Evaluation and Treatment of Chronic Scrotal Content Pain

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Introduction

- Chronic orchialgia/scrotal content pain not an infrequent complaint
- Dilemma due to idiopathic etiology, patient frustration, conflicting motivations
- No established work-up or treatment algorithm
Definition

- Intermittent or constant testicular pain 3 months or longer in duration that significantly interferes with the daily activities of the patient

Source of pain

- Direct pain
  - Infection
  - Torsion
  - Tumor
  - Obstruction
  - Celes – varico, hydro, spermato
  - Trauma
  - Iatrogenic (vasectomy / inguinal hernia repair)
Source of pain

- Referred pain
  - Mid-ureteral stone
  - Indirect inguinal hernia
  - Aortic/common iliac artery aneurysm
  - Lower back disorders
  - Nerve entrapment ("perineural fibrosis" – better term)

- Pelvic floor myalgia

- Idiopathic – up to 50% (Davis ‘90)

- 2° gain +/- malingering
Evaluation

- R/O medically important/treatable causes, e.g. Testis tumor, intermittent torsion, infection, varicocele, etc.

NB – Scrotal pain not synonym for scrotal pathology
Evaluation

- History should focus on several issues:
  - Onset, duration, severity (0-10), location, referral
  - Associated factors (prior surgery, trauma, infection)
  - Exacerbating/ameliorating factors
    - (Voiding, BM’s, sex, physical activity, sitting)
  - Previous treatments
Evaluation

- Physical exam
  - Overall appearance
  - Focused GU exam
    - Penile lesions
    - Scrotal appearance
    - Testes/epididymides/vasa
    - Rectal exam – evaluate pelvic floor palpate 360°

Try to recreate the pain
Evaluation

- **U/A, C&S prn, semen C&S prn**
- **Urethral discharge?**
- **Imaging**
  - Duplex Scrotal Ultrasound (all) – low yield
  - CT, IVP, retrogrades, VCU, cysto – extremely low yield
  - Spine/hip MRI/CT prn back/hip pain

- **Spermatic Cord block (20 cc 0.25% bupivacaine w/o epi) injected at pubic tubercle level**
  - Consider saline control
  - + response (>50% ↓) to block predicts success w/MDSC (p=0.05)

Branigan et al AUA 2016
Treatment
A Therapeutic Dilemma

- Pharmacologic

- NSAIDs
  - Ibuprofen 600-800 mg TID
  - Cox-2 inhibitors

- Antibiotics
  - Only when active clinical infection - rare
  - Typically caused by non-bacterial sources, must cover Chlamydia
  - Doxycycline & Levaquin best- should be given for 4-6 weeks (if indicated)

- Medical Marijuana?
Treatment

- Pharmacologic (cont)
  - Anti-depressants
    - MoA – NE inhib @ 1\textsuperscript{st} & 2\textsuperscript{nd} order neurons in CNS
    - Amitriptyline 10-20 mg qhs, can go as high as 100 mg qhs
    - Nortriptyline 10-150 mg qd x 3 mos- no success post-vasx
  - Anti-convulsants – Neurontin, Lyrica
    - MoA - ↓ neuron excitation & ↑ inhibition via blocking Ca\textsuperscript{++} channels
    - Begin 300 mg qd, then BID, then TID with max of 3600 mg/d- no success post-vasx - Sinclair et al, IJ Urol, 2007
Treatment

- Series of nerve blocks
  - Steroids - Kenalog
  - Anesthetics - short or long acting
    - Ilioinguinal, genitofemoral
    - Caudal, hypogastric plexus
- N.B - Work best when pain <1 y
- Physical Therapy – internal & external pelvic floor massage
- Acupuncture
Pelvic Floor PT Study

- 30 men w/ CSCP & + DRE referred for PFPT
  - Biofeedback relaxation techniques, int & ext pelvic massage
- Median # PFPT sessions 12 (1-35)
- Mean f/u – 13 mos (3-48)
- Any improvement - 50%
- Median ↓ pain score - 4.5 (1-10)
- None to mild residual pain - 42%
- 30% no longer needed narcotics

Farrell et al, NCAUA 2015
Treatment

- Psychologic/psychiatric counseling
  - May help patient “deal with pain”

- Surgical
  - Neurectomy (after IH – 71% success)
  - Epididymectomy
  - Open-ended vasectomy
  - Vasectomy reversal
  - Cord micro-denervation
  - Orchiectomy – inguinal > scrotal
  - Laparoscopic denervation (7/9, 77% success-Choa)
  - Robotic microdenervation
Epididymectomy for Chronic Pain

- Clearly indicated when pain involves epididymis only
  - Especially after vasectomy and when painful cyst/mass or U/S structural abn present (50-87%)
  - Not for chronic inflammation - (success only 0-24%)

- Disadvantages
  - Creates obstruction
  - Risk of vascular compromise

Hori et al J Urol 2009; 182: 1407
Sweeney et al BJU 1998; 81: 753
Padmore et al J Urol 1996; 156; 95
Surgical Treatment

- Micro-denervation of spermatic cord (MDSC)
  - 1st case report 1978 – Devine & Schellhammer, J Urol
  - Primary Advantage – “Spare the testicle”
    - Psychological and physiological reasons
  - Division of all structures- sparing only arteries (testicular, cremasteric, deferential), lymphatic(s), +/- vas deferens
  - Best Selection Measure- positive response to cord block
Micro-anatomical Cord Findings

- 47 men – 11s/p orchx; 36 s/p v-cele repair
- IHC for–
  - Pan-neuronal marker – Protein Gene 9.5
  - Sensory nociceptor marker – Calcitonin Gene-Related Peptide (CGRP)
  - SNS marker – Tyrosine hydroxylase
  - PNS marker – VIP
  - Lymphatic marker – D2-40
Micro-anatomical Cord Findings continued

- PGP 9.5 - diffuse in cord and fascia
- Sensory & autonomic nerves co-travel in some nerves – **New stuff here!**
- Distribution - 50% peri-vasal, 20% in fascia, otherwise even throughout cord
- Sensory & SNS are majority of nerves found
- Lymphatics found in cord tissue, rarely in fascia

Oka et al, in press 2016
MDSC Technique: Spermatic Cord Exposure
MDSC – What to do with Vas

- Consider leaving vas intact -
  - To preserve fertility
  - Avoid congested epididymis (when no pre-op epididymal pain)

- If previous vasectomy
  - Divide it again
MDSC Technique: Remaining Structures
# Microdenervation Outcomes

## All cause SCP

<table>
<thead>
<tr>
<th>References</th>
<th>No. Pts</th>
<th>Mean FU mos (range)</th>
<th>% Pain Free</th>
<th>% Improved</th>
<th>% No Change</th>
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<td>Marconi et al 2015</td>
<td>50</td>
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<td><strong>Total</strong></td>
<td><strong>312</strong></td>
<td><strong>22 (1-102)</strong></td>
<td><strong>78%</strong></td>
<td><strong>12%</strong></td>
<td><strong>10%</strong></td>
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Vasectomy Reversal for PVPS

- Mostly small single-center studies N=4 (9-32 cases)

- Success rates – 50-69% pain free
  75-100% improved

- Indication – when ↑ pain after ejaculation and not diffuse

- Advantages
  - Spares testicle

- Disadvantages
  - Reverses purpose of vasectomy
  - Costly
  - Not all surgeons comfortable w/ technique
  - ? Insurance coverage
Surgical Treatment

- **Orchiectomy**
  - When medical/surgical tx fails
  - When he can’t stand it any longer!
  - When pain diffuse
    - Testis and Epididymis
  - Best when responds to cord block
  - Reported failure - 80% (Costabile ’91)
Conclusions

- Chronic testicular/scrotal content pain frustrating for both patient and physician
- Rule out reversible causes
- May be associated with psychological factors +/- 2° gain
- Multi-disciplinary approach before surgery including pelvic floor PT
- Spare testicle if possible- consider MDSC-complete success in 71-88%