

Pudendal Nerve Perineural Injections.
Effective treatment of pudendal
neuropathy

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Three sequential treatments may relieve pelvic pain due to pudendal neuropathy, including IC.

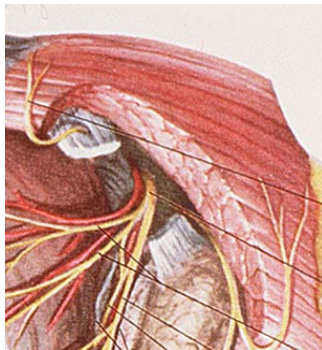
- **1. “Self-care”, a Nerve protection program.**

(All patients)

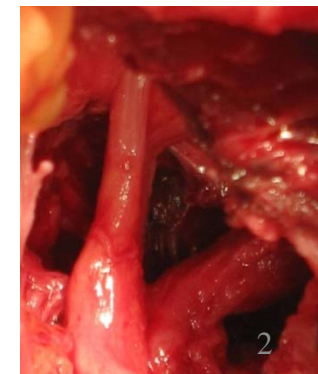
Stop exercising. Sit pad. Hara chair.
Standing work station. Amitriptyline.



- **2. Three Pudendal Nerve Perineural Injections (PNPI) needed in 90% of patients.**



- **3. Decompression Surgery in about 30 % of patients**



Pudendal Nerve Perineural Injections (PNPI).

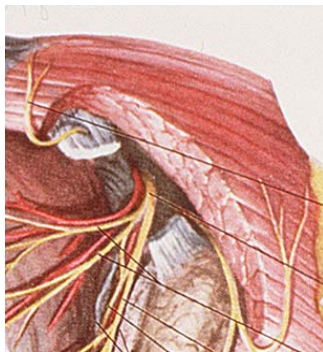
- What?
- Why?
- When?
- How?
- Results?
- Failures

What: are PNPI?

Infiltration of bupivacaine and corticosteroids around the pudendal nerves.

Two blocks into “lobster claw” or “claw” between the sacrotuberous and sacrospinous ligaments.

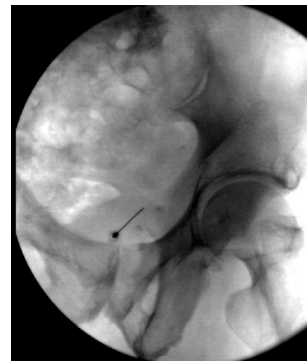
One block into Alcock (pudendal) canal between the obturator muscle and its fascia.



Right side
Posterior view



Fluoroscopic PNPI
At ischial spine



CT guided into the
Alcock canal

PNPI – why?

- To relieve pain
 - Initially with bupivacaine
 - Rapid onset; last hours to a few days
 - Longer term with corticosteroids
 - Onset after 1-3 days; lasts 0-5 weeks
- To relieve organ dysfunction
 - Bladder symptoms may respond immediately but typically respond more slowly than pain.
 - Rectal sx – slow recovery; immediate response may occur
 - Sexual sx - ask about nocturnal erections as a measure

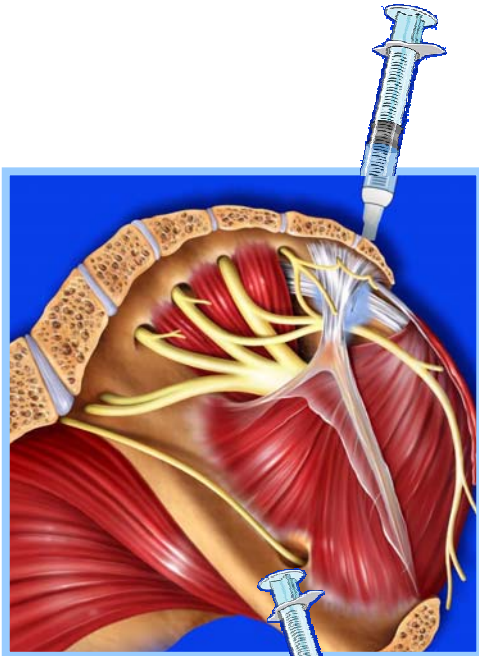
PNPI - When

- When pain and symptoms are not controlled by nerve protection(self-care), physical therapy and medications.
- When patient is from >300km, I begin PNPI immediately but always with concurrent self-care and medications.
- 90% of my patients receive PNPI.

Pudendal Nerve Perineural Injections (PNPI).

- How?
 - Several techniques
- **Transgluteal** (Dr. Maurice Bensignor –Nantes)
 - Fluoroscopic and CT guided
- Others
 - Ultrasound guided: Peter Kovacs (AU); Philip Peng (CN)
 - Stimulus guided (for hemorrhoidectomy, etc.)
 - Transvaginal

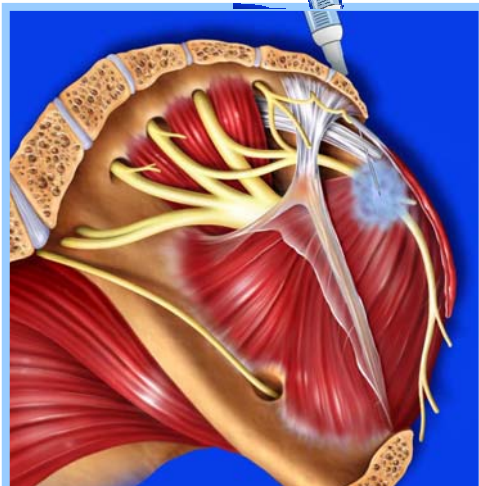
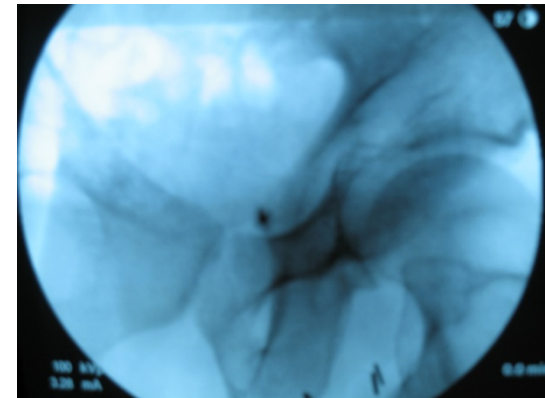
Pudendal Nerve Perineural Injections (PNPI)



Two PNPI medial to tip of ischial spine between the ligaments (fluoroscopic).

Bupivacaine 0.25% 6 ml

Steroid of choice.



One PNPI is given into the pudendal canal using CT scan for guidance.



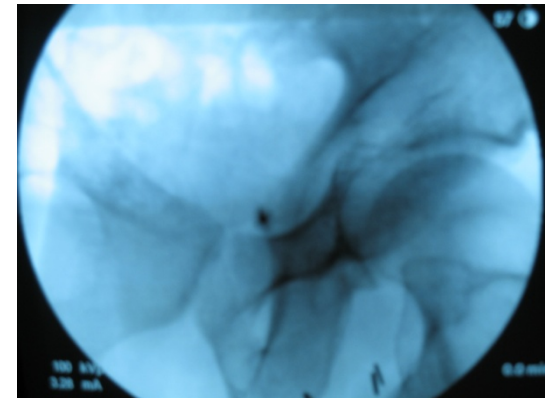
Pudendal Nerve Perineural Injections (PNPI)

Treatment at four week intervals is optimal

Measure responses:

-same day with pinprick sensory test.

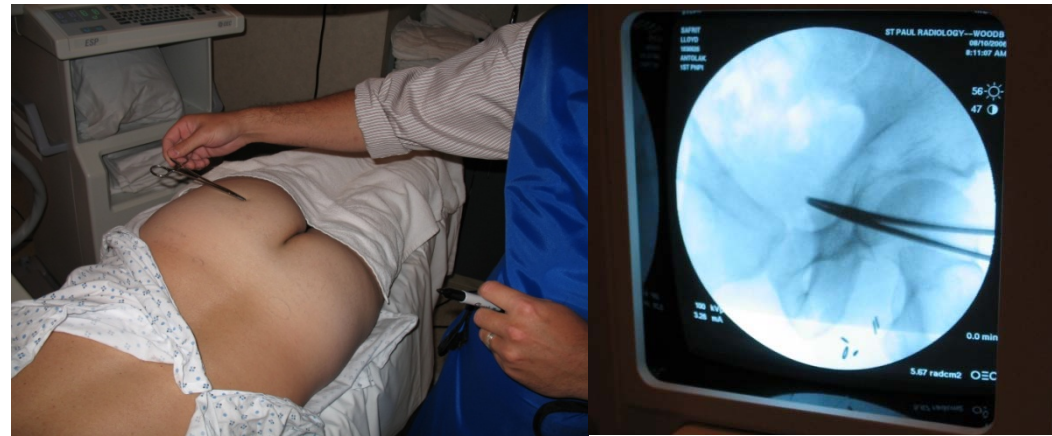
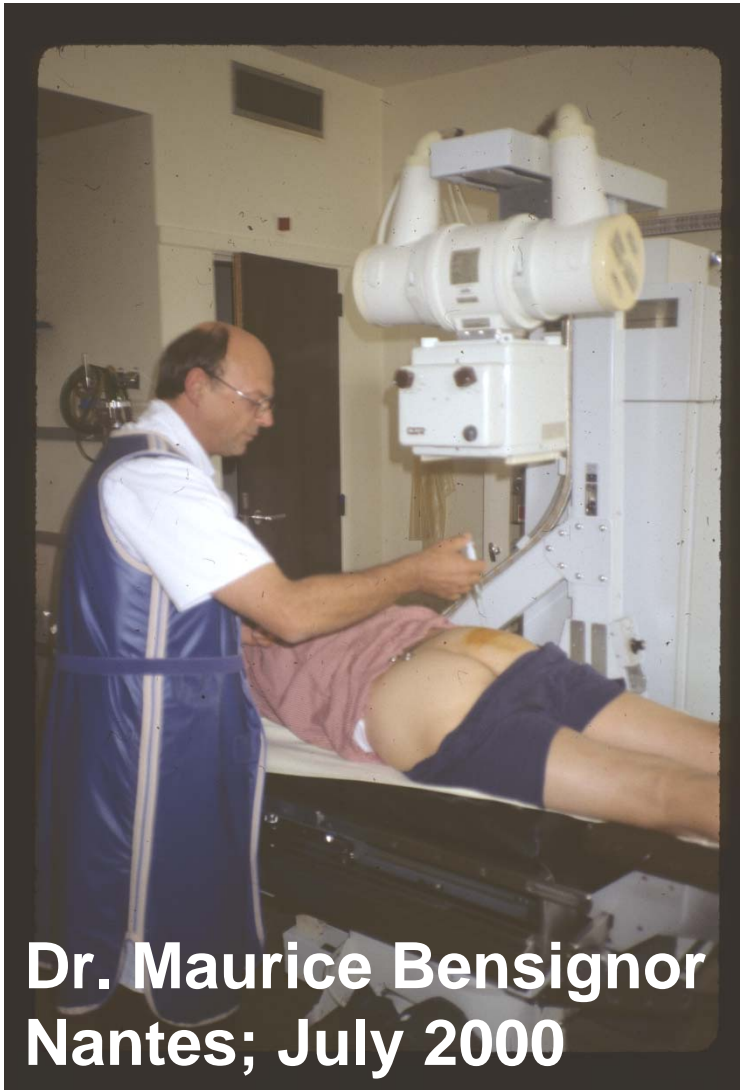
-long-term response using symptom scores.



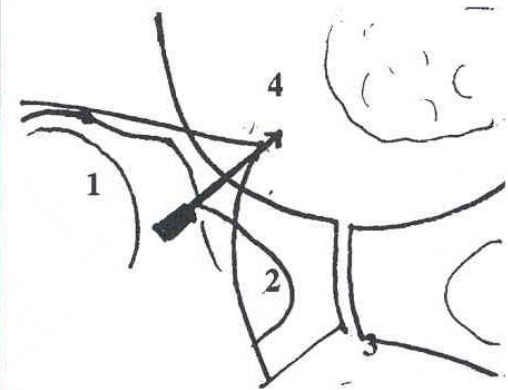
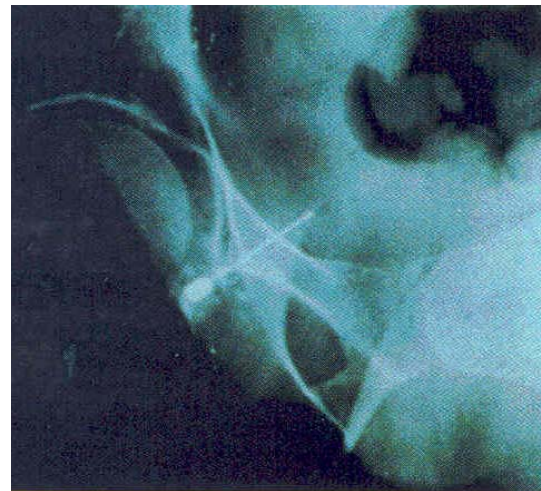
Technique of PNPI

- POSITION: Prone; elevate ipsilateral side.
- ANATOMY: Identify ischial spine;
- LOCATE nerve: stimulate paresthesias with needle tip.
- INJECTION: medial to tip of ischial spine into the interligamentary space.
 - May have interesting symptoms during the injection
- EVALUATE RESPONSE: two hours after PNPI
 - Pain reduction (subjective); e.g. 7/10 to 0/10
 - Test six pudendal nerve sites with pinprick
 - Ideal response is analgesia at all six sites.

Pudendal nerve perineural injections (**PNPI**) - Technique



Marking skin over tip of ischial spine.

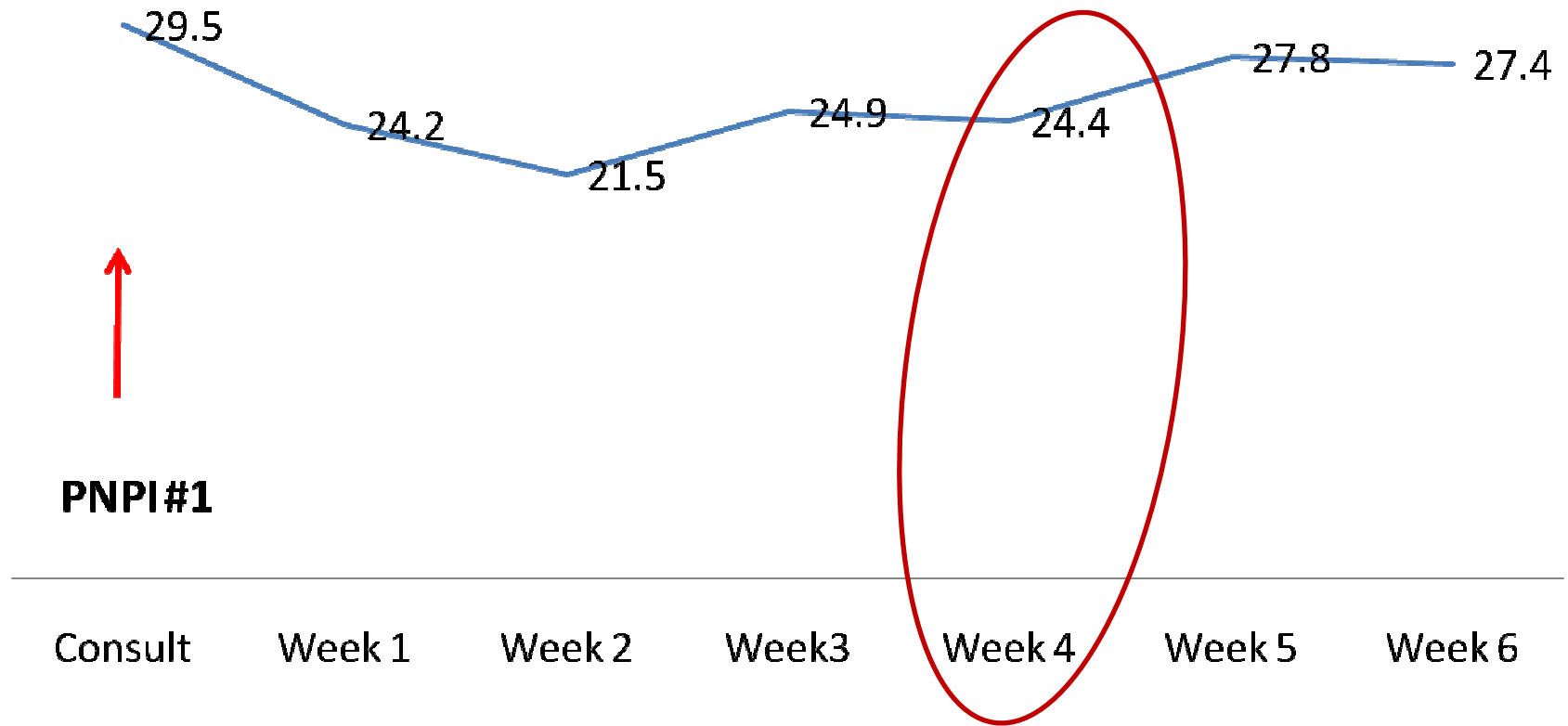


Bensignor 8th World Congress on Pain. 1996

Why 4 week intervals?

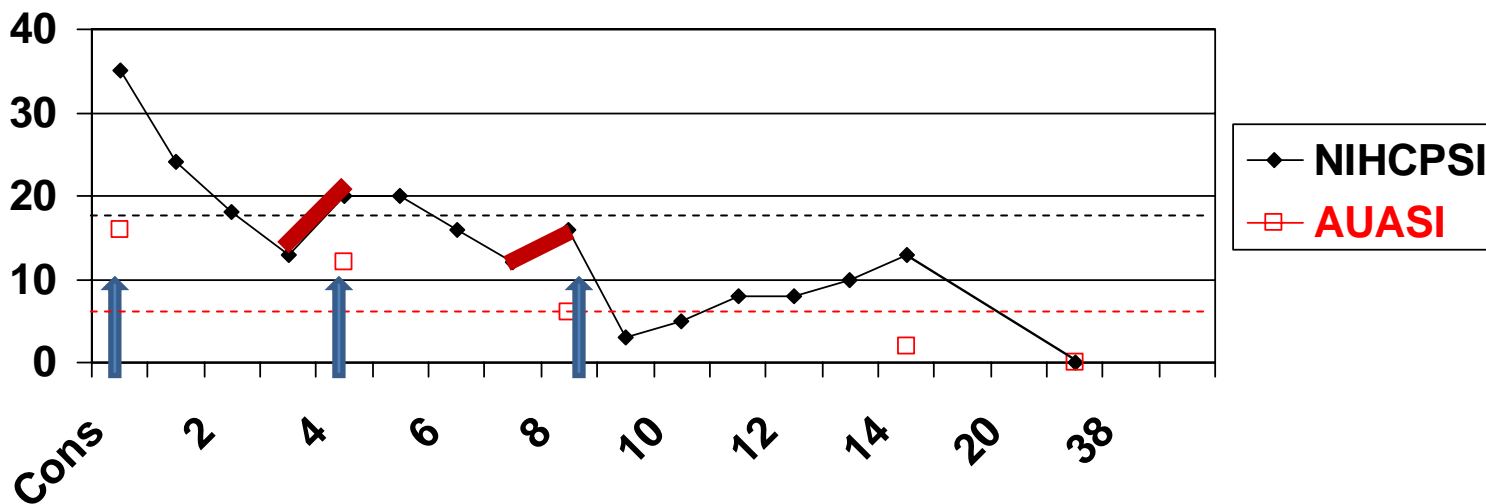
Because they provide the best results.

Average NIH-CPSI n=15



Why a series of three PNPI (↑)? Empirical and evidence based cure of CPP.

Response to Pudendal Nerve Perineural Injections (PNPI) weeks 0, 4, 8



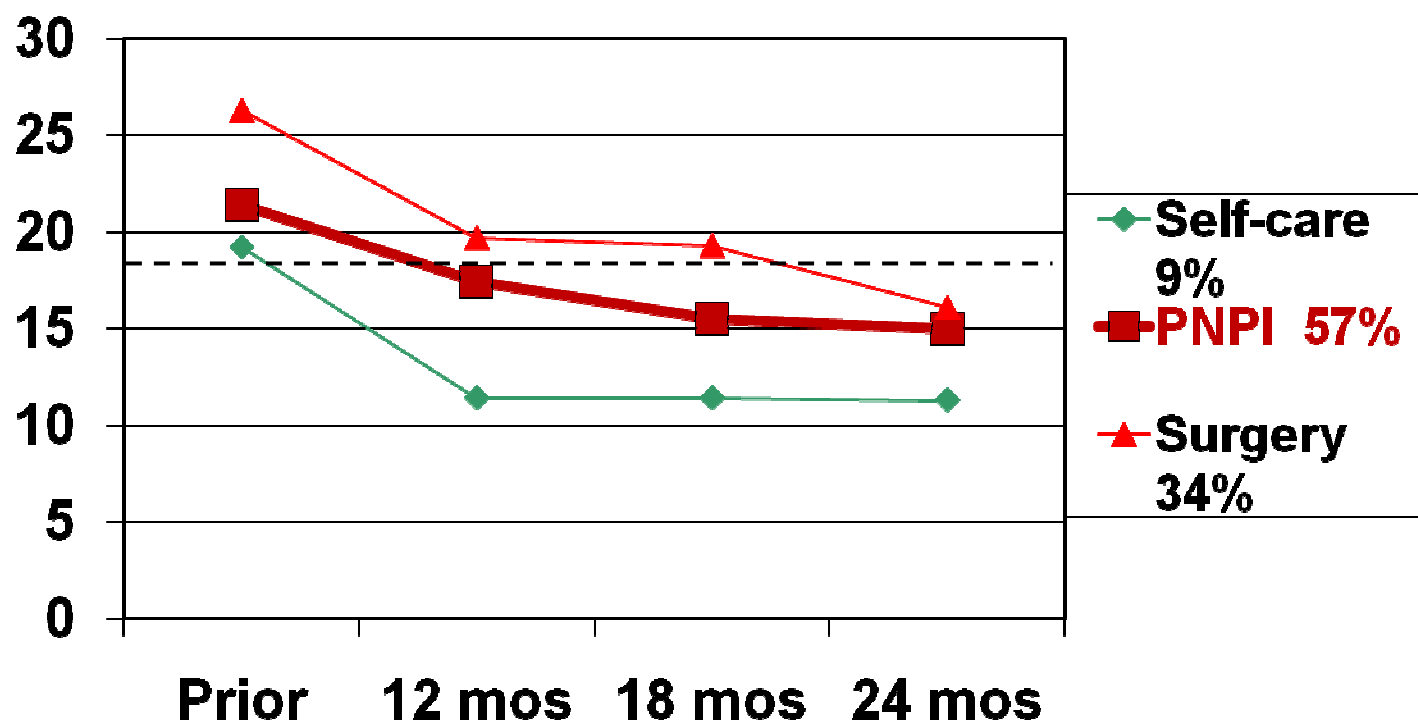
Patients note that pain typically increases between weeks 3 and 4

Pudendal Nerve Perineural Injections (PNPI).

- What?
- Why?
- When?
- How?
- **Results?**

Treatment of pudendal neuropathy
can be **successful** and **durable**.

Cumulative NIH-CPSI Responses 2005

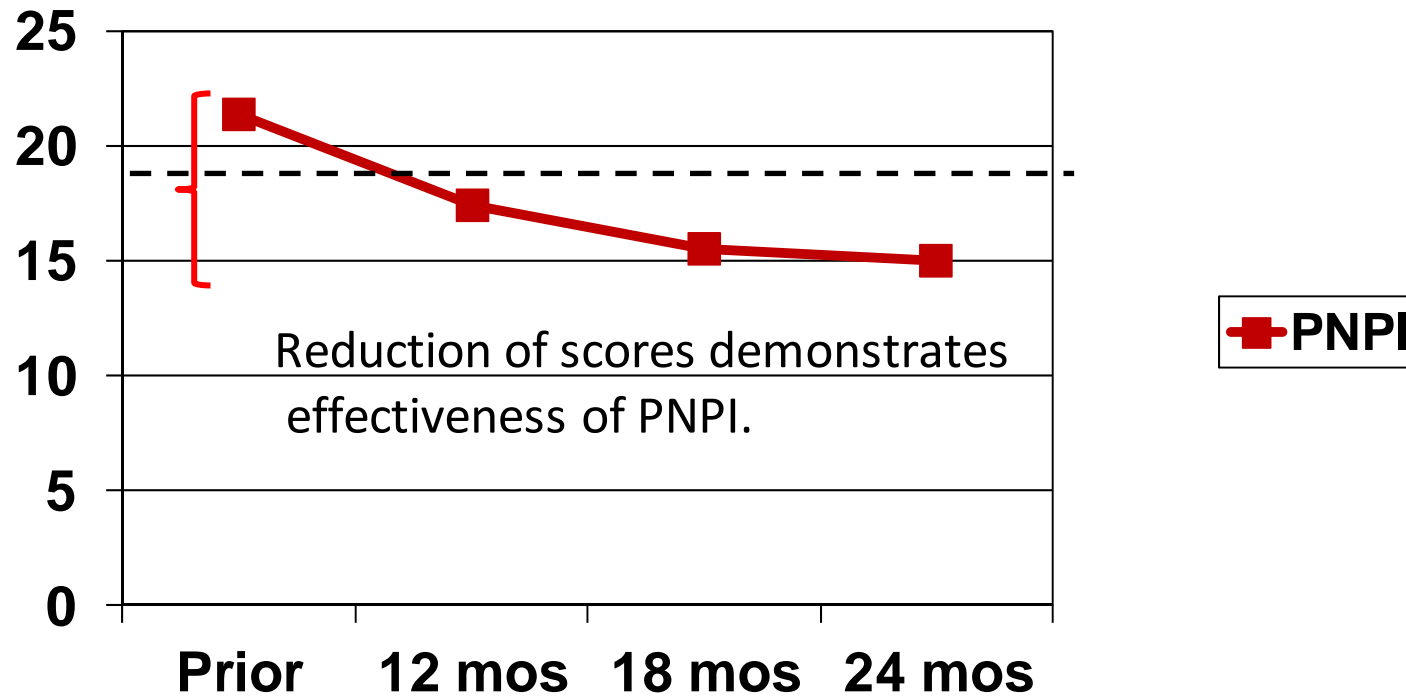


2008 AUA Annual Meeting Orlando, Florida

PNPI treatment results 2005.

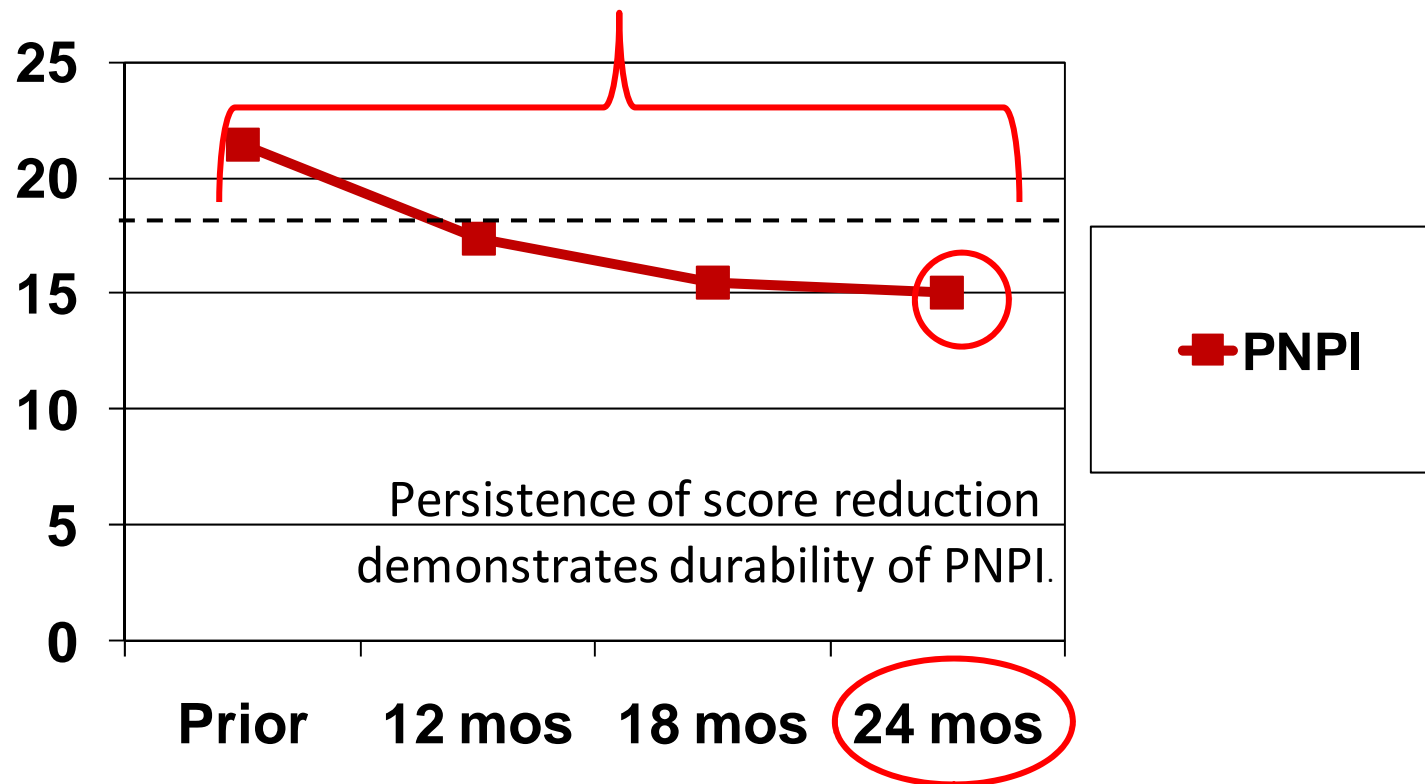
Significant pain reduction.

Cumulative NIH-CPSI Responses



PNPI treatment responses are **durable**.

Cumulative NIH-CPSI Responses



Pudendal Nerve Perineural Injections (PNPI)

- Relieve neuritic pain symptoms
- Relieve sphincter obstruction
 - urinary...reduced hesitancy; increased flow
 - anal...relief of obstructed defecation; fewer or no enemas
- Relieve irritable bladder and bowel symptoms
 - Reduced urgency, frequency, and nocturia. (IPSS or AUASI)
 - fewer bowel movements per day
- Orgasms may return; improved lubrication; PGAD reversed
- Durable: hours, weeks, months; max >11 yrs.
- Response to injection is measured at examination 2 hrs after injection.
- The greater number of pinprick sites anesthetized the greater likelihood of improvement or cure

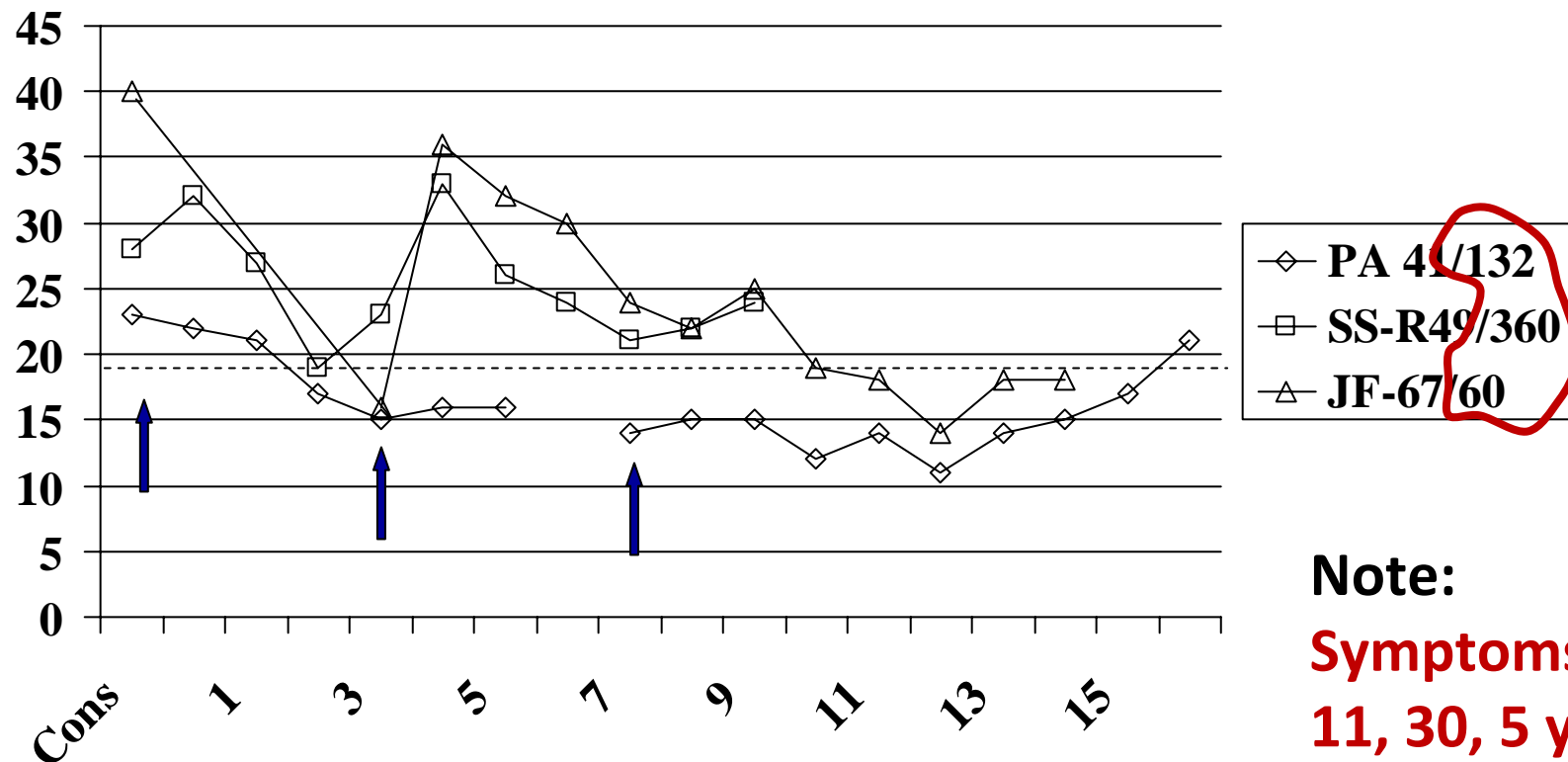
PNPI: Diagnostic or therapeutic

- Diagnostic
 - I do not use PNPI as a diagnostic tool.
 - Diagnosis is clinical and confirmed using neurophysiological testing.
- Therapeutic
 - Yes; in up to 70% of patients. (Bensignor, Amarenco)
 - Combine with medications and self-care

Symptomatic Relief

- Depends on **accuracy** of needle placement.
 - anatomy highly variable
- **Variable onset** and duration of relief:
 - bupivacaine...minutes to 1-2 hours
 - corticosteroids... onset after 2-10 days;
 - duration...first PNPI usually 1 to 3+ weeks;
 - subsequent responses tend to be cumulative.
- **Variable sensory, motor or autonomic response**
 - Inconsistent absorption by perineurium or epineurium? Neurovascular impairment?

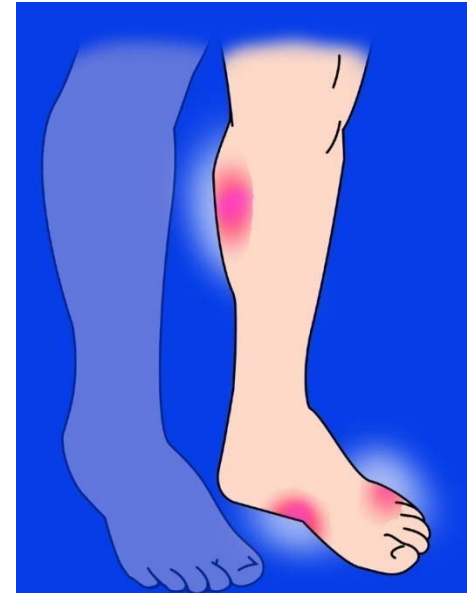
Longstanding symptoms respond to PNPI (↑)



Note:
Symptoms
11, 30, 5 years

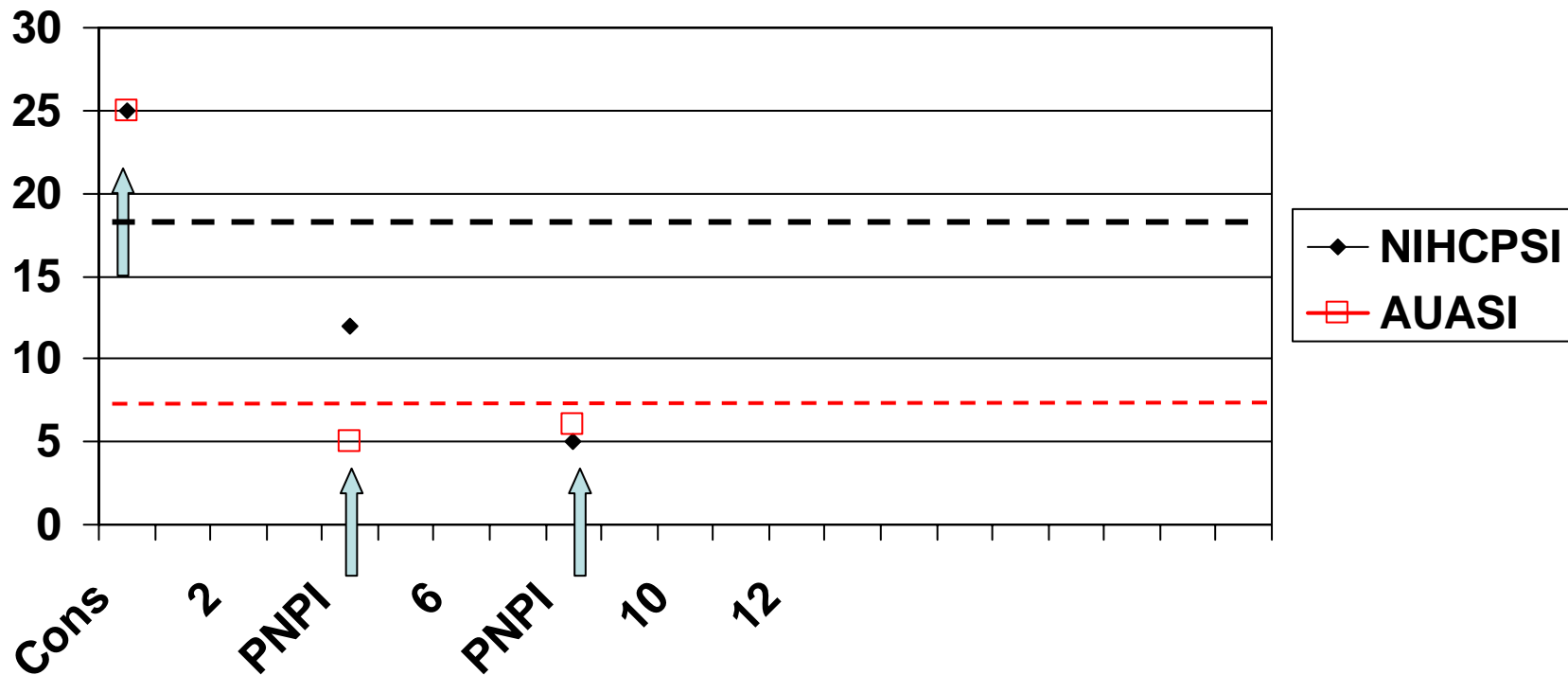
PNPI may **relieve symptoms** caused by **central sensitization** in sacral cord levels.

- Feet
 - Burning plantar surface
 - Burning or tingling toes
 - “Buzzing” sensation in feet
- Legs
 - Pains in calves, thighs
 - Restless legs
- Gait disturbances
 - Waddling gait; “short” leg; (obturator internus spasm)



60 year old female; pain in buttocks
Pain worse with full bladder; dysuria, urgency, frequency.
Rectal mucus secretion.

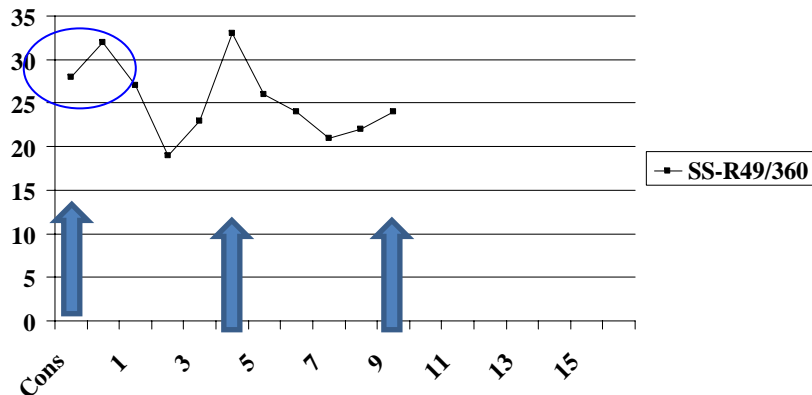
PNPI (↑) @ week 0, 4, 8



Improved Bladder pain syndrome after one PNPI

- 79 year old female; PBS and CPP for 2 years
- Evaluation two hours after second PNPI
 - (One month after first PNPI)
 - “pain with full bladder and the urge to void are markedly diminished after first injection”
 - “pain is a world of difference”

Painful Bladder Syndrome: Symptoms respond to PNPI



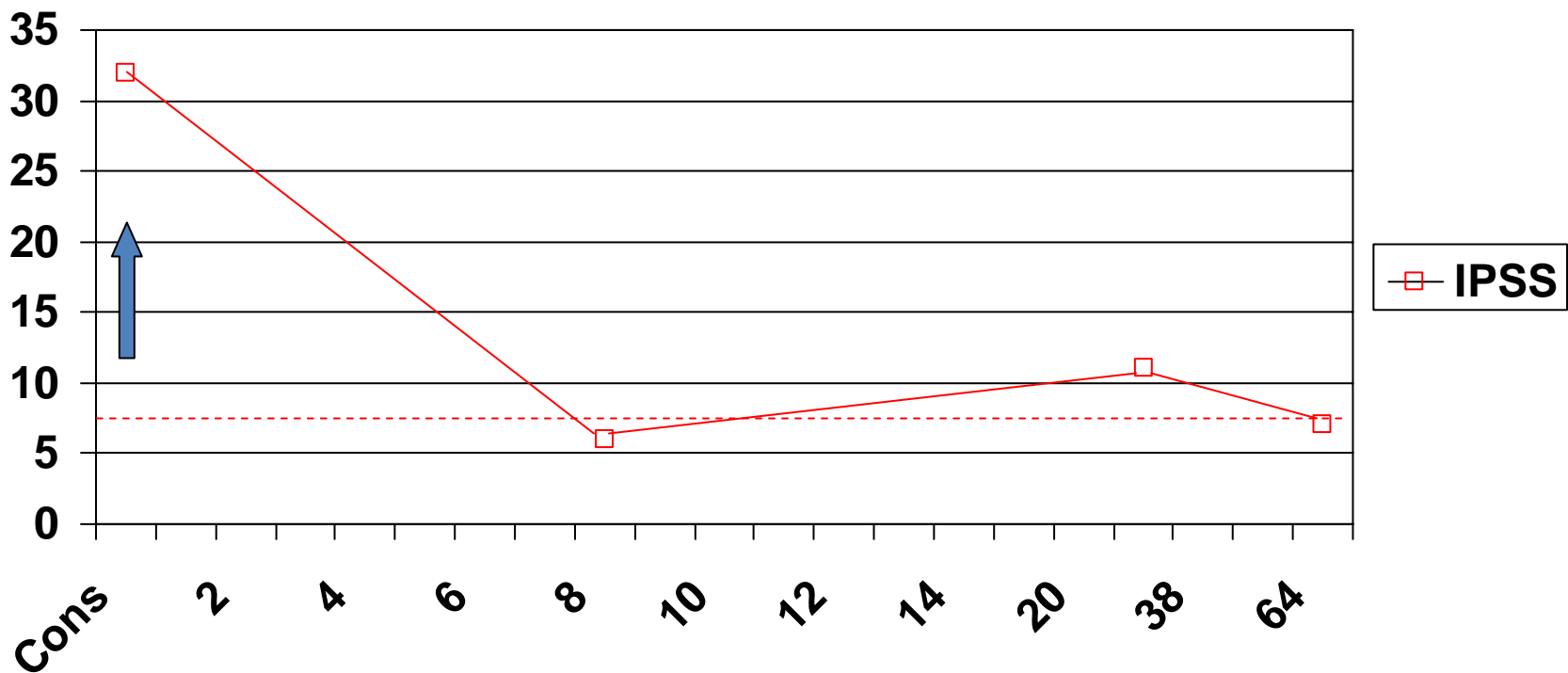
She noted resolution of symptoms for **4 days** after 1st PNPI.

- No suprapubic pressure. Bladder felt empty.
- No frequency; voided every 2 to 3 hours.
- No obstruction...easy release, rapid flow.
- No pelvic pain

Symptoms had persisted for 25 years until these nerve blocks.

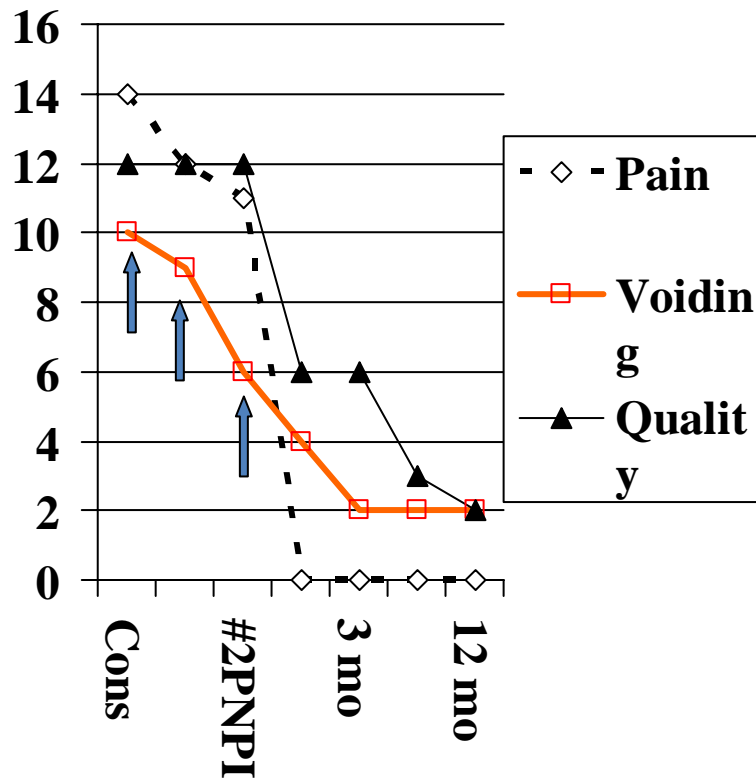
A single PNPI (↑) occasionally cures a patient.
(87 year old female; 15 years of symptoms.)

A single PNPI @ week 0



Durable @ 8 years (NIH-CPSI)

PNPI (↑)



- Male: **Urine retention.**
CIC for 3 years

- Previous irritable bladder

After three PNPI

- Voids spontaneously
- No longer has ED
- No pain with / following ejaculation.

At last contact, 8 years post PNPI he remains normal.

Recurrent symptoms

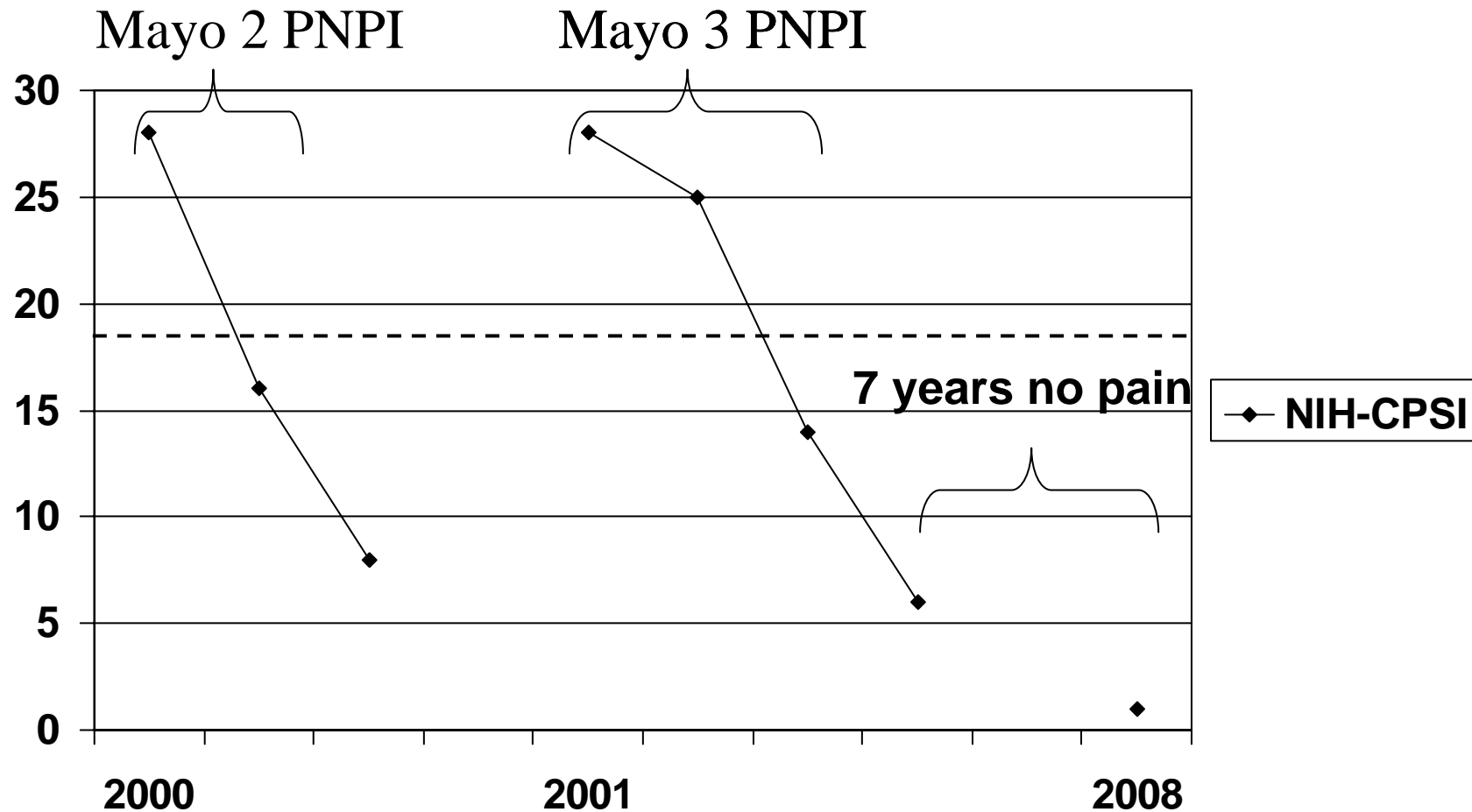
- Occur with noxious activities
- May respond to a single, “interval” PNPI
- May require a series of three PNPI
- Anatomy remains unchanged.
 - Must return slowly to normal activities
- A second series is rarely successful if response to first series was not complete and at least several weeks duration.

REPEAT SERIES CAN BE SUCCESSFUL

78 yr old pilot: perineal and scrotal pain

Pain free after 2 PNPI in 2000; Pain recurred

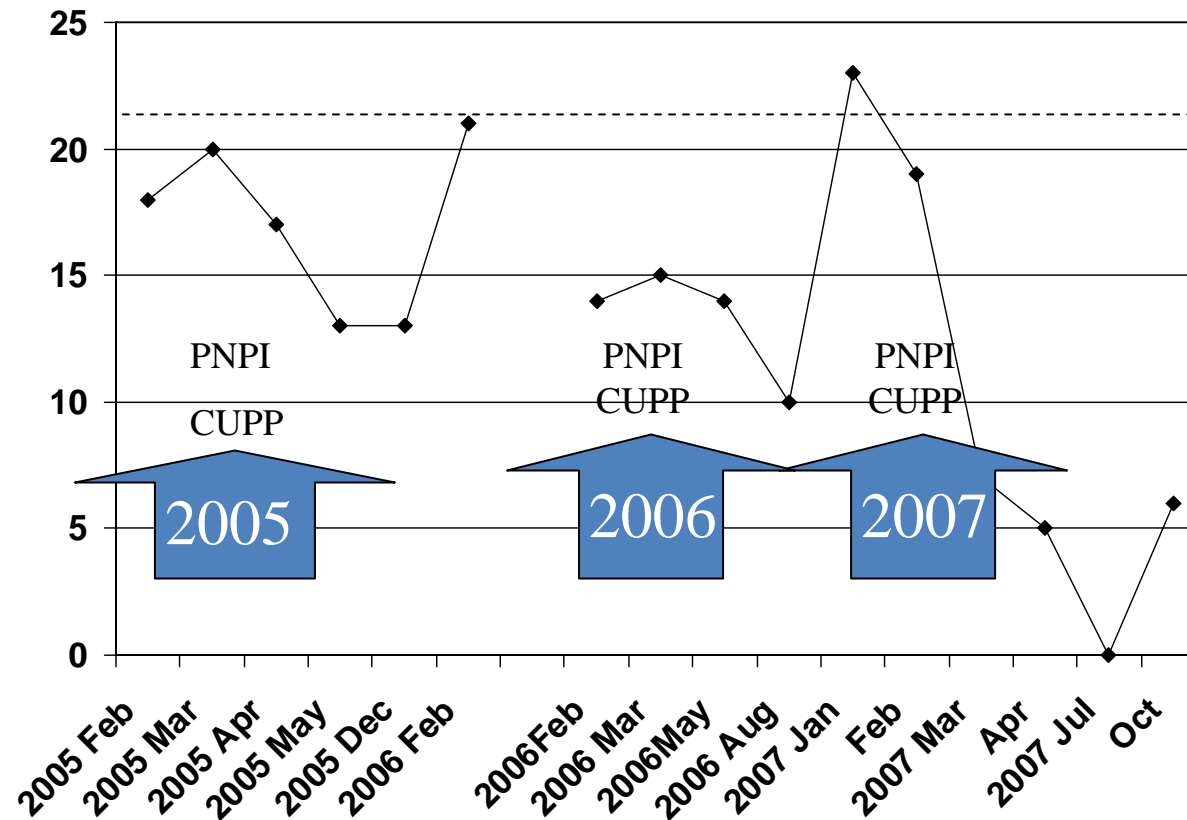
Required 3 PNPI in 2001; Pain-free seven years



PNPI series can be repeated with success.

46 y/o male with 14 years of pain, voiding symptoms, and painful ejaculation. No evidence of prostatitis.

NIH-CPSI
symptom
scores

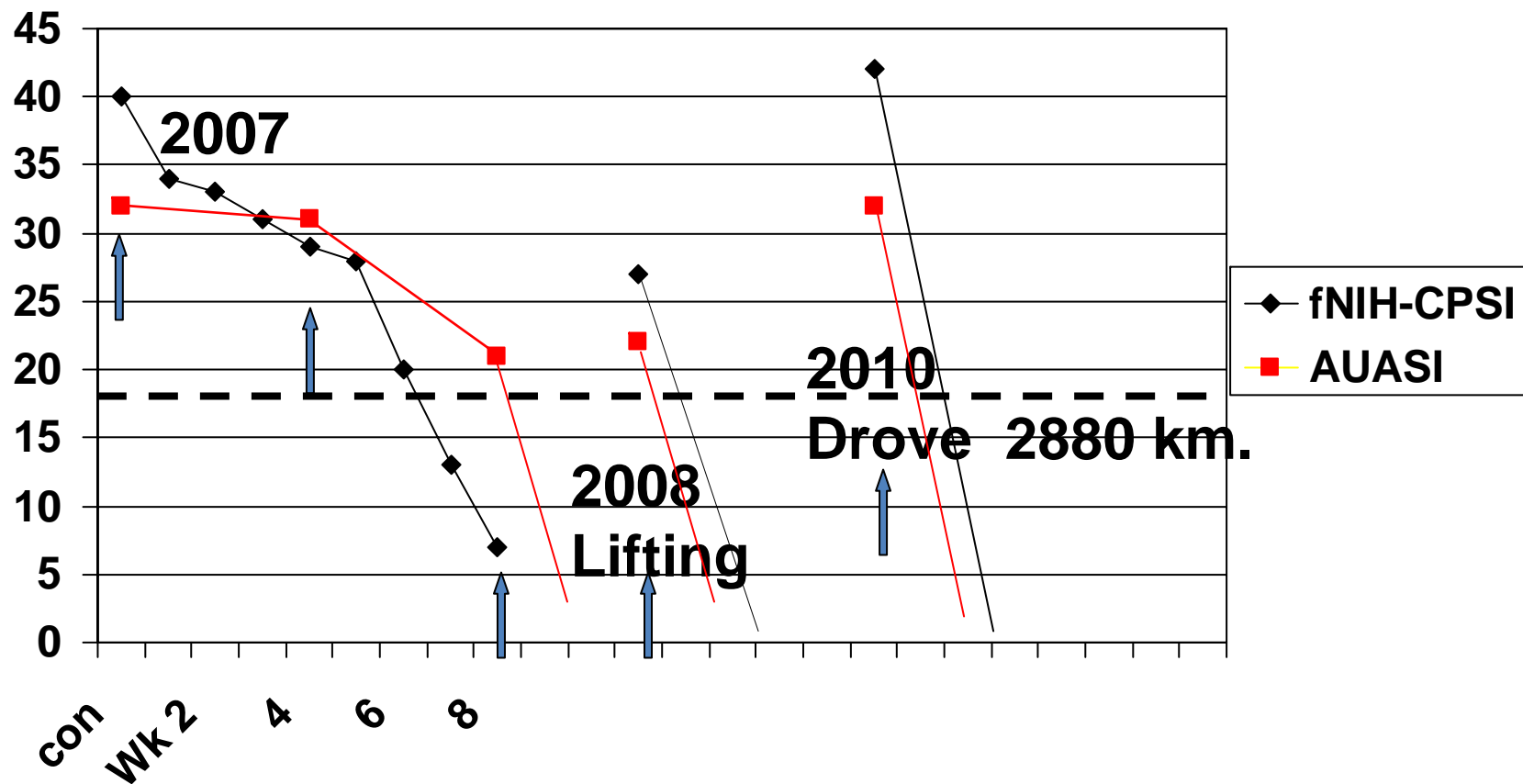


45 yr old nurse;

“Interval blocks” for recurrent symptoms

suprapubic, clitoral, labial pain. Frequency, urgency.

(PNPI (↑))



Complications of PNPI

(not common)

- **Urine incontinence** for 1-24 hours
 - Females, estimate 5%
 - Males only after radical prostatectomy
- **pain-“flare”** est. 5%; 7-21 days
- **Poor response**...poor placement of needle
- Increased # stools/day
- **Bleeding via needle**; perineural hematoma
- **Sciatic anesthesia** 1-2 hours (partial) est. 5%
 - Weak leg(s)

Bleeding, pudendal vessels. Right side.
Second needle placed at upper border of ischial spine.
Slow injection to prevent intravascular infusion.

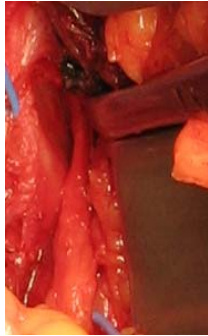


At two hours after injection:
analgesia two sites on right.

Normal at inferior rectal nerve.

Rectal examination at two hours after PNPI revealed no palpable hematoma.

Failure of PNPI to relieve pain



Severe nerve compression

No amount of corticosteroids can provide therapeutic relief.



Concurrent Pain Generators (multiple)

Maigne syndrome or posterior ramus syndrome.

Painful skin rolling causes voiding complaints/urethral pain



Failure of PNPI @ Alcock canal.

Contrast/meds are in ischioanal fat.

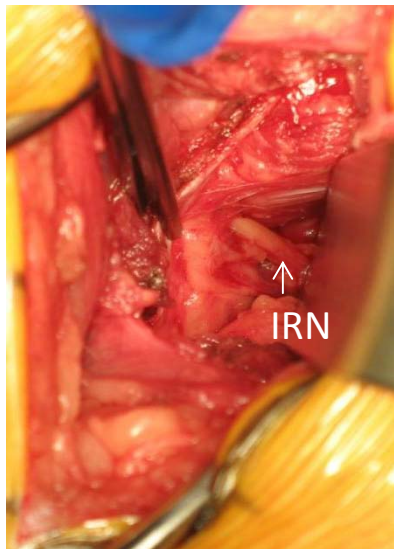
No analgesia to pinprick.

No relief of subjective pain

“Failure” of PNPI: Why rectal pain can persist.

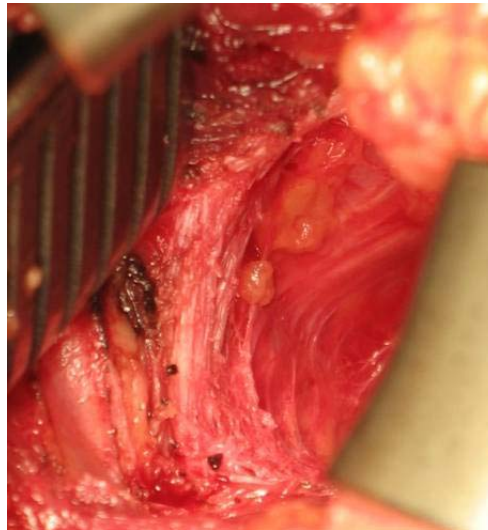
All views are of left nerve; transgluteal incision.

IRN in Ischiorectal fossa.
In 50% IRN does not
enter Alcock canal



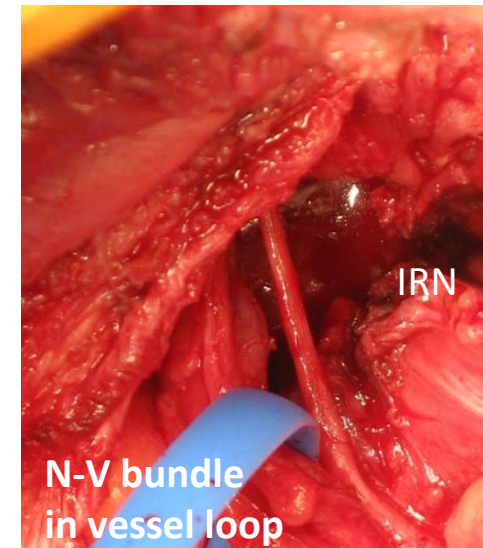
Case 1

No nerves in ischiorectal fossa.
Obturator fascia must be opened
to find PN [and IRN] 50%.



Case 2

- Completely separate IRN. Never joins main trunk. (10%)



Case 3

Five concurrent peripheral neuropathies may occur in patients with pudendal neuropathy.

In addition to pudendal neuropathy

- Maigne syndrome (posterior ramus syndrome-TLJ)
- Ilioinguinal and iliohypogastric neuropathies.
- Abdominal cutaneous nerve entrapment
- Middle cluneal neuropathy (episacroiliac lipoma or back mouse)
- Neuropathy of perineal branch of the posterior femoral cutaneous nerve

Maigne syndrome causes persistent suprapubic pain after successful PNPI.



- 15 year history of pain & voiding symptoms
- She had failed 15 months of intravesical therapies
- **Successful PNPI (total pinprick analgesia)** followed by infiltration of subcutaneous fat with 30mL lidocaine and 30mL bupivacaine.
- At follow up, one month later she felt “wonderful.”

This case demonstrates the value of examination 2 hours after PNPI. At that time the concurrent peripheral neuropathies can be addressed.

Ilioinguinal –iliohypogastric neuropathies remain painful after successful PNPI.

(analgesia at all 6 pudendal nerve branches)

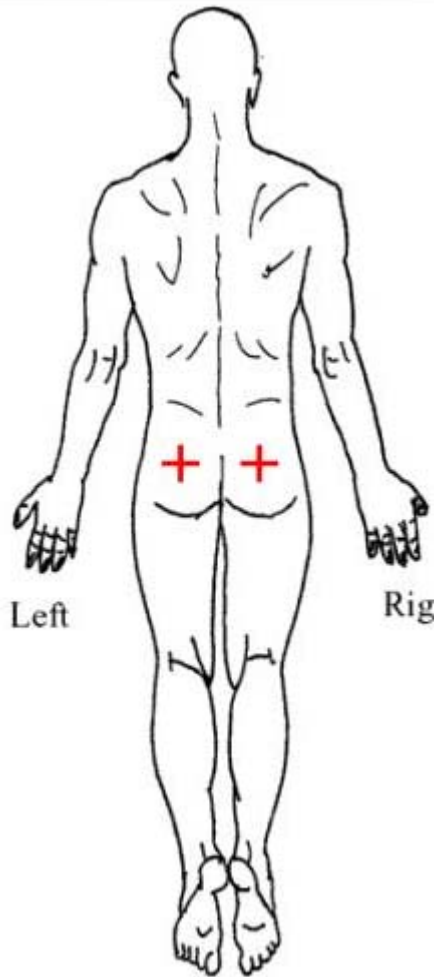


Inguinal pain persists because of I-I and I-H neuropathies.

Left inguinal anesthesia following PNPI.

All pain was relieved after PNPI combined with I-I and I-H blockade.

PNPI followed by multiple abdominal wall blocks (electronic record images)



PNPI

23 year old; 11 pelvic surgeries

2 hours after PNPI pain 8/10 to 7/10

Injected infraumbilical abdominal wall

I-I and I-H bilateral

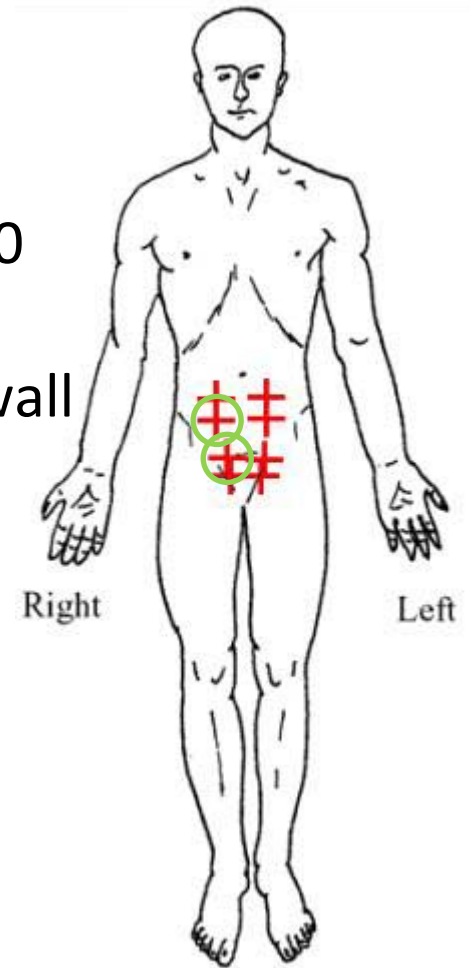
ACNE T11-12 bilateral

Subcutaneous fat for the

Maigne syndrome (2 ports)

[40 mL]

Pain 0/10



Multiple blocks²⁰

Pain after successful PNPI. Concurrent middle cluneal neuropathy

Pressure medial to S-I joint
caused left scrotal paresthesias.

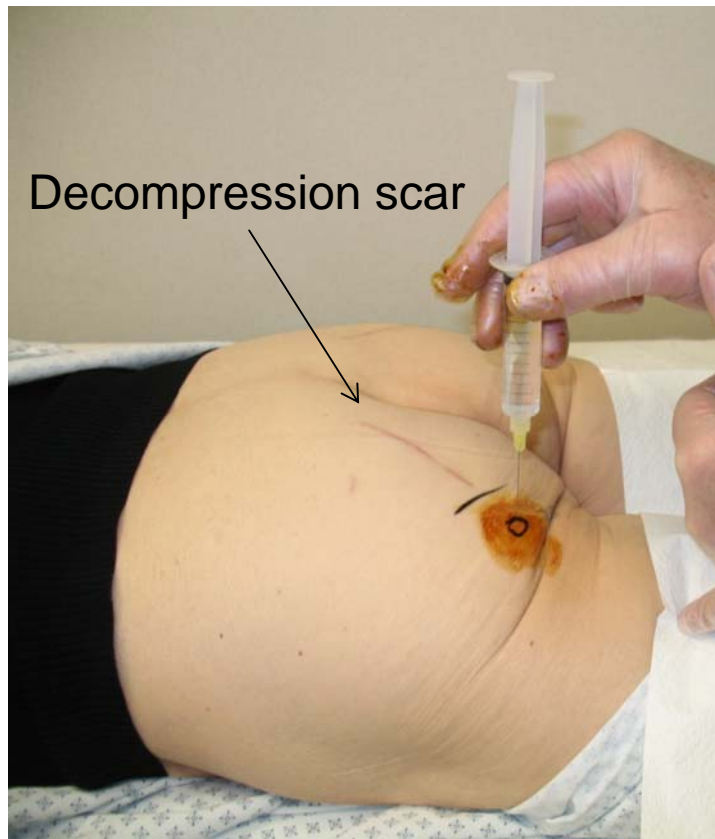


Pudendal block decreased
perineal and scrotal pain 50%

Injection of left S-3 posterior
rami relieved residual pain.

Repeated concurrent nerve
blockades are required to
control pains.

Perineal branch of PFCN



- Pain in thigh, toward anus, into crural fold
- Pressure over femur below ischial tuberosity reproduces pains.
- Pain free 6 months after two blocks (bupivacaine/steroid)

Conclusions

- CPPS is often due to pudendal neuralgia, a compressive neuropathy.
- Pudendal nerve perineural injections (PNPI) using bupivacaine and corticosteroids provide relief of pains of the chronic pelvic pain syndrome in both genders.
- PNPI may produce long term relief of pain, and bowel, bladder, and sexual dysfunctions.
- Evaluate and treat concurrent neuropathic pelvic pain generators.

