Bladder Pain Syndrome IC/BPS

SPRING 2023

This may be for some of you the first time you have ever heard about BPS.
And then you might be asking yourself
“ How does this possibly relate to orthopedics?”
“How could I possibly HELP, I’m an ortho specialist?”

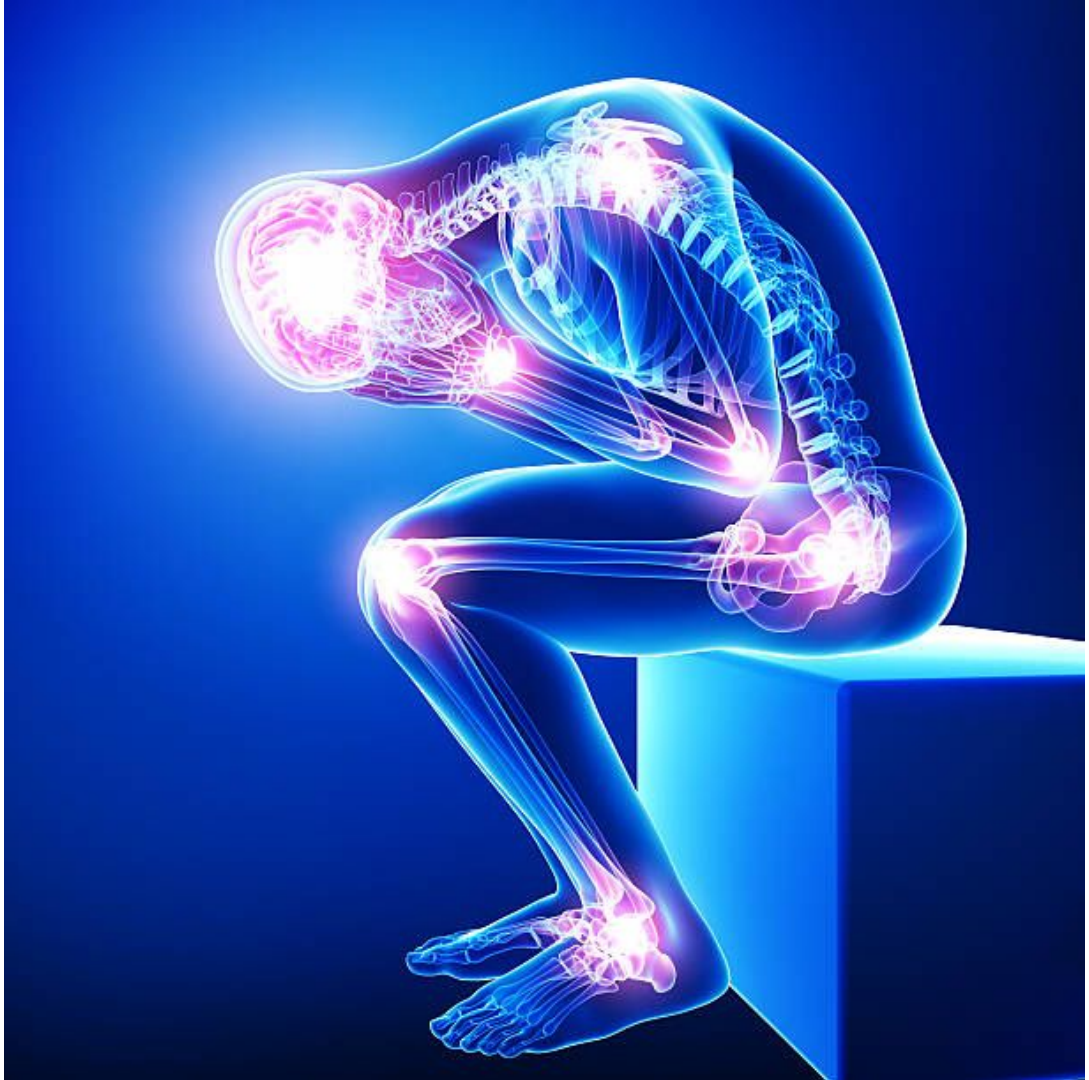
What exactly is BPS?

I think that the FIRST thing we need to discuss is that each and everyone one of us treat PAIN

BUT WHAT EXACTLY IS PAIN?

Well, you may feel more comfortable with pain from injury, or post surgical pain, or garden variety MSK pain.

BUT I AM HERE TO TELL YOU THAT EVERYONE HAS PAIN, AND THAT WE NEED TO BE CHANGING THE NARRATIVE ON HOW WE THINK AND APPROACH PAIN.

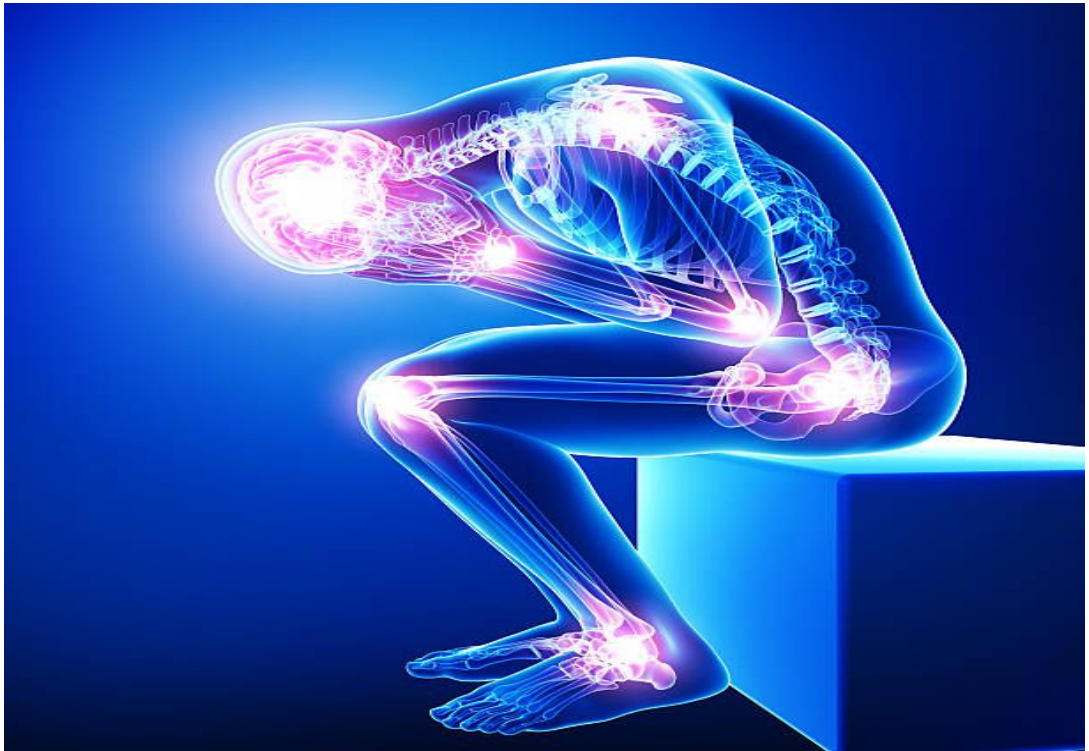


It is very important to BRIEFLY review what we all in the room are up against, when we are coming face to face with our patients who are in pain, whether it is a great deal of pain, or tolerable pain.

PAIN is COMPLEX can be broken up into 2 very specific categories; and we MUST address BOTH: PERIPHERAL PAIN AND CENTRAL PAIN.

BUT FIRST LETS TOUCH ON an UNDERSTANDING OF PAIN

And our patients often have BOTH PERIPHERAL AND CENTRAL pain.



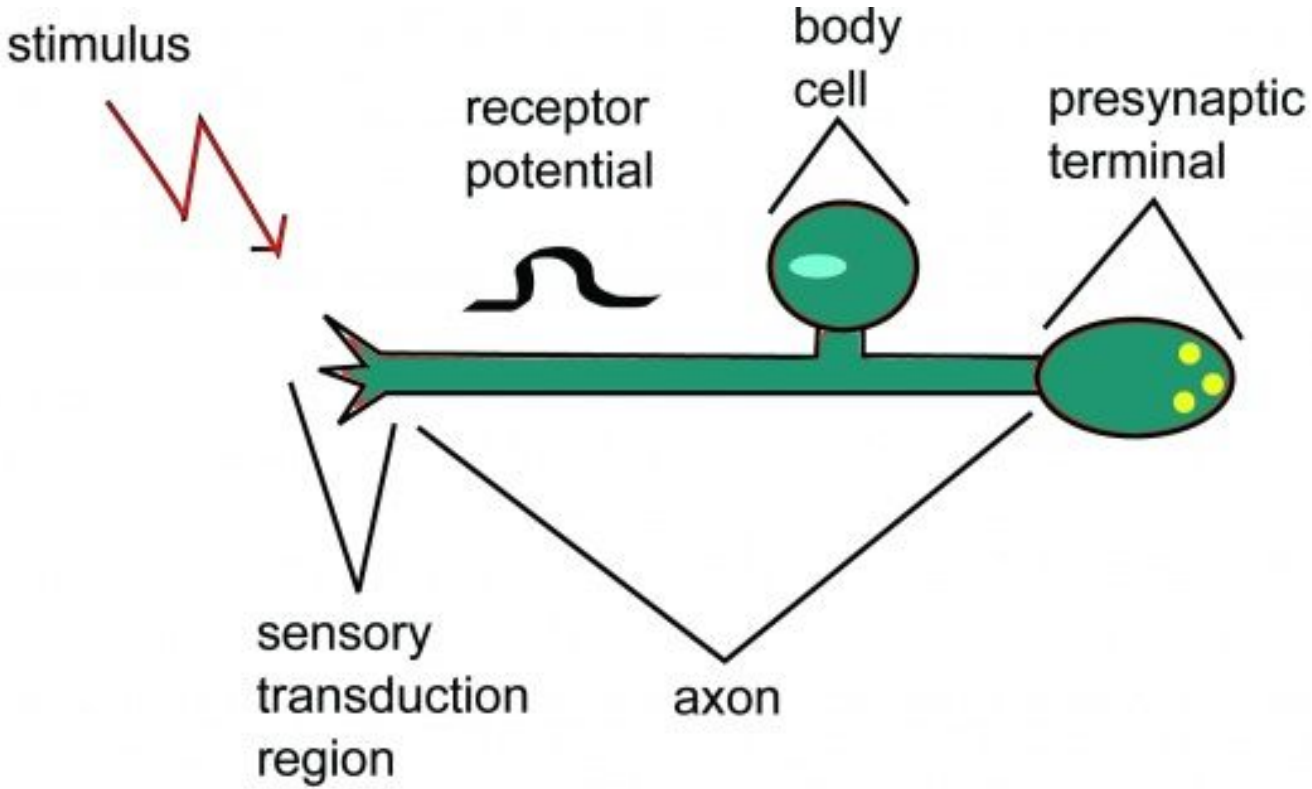
NOCICEPTION VERSUS PAIN

Nociception is your bodys “danger scouts”

Nociceptors report intense MECHANICAL, CHEMICAL OR THERMAL stimuli (through primary AFFERENT neurons)

REMEMBER A-FFERNET GO TO BRAIN E-FFERENT AWAY

It is mediated by BOTH central and peripheral nervous system, thoughts, beliefs, expectations and behaviors



Schematic drawing of nociceptor showing the four regions of the cell

PAIN

Unpleasant sensory or emotional experience associated with ACTUAL or POTENTIAL tissue damage

And it is mediated by EVERYTHING (internal and external)

And then there is this IDEA of CATEGORIZING PAIN rather than blanket lumping PAIN patients all together in a slurry.

Some BASKETS of PAIN:

Emotional stress (this could be from external circumstances: eg going through divorce

Psychological stress eg. patient shame and guilt, OR cued triggers (verbal/visual etc)

TRAUMA eg physical to the area or ASSAULT

Autoimmune MSK DYSFUNCTION

COMORBIDITY (patient has diagnosed Crohns/IBS/endo etc)

THERE ARE A LOT OF BASKETS

When you are able to get your patient in the right basket/baskets

You will deepen your trust and your relationship with your patient, all the while, building a stellar referal network to manage patient care and expectations…..

WHO HERE FEELS LIKE OUR PATIENTS THERAPISTS?

So heres the break down a little further:

1.NOCICEPTION

Brought on by POTENTIAL TISSUE insult

The cause is NOXIOUS STIMULI in peripheries

MAINTAINED by noxious stimuli

And it is TRANSIENT

2.INFLAMMATORY PAIN

Gives brain/tissue input on TISSUES HEALING

BROUGHT ON by pro-inflammatory markers and chemical with the tissue injury, pathogens, nutriotional issues and microbiome

PERPETUATED BY CONTINOUS NOXIOUS STIMULI

INFLAMMATIONS REMAINS along as tissue hypersensitivity lasts which can be swelling, redness, pain and itching

3.NEUROPATHIC

THIS pain is

Presumed NERVE injury

Maintained by increased excitability of NOCICEPTORS and/or the DORSAL HORN

Spontaneous pain, electrical shock, dysesthesia, numbness and tingling

4. FUNCTIONAL PAIN

Creates limited activity due to fear of pain

Could have relationships with recurrent infections, diet, sex, heightened nervous system from trauma (current or past)

Increased excitability of nociceptors, DORSAL HORN NEURONS, organ cross talk

Pain with bladder or bowel filling, emptying, digestion and intercourse

Now there will CERTAINLY be overlap between these categories, BUT when we are able to change how we view our patients pain, we may be able to better serve them.

So now with that review. Lets get swimming into BPS

BLADDER PAIN SYNDROME

Bladder pain syndrome, or here in the US “Painful Bladder Syndrome” is:

Pelvic pain, pressure or discomfort lasting >6 weeks or months

Worsens with bladder filling,

eases with emptying

persistent urge or increased urinary frequency without identified bladder or urethral infection

(ESSIC 2008, Fall et al. 2010; Engeler et al. 2014, Hanno et al, 2015)

Sensations of BPS can be: ANY PAIN located in the pelvis: stabbing, cramping, burning, throbbing spasming, etc

PLEASE KEEP IN MIND the complexity of the PELVIS and the vicera/tendon/ligament/fascia that is found withing the pelvic girdle.

This can seem overwhelming, but it is foundational to treating BPS.

Bladder Pain Syndrome is the name that has most recently been recommended INSTEAD of IC;

the diagnosis of Interstitial Cystitis is for those who have diagnosed HUNNER'S LESIONS and are SYMPTOMATIC.

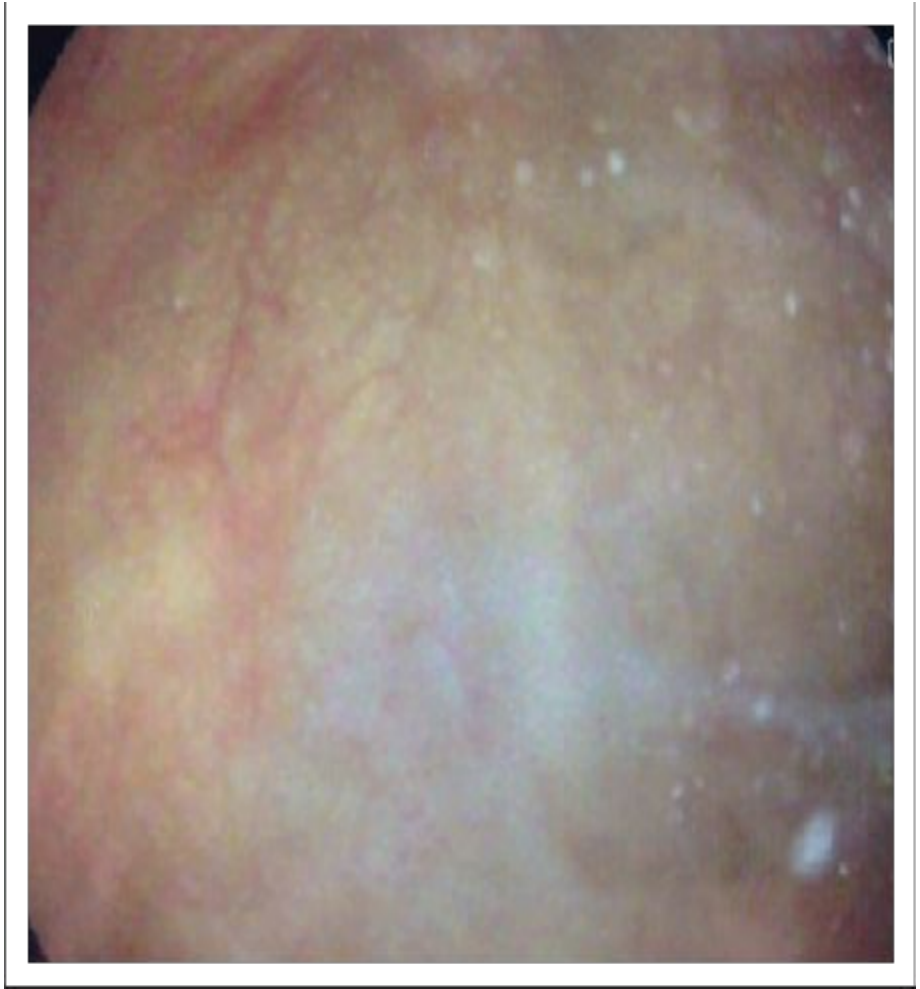
Now you will be seeing IC/BPS as research has been coming out, all research is being lumped together .

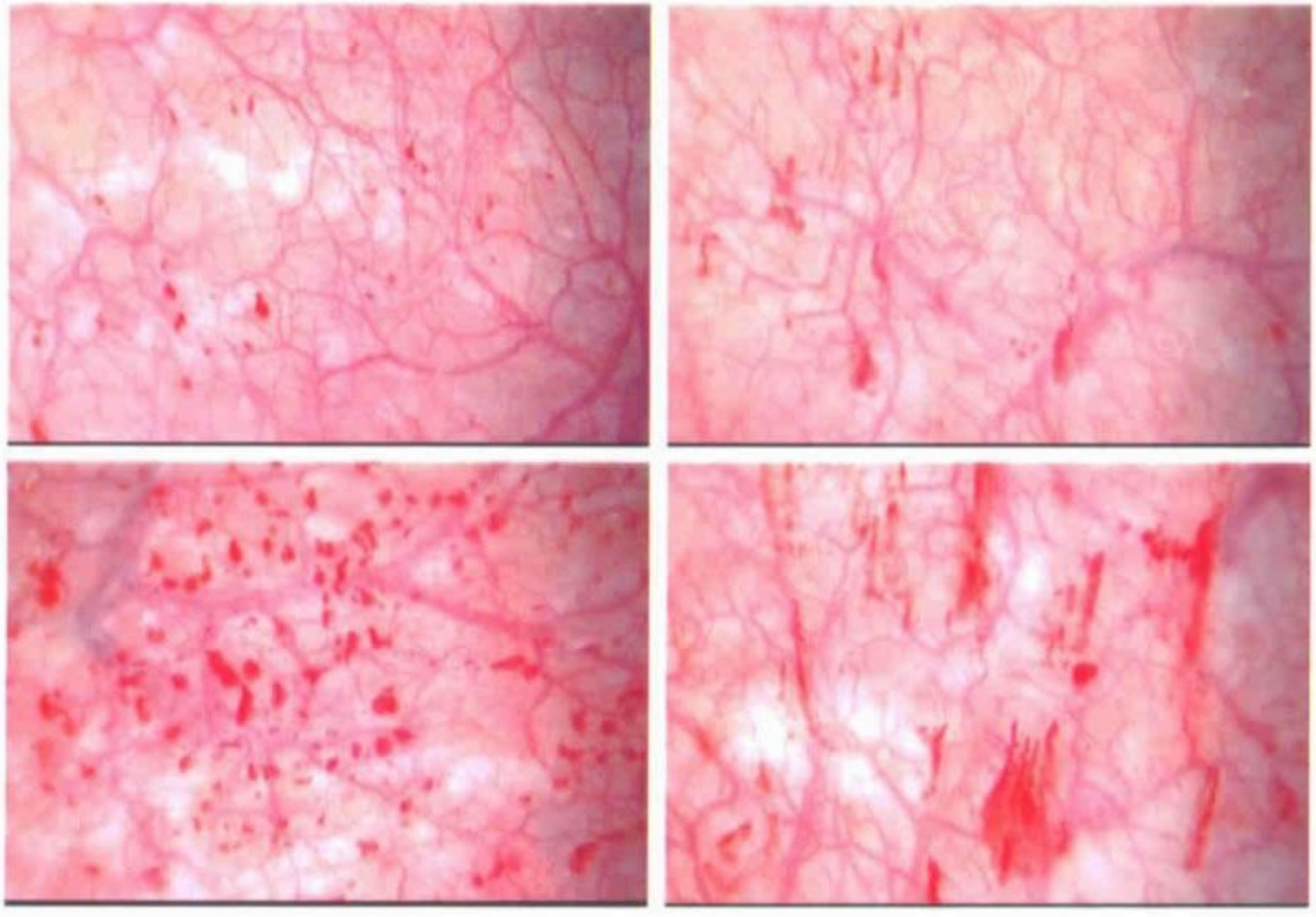
Originally for years, pain in the bladder was given that somewhat generic diagnosis of IC. We know now that bladders can have or cannot have HUNNER'S LESIONS and can be possibly non infected or INFECTED, and symptomatic.

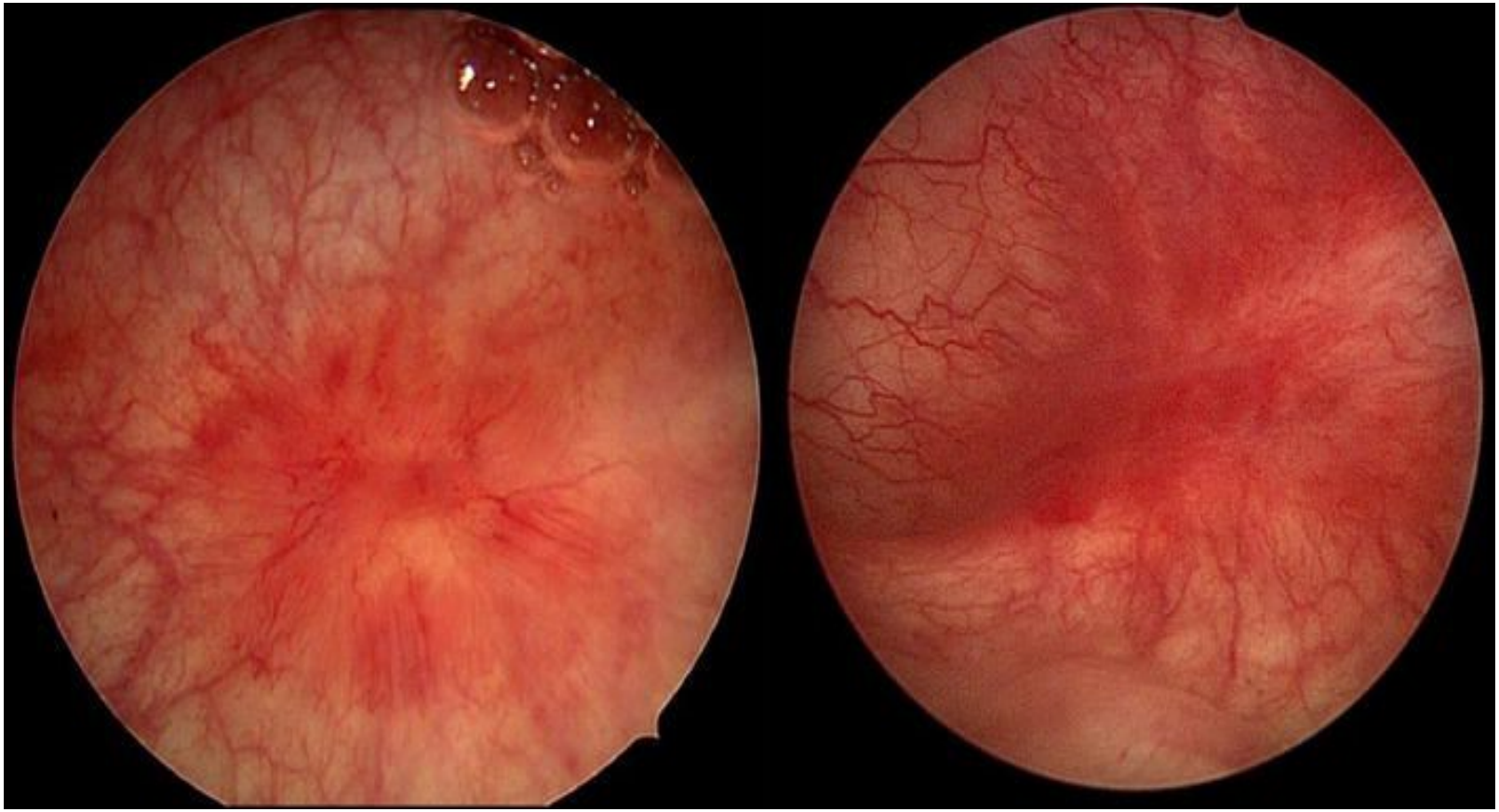
So NO HUNNERS LESIONS=SYMPTOMATIC

ACTIVE HUNNERS LESIONS= ASYMPTOMATIC OR SYMPTOMATIC

healthy







Pathophysiology of BPS

There is an initial insult to the area: can be the bladder or not

As a result to the initial insult we see a developing: CENTRAL Sensitization

INFLAMMATORY NEUROLOGICAL AND ENDOCRINE CHANGES

AUTOIMMUNE DISORDERS

Now you will be seeing it called “ IC/BPS” as research has been coming out, most of the research is being lumped together . So for sake of medical research studies, unless it is a TRUE diagnosis of IC, it will be seen as either IC/BPS or simply BPS.

Bladder Pain Syndrome is more than infection

AS I have noted before Hunners Lesions are not something that is seen regularly in uorlogical clinic, but they can also be seen in ASYMPTOMATIC bladders.

When we see BPS in clinic, it is very RARE that they are diagnosed with IC/BPS but what we DO see in clinic, based on this criteria:

From the first slide:

Pelvic pain, pressure or discomfort lasting >6 weeks or months

Worsens with bladder filling, eases with emptying, persistent urge or increased urinary frequency without identified bladder or urethral infection (ESSIC 2008, Fall et al. 2010; Engeler et al. 2014, Hanno et al, 2015)

So based on the most recent criteria, that leaves a HUGE field of patients that could potentially fall into the BPS diagnosis

SOME EXAMPLES:

Eg. of common chief complaints in patients:

Vulvodynia

Complex Pelvic Pain

Vaginismus

Levator Ani Syndrome

Urgency-Frequency Syndrome

Dyspareunia

Chronic Prostatits

URGENCY

IC

Persistent Genital Arousal Disorder

Clitorodynia

Vestibulodynia

Hard Flaccid Syndrome

Penile/Testicular Pain Syndrome

PROLAPSE

How does this relate to MY/or better YOUR field of specialty? It may not

BUT many, if not all of these patients that have BPS, have a MECHANICAL/MSK component to them….and you must also ask: HOW ARE THEY AS A WHOLE?

We DO THAT!

And that’s a way in which we can help them move out of pain

This is a HUGE group of patients.

The first thing to think about : It is a diagnosis of EXCLUSION. (eg. like FIBRO) Nickel et al. 2005

What does that mean? The urologist/urogyn/GI must RULE EVERYTHING ELSE OUT.

this takes ON AVERAGE 7 years to get the diagnosis of BPS.

The patient has been through the pipeline of PCP’s, GYN’s , Urologists, DERMATOLOGISTS, PAIN doctors etc…..HOW FRUSTRATING for them!

In FEMALE patients the pelvic floor has THREE holes

Those are THREE SPECIALISTS, that they will have been to.

MALE 2. And MOST of the time thse doctors AREN’T TALKING to one another, or they simpy say there is nothing wrong with your patient.

NOTE: If you get a self diagnosed patient, make sure that they ARE meeting the criteria for BPS, and that you have good medical referals for them to cut the line and get a proper EVALUATION to rule out CANCER, and other things.

There will be concurrent issues with BPS, SO

Keep your EYES open: noticing other symptoms and systems in involved

Keep your EARS open: Your patient is telling you how you can treat them and what they may need

Keep your mind open: Just because your a back and neck person doesn’t mean that you can’t apply the MSK treatments unsuccesfully to pelvic floor issues such as BPS

AND if you’ve ever worked with patients who have CRPS (which BPS acts like) you know that it isn’t so simple to get results

You are already equipped to treat these desperate patients using EA, DN, TCM. and all the other acupuncture systems and SOFT TISSUE work.

WHO?

So now we know the what and a little bit more…who gets BPS?

We know:

Patients in there 20’s through 60’s

Ties into visceral issues (also possible reproductive issues, sexual encounters, UTIS) etc

You are more likely to get it if you are a woman

10:1 F:M

0.5-30% Can get it, or better yet have “reported urinary pain/pelvic pain”

SOOOO

This is a HUGE issue

and where are these patients?

Why aren’t we seeing these patients in and out every day in our clinics?

Let me explain…

We want to make sure that we are treating appropriately and based on the ENTIRE person.

If your patient has NOT ONLY BPS, but pain elsewhere, we know that what we do helps mediate pain and actually can effectively work to improve our patients quality of life.

Pathophysiology

There is an initial insult to the area: can be the bladder or not

As a result to the initial insult we see a developing: CENTRAL Sensitization

INFLAMMATORY NEUROLOGICAL AND ENDOCRINE CHANGES

AUTOIMMUNE DISORDERS

Patho continued….

Actual changes to the Glycosaminoglycan layer (GAG) which is chronically inflammed and contributing to urine changes (actually turning the urine TOXIC)

This GAG layer is like a slippery surface (like your intestines)

ALSO GLOMURELATIONS (also HUNNERS Lesions)

We also see an UPregulation of C-FIBER AFFERENTS when the GAG layer is impacted

WIKI: **Group C nerve fibers** are one of three classes of nerve fiber in the central nervous system (CNS) and peripheral nervous system (PNS). The C group fibers are unmyelinated and have a small diameter and low conduction velocity, whereas Groups A and B are myelinated. Group C fibers include postganglionic fibers in the autonomic nervous system (ANS), and nerve fibers at the dorsal roots (IV fiber). These fibers carry sensory information.

Damage or injury to nerve fibers causes neuropathic pain.

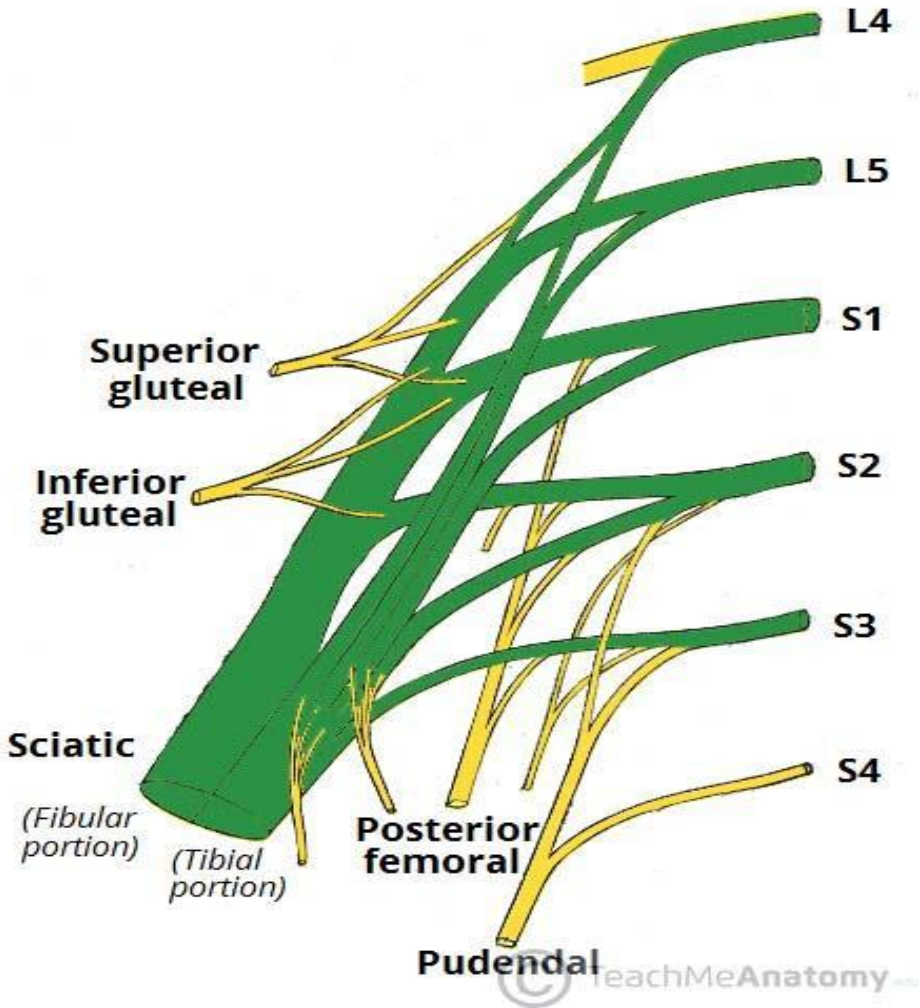
PATHWAY FROM THE PERIPHERAL TO CENTRAL

SO THE SACRAL plexes is insulted as well

Some cases PERSISTENT infection that is resistant (these are your patients who have been on loads of antibiotics- but it isn’t enough!)

Pelvic FLOOR MUSCLE Dysfunction

Sacral Plexus



When the GAG Layer (glycosaminoglycan layer) is assaulted by pathogens and inflammation, you can start to see the lining gets worn and holes in it allowing this toxic urine to irritate the actually deeper layers of the urothelium and SUB/urothelium which in turn ACTIVATE C-fibers….= EXTREME PAIN nagging and stabbing pain

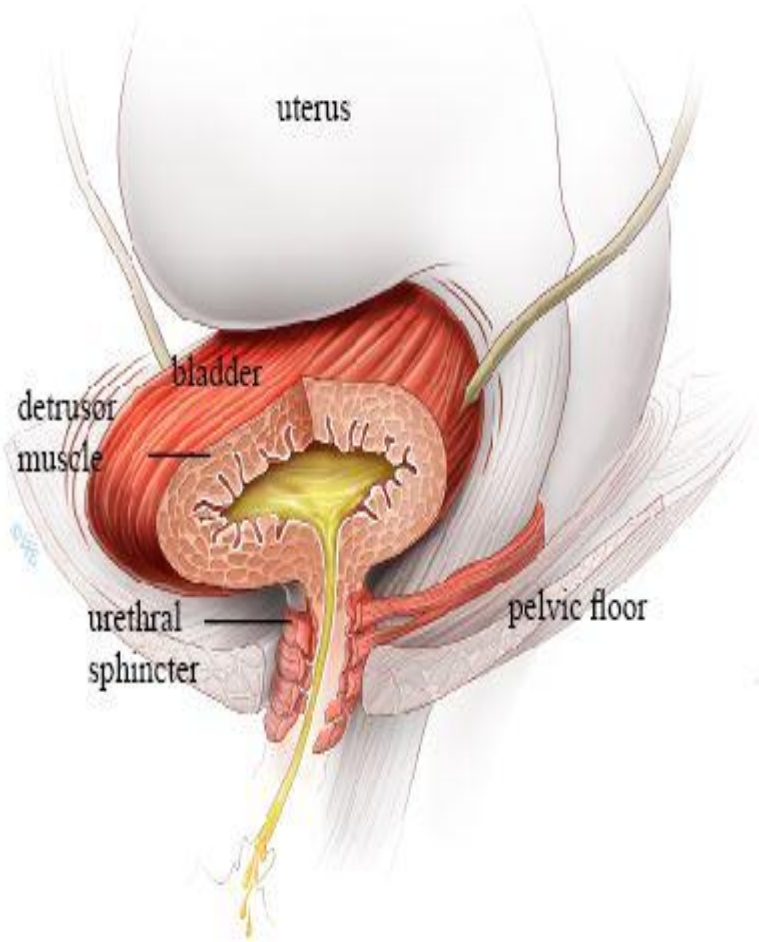
And if you think about the bladder like a water balloon, there are MORE of these receptors (TRPV 1 sensory receptors) that stimulate the C-fibers found near the urethral aperture (trigone) than at the dome of the bladder (this makes sense)

THERE IS A LOT going on….

Lets PAUSE for one moment and talk about one of the most important MUSCLES you may not have heard of: let alone muscle of the bladder

THE DETRUSOR muscle.

Detrusor


uterus
bladder
detrusor
muscle
urethral
sphincter
pelvic floor

If you have an inflammatory ANGRY insult to the INSIDE of the bladder (the lining) then it is ALSO sending feed back to the “outside of the bladder” involving the detrusor.

The bladder, when filling WITHOUT lining inflammation, will in a healthy manner fill and expanding hit a critical point where it signals to the brain that it needs to empty. Thus, engaging the detrusor to help assist in a “ gentle squeezing” of the bladder itself to ensure that the urine is entirely expelled out through the urethra.

Now lets pretend that you have a patient with an angry THICK INFLAMMED inner bladder wall

(in a persistent state) the detrusor gets activated prematurely and thus applies OUTSIDE forces (and a constant squeezing) on the bladder itself. So TWO opposing forces: one acting pushes inward and constricting the organ, one acting as swollen angry irritated on the inside to outside force. This is an extremely ANXIOUS and unhappy bladder.

We also know that people who produce more cortisol and adrenaline, SYMPATHETICALLY driven nervous system there will be a CONCURRENT INCREASE in the level of inflammation at the bladder.

Remember the importance

Autonomic Issues:

Myofascial Pelvic Pain - Autonomic Neuropathy (we see this in CRPS!)

Sympathetic Vascular Dysfunction creating LOCAL muscle disorders (swelling and edema since cannot achieve full ROM)

BPS- Diminished Vagal Nerve Function (Vagus nerve = main nerve provides Parasympathetic activity to organs

Small PAG (pariaquaductal gray area in the brain= organising descending inhibition response) If it was working effectively it would be BIGGER

Viceral Overflow (localized nerves share organ function/actual viscera with muscles of local area and local area in THE BRAIN) eg. constipation Peter Chelimsky,2017)

WHY?

Unclear actually.

Imbedded infection

SUGGESTION could be correlated with PANIC/ANXIETY disorders

Chronic Pelvic Pain, Depression, Migraine = MORE LIKELY

What do these have in common? IMMUNE function. There is thought that it may be AUTOIMMUNE? (clemens 2012,chelminsky 2017)

TREATMENT: PERIPHERAL

Work at the BIG picture while

1. Assess the entire abdomen (fascia/muscle)
2. Assess Pubic region, Pyramidalis, Rectus Abs, Obliques, TA, ADductors
3. Deep palpation to trigger pain/urgency
4. Treat what you see

The PYRAMIDALIS?!?!?!

Whats IS the PYRAMIDALIS you might ask? Can be a BIG problem

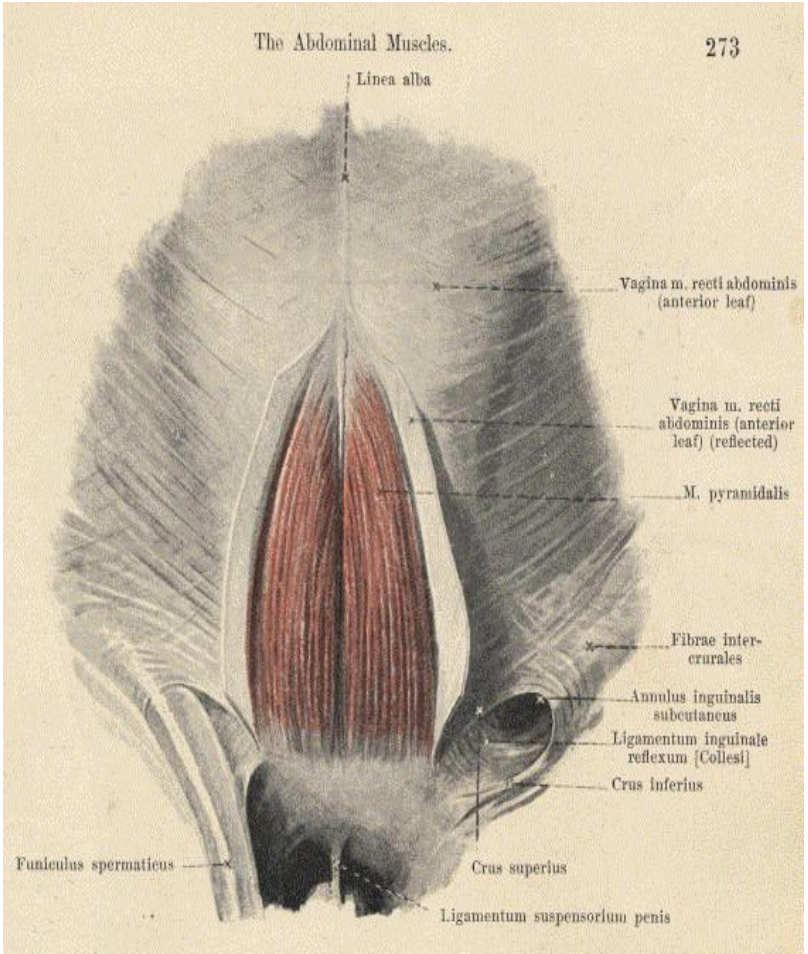
Small triangular muscles that lie just above the pubic bone on BOTH sides of the midliine withing the aponeurosis UNDER the rectus abdomenus.

It has tendinous attachments to the SUSPENSORY ligament of the PENIS.

This muscle blends into the Linea Alba halfway between the pubic symphysis and umbilicus.

There is a strong direct connection between the pyramidalis muscle and adductor longus tendon via the anterior pubic ligament, which introduces the new anatomical concept of the pyramidalis–anterior pubic ligament–adductor longus complex

Pyramidalis

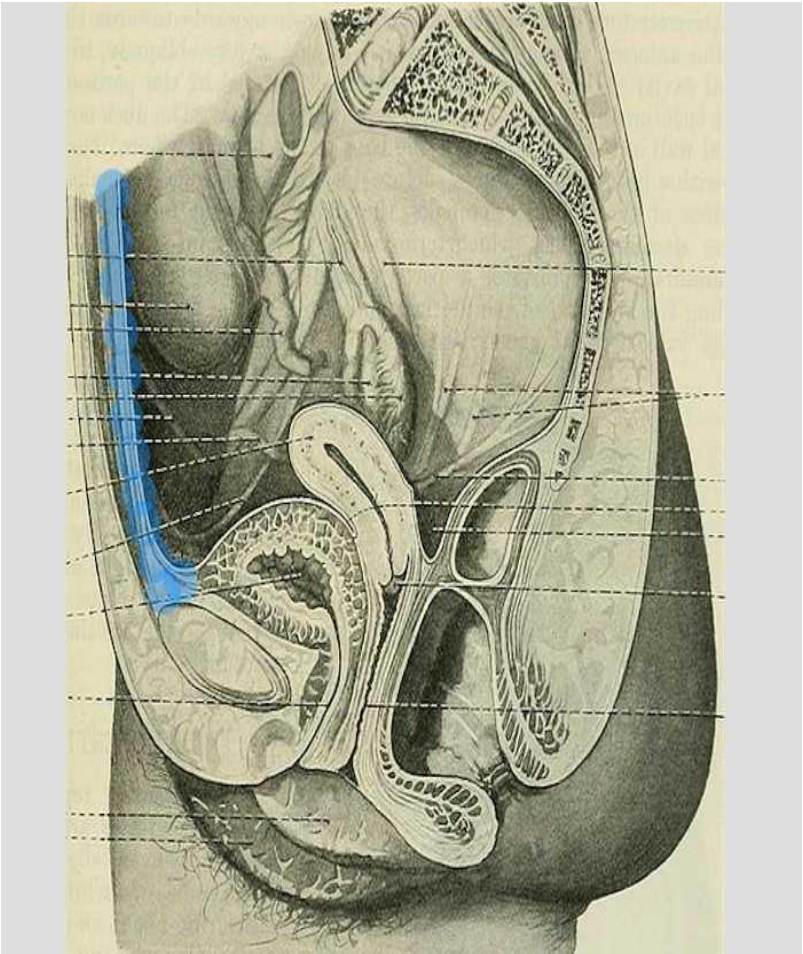


Next up

MY FAVORITE: The Urachus Ligament

Urachus ligament - attaches bladder to the umbilicus (formed from the remnants of the umbilical vein)

Urachus



RecAbs

The Rectus Abdominis makes up the top layer of your abdominal muscles, commonly referred to as your "six-pack." It is two flat and parallel muscles separated by linea alba (a connective tissue). It acts to flex the spinal column, tense the anterior wall of the abdomen and assist in compressing the contents of the abdomen.

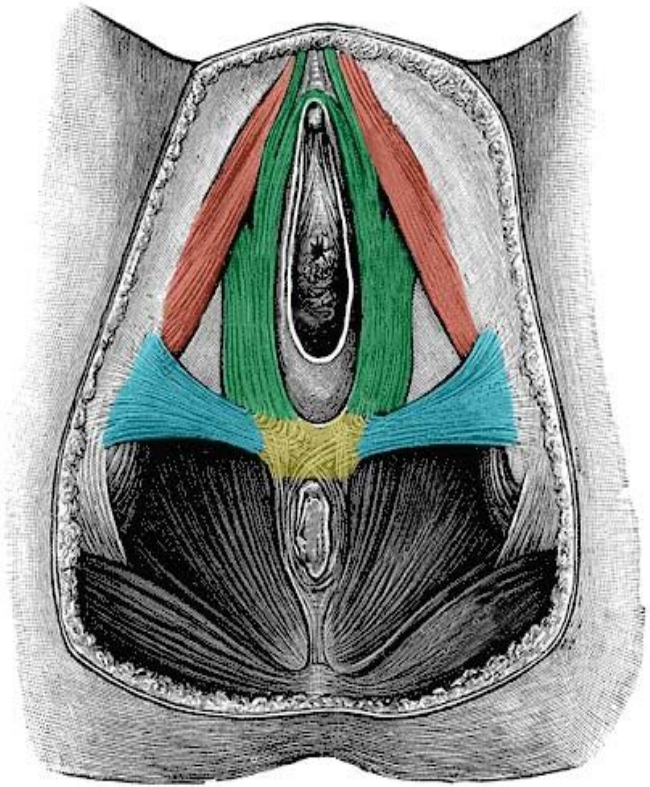
- The Rectus Sheath is a multilayered aponeurosis, being a durable, resilient, fibrous compartment that contains both the rectus abdominis muscle and the pyramidalis muscle

Revisiting the DETRUSOR:

For those of you who do Internal Med as well:

Interesting tidbit: Spasms of the DETRUSOR and URINARY SPHINCTER (you have 2: 1 internal and 1 external) muscles can lead to diarrhea and dysmenorrhea

Consider the PERINEUM



Perineal body

Ischiocavernosus

Bulbocavernosus

Transverse perineal

Consider the PELVIC FLOOR HAMMOCK

(I teach this in my FOUNDATIONS PF Class)

Now, in regards to PERIPHERAL vs. CENTRAL

The first rule to consider is that the “PAIN” may or may not be coming from “SAID SOURCE”

One thing you want to establish with your patients (and you’ll get a really great look inside their pain) is that they maintain a

BLADDER DIARY:

We need information about individual bladders

With functioning scales with urgency/ frequency columns and PAIN intensity as well as VOLUME if they are able to provide that as well.

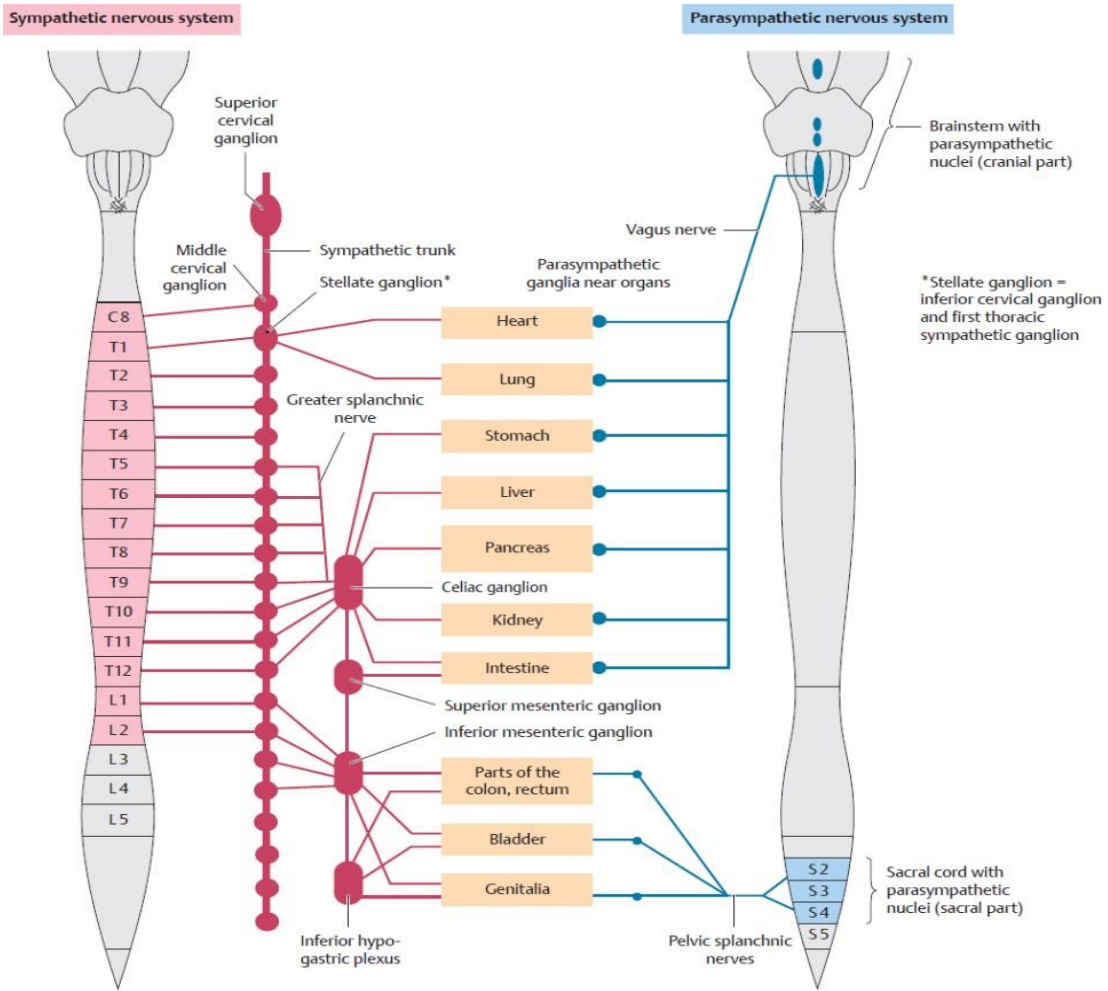
BOTH qualitative and quantitative info

Now we know that with BPS we are working with CENTRAL SENSITIZATION

We also know that EA is extremely effective working on the dorsal root ganglion/afferent nerve fibers that are also contributing to the BPS.

HTJJ on those spinal segments.

You see they share!



And from a class that Dr. Lombardi taught :regarding VAGAL TONE

MOIST HEAT ON THE STERNUM helps the tone

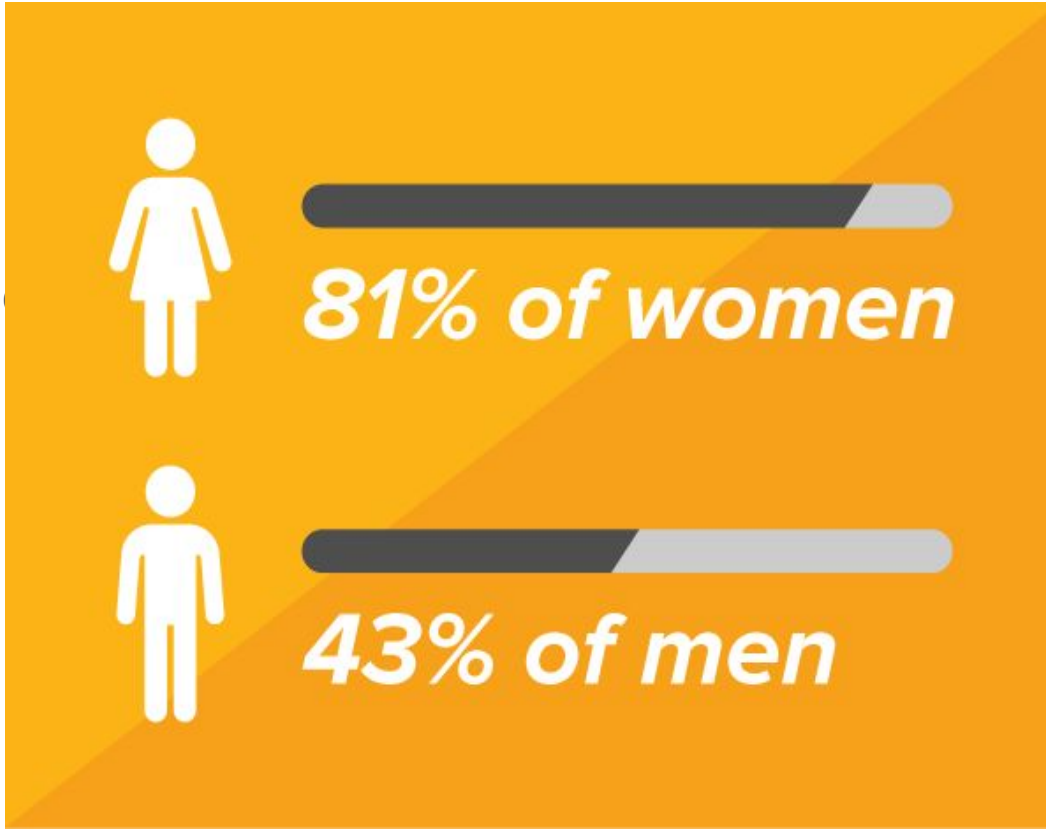
AND from me:

ALSO moist heat SUPRAPUBICALLY

And else where

Now, lets PIVOT for a moment,

Something you ALL should be aware



I would ABSOLUTELY BY REMISS if we didn’t take a moment to discuss

CONSENT