

Pelvic Physical Therapy Distance Journal Club

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Musculoskeletal findings on MRI among postpartum women with persistent pelvic pain.

Pipitone F, Duarte Thibault ME, Gaetke-Udager K et al. Int Urogyn J

2021;32:1779-1783.

Doi: 10.1007/s00192-020-0441-y.

Introduction:

- Pelvic pain during pregnancy and postpartum occurs in an estimated $\frac{1}{3}$ of women and is considered “normal” or “expected”, typically resolved by 6 weeks postpartum
- Persistent pain lasting beyond 6 weeks reported in 17% of women with 9% reporting pain at 24 mos post-delivery
- Frequently remains untreated or unresolved due to lack of diagnosis and lack of treatment

Purpose: describe the prevalence and types of musculoskeletal abnormalities and their clinical correlation in a cohort of women who underwent pelvic MR imaging for the indication of persistent postpartum pelvic pain

Hypothesis: Clinical symptoms in women with unexplained persistent postpartum pelvic pain will correlate with musculoskeletal abnormalities identified on MRI in >50% of cases, which will significantly aid in diagnosis and mgmt

Study Design: Retrospective cohort study

Population: Patients who underwent MRI for persistent postpartum pain at Michigan Healthy Healing After Delivery clinic (staffed by urogynecologists) seen over a 12 year period (2007-2019)

Inclusion criteria:

1. MHHAD visit w/ a primary indication of persistent postpartum pelvic pain (beyond 6 weeks postpartum); type of pain identified by location
2. MRI ordered for clinical indication of pelvic pain

Methods: All images reviewed by fellowship-trained musculoskeletal radiologist. Abnormalities on MRI were classified as major or minor.

- Major: bone fracture, levator ani avulsion
- Minor: bone marrow edema, inflammation, or partial levator defect
 - Bone marrow edema (“bone marrow contusion” or “bone bruise”) is an accumulation of excessive fluid in bone marrow, indicative of a non-specific stress injury within the bone. Commonly present in pubic area injuries in postpartum women and athletes.
 - Sx of bone marrow edema: chronic groin pain and tenderness of the pubic symphysis and/or superior pubic ramus,
 - Assessed by MRI - increased signal within marrow when compared to ischial tub. Conventional radiography and MRI without fluid-sensitive sequences **DO NOT** image bone marrow edema or subcortical fractures.

Results:

- Total of 2055 women seen over 12 year period, 252 (approx 12%) for pelvic pain
- Based on the inclusion criteria, only 18 of those women (7%) received an MRI.
 - 56% (n=10) were primiparous
 - 28% (n=5) had episiotomy AND forceps or vacuum
 - 28% (n=5) had obstetrical anal sphincter injuries

Discussion Question 1: The article states that persistent pelvic pain is present in 17% of postpartum women. Would you agree that this is likely a low estimate? (Based on experience, guessing that it is under-reported due to women thinking this is a “normal” part of postpartum recovery.)

Discussion Question 2: Why did only 18 of the 2055 cases get included in this study? All of the cases were postpartum women and 252 were seen for pelvic pain. Inclusion criteria suggest that only 18 women (7%) received an MRI. Why? (Did they have more severe presentations than the other 93%? Or was the source of their pain already defined by radiography? Were there more who were referred for postpartum PT?)

- Were few women referred to /mri due to pain % not being taken seriously?
 - PTs need to do a better job of educating physicians about what we can do for these patients - should be seeing those with pain that limits function
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- Table 1: Delivery variables
 - Low numbers of women with complicated deliveries (assisted, large babies, shoulder dystocia)
 - **15/18 with 2nd stage labor longer than 2.5 hrs*****
Brandon article - Most freq occurring risk factor for pubic injuries in primis-prolonged 2nd stage in both vag and cesarean deliveries
 - Low numbers of episiotomy (n=5) but 14 perineal tears
 - (Aside from prolonged 2nd stage, all other variables seem low. Could any of the major or minor abnormalities been present prior to delivery? As a result of stress from weight during pregnancy or force on pubic bones during contraction?
Clin Imaging article- pubic bone edema present in 3 of 4 women in 1st postpartum week, regardless of delivery mode - suggests that edema may occur from mechanical stress during pregnancy)
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- Median of 2 months between delivery and presentation; 4.5 mos delivery to MRI
 - Pain complaints varied: (approx 1/3 each)
 - Pubic bone (n=7)
 - Sacrum/coccyx (n=7)
 - Vagina (n=6)
 - Sexual dysfunction present in **72%** of cohort (n=13) - defined as dysparuenia, vaginismus, or fear of resuming intercourse due to pain
 - Musculoskeletal abnormalities present in **94%** of cases (n=17) on MRI, all correlating with patients' persisting symptoms
 - Major abnormalities present in 38.8% of patients (n=7)
 - 33.3% (n=6) with pelvic bone fractures
 - 11% (n=2) levator ani avulsion and pubic bone edema

- Minor abnormalities present in 55.6% (n=10)
 - 50% (n=9) bone marrow edema
 - 33.3% (n=6) partial levator ani defects
 - 22.2% (n=4) SI joint edema
 - 5.6% (n=1) pubic symphysis separation
- 1 normal MRI
- ALL patients referred to PT; 4 ortho referrals, 5 additional procedures for pain
- 4 patients requested work leave paperwork (if she can't RTW, is she also having difficulty caring for her newborn?)

Discussion:

- Higher incidence of musculoskeletal abnormalities found than hypothesized
- Authors felt that results substantially added to clinical reasoning behind treatment plans
- Miller et al study: 91% of women had MSK injuries per MRI at 7 wks postpartum, mostly resolved by **8 mos** PP; pain Sx not reported
- Current study provides evidence that patients with postpartum pain persisting for >6 weeks should be referred for imaging
- Validating pain Sx with a discrete physical examination or imaging finding has therapeutic benefit, especially when Sx have been disregarded or minimized

Conclusion: Imaging should be considered in women with persistent postpartum pelvic pain when symptoms are not explained by clinical assessment to accurately diagnose and treat the source of their pain.

Additional Discussion Questions:

1. The authors state that MRI results substantially added to clinical reasoning behind treatment plans. In what ways? Treatment/ healing for bone edema? Referrals to PT vs ortho/ pain mgmt?
 - a. May affect physician decision making
2. How confident are you in the differential diagnosis of postpartum musculoskeletal injuries discussed in the article?
 - Dietz - Vaginal palpation of levator avulsion is simple with moderate validity and reproducibility but requires extensive training
The index finger of the dominant hand is placed parallel to the urethra, with the fingertip at the bladder neck. The fingertip is then turned and retracted towards the inferior pubic ramus, and the patient is asked to contract the pelvic floor muscles. One should be able to palpate contractile tissue on the inferior pubic ramus, and the gap between urethra and muscle should be about the breadth of one finger. If there is no contractile tissue palpated on the pubic ramus there will be room for two or more fingers between urethra and lateral pelvic sidewall, and a diagnosis of avulsion is made. Partial trauma may be recognized by palpation as thinning of the entire muscle, slit-like defects or defects of the most inferior or superior aspects of the puborectalis muscle
 - Kuboti - Conservative Rx wth PFM strengthening and internal stim
 - Kari Bo - no difference in results of PFMT in patients with and w/o LA avulsion
 - John Delancy article - avoid theory-induced blindness and remain objective - document what can be measured

THP: In our postpartum patients with chronic pain greater than 6 weeks post-delivery, we should keep these underlying diagnoses in mind when assessing signs and symptoms and refer out as needed for further diagnostic testing.

Other relevant articles:

Dietz HP, Moegni F, Shek KL. Diagnosis of levator avulsion injury: a comparison of three methods. *Ultrasound Obstet Gynecol.* 2012;40:693–8.

Agten, Christoph A., et al. "MR imaging of pubic symphysis after uncomplicated vaginal delivery and planned caesarean delivery in the first postpartum week." *Clinical Imaging* 56 (2019): 58-62.

Brandon, Catherine, et al. "Pubic bone injuries in primiparous women: magnetic resonance imaging in detection and differential diagnosis of structural injury." *Ultrasound in obstetrics & gynecology* 39.4 (2012): 444-451.

Vassalou, Evangelia E., et al. "Spectrum of skeletal disorders during the peripartum period: MRI patterns." *Diagnostic and Interventional Radiology* 25.3 (2019): 245.