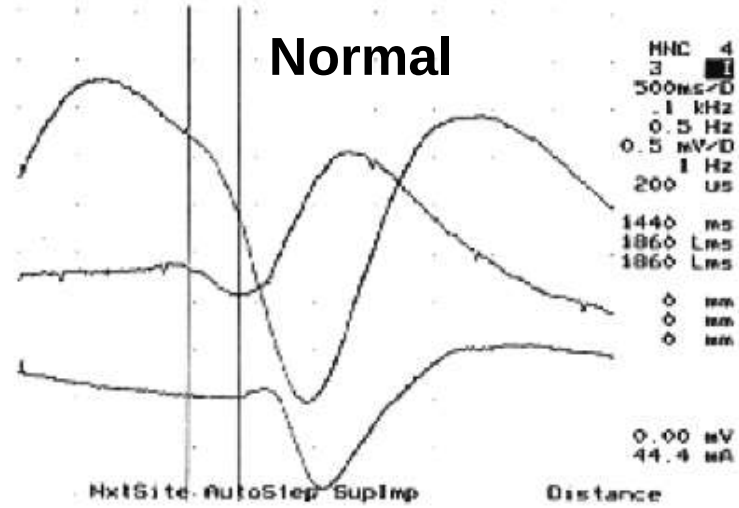


Recording :
Surface electrodes
Across Penis

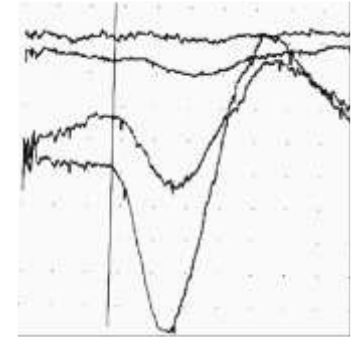


Recording :
Surface electrodes
Act. Vaginal Lips
Ref. Pelvic area

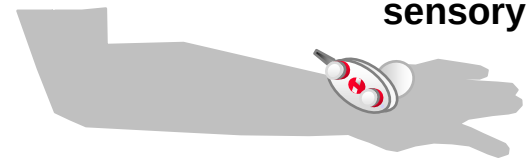
Normal



Altered SSR



Stimulation Median nerve, Intensity 3 times sensory threshold.



Préjudice sexuel et Explorations Neurophysiologiques

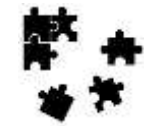
- Il existe un contrôle neurologique des fonctions sexuelles

- Les circonstances pouvant peuvent donner lieu à une lésion neurologique et donc donnant lieu à réparation : traumatismes, lésions per-opératoires, modalités d'accouchement, exposition toxiques, contaminations infectieuses, ...

- Les explorations électrophysiologiques peuvent investiguer l'ensemble des voies neurologiques impliquées dans le contrôle génito-sexuel

- Ces explorations permettent d'apprécier :
  - la topographie de l'atteinte
  - son importance (≅ pronostic)
  - son ancienneté
  - des facteurs associés ou ... Confondants

- **Conclusions**



Conclusions :

Nombre de lésions neurologiques peuvent déterminer des troubles sexuels :

- **lesions centrales**
- **lesions périphériques**

Evaluation toujours nécessaire :

- **argument organicité**
- **niveau lésionnel / pronostic**
- **imputabilité**

Merci pour votre attention !