Pelvic Pain: a Pain Management Perspective

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Image by: katerina eremeeva

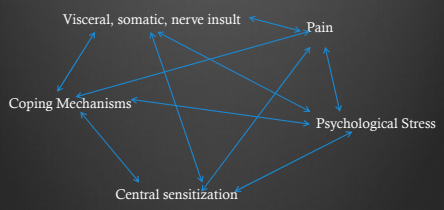
Disclosures

None

Learning Objectives

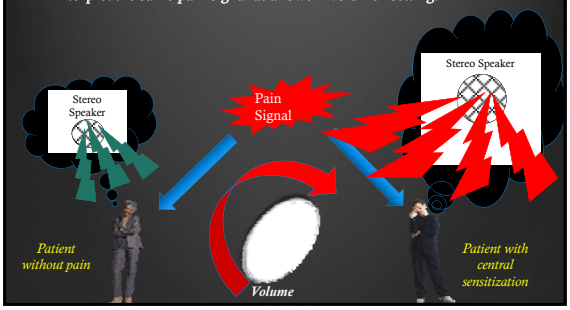
- List 3 "alternative" history and physical exam questions to supplement your assessment of a woman with pelvic pain.
- Describe the complex peripheral and central nervous system and biopsychosocial contributors to pelvic pain.
- Define 4 categories of multimodal treatment options for pelvic pain.

Pain is Complicated…

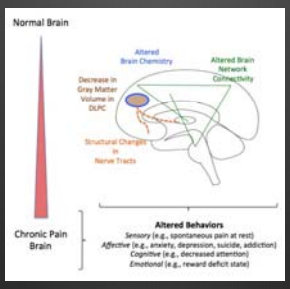


Central Sensitization

- This can be thought of as if the patient's pain perception ***"volume control setting" is turned up too high.*** A patient *without* pain would interpret the same pain signal at a lower "volume" setting.



Chronic pain → CNS changes (functional, morphological, chemical)



Borsook D. A future without chronic pain: neuroscience and clinical research. Cerebrum. May 2012

Impact of Chronic Pain on the Brain – Statistically Significant Decreased Grey Matter Density

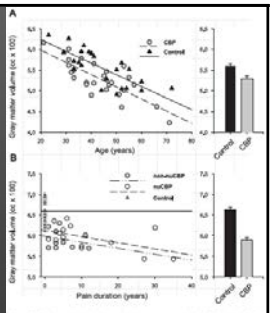


Figure 1. Decreased whole-brain cortical gray matter volume in CBP subjects. Skull-normalized neocortical gray matter volumes are shown for CBP subjects and matched control subjects. A, Gray matter volumes as a function of age. The difference in intercepts corresponds to an average decrease of 30 cm^3 in gray matter volume in CBP compared with the normal subjects. B, Gray matter volumes as a function of pain duration, after correcting for age and gender. Individual control subjects are shown at pain duration = 0. nuCBP and non-nuCBP CBP patient data are presented separately. The horizontal line is the mean volume for controls. Individual whole-brain gray matter volumes in CBP subjects are all below the mean volume for controls. Group-averaged gray matter volumes (mean ± SEM) are shown in the right bar graph, before (top) and after (bottom) correcting for age and gender. Lines are best linear fits for each group.

Apkarian et al. Chronic back pain is associated with decreased prefrontal thalamic and gray matter density. Journal of Neuroscience, 2004

Co-existing Central Pain Disorders with Pelvic Pain

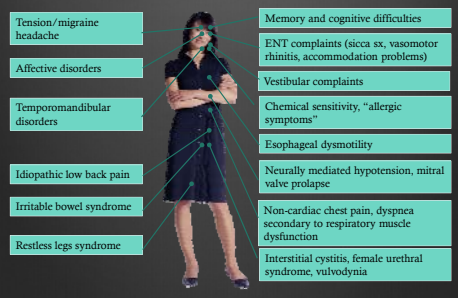
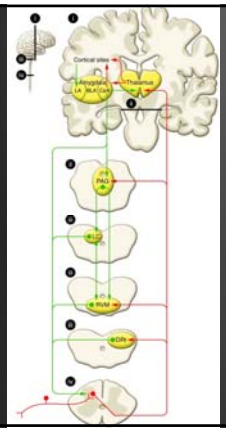


Diagram adapted from:
Clauw DJ. "Chapter 26: Fibromyalgia" in Bonica's Management of Pain. 4th edition. Lippincott Williams & Wilkins. 2010



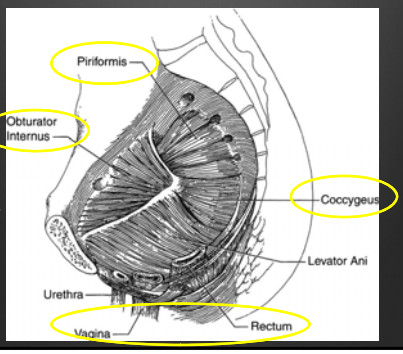
Pain Transmission– ascending and descending pathways → targets for treatment

http://www.u.arizona.edu/~michaelo/

Discussion Outline

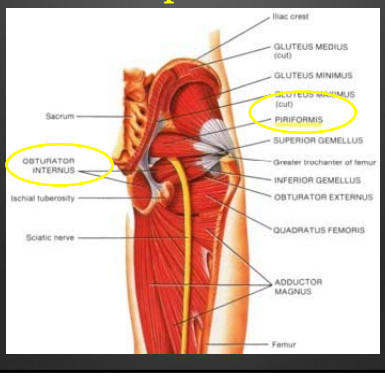
- Pain terminology
- Pain history – what questions to ask beyond the pelvis
- Pelvic pain questionnaires
- Physical examination
- Case discussions to illustrate a pain management perspective to evaluating and treating pelvic pain
- Multidisciplinary and multimodal management

Some Anatomy – Pelvic Muscles

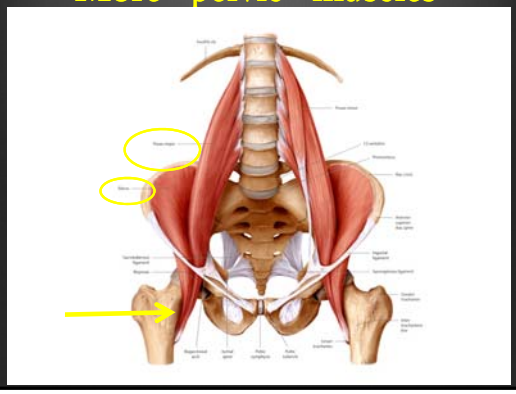


Gyang A et al. Musculoskeletal causes of chronic pelvic pain: what a gynecologist should know. OB & Gyn 2013

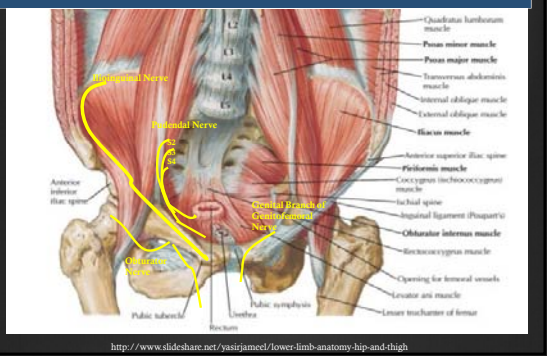
And more "pelvic" muscles



More "pelvic" muscles

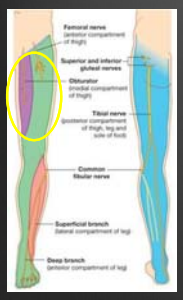


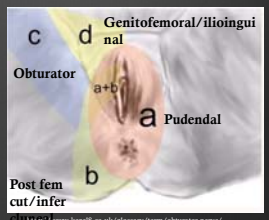
Muscles and Nerves of the Pelvis



http://www.slideshare.net/yasirjameel/lower-limb-anatomy-hip-and-thigh

Sensory Distribution





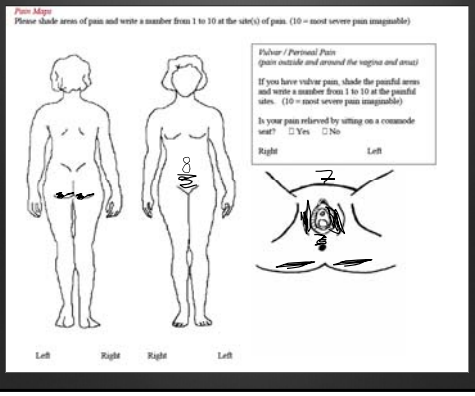
http://www.kegel8.co.uk/glossary/term/obturator-nerve/

History – Questions to Ask

- OPQRST
- Function
- GYN
- Urinary
- GI
- Musculoskeletal
- Psychological history

www.iasp.org

Pelvic Pain Questionnaires



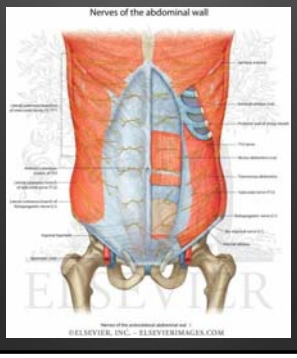
Physical Exam Highlights

- Have the patient point to where she thinks the pain "comes from" and focus on examining that area
- If history accurate enough then vaginal exam not always necessary → rely on OB/GYN colleagues to detect any abnormalities
- Skin exam (surgical scars)
- Sensory exam (?allodynia, ?numbness, etc.)
- Musculoskeletal exam including strength testing and joint range of motion and palpation of lower back and muscles
  - Don't forget a hip exam…

Case 1 – Endometriosis

- 37 G2P1 miscarried and trying to conceive with endometriosis and cyclical pain but also pain throughout her cycle. Has had frequent ED visits for acute pain.
- Pain better on OCPs and no pain during pregnancy
- No vaginal pain, no GI symptoms
- Physical exam with abdominal wall tender points lateral to rectus muscle on the left ~ T11 and T12
- How to manage?

Abdominal Cutaneous Nerves



Abdominal Cutaneous Nerve Entrapment (ACNES)? A diagnosis to always consider

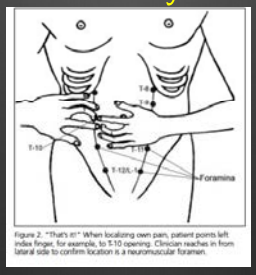


Figure 2. "That's it!" When localizing own pain, patient points left index finger, for example, to T-10 opening. Clinician reaches in from lateral side to confirm location is a neuromuscular foramen.

Image from: Appelgate WB. Abdominal Cutaneous Nerve Entrapment Syndrome (ACNES): a commonly overlooked cause of abdominal pain. The Permanente Journal 2001.

Anterior Cutaneous Nerve Entrapment (ACNES)

- Frequently missed diagnosis in patients with heavily worked-up GI and pelvic pain
- Can be a result of another primary pain problem such as endometriosis or from weight loss, weight gain, abdominal wall contraction 2/2 pain, or simply idiopathic…
- Often a missed diagnosis in the pediatric population
- Diagnostic nerve block simple and safe diagnostic tool and potentially therapeutic (with steroid…). Pending results could consider radiofrequency lesioning
- Combine with pelvic PT, myofascial relaxation, lidoderm patches
- Surgical neurectomy successful for refractory cases…

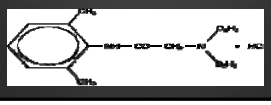
- Boelens OB et al. Randomized clinical trial of trigger point infiltration with lidocaine to diagnose anterior cutaneous nerve entrapment syndrome. Br J Surgery 2013
- Boelens OB et al. A double-blind, randomized, controlled trial on surgery for chronic abdominal pain due to anterior cutaneous nerve entrapment syndrome Ann Surg 2013

Centralized pain?

- Endometriosis can cause a generalized neuropathic pain syndrome; direct infiltration of nerves by ectopic implants
- Constant pain signaling can lead to central sensitization
- Identify strategies to break the pain signaling cycle – but limited medications options while trying to get pregnant
- One option (if not pregnant): Intravenous lidocaine at time of maximal pain
- Cross-over trial in 18 women…

So what about intravenous lidocaine?

- Old, cheap drug beneficial in neuropathic pain conditions, fibromyalgia
- Short half-life but beneficial effects persist beyond drug half-life (likely 2/2 inhibition of perpetuation of pain signaling, "pain reset)
- Pfizer Fellowship in Pain Medicine to study effect of IV lidocaine on endometriosis pain at BWH
- Cross-over trial (benadryl as active placebo)
- Administered around menses



Case 2 – Interstitial Cystitis

- 22F with interstitial cystitis with severe, constant, debilitating pelvic pain
- Has been on escalating doses of oxycodone 60-80mg/day and diazepam 5mg TID; recent dilaudid after laparoscopic surgery *(negative for pathology)*
- Unable to go back to nursing school
- Lies in bed most of the time in terrible pain
- How to proceed??

Opioid-induced Hyperalgesia? Chemical Coping?

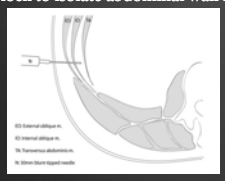
- Opioid-induced hyperalgesia is a well-studied and now widely accepted phenomenon, compounded by tolerance and decreased opioid efficacy; dose at which this can occur not determined – case-dependent
- This patient is quite young to be on such high doses of medications
- Intensive coordination with primary care, psychology/psychiatry for additional probing and coping mechanisms, and possibly pharmacist to help with a wean is warranted

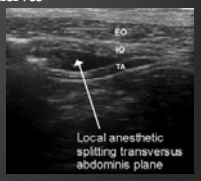
Case 3 – LLQ pain

- 29F > 12 months post-partum with chronic LLQ that started after c-section
- Complicated c-section course (perforated bladder, large blood loss)
- Noticed pain immediately after awakening from GA
- Unable to work. Has trouble taking care of child. Completely run down by the pain.
- Has had extensive GI and GYN work-up. Scheduled for laparoscopic surgery despite no clear suspicion for endometriosis or other clear gyn pathology…
- Exam significant for LLQ pin-point pain lateral to c-section scar, + allodynia

ACNES? Neuroma? Neuralgia? Nerve Injury?

- Goal is to differentiate abdominal wall pathology versus intraabdominal or intrapelvic pathology
- Consider trigger point/nerve block to abdomen at point of maximal pain versus transversus abdominis plane nerve block to isolate abdominal wall nerves





http://pie.med.utoronto.ca/OBAnesthesia/OBAnesthesia_content/OBA_blocks_module.html

Case 4 – Interstitial Cystitis

- 73F who since her teenage years has had extreme bladder pain, urinates > 50 times per day
- Pain radiates to vagina and rectum; describes as burning and spasm pain
- Unable to sit down, often drives on a bed pan to help relieve pressure off of her vagina and rectum
- Has thoughts of not living any more
- Has asked a urologist to take out her bladder

Complex, Centralized Pain with Neuropathic and Myofascial components

- Multimodal approach needed
- Medication management (oral agents +/- suppositories)
- Injection management for pelvic floor spasm – consider obturator internus muscle injection; Pudendal nerve blocks
- Psychological care
- Relaxation techniques
- Pelvic floor physical therapy??
- Urologic care
- Support Group…

Does meditation really work?

YES!

Meditation helps to separate the sensation of pain from the thoughts about pain.

Functional Magnetic Resonance Imaging (fMRI) can identify areas in the brain that influence a patient's pain perception. This 2011 study demonstrated that after four-days of mindfulness meditation training, meditating in the presence of noxious (painful) stimulation significantly reduced pain-unpleasantness by 57% and pain-intensity ratings by 40% when compared to rest. fMRI images further illustrate how meditation deactivates pain signaling and activates pain modulating centers in the brain that help to decrease pain.

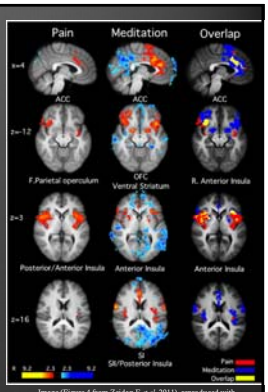


Image (Figure 4 from Zeidan F *et al.* 2011) reproduced with written permission from Dr. Fadel Zeidan, Wake Forrest School of Medicine
Zeidan F.*et al.* J Neurosci. 2011; 31(14):5540-8.

Case 5 – Groin/pelvic pain

- 35F with h/o IC s/p multiple injection therapies now self-catheterizes, s/p hysterectomy for dysmennorhea, with left groin pain radiating to pelvis and inner leg
- Physical exam: diffuse suprapubic tenderness, surgical scars without allodynia and well-healed, vaginal trigger points, left groin pain with abduction and flexion of hip, generalized left groin pain with palpation
- How do you proceed? Consider diagnostic nerve block or hip injection versus MRI versus MR arthrogram?

Dermatomes around the hip and pelvis – pain referral patterns

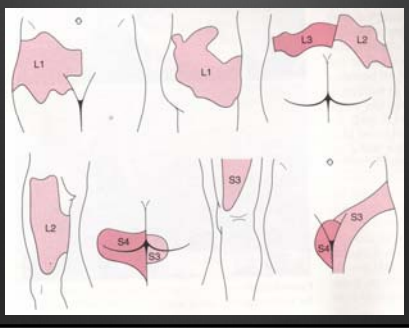


Image courtesy of Dr. Joanne Borg-Stein

Musculoskeletal Considerations in Pelvic Pain

Muscular
- Pelvic floor muscle spasm
- Abdominal wall myofascial pain (trigger point)
- Muscular strains and sprains
- Rectus tendon strain
- Faulty or poor posture

Skeletal
- Compression of lumbar vertebrae
- Early articular hip disorders
- Acetabular labral tears
- Developmental hip dysplasia
- Hip osteoarthritis
- Low back pain
- Neoplasia of the spinal cord or sacral nerve
- Spondylosis
- Degenerative joint disease
- Fibromyalgia
- Chronic coccygeal pain
- Femoral acetabular impingement

Others
- Hernias: ventral, inguinal, femoral, spigelian
- Neuralagia of iliohypogastric, ilioinguinal, or genitofemoral

Gyang A et al. Musculoskeletal causes of chronic pelvic pain: what a gynecologist should know. OB & Gyn 2013

Consider Obturator Nerve Block

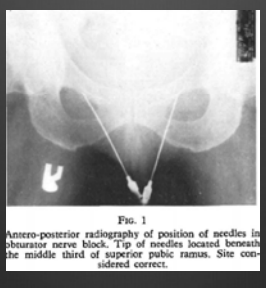


FIG. 1

Antero-posterior radiography of position of needles in obturator nerve block. Tip of needles located beneath the middle third of superior pubic ramus. Site considered correct.

Br J Anaesthesia 1969

Case 6 – Vaginal Pain

- 48 female with Hep C with worsening left-sided vaginal/perineal pain over the last years
- Pain started without any clear preceding event; not avid cyclist
- Denied any particular stressors or abuse at the time of her worsening pain
- Extensive work-up has been negative
- Pain affects her work and personal relationships

How to proceed in treating her vaginal pain?

- Good history and physical exam
- Vaginal exam to look for trigger points
- Consider multi-modal approach:
  - Pelvic floor spasm? Consider pelvic floor muscle injections
  - ?Pudendal neuralgia? Consider diagnostic nerve block
  - ?Radiates into medial thigh? Obturator nerve injection?
  - Vaginal trigger points and spasm? Consider suppository anti-spasmodics (e.g. diazepam 5mg PV BID) or vaginal trigger point injections
  - Neuropathic meds (eg gabapentin, pregabalin, TCA)
  - Behavioral modifications
  - **Pelvic PT**

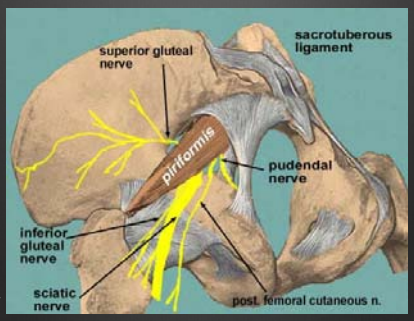
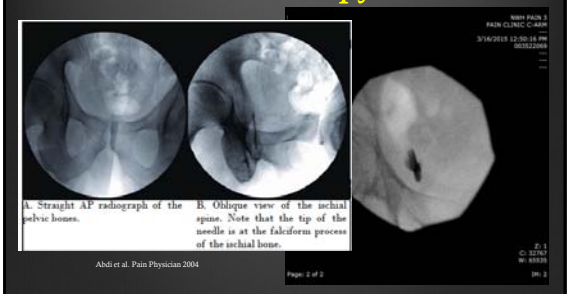


Image courtesy of Dr. Joanne Borg-stein

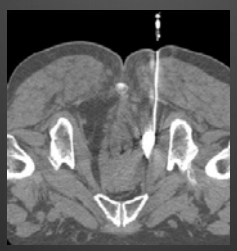
Pudendal Nerve Block with Fluoroscopy



A. Straight AP radiograph of the pelvic bones. B. Oblique view of the ischial spine. Note that the tip of the needle is at the falciform process of the ischial bone.

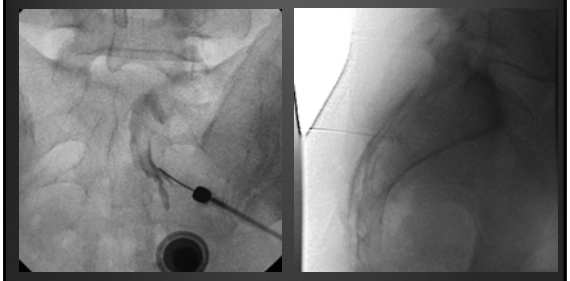
Abdi et al. Pain Physician 2004

Pulsed Radiofrequency Lesioning



Masala *et al.* 2014

Transforaminal S2-3-4 Injection

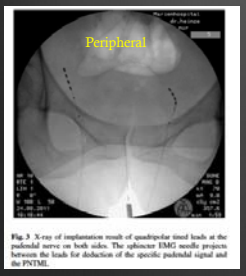


http://radiopaedia.org/cases/s2-nerve-root-block

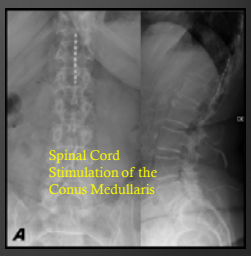
Case 7 – Post-vaginal Mesh Chronic Neuropathic Pain

- 35F G2P2 with mild urinary stress incontinence underwent vaginal sling with vaginal mesh
- Immediately after surgery awoke with severe vaginal pain radiating to inner and posterior thighs
- Missing work, significant depression and anxiety developed, Marriage to wife falling apart, 11 year old daughter demonstrating somatization/pain behaviors
- Has tried multiple neuropathic medications with minimal relief
- Mesh removed with minimal improvement > 2 years after surgery but pain remained; vaginal injections brief relief

Spinal cord stimulator? Pudendal/peripheral stimulator?



Heinze *et al.* 2014



Buffenoir *et al.* 2015

Multidisciplinary Management

- **GYN** – hormonal therapies, family planning, surgical evaluation, etc.
- **Medications** – anti-inflammatories (NSAIDs, acetaminophen), antispasmodics (PO or PV/PR), neuropathic agents, anxiolytics, antidepressants, topical agents (lidoderm patch), suppositories, GI and GU medications …….. Opioids…..
- **Interventional Techniques** – diagnostic and therapeutic; ?Role of peripheral/spinal nerve stimulator implantations?
- **Psychological Care, Behavioral Management, Coping Strategies**
- **Pelvic Floor and Musculoskeletal Physical Therapy**
- **Non-pharmacologic therapies**: biofeedback, acupuncture, Reiki, relaxation techniques, meditation
- **Other provider consults** (urologist, gastroenterologist, physiatrist, etc.)
- **Support groups** (online media, in person)

Thank you!

- Any questions? abarreveld@partners.org

Image by: katerina eremeeva