AAOMPT sSIG Presents:
TMJ/headache, Antepartum Lumbar/Pelvic Girdle Pain, and Maigne’s Syndrome ‘OMT Considerations for New and Experienced Clinicians Alike

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Working with Headaches can give you Headache
Headaches and TMD

• What is the link between Headaches and TMD?

• What types of Headaches are there?

• What causes these conditions?

• What are intervention strategies for management?
What is the link between headaches and TMD?

- Cervical Intervention improved TMJ opening (Oliveria)
- Link between ROM upper cervical and both HA and TMD (Grondin)
- Trigeminal nucleus common connection (Speciali)
- Headache attributed to temporomandibular disorder (11.7 ICHD-3 beta)
What types of Headaches are there?

• Primary Headaches:
  • Trigeminal autonomic cephalagies
  • Other
  • Tension based
  • Migraines

• Secondary Headaches:
  • Headache resulting from another pathology
  • Need to have been previously linked and diagnosed
What causes these conditions?

- Trigeminocervical nucleus
  - Pars Caudalis
  - Gray matter C1-3

- Convergence between trigeminal and cervical afferents
  - Forehead
  - Orbit
  - Temporal regions

- Upper cervical refers pain into the occiput (Bogduk)
What causes these conditions?

Injury can activate C Fibre nociceptors

High afferent input

Injury effects excitability
What causes these conditions?

- Peripheral vs Central pain
  - Peripheral
    - Acute damage
  - Central
    - Decrease central sensitization
    - Increase activation of descending pain inhibitory pathways
What causes these conditions?

• Risk factors
  • Upper cervical ROM (Grondin, Hall, Zito)
  • Deep flexor endurance (Jull)
  • Upper cervical mobility (Jull)
  • Painful segments (Zito)
  • Omega 6 fatty acids (Ramsden)
  • Loneliness and psychological distress play role (Stensland)
What are intervention strategies in management?

• Medical management
  • Medication
  • Injections

• How does this effect us?
  • Right medication
  • What is the target
What are intervention strategies in management?

• Physical management
  • Combo manual and specific exercise (Jull)
    • Deep cervical flexors and manual combo (Castien)
  • Deep cervical flexors strength and endurance (Ettekoven, Ylinen)
  • Stretching less effective (Ylinen)
• High velocity low amplitude manipulation
What are intervention strategies in management?

• Psychological management
  • Cognitive therapy reduced intensity, frequency and duration (Martin)

• Anxiety, depression, perception on management (Hickman)

• No change noted with cognitive therapy (Kjeldgaard)

• Biofeedback shows promise (Nestoriue, Odawara)
Take Home Points!

- Multidisciplinary
- No clear evidence to date
- Impairment based vs classification system
- Stage
Susan C. Clinton PT
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PGP in the Antepartum Population

An evidence based look at pain provocation testing and intervention of the SIJ in the antepartum population
Symphysis Pubis

- Cartilaginous joint
- SIJs are linked to symphysis pubis in a closed kinetic chain
  - Any motion at PS is accompanied by motion at SIJs and vice versa
    - Rotational motion: 0.2 – 2 degrees
    - Translation motion: 1–2 CM
    - Increased motion in pregnancy and post-partum
Muscles that reinforce and stabilize SIJ:
- Erector Spinae
- Lumbar multifidi
- Abdominal muscles: External & Internal obliques
  Rectus abdominis
  Transversus abdominis
- Hamstrings such as biceps femoris

Gluteals/hip rotators as prime movers for the pelvis: AP/lateral
Pelvic Floor mm - the “floor of the core”
Centralization

- Valid and reliable
- Not observed in SIJ pathology
- If patient centralizes, then SIJ tests are false +
Clusters

3 or >3 + tests
Sns: 91% & Sp: 78%

Not as accurate in pregnant population.
Single test may be just as good.

*Stuber, Laslett, Cook
MAKING THE CLINICAL CONNECTION

Antepartum Pelvic Girdle Pain and Musculoskeletal Treatment
Medical Considerations

Lifestyle – Active vs. Passive
Nutrition
Gynecological issues (bleeding, cramping, urinary changes)
Intensity of exercise
Anemia/gestational diabetes
Postural pressure on inferior vena cava (standing/supine)
Cauda equina syndrome vs. pelvic floor weakness
Postural Changes/DRA

- Changes in thoracic diameter and position
  - Affects on the diaphragm
    - Slow, shallow and increased RR
  - Advancing pregnancy
    - Increased work of obliques with over stretching of rectus abdominus
      - Changes in IAP
      - Increased thoracic flexion
What does the Clinician Avoid?

- **Prone position without modification**
  - 12-16th weeks as the uterus rises out of the pelvic brim

- **Modified prone**
  - pillows above and below the abdomen
  - ¾ prone
  - side lying
  - seated with arms over a plinth

- **Extended periods of supine**
  - At the fourth month.
  - General guideline is 5 min less if the patient shows poor tolerance

- **Alternate positions:**
  - side lying
  - ¾ supine—hips tilted 30 degrees.

Musculoskeletal Considerations
Past History (possible correlates)

- Number of previous pregnancies and delivery methods
- Active vs. passive lifestyle
- Work history – light vs. heavy
- BMI
- PGP or LBP in previous pregnancies or positive orthopedic history
- Orthopedic history of hip/LE dysfunction
- Presence of muscle dysfunction (PFM/Gluteus medius)

  (Bewyer, 2009)
Transient osteoporosis - Spine (BMD ↓3.4%) and femoral neck (BMD ↓4.3%) and calcaneus (BMD ↓6%) with loss of trabecular bone – (Boissonault, Boissonault, Bartoli, 2005)

Diastasis Rectus Abdominis (DRA) – 66% in third trimester (Boissonault, 1998). Occurrence post partum – 39% significant after years - (Ranney, 1990)
- weakness of abdominal wall is associated with pelvic floor muscle weakness (Spitznagle, 2007)
- Overuse of obliques due to DRA and loss of core muscle stabilizers

History of inflammatory disease such as RA
Incidence of PGP

- Low back and pelvic pain – 56-72% (Albert, 2002), (Mogren, 2005) (Fast, 1987)
  - Risk Factors: increased parity, history of hypermobility, periods of amenorrhea, increased BMI pre and end of pregnancy

- Total objectively identifiable pelvic joint pain – 20.1% (Albert, 2000) (Cook, 2007)
  - Pelvic Girdle Syndrome: 6%, Symphoysiolyis 2.3%, One-sided SIJ 5.5%, Double-sided SIJ 6.3%
  - 5 categories: PS, one sided SIJ, two sided SIJ, two sided SIJ and PS, general PGP
Comparison of the classification/examination of PGP with Pregnancy

- Confirmation of classification
  - Symptoms – pain daily, in pelvic region, + point test
    - Prolonged sitting/standing, sit to stand, stairs, moving in bed (Albert, 2000)

- Functional tests
  - (-) centralization, + deep squat, + 8” lateral step up, + lunge (Cook, 2007)

- Pros/Cons of Classification
Comparison of the classification/examination of PGP with Pregnancy

Tests/Measures: poor sensitivity, high specificity, high LR+

- SI joint provocation tests – requires a cluster of tests for a positive – (Albert, 2000) (Vleeming, 2008)
  - FABER, Posterior Pelvic Pain Test, Menell’s (long leg compression/distraction), Squish test, gap test

- Load transfer tests –
  - Marching (Gillete), trendelenburg, ASLR (Mens, 1999, 2001 and 2002)

- Individual tests/measures – no difference in specificity and Liklihood ratios than clusters
  - Thigh thrust (PPPT), Gaenselen’s, ASLR, hip ROM, deep squat, MMT (Cook, 2005)
<p>| Measurement Properties Based on Classification Groups: Albert et al. |
|---------------------------------|-----------------|-----------------|-----------------|-----------------|
| | Sensitivity | | | Specificity |
| | PGS | Sympyosiolysis | 1-Sided SI Syndrome | 2-Side SI Syndrome |
| Menell’s test | 0.70 | 0 | 0.54 | 0.65 | 1 |
| Trendelenburg test | 0.60 | 0.62 | 0.19 | 0.18 | 0.99 |
| Passive hip abduction | 0.70 | 0.17 | 0.25 | 0.37 | 1 |
| Passive hip adduction | 0.67 | 0.38 | 0.30 | 0.30 | 1 |
| Separation test | 0.4 | 0.13 | 0.04 | 0.14 | 1 |
| Compression Test | 0.7 | 0.13 | 0.25 | 0.38 | 1 |
| PPPT | 0.9 | 0.17 | 0.84 | 0.93 | 0.98 |
| FABER Test | 0.7 | 0.4 | 0.42 | 0.4 | 0.99 |
| Palpation of the Sacroiliac Joints | 0.49 | 0 | 0.15 | 0.11 | 1 |
| Palpation of Pubic Symphysis | 0.81 | 0.6 | 0 | 0 | 0.99 |</p>
<table>
<thead>
<tr>
<th>Test Cluster</th>
<th>Sensitivity</th>
<th>Specificity</th>
<th>Positive LR</th>
<th>Negative LR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lunge, MMT, Hip PROM (1/3)</td>
<td>0.7</td>
<td>0.83</td>
<td>4.2</td>
<td>0.36</td>
</tr>
<tr>
<td>Lunge, MMT, Hip PROM (2/3)</td>
<td>0.35</td>
<td>0.83</td>
<td>2.2</td>
<td>0.78</td>
</tr>
<tr>
<td>ASLR, Gaenslen, Thigh Thrust (1/3)</td>
<td>0.88</td>
<td>0.66</td>
<td>2.6</td>
<td>0.18</td>
</tr>
<tr>
<td>ASLR, Gaenslen, Thigh Thrust (2/3)</td>
<td>0.58</td>
<td>0.83</td>
<td>3.5</td>
<td>0.51</td>
</tr>
<tr>
<td>ASLR, Lunge, Thigh Thrust (1/3)</td>
<td>0.94</td>
<td>0.66</td>
<td>2.8</td>
<td>0.09</td>
</tr>
</tbody>
</table>
Persistent pain into the postpartum period has been estimated at 7% - 25% with 1/5th of these subjects assumed to have serious problems.

Of the serious cases, 8-10% continue to have pain for 1-2 years.

Albert et al demonstrated that subjects with a higher number of positive pelvic pain provocation tests in the last trimester, correlated with subjects more likely to have pelvic pain 2 years after delivery.

This group also found that a slower postpartum recovery was seen in subjects with a greater number of pelvic pain locations.

Robinson et al also found that subjects were most likely to have problems at 12 weeks post-delivery with a higher number of pain sites and a history of LBP (pre-antepartum)

Work dissatisfaction and lack of belief in improvement were also highly predictive of persistent pain.
Predictive Value

- Risk factors in early pregnancy and disability or pain intensity in later pregnancy (Robinson et al., 2010)
- 14 weeks to 30 weeks
- Pain locations
- PPPT provocation test
- Sum scores of compression, distraction, FABER and palpation
- Distress and Disability – high correlation
Outcome Measures/QOL

- Why is it so important to treat?
  - Identification of fear and catastrophization
  - Persistent pain into the postpartum period (10%)
  - Consideration of the neuromatrix model with intervention
    The Pelvic Girdle Questionnaire (Stuge, 2011)
  - Disability Indexes/Fear Avoidance
Interventions

- Evidence Based Practice
  - What does the literature support?
  - What does clinical reasoning support?
  - What are the considerations of the patho-anatomical model vs. the treatment based classification model?
Interventions

- **Systematic Review**  
  (Boissonnault et al., 2012)

- 11 studies reviewed

- Exercise (non-specific) – helpful alone or with use of education and pelvic belts  
  (Elden, 2005) (Garshabi, 2005) (Morkved, 2007)

- Aquatic exercise better than land based  
  (Granath, 2006)
Interventions

- Deep core muscle stabilization – transversus abdominus, pelvic floor, multifidus, hip AB, hip ER
  - static postures within functional movement to reduce stress/strain with transitions and load transfer
    - Assymetrical vs. symmetrical movements

- Protection of DRA

- Pelvic Ring support – proprioceptive vs. jt. stability
  - Pelvic belts (Mens, 2005) (Lee, 2001) (Depledge, 2005)
    - High position – just below ASIS for SIJ stability
    - Low position – over PS
Interventions

- Pelvic Ring support – proprioceptive vs. jt. stability
  - Pelvic belts (Mens, 2005) (Lee, 2001) (Depledge, 2005)
    - High position – just below ASIS for SIJ stability
    - Low position – over PS
  - Taping
  - Methods to reduce pubic symphysis strain
    - Tissue creep with positioning
- Body mechanics, bed positioning, prolonged positioning, ADL’s
- Aerobic Exercise – water ex, walking with trekking poles
  - Instruction in monitoring vitals
Interventions

- Address thoracic spine stiffness and forward head posture to ↓IAP and unload the pelvic ring
  - Manual therapy
  - Breathing retraining

- Manipulation vs. Mobilization
  - Emerging evidence (Khorsan, et al., 2009)
  - No adverse effects reported in the literature for PG or Lumbar manipulation
  - Contraindications included preterm labor, cramping, bleeding
  - One adverse effect - odontoid fracture

Reasonable to consider manipulation in the uncomplicated pregnancy?
Interventions

- Treatment based classification system
  - Drive the intervention
    - Paucity of research to support interventions for single sided SIJ dysfunction vs. B sided dysfunction vs. pubic symphysis
  - Theories based on joint mechanics
    - Two sided SIJ pain and PS pain
      - Limit any/all assymetric movements of the LE’s
      - Tissue creep to keep appropriate joint approximation
      - B ER activation strategy to stabilize the pubic and ischial rami
      - Mobilization/manipulation – target the sacrum in the direction of the movement dysfunction
Interventions

- Treatment based classification system

- Theories based on joint mechanics
  - One sided SIJ dysfunction
    - Target the side for specific stabilization
      - Lumbopelvic, pelvic-hip
      - Asymmetrical movements
      - Mobilization/manipulation to the dysfunctional SIJ
Thank-you!

Questions?

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Maigne Syndrome

Vicki Luebbe, PT, FAAOMPT
AAOMPT 2015 Conference
Robert Maigne

• French physician
• 1980
• 30% of “LBP” originates at TL junction
• Thoracolumbar Junction Syndrome (1996)
• Not painful iliolumbar insertion syndrome
Anatomy

- **3 Branches**
- **Proximal:** Posterior Rami comes off spinal root at a right angle. Wraps around the superior pillar of adjacent vertebrae.
- **Distal:** Innervates gluteal region of posterior buttock and low lumbar. Medial branch travel through an osseous-aponeurotic orifice at the iliac crest.
Two Primary Opportunities for Pathology
Referred Pain Patterns
Differential Diagnosis

- SI Pathology
- Anterior Ilial Torsion
- Lumbar Arthropathy
- Ankylosing Spondylitis and Undifferentiated Spondyloarthropathy
- Hip Fracture
- Hip Tendonitis and Bursitis
- Iliotibial Band Syndrome
- Quadratus Lumborum Dysfunction

- Lumbosacral Discogenic Pain Syndrome
- Lumbosacral Facet Syndrome
- Lumbosacral Radiculopathy
- Piriformis Syndrome
- Sacroiliac Joint Infection
- Seronegative Spondyloarthropathy
- Superior Cluneal Nerve (Iliac crest) Syndrome
- Trochanteric Bursitis
Physical Therapy/Manual Therapy Evaluation

• Clinical Findings
  – __________________
  – __________________
  – __________________
  – __________________
Maigne’s 5 Diagnostic Criteria

1. Iliac Crest Point Sign
2. Skin Rolling Test
3. Clinical Evidence of Thoracolumbar Involvement
4. + Palpation of Apophyseal Joints
5. Elimination of s/s with Procaine Injection
Manual Therapy Treatments

- Mobilization, soft tissue and joint specific
- Manipulation
- Therapeutic Exercise
- Activity/Ergonomic Modifications
More Invasive Treatment

- NSAIDS
- Iontophoresis
- Decompression Surgery
GOAL

• Combine our basic science knowledge with good clinical reasoning to provide optimal treatment interventions.
Thank You
Questions?