NIH Pain Consortium
Centers of Excellence in Pain Education

CoEPEs
CENTERS OF EXCELLENCE IN PAIN EDUCATION

Anterior Pelvic Pain During Pregnancy

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Contents

Introduction

Ava is a 28-year-old Puerto Rican woman who is seven months pregnant. She complains of anterior pelvic pain that began several weeks ago.

Learning Objectives

After completing this module, you should be able to:

- Understand assessment, clinical decision-making, and treatment of uncomplicated anterior pelvic pain, especially in pregnancy.
- Recognize features of cultural competence and patient-centeredness in pain care.
- Describe non-pharmacological and pharmacological elements of a safe and effective treatment plan.
- Define and apply opioid misuse, abuse, dependence, and addiction in context.
- Appreciate the roles, contributions, and concerns of inter-professional team members in comprehensive pain care.

Module Categories

The module features nine main categories:

- Interview Ava
- Ava's Biopsychosocial Assessment
- Ava's Pain Narrative and Assessment
- Physical Exam, Review of Systems, and Labs
- Interdisciplinary Pain Center Assessment
- Diagnosis
- Treatment
- Outcomes
- Additional Learning Resources

Introduction to Ava

The following describes the video introduction to the patient, Ava:

Ava can be seen walking up a red paving stone walkway to the entrance of the medical facility. She's wearing street clothes that include a dark blue sleeveless maternity top, black pants, black flats, and sunglasses. She appears to be heavily pregnant, but does not look to be walking abnormally.

The video follows Ava as she turns off the paving stone walkway to the sidewalk abutting the medical center and walks through the automatic double doors of the building. As she enters the lobby of the building, Ava can be seen walking past the information desk before the visual portion of the video fades to white.

Voice over narration for the video features Ava speaking. The following describes the audio:

“Hi, I’m Ava. I’m 28-years-old and I’m from Puerto Rico. I’m currently seven months pregnant. I have a little one at home, he’s 2-years-old. I work full time and I have a supportive but busy husband that works long hours.

I am in good health. I saw my OBGYN yesterday who said everything looked good, but I do have a concern because I’ve been feeling this pain on my pelvis, and it hasn’t gone away. It’s been about…almost a month. So I wanna go see my midwife and ask her if there’s anything else I can do to help out with that.”

Interview Ava

What brings you in today?

The following provides a description of the video of Ava responding to what brought her to visit her midwife:

Ava is seated on a cushioned purple bench in a medium sized room in a private setting. To her right sits her midwife, on a similar cushioned bench that joins the one Ava sits on perpendicularly. A low round table rests in front of both women. The midwife holds a clipboard as Ava speaks.

Ava tells the midwife, "*Well, today I'm coming to you because I have this very severe pain that comes and goes. But it can be quite severe in the front part of my pelvis. Like...right in the pubis area.*"

"*Okay,*" responds the midwife.

When did you first feel this pain?

The following provides a description of the video of Ava responding to the question of when she first felt the pain:

Ava is seated on a cushioned purple bench in a medium sized room in a private setting. To her right sits her midwife, on a similar cushioned bench that joins the one Ava sits on perpendicularly. A low round table rests in front of both women. The midwife holds a clipboard as Ava speaks.

Ava says, "*It's been going on for a little bit, maybe since I was like six or so months pregnant.*"

"*Okay,*" the midwife says encouragingly. "*So several weeks,*" she says in reference to how long Ava's felt this pain.

"*Yeah,*" Ava says. "*Um, I was very active. And then when I get...when I do exercise or become more active...after the exercise I tend to feel it more.*"

What makes the pain worse?

The following provides a description of the video of Ava responding to the question of what makes the pain worse:

Ava is seated on a cushioned purple bench in a medium sized room in a private setting. To her right sits her midwife, on a similar cushioned bench that joins the one Ava sits on perpendicularly. A low round table rests in front of both women. The midwife holds a clipboard as Ava speaks.

"*So what makes it really worse is lifting one leg,*" Ava says.

"*Okay,*" says the midwife.

"*Standing on one leg,*" continues Ava.

"*Yeah,*" the midwife agrees.

"*Like putting my pants on. That can be very painful,*" Ava says.

How would you describe your pain?

The following provides a description of the video of Ava responding to the question of how she would describe her pain:

Ava is seated on a cushioned purple bench in a medium sized room in a private setting. To her right sits her midwife, on a similar cushioned bench that joins the one Ava sits on perpendicularly. A low round table rests in front of both women. The midwife holds a clipboard as Ava speaks.

"*Definitely…I mean moments when it's at its peak it feels like a sharp, stabbing pain,*" Ava says.

"*Okay,*" the midwife responds. She makes a note of this on the clipboard.

"*And it's difficult for me to move. Like…I have to take a second to hold the position,*" Ava smiles.

The midwife smiles and says, "*Yeah, catch your breath.*"

"*Yeah,*" Ava agrees with her, laughing.

Does your pain come and go?

The following provides a description of the video of Ava responding to the question of whether her pain comes and goes:

Ava is seated on a cushioned purple bench in a medium sized room in a private setting. To her right sits her midwife, on a similar cushioned bench that joins the one Ava sits on perpendicularly. A low round table rests in front of both women. The midwife holds a clipboard as Ava speaks.

Ava says, "*There's moments when it's really sharp. Especially…I've had moments when I get out of my car. That makes it really sharp.*"

"*Okay,*" the midwife says, nodding.

"*Or if I'm putting my clothes on, like I said. The rest of the time it's there,*" Ava continues.

"*Uh-huh,*" the midwife agrees.

"*It's more dull,*" Ava says. "*It's just bothersome.*"

What makes the pain better?

The following provides a description of the video of Ava responding to the question of what makes the pain better:

Ava is seated on a cushioned purple bench in a medium sized room in a private setting. To her right sits her midwife, on a similar cushioned bench that joins the one Ava sits on perpendicularly. A low round table rests in front of both women. The midwife holds a clipboard as Ava speaks.

"*Rest,*" says Ava.

"*Rest?*" the midwife confirms. "*And how do you rest when you're resting?*"

"I try to lay down. Um, maybe lift my legs a little bit." Ava motions with her hands as if she's placing something imaginary between her knees and says, "Maybe get some pillows to get comfortable."

"*Yeah,*" the midwife encourages.

"*Yeah, I sometimes put some heat...I dunno. That feels good,*" Ava tells the midwife.

"*Okay,*" the midwife says. "*That's fine. I mean heat is absolutely fine.*" She checks her clipboard. "*And nothing has really sort of improved it permanently though?*"

"*No,*" Ava confirms. "*It gets a little bit better, but then when I become active again, or if I'm walking it kind of comes back.*"

"*Right,*" says the midwife.

"*It makes it hard to take care of my 2-year-old...lifting him,*" Ava says.

"*Of course,*" agrees the midwife. "It hurts when you're lifting?"

"*Yeah,*" says Ava. She gestures to her side, with her arms encircling an imaginary toddler. "*When I'm carrying him on one side.*"

"*Okay,*" notes the midwife.

Summary

- 28-year-old Hispanic female from Puerto Rico
- Currently 7 months pregnant, has one child, aged 2, at home
- Works full time
- Has a supportive husband and mother
    - Husband works 10+ hours each day
- In good health
- Saw OB-GYN yesterday who said everything was fine with her pregnancy
- Concerned because she is experiencing anterior pelvic pain

Ava's Biopsychosocial Evaluation

Does your pain make any activities more difficult?

The following provides a description of the video of Ava responding to the question of whether her pain makes any activities more difficult:

Ava is seated on a cushioned purple bench in a medium sized room in a private setting. To her right sits her midwife, on a similar cushioned bench that joins the one Ava sits on perpendicularly. A low round table rests in front of both women. The midwife holds a clipboard as Ava speaks.

"*Well, I'm a pretty active person and I actually teach this exercise class,*" Ava says.

"*Great!*" says the midwife.

"*But I haven't been able to teach it for the past two weeks because of the pain,*" continues Ava. "*So that's been modified. I'm barely being able to keep up with my 2-year-old.*"

"*Yeah,*" the midwife says, sympathetically.

"*And he's been especially clingy, so he only lets me bathe him, change him, and it's getting a little bit harder and harder.*"

Is there anyone else that can help you take care of your 2-year-old?

The following provides a description of the video of Ava responding to the question of whether anyone else can help her take care of her 2-year-old:

Ava is seated on a cushioned purple bench in a medium sized room in a private setting. To her right sits her midwife, on a similar cushioned bench that joins the one Ava sits on perpendicularly. A low round table rests in front of both women. The midwife holds a clipboard as Ava speaks.

"*The only person is my husband,*" Ava says.

"*Okay,*" the midwife nods.

"*We do have my in-laws, but they're a little bit older and a little bit frail, so they're not able to help as much. But my husband also works very hard. He owns his own company and he's really busy.*"

"*Okay,*" the midwife acknowledges.

"*So, maybe it's time to ask him to make some time,*" Ava tells the midwife.

"*I mean, it might be,*" the midwife says. "*You know, other things we can talk about with your toddler is, instead of bending over and picking your toddler up, if you are doing that, but inviting to maybe climb up and sit next to you and see if that doesn't help a little bit with the pain.*" The midwife pats the seat next to her to emphasize her point of directing a toddler's actions.

Has there ever been a time when you've felt unsafe?

The following provides a description of the video of Ava responding to the question of whether she's ever felt unsafe:

Ava is seated on a cushioned purple bench in a medium sized room in a private setting. To her right sits her midwife, on a similar cushioned bench that joins the one Ava sits on perpendicularly. A low round table rests in front of both women. The midwife holds a clipboard as Ava speaks.

"*No, I don't think so*" Ava says.

"*Okay,*" responds the midwife. "*Ever any experiences of being hit or slapped?*"

Ava draws a deep breath, incredulous. "*No,*" she says, as though she finds this suggestion to be laughable. "*God, no.*"

"*Right,*" confirms the midwife. "*Okay, excellent. Well, we're glad to hear about that.*"

"Or my kid," adds Ava, shaking her head at the thought of her husband hitting her or their toddler.

"All right," the midwife smiles. *"Wonderful! These are just questions we like to ask everyone to make sure they're physically safe."* Ava nods agreement. The midwife continues, *"If there's ever a situation like that that does come up, please get in touch with us. We can help. Okay? There are things that we can do."* Ava nods again.

Do you have access to other healthcare?

The following provides a description of the video of Ava responding to the question of whether she has access to other healthcare:

Ava is seated on a cushioned purple bench in a medium sized room in a private setting. To her right sits her midwife, on a similar cushioned bench that joins the one Ava sits on perpendicularly. A low round table rests in front of both women. The midwife holds a clipboard as Ava speaks.

Ava says, *"Yeah. I have pretty good insurance that allows me to make appointments with whomever I want. So it's been working out well."*

"Great," says the midwife.

How do you get around the city?

The following provides a description of the video of Ava responding to the question of how she gets around the city:

Ava is seated on a cushioned purple bench in a medium sized room in a private setting. To her right sits her midwife, on a similar cushioned bench that joins the one Ava sits on perpendicularly. A low round table rests in front of both women. The midwife holds a clipboard as Ava speaks.

"I drive," says Ava.

"Okay. Do you spend a lot of time in the car?" the midwife asks.

"Not really. I commute from the county to the city every day."

"And when you're sitting in the car, does that aggravate your pain at all?"

"No," Ava says, *"but transferring into and out of the car. It's one of those things that really brings on the sharp pain."*

"Okay," the midwife says.

Does getting out of bed in the morning aggravate your pain?

The following provides a description of the video of Ava responding to the question of whether getting out of bed in the morning aggravates her pain:

Ava is seated on a cushioned purple bench in a medium sized room in a private setting. To her right sits her midwife, on a similar cushioned bench that joins the one Ava sits on perpendicularly. A low round table rests in front of both women. The midwife holds a clipboard as Ava speaks.

"Yeah," Ava laughs.

"Okay," nods the midwife.

"That's another one." Ava shifts around in her seat to show how she moves from side to side to situate herself to get out of bed in the morning. *"I kind of come up with this rolling over technique. I try to get up in an easier way, but it takes a little bit of time."*

"Extra time in the morning," notes the midwife, smiling.

"Yes," Ava confirms.

Summary

- Hasn’t been able to teach exercise class for 2 weeks
- Having difficulty taking care of her 2-year-old on her own
    - Husband works long hours, in-laws older and unable to help much
- No experiences with her or her child being hit or in danger
- Access to good obstetric care and general healthcare via insurance
- Drives to get around the city, usually for short periods of time
- Pain aggravated by getting in and out of car
- Pain also aggravated by getting out of bed in the morning

Pain Narrative

Summary

Ava developed anterior pelvic pain over the past few weeks. Her pain narrative can be summed up as follows:

- Feels stabbing, sharp, with a residual aching
- Worst right over midline pubis and base of stomach, radiates into back and medial legs at times
- Intense with walking, better at rest, ranges from 8 out of 10 to 2 out of 10
- Started with mild pain first day, worse of ensuring days, now almost incapacitating
- Much worse with walking, carrying her toddler is very painful
- Relieved by reclining, somewhat better with sitting than walking, acetaminophen is barely helping

Timeline

5 months ago: First OB-GYN visit, initial labs drawn.

3 weeks ago: Felt a twinge, then a mild, but stabbing and sharp pain first presented.

2 weeks ago: Pain worsened, became more uncomfortable to walk, pain began to radiate to back and medial legs.

Several days ago: Pain became intense if she was walking for longer periods of time, better with rest. Ranges from 2 out of 10 at best to 8 out of 10 at worst. Pain also aggravated by carrying her toddler.

Yesterday: Had regularly scheduled appointment with OB-GYN, everything confirmed normal with the pregnancy. Found pain to be better with reclining, acetaminophen.

Today: Pain became completely unbearable, came in for urgent clinic visit staffed by nurse midwife.

Pain Features

Region: anterior pelvic area: symphysis pubis

Quality: stabbing, sharp

Timing: worsening over day, occurring sporadically

Severity: 8 with movement, 2 at rest

Extracted Pain Synopsis

Ava is a 28-year old Hispanic female who is 7 months pregnant, and has developed a progressively severe anterior pelvic pain that is worsening with walking.

Physical Exam, Review of Systems, Labs

Physical Exam

General

- Young woman, appears healthy
- 7 months pregnant
- Alter and oriented to person, place, and time
- Affect and speech appropriate

Head, Eyes, Ears, Nose, Throat

- PERRLA
- Conjunctiva anicteric
- No lymphadenopathy

Cardiovascular/Pulmonary

- No crackles, rales, rhonchi, or wheezes
- Regular rate and rhythm with no murmurs, gallops, or rubs
- Peripheral pulses present and normal

Gastrointestinal/Genitourinary/Reproductive

- Positive bowel sounds in all four quadrants
- Non-tender to palpation of abdomen
- Tender to palpation midline anterior pelvis
- Non-tender to palpation over the flank bilaterally

Extremities/CNS/Musculoskeletal

- No cyanosis, edema, jaundice
- Normal strength and range of motion bilaterally
- Normal deep tendon reflexes bilaterally
- Gait slow and antalgic
- Patient exhibits guarding of lower abdomen

Review of Systems

General

- No weight loss
- No fatigue
- No fever

CNS/Neuro

- No visual changes
- No confusion
- No loss of consciousness
- No anxiety
- No headaches

Cardiovascular/Pulmonary

- No chest pain
- No shortness of breath
- No cough
- No palpitations

Musculoskeletal/Extremities

- Pain on ambulation
- No swelling
- No weakness

Tests and Labs

Triage Vital Signs and Lab Values

Vital signs all within normal limits

Afebrile

Urinalysis negative

Previous Lab Values

The previous lab values were obtained at new patient assessment by OB-GYN.

CBC: within normal limits

Chemistry: within normal limits

STD Panel: all negative

HIV: Negative

Fetal Ultrasound: Normal

Knowledge Check: Physical Exam, Review of Systems, Test and Labs

Which of the following aspects of the patient's pain narrative is LEAST consistent with a diagnosis due to musculoskeletal dysfunction?

1. Pain that does not respond to Tylenol
2. Sharp, stabbing pain
3. Pain radiating to the back and medial legs
4. Pain that is worsened by carrying her toddler

Interdisciplinary Pain Center Assessment

Medical Assessment

Cross-Cultural Considerations

- Who does she talk to about health concerns before she goes to the doctor/clinician?
- Does she feel comfortable with her OB? Does she have any special worries regarding the pregnancy?
- What does her husband think? Is there any strain on their dynamic? Is he tuned in or out?
- What prompted her to come in today? Did she talk to her mother or husband before coming in?
- What does she try before she goes to the doctor? (E.G.: home remedies, etc.)
- “What do you think is going on?”

Nursing Assessment Considerations

Access to Healthcare

1. Gaining entry into the health care system
2. Getting access to sites of care that attend to health care needs
3. Finding providers who meet individualized patient care needs and who also can develop a relationship based on mutual trust and communication

Consideration for Access

Accessible? Location, easy to get to, free parking, on a mass transit line

Acceptable? Patient-centered care, culturally competent, pleasant receptionist/nurses/medical assistant, open and respectful dialogue with provider

Affordable? Accepts a range of insurance plans, standard versus sliding scale co-pay, can the patient afford health care?

Timely? Delay in receiving services once the need is identified, the time spent waiting

Activities of Daily Living (ADLs)

<u>Ability to:</u>

1. Bathe self
2. Dress self
3. Toilet self
4. Feed self
5. Ambulate
6. Maintain continence

Instrumental Activities of Daily Living (IADLs)

1. Ability to use the telephone
2. Ability to shop
3. Ability to perform food preparation
4. Ability to complete housekeeping
5. Ability to do laundry
6. Ability to drive
7. Ability to take own medications
8. Ability to handle finances

Caregiver Roles

- In families, caregiving tasks typically fall to the daughter(s)
- Caregiving tasks may include:
    - ADLs (any/all six)
    - IADLs (any/all eight)
    - Medical/Nursing tasks of care
    - Maintaining safety
    - Companionship
- Role demands in addition to the caregiving role
    - Raising children
    - Home maintenance
    - Employment outside of the home
    - Civic obligations
    - Maintaining intimacy with spouse/partner

Patient Safety

- Intimate Partner Violence is associated with:
    - Chronic pain syndromes
    - Delayed prenatal care
    - Preterm delivery
    - Pregnancy difficulties (low birth weight, perinatal deaths)
    - Unintended pregnancy
- The Danger Assessment consists of 20 questions and identifies risk factors that have been associated with increased risk for homicide
- Women are asked to indicate approximate date(s) during the past year in which they were abused by their partner/ex-partner
    - Slapped, pushed; no injuries or lasting pain
    - Punched, kicked; bruises, cuts and/or continued pain
    - "Beaten up"; severe contusions, burns, broken bones
    - Threats to use weapon; head injury, internal injury, permanent injury
    - Use of weapon; wounds from weapon

Knowledge Check: Patient Safety

True or false? Nearly one in four women over the age of 18 have experienced physical violence by an intimate partner.

1. True
2. False

Clinical Psychology Assessment

Stressors and Risk Factors

- Depression is found in 8%-50% of chronic pain patients.
- Anxiety and/or depression exacerbate pain outcomes.
- Pain-related anxiety is associated with greater genito-pelvic pain intensity 3 months postpartum.
- Catastrophizing is a robust predictor of negative pain-related outcomes.
    - Catastrophizing: rumination, magnification, and helplessness
    - Catastrophizing is a risk factor for negative mood and vice-versa

Cultural Considerations

- Pain and pain management throughout the course of labor is a major topic. Cultural awareness of the interpretation of pain experience across cultures is an important factor.
- Personal bias is important to consider.
    - Healthcare providers need to be aware of their personal beliefs regarding pain and pain management.
    - It's important not to impose one's values on patient.
- It's important for healthcare providers to be aware of cultural differences and attitudes toward the use of pain-relief strategies.

Pain and Sleep

- Sleep disturbance and pain are interrelated.
    - Upwards of around 80% of chronic pain patients experience sleep disturbance.

- Poor sleep results in increased pain sensitivity/amplified nociceptive response to noxious and non-noxious stimuli.
- Pregnancy-related physiologic changes may negatively impact sleep.
    - Sleep continuity disruption is common.
- Sleep should always be assessed.
- Improved sleep has been associated with improvement in clinical pain.

Pharmacy

Medication Safety

1. Right patient
2. Right medication
3. Right dose
4. Right time
5. Right route
6. Right (appropriate) storage

Insurance needs

1. Does the patient have insurance?
2. What is covered by the plan?
3. Can she afford the co-pay?
4. Are prior authorizations needed for certain medications?
5. What services might she be eligible for?
6. Contributes to adherence.

Health Literacy[1]

- Determinant of adherence
- Impacts health care outcomes and increases healthcare costs

New Vital Sign (NVS)

- Assessment case: Nutrition label for ice cream
- 3 minutes to administer
- Assessing comprehension and numeracy

Test of Functional Health Literacy in Adults – short version (S-TOFHLA)

- Reading comprehension
- No numeracy
- 7 minutes to administer

Adherence

- Assess health care literacy
- Adding questions such as, "Who writes out the information?"
- How does the patient like to receive information?
    - Visual, written, oral
- Teach back model
    - Restate what was just explained to them.
- Ask me 3
    - "What is my main problem?"

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[1] Duell P, Wright D, Renzaho AM, et al. *Optimal health literacy measurement for the clinical setting: A systematic review*. Patient Educ Couns. 2015; 98:1295-1307.

    - "What do I need to do?"
    - "Why is it important for me to do this?"
- Medication education, management, and counseling
    - Often waived by patients
- Telephone follow-ups
    - Literature support
- Text messaging
- Mobile applications
- Patient support programs
    - Literature support
- Motivational interviewing

Knowledge Check: Pharmacy Assessment

Which of the following is not one of the 'rights' of medication safety?

1. Dose
2. Patient
3. Adverse effects
4. Medication

Rehabilitation

Assessment

Some pain provocation tests can be self-administered [2]including:

- **Painful palpation of the pubic symphysis**
  - Sensitivity: 0.96; Specificity: 0.85
- **MAT Test**
- While standing, the woman performs a movement of hip abduction and adduction simulating the movement to pull a floor mat
- POSITIVE test if pain is reproduced in the symphysis pubis area
- Sensitivity: 0.85; Specificity: 0.89

[2] Fagevik Olsen M. Gutke A, Elden H, et al. *Self-administered tests as a screening procedure for pregnancy-related pelvic girdle pain.* Eur Spine J. 2009; 18:1121-1129.

Diagnosis

Choose Ava's Diagnosis

Which diagnosis do you feel fits Ava's pain complaint?

1. Pelvic Inflammatory Disease
2. Urinary Tract Infection
3. Symphysis Pubis Laxity
4. Rectus Abdominis Sprain
5. Adductor Muscle Sprain (Groin Pull)
6. Chronic Pelvic Pain
7. Ilioinguinal Nerve Entrapment

Diagnosis Review

Ava has pain in her anterior pelvis. It's worse with walking and came on very recently. This is all characteristic of symphysis pubis pain.

Ava's lack of antecedent trauma, vaginal discharge, pain on urination, or substantive night pain make other causes less likely.

Knowledge Check: Diagnosis Review

MRI imaging in a pregnant patient with symphysis pubis pain would not be performed unless the provider is concerned about what?

1. Spinal involvement
2. Obstetric complications
3. Ruptured ectopic pregnancy
4. Lytic lesions of the bone

Treatment

Medical

Motivational Interviewing

Motivational interviewing is a patient counseling technique with wide applicability in healthcare.

Extensively developed in working with patients with substance abuse disorders the method also useful for patients with chronic conditions such as diabetes. It's applicable in patients where behavior change is an important part of treatment.

In this patient, we will try to understand her values and the barriers that she perceives to following through with the treatment plan. By framing the discussion in terms of her values, reaching goals that are relevant to her, partnering for change, and offering specific simple solutions to potential barriers. Even a short session with a patient can result in meaningful steps.

Physical Therapy Treatment Perspectives

Ava tries four different physical therapy approaches to help treat her pain.

The following video descriptions do not include audio transcriptions because the videos feature no audio.

Abdominal stabilization

The directions for this physical therapy exercise dictate that while supine, raise your hands in the air so they are perpendicular to your body. Pull in your lower abdominal muscles and while raising your hips, bring your arms

downward. Hold for five seconds. Repeat five times, while breathing normally.

The video shows Ava laying on her back on a physical therapy table, her head supported by two pillows. Her knees are raised, and she's holding her arms straight up in the air, away from her body. The left side of her body is closest to the camera. The physical therapist sits on a stool next to Ava, giving her instructions. Ava follows the instructions to lower her arms from their original position to flat on the physical therapy bed at her sides, while simultaneously lifting her abdomen by raising her thighs. She holds her position with her abdomen elevated for a few seconds, before returning to her initial form of back flat on the physical therapy bed with her arms raised away from her body. She repeats the exercise once more before the video fades out

Spine realignment

The directions for this physical therapy exercise dictate to lean forward slightly, then tilt your hips backwards to align your spine with your center of gravity. This will help avoid putting excess strain on the pubic symphysis.

The video shows Ava standing in a medical office with a physical therapy bed in the background. She stands normally, with her arms relaxed at her sides, and with her right side facing the viewer. The physical therapist kneels behind her at Ava's right-hand side. She measures the outer side of her left hand against Ava's right side at the shoulder, hip, and ankle to check Ava's overall alignment.

The physical therapist then slides the palm of her hand across Ava's right shoulder blade before moving it to the small of Ava's back. She gently guides Ava to bend forward while titling her hips backwards to keep her center of gravity intact. Once Ava bends forward, she reassumes her previous position, at which point the physical therapist once again checks Ava's overall alignment using the outside of her left hand against Ava's side along her right shoulder, hips, and ankle.

Sitting to Standing

The directions for this physical therapy exercise dictate that to keep your knees shoulder-width apart, and your back straight, exhale as you stand from the sitting position.

Ava can be seen sitting in a regular chair in a medical office with a physical therapy bed behind her. She faces the camera at an oblique angle. The physical therapist sits on a stool to Ava's left, slightly in front of Ava.

The physical therapist encourages Ava to inhale as she sits, then exhale as she stands from the sitting position, aided by her hands on her knees as she stands.

Hip Abductor Strengthening

The directions for this physical therapy exercise dictate to sit down, put your fist or a rolled towel or exercise ball between your knees. Squeeze your knees together. Hold for five seconds, then repeat five times.

Ava can be seen sitting in a regular chair in a medical office with a physical therapy bed behind her. She faces the camera at an oblique angle. The physical therapist sits on a stool to Ava's left, slightly in front of Ava.

Ava holds a soft rubber orange ball with knobs all over it between her knees. She slowly squeezes her knees together while resting her hands on the top of her knees, and holds the position for five seconds before releasing.

Clinical Psychology

Treatment Perspectives

Pain Psycho-Education

- Biopsychosocial model: the experience of pain is multi-factorial
- Gate Control Model of Pain
- Pain Triggers

- Pain-coping strategies

Managing Pain Triggers: Stress and Pain

- Problem-focused coping versus emotion-focused coping
- Emotion-focused coping strategies
    - Relaxation techniques
    - Cognitive therapy
    - Distraction

Behavioral Strategies and Sleep

- Pacing
- Behavioral activation

Coping

- Problem-focused coping
    - Appropriate when stressor can be changed/impacted
- Emotion-focused coping
    - Appropriate when stressor is outside of individuals control
    - Examples:
        - Chronic pain/disease process, other people's behaviors, traffic, weather, economy, etc.
    - Focus is on regulating self's response to stressor
        - Thoughts, emotions, and behaviors
- Emotion-focused coping examples
    - Cognitive therapy
    - Pacing

    - Behavioral activation
    - Relaxation training

Available Resources

- Assess available resources
    - Review access to healthcare
    - Social support
        - Positive social support
        - Negative social support

Pharmacy

Medication Pregnancy Rating A

Example: Acetaminophen

Controlled studies in women fail to demonstrate a risk to the fetus in the first trimester (and there is no evidence of a risk in later trimester), and the possibility of fetal harm appears remote.

Medication Pregnancy Rating B

Examples: Benadryl, Zantac

Either animal-reproduction studies have not demonstrated a fetal risk but there are no controlled studies in pregnant women or animal-reproduction studies have shown an adverse effect (other than a decrease in fertility) that was not confirmed in controlled studies in women in the first trimester (and there is no evidence of a risk in later trimesters).

Medication Pregnancy Rating C

Examples: NSAIDs, Morphine, Oxycodone, Codeine

Either studies in animals have revealed adverse effects on the fetus (teratogenic or embryocidal or other) and there are no controlled studies in women or studies in women and animals are not available. Drugs should only be given if the potential benefit justifies the potential risk to the fetus.

Medication Pregnancy Rating D

Examples: Topamax, Klonopin, Xanax

There is positive evidence of human fetal risk, but the benefits from use in pregnant women may be acceptable despite the risk (e.g., if the drug is needed in a life-threatening situation or for a serious disease for which safer drugs cannot be used or are ineffective).

Medication Pregnancy Rating X

Examples: Depakote

Medications in this category should be discussed with the patient's obstetrician.

Studies in animals or human beings have demonstrated fetal abnormalities or there is evidence of fetal risk based on human experience or both, and the risk of the use of the drug in pregnant women clearly outweighs any possible benefit. The drug is contraindicated in women who are or may become pregnant.

Knowledge Check: Pharmacological Treatment

Which of the following medications is most appropriate for pregnant patients experiencing musculoskeletal pain?

1. Ibuprofen
2. Acetaminophen
3. Codeine
4. Aspirin

Summary

- Acetaminophen is usually the safest choice
- Suggest non-pharmacologic interventions for management of low back pain in pregnancy
- I.E. physical medicine and rehabilitation methods
- Nonsteroidal anti-inflammatory drugs (NSAIDs) may be used from the time of the first missed menstrual cycle up until the beginning of the third trimester.

Rehabilitation

Education[3]

Activity modifications:

1. Bed mobility
    - Roll in bed with knees together
    - Getting out of bed, roll with knees together, bring hips to 90 degrees and roll from laying position to sitting position

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[3] Depledge J, McNair PJ, Keal-Smith C, et al. *Management of symphysis pubis dysfunction during pregnancy using exercise and pelvic support belts.* Phys Ther. 2005; 85:1290-1300.

2. Sit to stand activities
    - Keep knees together when getting up or sitting on a chair
3. Transfers (in-out of a car or other vehicle)
    - When getting into a car, sit first then swing legs in, keeping knees together
4. Walking
    - Take smaller steps

Avoidance of:

1. Active stretching
    - Squatting
    - Sitting cross legged
    - Breath stroke
2. Walking for exercise
3. Sitting on soft or low sofas/chairs
4. If possible, avoid stairs
5. Pulling up from laying on the back

Interventional Treatment

Interventional options exist, but are not warranted at this time.

Outcomes

Ava was diagnosed with a ***ligamentous laxity of the symphysis pubis*** after ruling out obstetric complications, lower back pain syndromes, bone/joint infections, and pubic symphysis rupture.

Ava's baby's head was sitting right on top of her pelvis, and that coupled with the ***increased relaxin hormone*** released during pregnancy caused the pain she experienced.

Ava was given the recommendation to ***continue taking over-the-counter acetaminophen*** for pain flare-ups, and recommended to ***avoid NSAIDs.*** Other prescription pain medications won't have any effect on her musculoskeletal pain.

Ava was given the recommendation to ***utilize a maternity belt***, which sits on the lower abdomen or back and keeps the baby closer to the center of gravity and alleviates the pressure on the symphysis pubis.

Ava was not comfortable wearing the belt all the time, but she did use it when she had to take a long car ride or was standing for long periods of time.

Ava was ***referred to a physical therapist*** at the interdisciplinary pain center to help stabilize her pelvic floor muscles, and strengthen her hip adductor muscles.

After doing the physical therapy exercises, Ava's pain almost completely resolved. She was able to sleep well at night and continue her daily activities.

She was also able to get through the rest of her pregnancy without further difficulties.

Learning Resources

Differential Diagnosis Descriptions

Adductor Muscle Sprain (Groin Pull)

- Quality: sharp to burning with any movement, some mild residual pain at rest
- Region: proximal medial thigh to anterior pelvic
- Severity: 8 out of 10 with walking, less severe with rest
- Timing: occurs after strain of muscle, e.g. kicking a ball, resolves over days to weeks

Ilioinguinal Nerve Entrapment

- Quality: burning to dull, may have increased sensitivity or loss of sensation over area involved
- Region: anterior pelvic, low abdomen, radiating into labia majora, may have sensitivity over inguinal canal medial and below the ASIS
- Severity: 8 out of 10, worse after movement, hip extension
- Timing: worsens over time, may be most painful at night

Pelvic Inflammatory Disease

- Quality: dull to sharp
- Region: low abdomen, low back
- Severity: 6 out of 10, worse with sexual activity
- Timing: waxing and waning

Rectus Abdominis Sprain

- Quality: sharp to dull, some burning-aching at rest
- Region: low abdomen
- Severity: 8 out of 10 with abdominal contraction, less severe with rest
- Timing: worsening over days and ultimately resolving

Symphysis Pubis Laxity

- Quality: sharp to dull, some burning-aching at rest
- Region: anterior pelvic, low abdomen
- Severity: 8 out of 10 to 10 out of 10 with walking, less severe with rest
- Timing: mid to late pregnancy, worsening over days to weeks

Urinary Tract Infection

- Quality: dull, burning-sharp pain with urination
- Region: low-abdomen, or ureter with urination
- Severity: 8 out of 10 to 10 out of 10 with urination, less severe with rest
- Timing: worsening over hours to days

Pain Anatomy and Pathophysiology

Symphysis Pubis Overview

The symphysis pubis is comprised of two bones that each has a hyaline cartilage-lined surface, connected by a fibrous disc.

A simple graphic design illustrated that the symphysis pubis is comprised of two bones and each has a hyaline cartilage-lined surface, connected by a fibrous disc.

There is no ‘synovial’ joint in this location.

Radiologic Correlates

A coronal MRI section illustrates the position of the symphysis pubis just below the bladder. Expanded inset view illustrates the fibrous disc situated between the bones anteriorly at the midline. The symphysis pubis of this overweight 56-year-old female demonstrates features of degenerative joint disease including osseus hypertrophy, edema, and endplate sclerosis.

Pain Innervation

The innervation of the joint is variously described as coming from the pudendal and genitofemoral nerves *(Gamble et al. 1986)* and branches of the iliohypogastric, ilioinguinal and pudendal nerves *(Standring, 2008).* However, no further information is provided regarding the pattern the innervation or which branches supply specific parts of the joint.

Mechanisms

- When inflamed, the joint secretes inflammatory mediators, e.g. serotonin, bradykinin, CGRP, protons, and norepinephrine.
- The peripheral nerve afferent terminations that supply this area have receptors for these mediators and this is part of the pain signaling cascade.
- In the context of inflammation, pain signaling is enhanced.

Pain Pathways

<u>Simplified overview of the pain pathways</u>

The nociceptive signal enters the CNS via the primary afferent nociceiptor. From there nociceptive signals can ascend via synapses in the superficial dorsal horn, Rexed laminae I and II (substantia gelatinosa). The primary signal then ascends via multiple pathways to rostral anterior cingulate cortex (impacting mood and behavior) and S1 cortex (mediating intensity and qualitative features) via the thalamus.

There are other projections but this is a simplified description. Descending modulatory signals project from S1 and other cortical areas to the periaquaductal gray (affecting level of consciousness and sleep) and to the nucleus raphe magnocellularis where facilitation and suppression of pain can occur via descending projections to the dorsal horn.

Once nociceptive signals enter the dorsal horn, spinal cord reflex pathways activate, such as the direct connections to motor neurons which can prompt muscle spasm and protective movements.

Knowledge Check: Pain Anatomy and Pathophysiology

All of the following are implicated in inflammatory pain signaling EXCEPT:

1. Acetylcholine
2. Serotonin
3. Protons
4. Bradykinin

Impact of Opioids

Introduction

Consider our Ava, who is still experiencing anterior pelvic pain. This time, however, you learn some additional information reviewing her chart:

- Patient tested positive for opioids at a screening exam early in pregnancy.

Her obstetrician learned from the medical chart that she has been using Percocet to help her 'relax' and when her chronic knee pain flairs.

Opioid Dependence and Pregnancy

The American College of Obstetrics and Gynecology (ACOG) has issued guidance on opioid dependence and pregnancy.

ACOG has noted that opioid tapering is not recommended for addicted patients during pregnancy as relapse is likely and places the fetus at risk of complications including fetal demise.

Support of an addiction specialist is recommended.

ACOG notes that management of delivery pain in the opioid dependent patient generally requires higher doses of opioids when opioids are indicated and adjustment of dosing should be anticipated.

Opioid Pharmacobiology Definitions

Tolerance: decreased drug effect with a fixed dose.

Physical dependence: adaptation to a substance manifested by characteristic symptoms when dosage lowered or stopped, or an antagonist is given.

Withdrawal: signs or symptoms after abrupt reduction or discontinuation of agonist or after antagonist administration.

Opioid Behaviors Definitions

Misuse: use of a prescribed medication in a manner other than that prescribed, e.g. increased doses, or for another condition.[4]

Abuse: use of legal drugs inappropriately, or the use of illegal drugs[5] (National Institute on Drug Abuse Definition)

Chemical coping: use to "cope with emotional stress characterized by inappropriate and/or excessive use[6].

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[4] Denisco RA, Chandler RK, Compton WM. *Addressing the intersecting problems of opioid misuse and chronic pain treatment.* Exp Clin Psychopharmacol. 2008; 16:417-428.

[5] Adapted from https://www.drugabuse.gov/publications/media-guide/science-drug-abuse-addiction-basics

Addiction: a chronic condition with craving and compulsion but lacking concern and control. (Otherwise known as the '6 C's definition.')

Opioid Scenarios

Scenario 1

The patient was adamant that she takes 'Percocet' only once or twice a month. She's been using pills left over from a prescription given to her after a surgical procedure about a year ago.

The obstetrician counseled her about using opioids and referred her to an addiction specialist for further assessment and treatment.

Scenario 1: Solution

The addictionologist confirmed that the patient's pattern of drug use was occasional and chronic daily opioid treatment was not recommended but that a short course of psychological substance abuse therapy was recommended.

The patient herself advises you of this history. How do you think this impacts the treatment choices?

Scenario 2

The patient was actually taking several doses of prescription opioid daily. She started taking prescription pain pills after a surgical procedure several years ago. Over time, the amount of opioid (in terms of daily morphine equivalents) increased to the point where she now takes 80mg 'morphine equivalents' daily.

The obstetrician was concerned about opioid misuse and referred her to an addiction specialist for treatment.

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[6] Kwon JH, Hui D, Bruera E. *A Pilot Study To Define Chemical Coping in Cancer Patients Using the Delphi Method.* J Palliat Med. 2015; 18:703-706.

Scenario 2: Solution

The addictionologist confirmed that the patient's pattern of drug use was consistent with opioid dependence and addiction. Chronic daily opioid dependence treatment was initiated and supportive psychological substance abuse therapy was recommended.

The patient advises you that she is treated with buprenorphine but does not disclose the full history, which you learn from the records obtained. How does this impact the treatment choices?

Knowledge Check: Impact of Opioids

True or false? Opioid tapering is recommended for addicted patients during pregnancy?

1. True
2. False

Assessment of Pain:

To assess pain, complete the following questionnaire with the patient:

- Quality
- Region
- Severity
- Timing
- Usually associated with _____
- Very much better with _____
- Worse with _____

Quality:

Descriptive feature(s) of pain

Essential for clinical assessment

Can include descriptions like:

- Tingling
- Painful
- Burning
- Stinging
- Deep
- Prickling
- Throbbing
- Dull
- Time
- Seconds
- Tolerable
- Aching
- Pain
- Numbness
- Progressive
- Hand
- Like
- Numbing
- Radiating
- Intense

- Uncomfortable
- Sharp

Region

- Localization of pain
- Essential for clinical decision making

An image can be seen depicting various “hot spots” marked by red circles with jagged edges on the outline of a person shows how these areas can vary with location. Locations seen in the image include to the side of the spine, on the pelvis, the spine itself, radiating from the spine down the legs, radiating from the spine down just one leg, or pain in the upper portion of just one leg.

Severity

People vary tremendously in pain perception. Highly personal intensity valuation is normal.

A bar chart shows how many people score their pain between 0 and 10. The majority rate it at a 5, with the next most popular pain score reported tied between 6 and 7. The third most reported pain value is 4, then 3, then 8, then 2, then 9, then a tie between 1 and 10, and finally 0 being reported the least often.

Timing

The tempo of pain tells us a lot about potential causes and prognosis. Both daily and longer-term variations can be important.

Two graphs show a steadily rising line to depict steadily worsening pain, and another line that rises to several peaks and lows to show waxing and waning pain.

Assessment Can Make a Diagnosis Possible

Quality:

MI: Crushing, Costochondritis: Sharp

Region:

MI: Sub-sternal, Costochondritis: Peri-sternal

Severity:

MI: Varies: 7 to 10, Costochondritis: Varies: 4 to 10

Timing:

MI: New onset, worsening, Costochondritis: Waxes and wanes

Usually associated with:

MI: Diaphoresis, SOB, Costochondritis: Exercise

Very much better with:

MI: Catheterization, Costochondritis: NSAIDS, ice

Worse with:

MI: Exertion, Costochondritis: pressure reproduces the pain

Types of Pain

Nociceptive: 'normal' pain sensing in response to threats in the environment

Inflammatory: heightened pain sensing that increases sensitivity to normal levels of touch, pressure, and position

Neuropathic: aberrant signaling in response to stimuli that increases pain perceived in response to non-painful and painful stimuli

Pain Types Comparison

Nociceptive

Specifics of mechanism: Activation of nociceptive afferents using ordinary mechanisms of sensing

Examples: pricks, burns, cuts, blows, breaks, crushes, chemical exposures

Inflammatory

Specifics of mechanism: Activation of afferents following modification in response to inflammatory mediators

Examples: arthritis, inflammation, infection

Neuropathic

Specifics of mechanism: Activation of nociceptive processing pathways due to disease or dysfunction of nervous system

Examples: neuropathy, MS, transverse myelitis, spinal cord injury, nerve damage

Treatment Based on Pain Type

Nociceptive

Non-pharmacological treatment: cold or cooling, rubbing (counter irritant), disctraction

Pharmacological treatments: NSAIDs, local anesthetics, opioids (severe and acute)

Inflammatory

Non-pharmacological treatment: warmth (heating pad, Epsom salts), or cooling, gentle exercise, PT: strengthening, stretching, bracing

Pharmacological treatment: NSAIDs, acetaminophen (non-anti-inflammatory), disease modifiers, minimize opioid use

Neuropathic

Non-pharmacological treatment: distraction, self-management, CBT/ACT, PTC, empathetic support

Pharmacological treatment: pain-active antidepressants, pain-active anticonvulsants, local anesthetics, minimize opioid use

Chronic Pain Pharmacology

How to Design a Pharmacological regimen:

Chronic pain is often addressed with more than one medication. The choice of medications is ideally based on evidence that the medication is effective against a particular condition. In the event that a firm diagnosis is not yet established, or that there is no published evidence specifically pertaining to a condition, or that a condition does not respond adequately to the established treatments, it is necessary to tailor a regimen to improve patient outcomes.

The principles of rational pharmacotherapy are represented figuratively in this image description. In the diagram, there is an overlapping series of bubbles in a Venn diagram. The bubbles include NSAIDs/acetaminophen, neuromodulating medications: anti-depressants, neuromodulating medications: gabapentinoids, opioids (a much smaller bubble), and topical agents. Depending on the type of pain (mechanism-based classification of pain) that a patient presents with, the provider will recommend a different set of medications be incorporated into the treatment regimen.

Inflammatory chronic pain

Pharmacology overlaps mostly between NSAIDs/acetaminophen, topicals, and neuromodulating: anti-depressants. Pharmacology shares smaller overlaps with neuromodulating: gabapentinoids and to a far lesser degree, opioids.

Nociceptive chronic pain

Pharmacology overlaps mostly between NSAIDs/acetaminophen, topicals, neuromodulating: anti-depressants, neuromodulating: gabapentinoids and to a far lesser degree opioids.

Neuropathic

Pharmacology overlaps mostly with neuromodulating: anti-depressants and neuromodulating: gabapentinoids. Lesser overlaps include topicals, NSAIDs/acetaminophen, and to a far lesser degree opioids.

Opioids must be reserved for chronic pain conditions that: 1) have well established pathophysiology, 2) clearly are known to respond to opioids, and 3) in patients for whom the opioid risk profile is established as very low and 4) who are compliant with a structured monitoring program.

Comprehensive Pain Treatment

Multimodal Approaches

- The following all contribute to treating pain:
- Physical therapy: conditioning
- Psychological support: skillful living
- Acupuncture, massage: natural defenses
- Sleep, ‘tune-up’: restoration
- Interventional care: ‘rescue’
- ‘Neuro-active’ medications: pain modulation
- Ergonomic adaptation: productivity
- Standard analgesia/OTC meds: temporary relief

Types of Medications

NSAIDs and Steroids

Medication names (examples): Ibuprofen, Naproxen, Etodolac, Ketorolac, etc.

Utilization summary: Work well for inflammatory pain but also good for mild to moderate nociceptive pain.

Major cautions: NSAIDs: GI bleeding, renal. Steroids: not for long-term use

Typical use: As needed and limited courses

Neuro-active: anti-depressants

Medication names (examples): Nortriptyline, amitriptyline; venlafaxine, duloxetine, etc.

Utilization summary: Take time to start working, but quite effective and generally safe for long-term use.

Major cautions: Some may increase suicide risk, need to monitor use.

Typical use: Must take daily for drug to work.

Neuro-active: Anti-convulsants

Medication names (examples): Gabapentin, pregabalin, carbamazepine, topiramate, etc.

Utilization summary: Work especially well for neuropathic (nerve) pain, work well together with other agents.

Major cautions: may increase dizziness, impair thinking.

Typical use: Recommended for daily dosing.

Opioids

Medication names (examples): Morphine, oxycodone, codeine, Fentanyl, etc.

Utilization summary: Work well for short periods, but effect wears off quickly and potency declines with use.

Major cautions: Potentially dangerous: many deaths each year.

Typical use: Not ideal for daily use.

Neuro-active: others

Medication names (examples): Lidocaine, acetaminophen, tramadol, muscle relaxants.

Utilization summary: Work through various pathways, often used alone or in combination with other medications.

Major cautions: Side effects vary but should be reported if suspected.

Typical use: Dosing varies with drug.

Active Strategies

- Tailored exercise
- Daily stretching
- Core exercises
- Yoga
- Meditation

Freely Available Review Articles

(BABB 2010) Treating pain during pregnancy:

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2809170/

(Becker 2010) The adult human pubic symphysis: a systematic review

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3035856/

(Elden 2016) Predictors and consequences of long-term pregnancy-related pelvic girdle pain

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4941027/

(Fagevik Olsen 2009) Self-administered tests as a screening procedure for pregnancy-related pelvic girdle pain

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2899498/

(Flack 2015) Adherence, tolerance and effectiveness of two different pelvic support belts as a treatment for pregnancy-related symphyseal pain

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4339641/

(Kanakaris 2011) Pregnancy-related pelvic girdle pain: an update

https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3050758/

Answer Key

Physical Exam, Review of Systems, Test and Labs

Knowledge Check

Which of the following aspects of the patient's pain narrative is LEAST consistent with a diagnosis due to musculoskeletal dysfunction?

1. Pain that does not respond to Tylenol *(incorrect)*
2. Sharp, stabbing pain *(incorrect)*
3. Pain radiating to the back and medial legs *(Correct: radiating pain is often associated with neuropathic pain or nerve injury; the other features are all typical of musculoskeletal symptoms.)*
4. Pain that is worsened by carrying her toddler *(incorrect)*

Interdisciplinary Pain Center Assessment

Knowledge Check: Patient Safety

True or false? Nearly one in four women over the age of 18 have experienced physical violence by an intimate partner.

1. True *(Correct: Intimate partner violence is a global phenomenon and prevalence is shockingly high.)*
2. False (incorrect)

Knowledge Check: Pharmacy Assessment

Which of the following is not one of the 'rights' of medication safety?

1. Dose *(incorrect)*
2. Patient *(incorrect)*
3. Adverse effects *(Correct: In this context, 'rights' refers to the right medication qualities – the right patients, the right medication, the right dose. Adverse effects should be avoided.)*
4. Medication *(incorrect)*

Diagnosis

Choose Ava's Diagnosis

Which diagnosis do you feel fits Ava's pain complaint?

1. Pelvic Inflammatory Disease *(incorrect)*
2. Urinary Tract Infection *(incorrect)*
3. Symphysis Pubis Laxity *(correct)*
4. Rectus Abdominis Sprain *(incorrect)*
5. Adductor Muscle Sprain (Groin Pull) *(incorrect)*
6. Chronic Pelvic Pain *(incorrect)*
7. Ilioinguinal Nerve Entrapment *(incorrect)*

Knowledge Check: Diagnosis Review

MRI imaging in a pregnant patient with symphysis pubis pain would not be performed unless the provider is concerned about what?

1. Spinal involvement *(correct. Imaging must be safe for the patient and appropriate to the risks of the concerning diagnoses under consideration)*
2. Obstetric complications *(incorrect)*
3. Ruptured ectopic pregnancy *(incorrect)*
4. Lytic lesions of the bone *(incorrect)*

Treatment

Knowledge Check: Pharmacologic Treatment

Which of the following medications is most appropriate for pregnant patients experiencing musculoskeletal pain?

1. Ibuprofen *(incorrect)*
2. Acetaminophen *(Correct: The other medications are not recommended for musculoskeletal pain in pregnancy)*
3. Codeine *(incorrect)*
4. Aspirin *(incorrect)*

Learning Resources

Knowledge Check: Pain Anatomy and Pathophysiology

All of the following are implicated in inflammatory pain signaling EXCEPT:

5. Acetylcholine *(Correct: Acetylchoine is involved in neuromuscular transmission. The other signaling molecules are utilized in the sensory nervous system to signal pain.)*
6. Serotonin *(incorrect)*

7. Protons *(incorrect)*
8. Bradykinin *(incorrect)*

Knowledge Check: Impact of Opioids

True or false? Opioid tapering is recommended for addicted patients during pregnancy?

1. True *(incorrect)*
2. False *(Correct: American College of Obstetrics and Gynecology does not recommend tapering during pregnancy. Referral to an addictionologist is recommended and treatment is recommended.)*