

Urologic symptoms and Interstitial Cystitis
in
Pudendal Neuropathy

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Experience in Minnesota, USA

(Antolak)

- 58.3% of pudendal neuropathy patients seen in 2005 had voiding complaints.

“...by far, the majority of LUT symptoms...
and pelvic pain syndromes-remain
unexplained by existing theories.”

Zermann et al. Pathophysiology of the Hypertonic
Sphincter, in The Urinary Sphincter, Jacques Corcos
ed. (2001) p 218

A simple explanation.

by far, the majority of LUT symptoms...
and pelvic pain syndromes are caused
by three peripheral neuropathies

Today I will discuss peripheral neuropathies
that affect pelvic pain and voiding
complaints.

The discussion will include
“Urologic symptoms and Interstitial Cystitis
in Pudendal Neuropathy.”

Goals

- Discuss Interstitial cystitis briefly
- Review some aspects of pudendal neuralgia
 - Diagnostic and therapeutic benefits of PNPI
 - Responses measured using symptom scores
- Discuss painful bladder symptoms
 - in patients with pudendal neuropathy
 - associated with Maigne syndrome
 - associated with middle cluneal neuropathy
- Review a patient cohort with IC and PN

Interstitial cystitis is a controversial diagnosis with multiple synonyms.

- Painful bladder syndrome
- Bladder pain syndrome
- Female urethral syndrome
- Prostate pain syndrome
- Irritable bladder
- Et cetera

Drs. Karseny & Haab will explain.

In 2007 IC was described in broad terms.



- “IC may consist of: Frequency only, urgency only, pain only, but [symptoms] often are a combination”
- “Pain can be **anywhere** in the pelvis or perineum”.
- “Pain may not necessarily be perceived as originating in the bladder.”

This description of IC seems much too broad. Do the editors actually describe pudendal neuropathy?

Parsons & Sant Ed. Urology 2007;69:(suppl 4A) p. 2

The role of pudendal neuropathy and IC-like symptoms was established in 1915.

- Patients with **urinary urgency, urethral pressure, and normal urinalyses**
 - are found to have extraordinary **cutaneous hypersensitivity**
 - in a rhomboid from above the symphysis pubis to the mid sacrum and to the lateral borders of the perineum.
- This **hyperalgesia identifies the cases as pudendal neuralgia**.

Zuelzer G. Reizung des nervus pudendus (neuralgie). Berl Klin Wochen 1915;52:1260-61

Achtung! Translation by Dr. Antolak

Diagnosis of pudendal neuropathy

Patient with *typical pain*

Examination: Pinprick sensation is most important.

Neurophysiological tests confirm neuropathy.

PNTMLT; Pudendal Nerve Terminal Motor Latency Test

WDT; **Warm Detection Threshold test** (a Quantitative Sensory Test). It is imperative to do this test.

Bleustein CB J Urol 2003; 169: 2266

Pudendal neuropathy: Patients' observations of bladder symptoms.

- **Irritable bladder often precedes pain by about 4 to 8 weeks.**
- **Voiding complaints usually improve with treatment.**
- **Urine flow improves; frequency & nocturia decrease.**
 - may last hours to weeks after a single pudendal nerve perineural injection (PNPI).
- **Bladder complaints may occur**
 - During examination (Valleix phenomenon)
 - During testing (Warm Temperature threshold and PNTMLT)
 - During needle placement for perineural injections (PNPI)

Example: **bladder pain and urgency** occurred during warm temperature detection threshold testing of right inferior rectal branch.

PN patient Value @1C increments

	Right	Left
Clitoris	39.0	36.0
Labia	36.5	36.6
Peri-anal	43.5	43.5

Normal <39.5C



Physitemp NTE 2A, USA

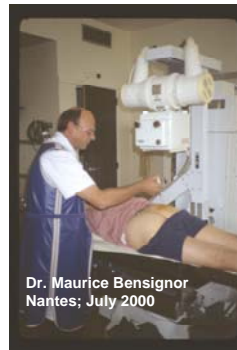
•Beco uses MSA, Somedic, SW

Perineural infiltrations or Pudendal Nerve Blocks (PNPI)
Define the symptoms of pudendal neuropathy.

- 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. (measured using symptom scores)**
 - fewer bowel movements per day
- Orgasms may return; improved lubrication in females
- PNPI are durable: hours, weeks, months; max >6 yr.

Antolak:
Western Section American Urological Association,
Kauai, Hawaii, USA 2002

Pudendal nerve perineural injections (PNPI)
define symptoms of pudendal neuropathy



Dr. Maurice Bensignor
Nantes; July 2000

- Pudendal neuropathy
 - Bensignor
 - Amarenco
 - Thoumas
 - Baurant
 - MacDonald (USA)
 - Hough, Antolak (USA; Mayo Clinic)
- We evaluate response 2 hours after each block and review symptom changes of the past 4 weeks.

Pudendal neuropathy:
Bladder pain with full bladder and after voiding relieved after PNPI.



- Bilateral pudendal blocks changed bladder pain to "tingling" paresthesias
- Hypalgesia inferior to dotted line.
- **Ventral axial line is shifted superiorly and laterally (be alert to this anatomic variation).**

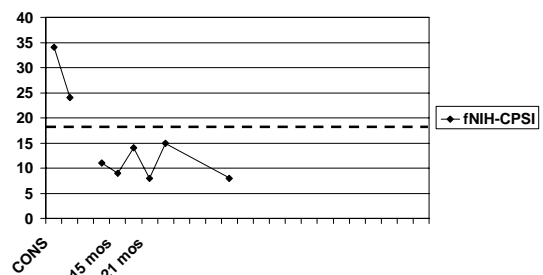
Urs100308

How should we measure and monitor responses to treatment?

Many symptom indices are available.

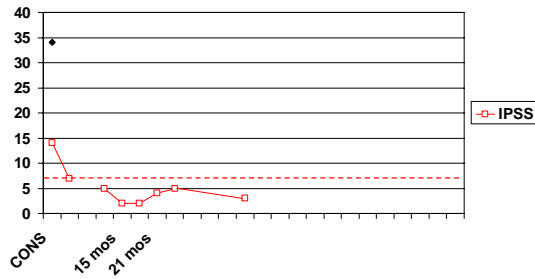
- As a urologist I used two scores to monitor pudendal neuralgia patients for 9 years.
- 1. **NIH-CPSI** = Chronic Prostatitis Symptom Index
 - In actuality this is a pelvic pain symptom index
 - (Since 2000 we also use a **female version**)
 - Measures PAIN, VOIDING SYMPTOMS, QUALITY OF LIFE
- 2. **IPSS** = International Prostate Symptom Score (AUASI = American Urological Association Symptom Index)
- **These are simple, rapid, and can be used weekly.**

NIH-CPSI score of 18 or >18 is abnormal.

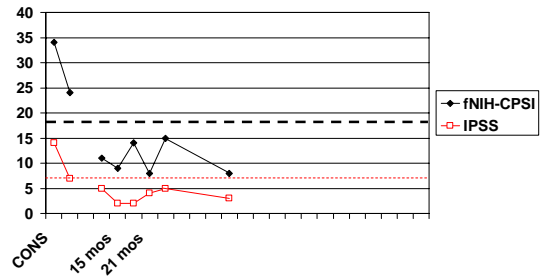


DeRe

IPSS score of 7 or >7 = moderate symptoms.

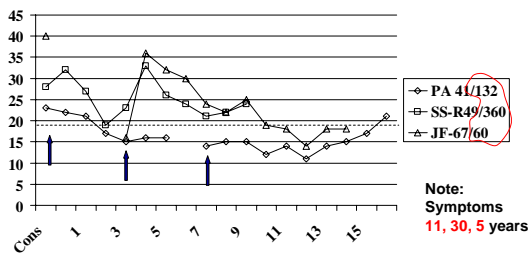


Scores permit a rapid overview of individual patient's treatment response (36 months).

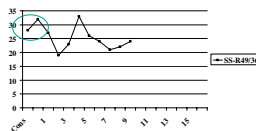


42 year old female; nerve protection only + amitriptyline 40 mg @ HS.

Scores: measure responses weekly; PNPI (↑)
Not practical with urodynamic testing.



Improvement in bladder pain syndrome after PNPI



"Luscious peeing"

Continued for 4 days after first PNPI.

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

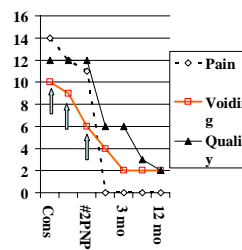
QUERY: "When was the last time you had "luscious peeing"
ANSWER: 25 years

Patients taught us the PN voiding symptoms.
We know how to treat and monitor.
Let us look at their responses.

- Male and female
 - Young and old
- PNPI and surgical decompression
 - Durable responses over 1-7 years after PNPI
- Only successes today
 - Treatment is available for failures of surgery.
- Cumulative responses

Male: Retention of urine

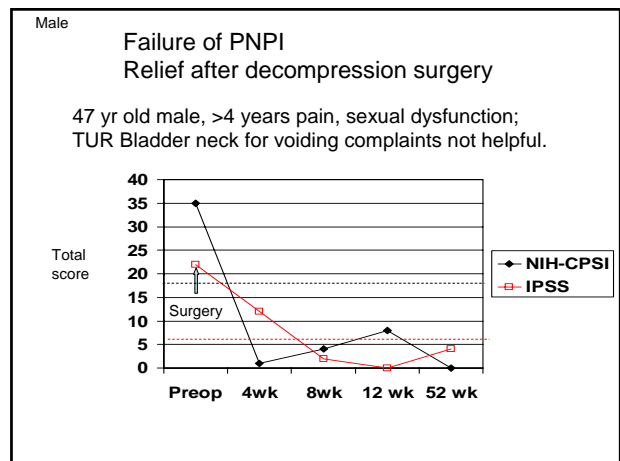
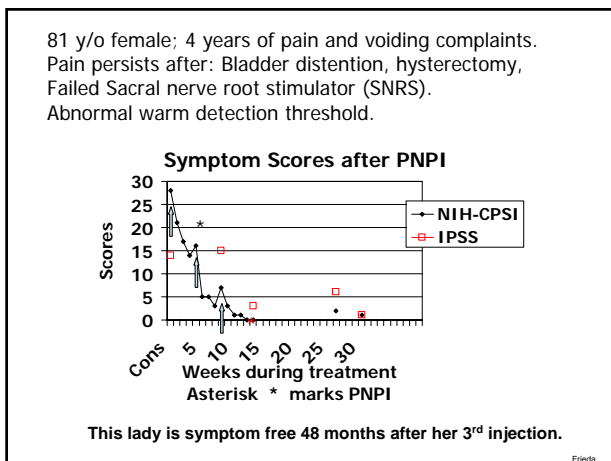
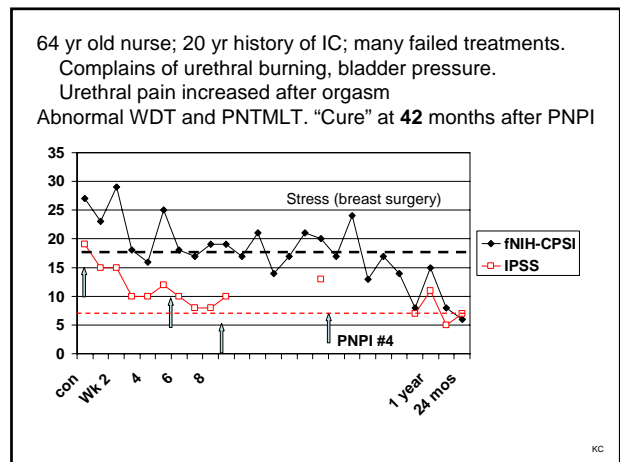
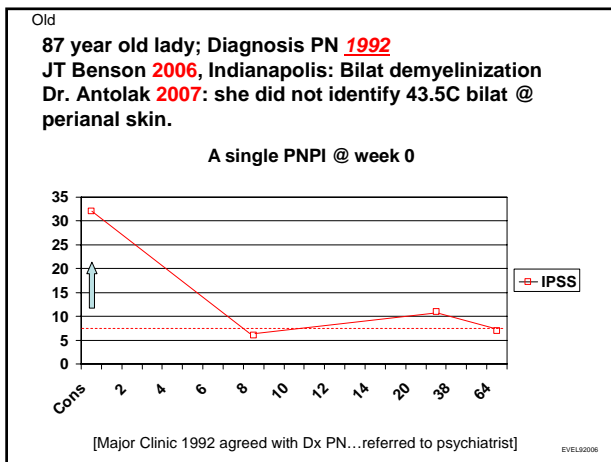
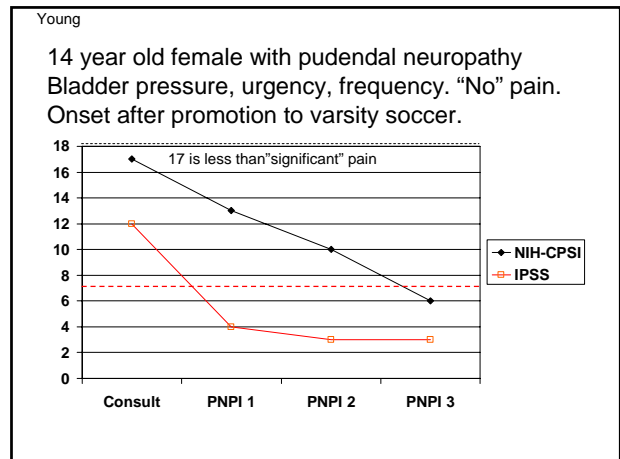
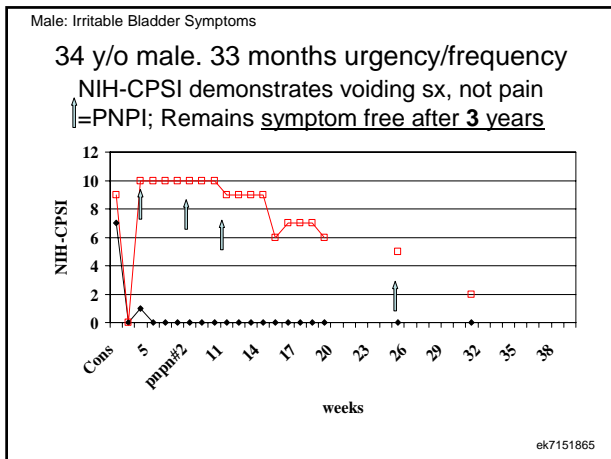
PNPI (↑) : Durable @ 8 years (NIH-CPSI)



- Male: >7 yr. hx IC
- Later, urine retention. CIC for 3 years
- After three PNPI
- Voids spontaneously
- No longer has ED
- No pain with / following ejaculation.

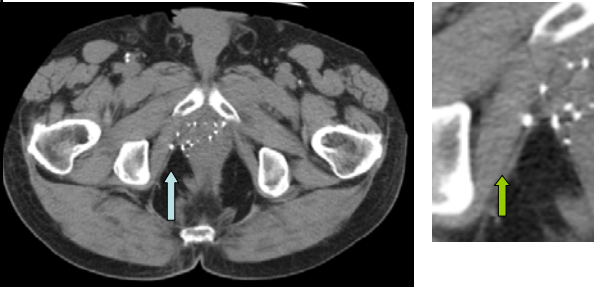
(Note decrease in voiding scores).

Voiding accounts for 10 of 43 points in NIH-CPSI score.



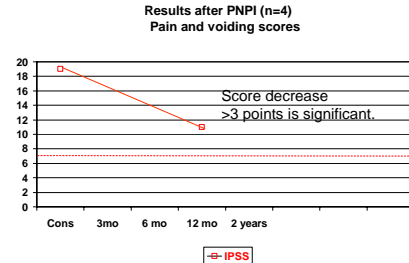
Radiation Neuritis

Brachytherapy: Chronic Pelvic Pain Syndrome
Seed in the pudendal canal; (1) note edema ↑
Pain, bladder symptoms relieved following PNPI.



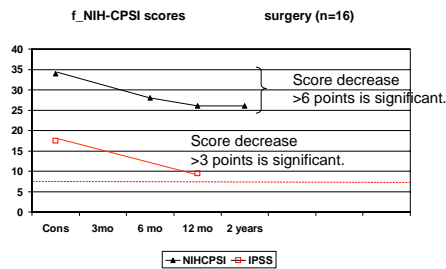
Cumulative Results

Females with interstitial cystitis (2004-2007).
Responses to treatment using only PNPI.
Failures proceeded to surgery.
Score is significantly improved.



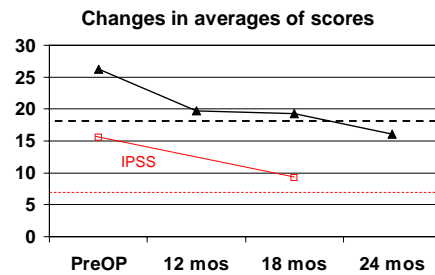
Cumulative Results

Females with interstitial cystitis. Failures of PNPI.
Surgical decompression of the pudendal nerve (n =16)
Pain remains "moderate". Voiding significantly improved.



Results: Decompression Surgery;
Males seen in consultation 2005
n=22 at 12 months; n=14 at 24 months

Cumulative NIH-CPSI averages



We have demonstrated

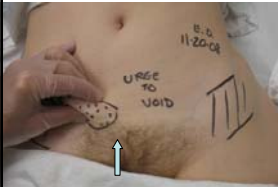
- Pudendal neuropathy is associated with voiding complaints including classic IC.
- IC symptoms can be resolved using pudendal nerve perineural injections (PNPI) and nerve decompression.
- Two symptom indices can measure treatment responses.
- Ventral axial line can extend into thoracolumbar distribution.

Two additional peripheral neuropathies affect voiding symptoms and bladder pain.

- **1. Maigne syndrome:** a secondary peripheral neuropathy causing bladder complaints.
 - In my practice, this neuropathy is a major reason why "bladder pain" and voiding symptoms are not relieved after PNPI
- **2. Middle cluneal neuropathy:** a common problem with occasional bladder complaints causing "failure" of PNPI.
- (Interstitial Cystitis due to **Pudendal Neuropathy** is the major cause of neuropathic bladder complaints).

Dorsal Ramus Syndrome

Bladder pain with Maigne syndrome (Thoracolumbar junction syndrome)



- Skin rolling at RLQ ↑ causes urge to void
- Hyperalgesia bilaterally at T-11, 12 (~~ZZ~~)
- Her urgency was relieved after subcutaneous infiltration with lidocaine and bupivacaine (field block).

Dorsal Ramus Syndrome

Maigne syndrome (Thoracolumbar junction syndrome)

- Pain at 3 sites in distribution of spinal nerves T12 and L1
 1. Inguinal or suprapubic pains
 2. Low back pain over iliac crest
 3. "Hip" pain near greater trochanter; anterior thigh
- Never complain of pain at level of TLJ
- Diagnosis requires a systematic examination
 - "Skin rolling" over abdominal wall and flank
 - Pressure over thoracolumbar vertebrae is painful
 - Lateral pressure on spinous process produces "vertebral" pain at TLJ

Dorsal Ramus Syndrome

Maigne Syndrome

Man with left inguinal and suprapubic pain
Low back and sacral pain.

Gentle squeeze; roll from flank to hypochondrium



No pain



No pain



Pain
Right hand +++
Left hand +

Dorsal Ramus Syndrome

Maigne Syndrome:

Bladder complaints during skin rolling @ LLQ

- pressure in bladder
- burning in urethra



- Her **bladder symptoms persisted after successful PNPI** into pudendal canal.
- Infiltration of the subcutaneous fat with local anesthetics relieved the bladder pressure immediately and for several weeks.

Dorsal Ramus Syndrome

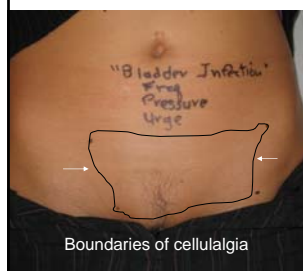
Maigne syndrome in male with pudendal neuropathy



- Cutaneous hypersensitivity at T-11,12 bilaterally
- Vertebral tenderness T-10 and T-11
- Pressure at 2 sites at border of left rectus muscle causes **urge to void**

Dorsal Ramus Syndrome


Maigne syndrome: IC symptoms (frequency, pressure, urgency) persist after PNPI for pudendal neuropathy



- Suprapubic cellulalgia (painful skin rolling).
- Skin rolling reproduces voiding complaints
- Infiltration of subcutaneous fat relieved symptoms for several days
- Bupivacaine 0.25%, 20cc and lidocaine 1%, 20cc

Dorsal Ramus Syndrome

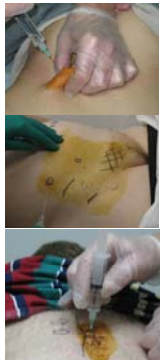
Maigne syndrome + pudental neuropathy
Cellulalgia persists after PNPI



- 15 year history of pelvic pain & voiding symptoms
- 15 months of intravesical therapies
- One month after first PNPI followed by injection of cellulalgia she felt "wonderful"
- intravesical therapies are not required.

Dorsal Ramus Syndrome


Infiltrations relieve Maigne syndrome
(1% lidocaine and 0.25% bupivacaine)



- Directly into painful skin roll.
- Into broad area of cellulalgia. (Field block)
- Posteriorly, 1.5 cm lateral to spinous processes of T10 – L1.
- Lidocaine produces immediate response.

Dorsal Ramus Syndrome

Maigne syndrome:
Paraspinal infiltration of lidocaine and bupivacaine



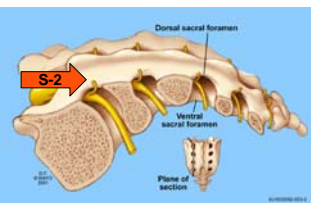
Infiltration of medications reproduced "bladder pain" on each side.

- Almost immediate relief of pain.
- Able to bend to tie shoes pain free.
- Able to rise from chair without pain.

Dorsal Ramus Syndrome

Middle cluneal neuropathy

- Posterior rami of S 2-3-4; (middle cluneal nerves)
- [Same cord levels as other pelvic pain generators]
- May be associated with a fat hernia called a "back mouse" or episacroiliac lipoma.



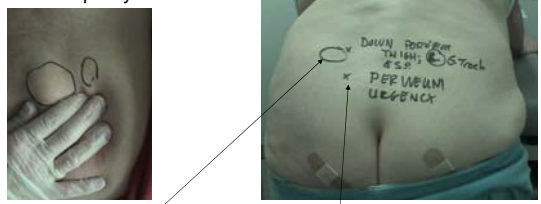
Can cause sacral (low back), thigh, foot, inguinal, genital, perineal and suprapubic pain.

- These nerves are not mentioned in most English language anatomy, neurology, orthopedic, or neurosurgery textbooks.

Dorsal Ramus Syndrome

Common sacral origin affects pudental nerve symptoms even after successful PNPI.


- Back mouse (Episacroiliac lipoma) or middle cluneal neuropathy.



One "Back Mouse"... but pressure at 2 sites causes symptoms. S-2 thigh and S.P.; S-3 perineal pain & urgency

Dorsal Ramus Syndrome

Middle cluneal neuropathy affects scrotum and perineum (post op PN decompression)




One month post op (PN decompression)


Note previous back surgery scar

This case is NOT A SURGICAL FAILURE but pain caused by a second peripheral neuropathy.

Back Mouse
Anesthetic blockade
Lidocaine + bupivacaine




Palpation



Marking
"X" at tender site
right S-3.

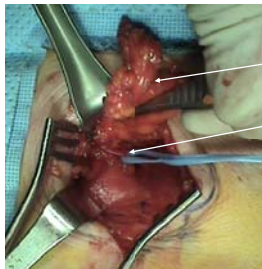
Injection:
The needle is advanced until pains are reproduced; aspirated; injected.
Immediate relief of pain.



Back mouse. Excision with repair of fascial defect.

I now excise a 1 to 2 cm portion of the nerve.

Need to try radiofrequency or cryo ablation.

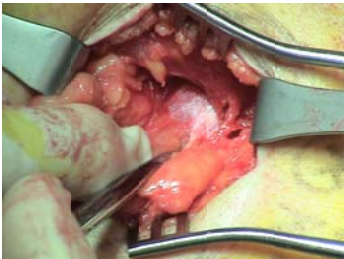


Large lipoma or "back mouse"

Nerve in vessel loop.

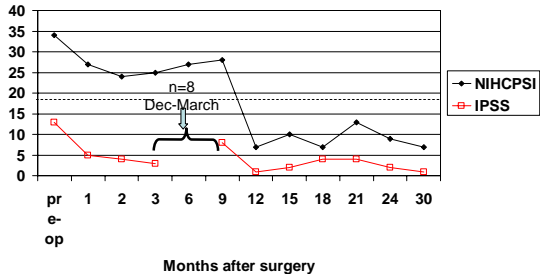
NIH March 2005

Right-side: Back mouse
Defect in fascia.
Fat is herniating and stretching the nerve.



Jan05

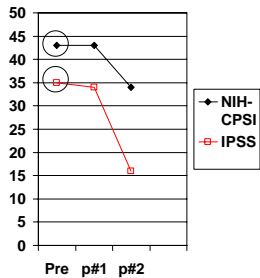
Surgical "failure" RX Post op Heparin PNPI, ↓
8 weekly injections; Right side only
Betamethasone added to Heparin weeks 1 and 5;



Months after surgery

John G71105

Ketamine infusion: 20mg I.V. over 20 min.
q 2 weeks X 3; then q 4 weeks



Pre p#1 p#2

- 62 year old female
- IC
- Pudental neuropathy
 - Surgical "failure"
 - Transient relief from post-op PNPI
- Maigne syndrome
- Middle cluneal neuropathy
- ○ = Maximum possible scores

SUMMARY
Voiding symptoms; painful bladder

- Caused by 3 peripheral neuropathies
- Long-term cures of pudental neuropathy are possible
 - Nerve protection (self-care)
 - PNPI (Pudental Nerve Perineural Injections)
 - Decompression and transposition surgery
- Maigne syndrome and middle cluneal neuropathy are challenges to treat.