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Mechanical diagnosis and therapy in chronic postpartum isolated coccygeal pain: a case report

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Objective: *To describe the use of Mechanical Diagnosis and Therapy in evaluating and treating a patient with chronic postpartum isolated coccygeal pain.*

Clinical features: *A 30-year-old female presented with isolated coccygeal pain that began after a vaginal birth 4 months prior. Aggravating factors included sitting and standing upright. She also expressed fear of transitioning from sitting to standing.*

Intervention/outcome: *A directional preference for lumbar extension with right lateral flexion was identified, leading to a diagnosis of lumbar derangement and initiation of reductive forces. At follow-up, she maintained reduction and reported periods of being pain free with less fear of movement. Subsequently,*

Diagnostic et thérapie mécaniques dans la douleur coccygienne isolée chronique post-partum: un rapport de cas

Objectif: *Décrire l'utilisation du diagnostic et de la thérapie mécaniques dans l'évaluation et le traitement d'un patient souffrant de douleur coccygienne isolée chronique post-partum.*

Caractéristiques cliniques: *Une femme de 30 ans s'est présentée avec une douleur coccygienne isolée qui a commencé après une naissance vaginale il y a quatre mois. Les facteurs aggravants comprenaient les actions de s'asseoir et de se lever à la verticale. Elle a également exprimé craindre d'avoir à passer de la position assise à la position debout.*

Intervention et résultat: *Une préférence directionnelle pour l'extension lombaire avec une flexion latérale vers la droite a été identifiée, menant à un diagnostic de déplacement lombaire et d'initiation de forces réductrices. Lors du suivi, elle a maintenu la réduction et a déclaré des périodes d'absence de douleur avec moins de crainte de mouvement. Par la suite, des progressions*

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Conflicts of Interest:
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force progressions were implemented. By visit 6, she was discharged with symptom resolution and functional improvement.

Summary: *This case demonstrates the utility of applying the principles of Mechanical Diagnosis and Therapy in the evaluation and treatment of a patient with chronic postpartum isolated coccygeal pain who failed previous treatments.*

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KEY WORDS: physical therapy modalities; chiropractic; pelvic pain; classification; exercise therapy; mechanical diagnosis and therapy

de forces ont été mises en œuvre. À la sixième visite, elle a été libérée en raison de la résolution des symptômes et de l'amélioration fonctionnelle.

Résumé: *Ce cas démontre l'utilité d'appliquer les principes de diagnostic et de thérapie mécaniques dans l'évaluation et le traitement d'un patient atteint de douleur coccygienne isolée chronique post-partum qui n'a pas répondu aux traitements antérieurs.*

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MOTS CLÉS: modalités de thérapie physique, chiropratique, douleur pelvienne, classification, rééducation par l'exercice, diagnostic et thérapie mécaniques

Introduction

Coccydynia, or tailbone pain, is a condition characterized by pain in the coccyx region.[1] It is often exacerbated by sitting, leaning back while seated, or transitioning from sitting to standing.[2] Pain may also be worsened with defecation or sexual intercourse.[2] The exact prevalence of coccydynia is unknown, but it is more common in women than men.[2] It is present in nearly 50% of women with pelvic pain and in women presenting with coccydynia up to 7.3% have postpartum coccydynia.[3,4]

Common etiologies include fracture or dislocation due to direct trauma from falls or childbirth and pelvic floor dysfunction.[1] Treatment for coccydynia typically consists of physical therapy, pelvic floor rehabilitation, intrarectal manipulation, utilization of donut cushions while sitting and use of nonsteroidal anti-inflammatory medication (NSAID).[5-7] In patients that are unresponsive to conservative care, interventional procedures such as epidural steroid injections, ganglion impar blocks, or radiofrequency ablations and surgical options such as coccygectomy may be considered.[5,6]

The McKenzie method of Mechanical Diagnosis and Therapy (MDT) is a validated and reliable classification-based system, when implemented by a credentialed or diplomate level clinician, designed to assess and treat spinal and extremity musculoskeletal conditions.[8,9] This system is not reliant on pathoanatomical findings and involves a mechanical examination that assesses symptomatic and mechanical responses via a response-based repeated movement assessment.[10] A response-based repeated movement assessment test the symptomatic and mechanical responses to repetitive or sustained mid-range and end-range movements of the spine or afflicted joint.[11,12] Responses to such movements allow for the classification of musculoskeletal complaints into either categories of derangement syndrome, dysfunction syndrome, postural syndrome, or other.[11-13] Treatment is then tailored to the specific classification, often involving directional preference exercises that aim to centralize pain and improve function. Furthermore, the system emphasizes active self-management of the patient's condition, recognition of psychosocial factors and discourages reliance on the clinician and passive care options.[10,14] An overview of the approach to care with definitions of terminology utilized within the MDT system are detailed in Figure 1.

The utilization of MDT has not yet been sufficiently examined as an option for the assessment or management of coccydynia. With this case, we aim to expand on previously established findings that the spine can produce referred pain symptoms without local spinal pain symptoms.[15] This concept has been demonstrated in upper and lower extremity isolated joint pain originating from the cervicothoracic and lumbar spine respectively.[15] Additionally, it has been demonstrated in non-cardiac chest pain originating from the cervicothoracic spine.[16] This

Assessment

History: A standard medical history with a strong emphasis on symptom location, symptom duration, if symptoms are constant or intermittent, the consistency of aggravating and alleviating factors (i.e., always, sometimes, never), sleep disturbance, and red flag screening.

Physical examination: Observation of posture, neurological and orthopedic examination, range of motion assessment, and establishing of functional baselines.

Response-based repeated movement assessment: Evaluation of symptomatic and mechanical responses to repetitive or sustained mid-range and end-range movements of the spine or afflicted joint. The clinical reasoning implemented during this process is guided by the symptom response traffic light guide
(Figure 3).

Provisional Classification

Derangement syndrome: A clinical presentation which demonstrates directional preference in response to loading strategies and is typically associated with movement loss. A common feature in the spine is centralization.

Dysfunction syndrome: A clinical presentation where symptoms are produced consistently and only at a limited end-range of a movement.

Postural syndrome: A clinical presentation where symptoms are produced only from prolonged static loading.

Other: Serious pathology, chronic pain syndrome, inflammatory arthropathy, post-surgery, spinal stenosis, structurally compromised, trauma/recovering trauma, mechanically inconclusive, mechanically unresponsive radicular syndrome, pregnancy related pelvic girdle pain

Treatment

Treatment or an appropriate referral will be made that is based on the classification that was made.

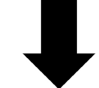
Approach to the management of derangement syndromes consist of the following:

Derangement reduction: Using directional preference exercises and appropriate force progressions

Maintenance of reduction: Through the temporary avoidance of aggravating factors and/or avoidance of repetitive or sustained movements that are opposite to the directional preference and continued appropriate force progressions as needed.

Recovery of function: Includes re-introduction to functional activities and avoided movements/positions.

Prevention of recurrence: Education on risk factors, encouragement to engage in healthy lifestyle habits (i.e., sleep, exercise), and self-management.



Force Progressions

Independent Forces:
Static patient generated: Mid-range of motion ➔ End-range of motion
Dynamic patient generated: Mid-range of motion ➔ End-range of motion ➔ End-range of motion with patient overpressure Dependent Forces:

Clinician generated:
Clinician overpressure at mid-range of motion ➔ Clinician overpressure at end-range of motion ➔ Mobilization ➔ Manipulation

Force Alternatives:
Unloaded or loaded; Sustained positions or repeated movements; Direction of movement: sagittal, frontal, or transverse plane or combined planes

Time factor: Increasing time spent in sustained positions or increasing the number of repetitions completed

Exercise Prescription

Exercise prescription within the MDT system is not a fixed protocol. It is designed to follow general guiding principles, but allow for adaptability based upon the patient's condition, condition severity, and clinician experience.

Guiding principles:
1. Exercise selection should be based on the assessment and consistent with the principles of the symptom response traffic light (Figure 3) and force progressions.
2. Begin with patient generated forces and progress to clinician generated forces when symptoms plateau or fail to improve.
3. In most cases single sets of 10-20 repetitions every 1-3 hours will be utilized. During the evaluation multiple exercises and/or sets of the exercises may be utilized to establish a classification and/or directional preference exercise.

Confirm Classification

Re-assessment is completed in each subsequent visit following the initial examination.

The goal of frequent re-assessment is to:

Confirm, reject, or modify the provisional classification
- Determine the need for force progressions
- Determine when to initiate recovery of function
- Develop self-management skills
- Develop prevention plan
- Determine appropriateness for discharge

Figure 1.
Overview of the Mechanical Diagnosis and Therapy approach.10-12

case describes how the principles of MDT assisted in identifying referred pain from the lumbar spine as a likely pain generator in a case of chronic postpartum isolated coccygeal pain who failed previous treatments.

Case Presentation

A 30-year-old female presented with isolated coccygeal pain that started 4 months prior following a vaginal delivery (Figure 2). The care for this patient took place within a hospital-based healthcare system that utilizes EPIC, an electronic health record (EHR) keeping system. This EHR is utilized by all healthcare providers within this healthcare system to document patient encounters. This allowed for a detailed chart review of the EHR to be conducted prior to her initial visit. The chart review revealed that the delivery occurred without complications, and no episiotomy was required. During her six-week follow-up with her gynecologist she was referred to pelvic floor therapy for her coccygeal pain. This gynecological encounter revealed no diagnosis of pelvic floor dysfunction. She then completed 4 weeks of pelvic floor physical therapy which consisted of pelvic floor and core strengthening, diaphragmatic breathing, coccyx mobilization, and internal and external soft tissue mobilization. During this time, she also met with a family medicine nurse practitioner who recommended the utilization of NSAIDs, a donut cushion, and made a referral to a pain management specialist. In the consultation with the pain management specialist, it was noted that there was only focal tenderness over the coccyx and no tenderness to the lumbar paraspinal musculature or sacroiliac joints. A referral was then made for chiropractic care and a recommendation for a sacrococcygeal ligament injection pending her response to chiropractic care. The chiropractor she was referred to was credentialed in MDT with the McKenzie Institute USA.

TIMELINE

Visit 1
Initial Evaluation
Presented for initial assessment and a directional preference of lumbar extension with a relevant right lateral component

Visit 2
4 days after visit 1
Presented with symptomatic and functional improvement. Force progressions were made to the home exercise plan.

Visit 3
9 days after visit 2
Presented pain free. Recovery of function plan was implemented.

Visit 4
2 weeks after visit 3
Presented pain free but experienced a flare up between sessions. New directional preference was identified.

Visit 5
2 weeks after visit 4
Presented pain free without bouts of pain between visits. She self-reported fear of flexion. Home exercise plan updated to include flexion.

Visit 6
1 week after visit 5
Improvement was maintained and the patient no longer felt fearful of flexion. Patient was discharged.

15-months post-discharge
A review of the electronic health record was conducted and there was no record of the patient receiving care for this complaint again.

Figure 2.
Timeline of patient management from initial presentation to discharge with a brief synopsis of progress at each time point.

Initial visit

At presentation of her initial chiropractic visit, her pain was a 4/10 on an 11-point Likert Numerical Pain Rating Scale (NPRS) and ranged from a 2/10 at its best to a 7/10 at its worst (0 being no pain, 10 being worst pain).[17] She described the pain as a constant sharp achy pain and stated, "it felt as if her sacral region was being pulled apart". Aggravating factors included prolonged sitting, transitioning from sitting to standing, and contracting her glutes. Alleviating factors included being bent forward. When questioned further on the pain with transition from sitting to standing, she clarified that there was only coccyx pain and no lower back pain. Additionally, she reported feeling fearful of having to stand up after sitting.

During the intake she completed a Patient Specific Functional Scale (PSFS) and a Yellow Flag Risk Form (YFRF).[18,19] On her PSFS, she reported having an impaired ability to "sit in a hard back chair", "stand for long periods", and "feed her baby in the rocker" with impairment scores of 3/10, 8/10, and 3/10 respectively (0-10; 0= completely unable to perform activity, 10= able to perform activity fully at the same level as before complaint). On the YFRF, she scored a 38/130 indicating that she was at a low risk for psychosocial and pain related disability risk factors.

Examination and diagnosis

Consistent with the principles of MDT, physical examination started with establishing symptomatic and mechanical baselines.[11] Symptomatic baselines are established from the history. Mechanical baselines are typically based on movement (i.e., range of motion or quality of movement) and functional activities or tasks.[11] When combined with the rest of the clinical examination, establishing baselines is intended to inform the clinician of the patients load tolerances, movement tolerances, and potential MDT classification.[11,12] It also aids in choosing a starting point for the response-based repeated movement assessment.[11,12]

In this case it was observed that attempts to sit upright were not tolerable and forward flexion was required to tolerate sitting during the history intake, the ability to sit erect in a chair was established as a functional baseline. Range of motion baselines were established with active range of motion (AROM) testing (Table 1). AROM deficits of the lumbar spine with symptom provocation were identified. Lumbar extension and right-side glide demonstrated a moderate loss and mild loss of AROM respectively. Both caused an increase in coccygeal pain, concordant with the chief complaint. Lumbar flexion and left side glide were full, with no effect on symptoms. Additionally, an extension-rotation test to the right was provocative of symptoms and not provocative on the left.

After establishing symptomatic and mechanical baselines and clinically correlating that information with her history, several things were determined. She had an intolerance to extension-based movements and an intolerance for loads in a seated or standing position (i.e., inability to sit erect, increased pain when transitioning from sitting to standing, and moderate loss of lumbar extension AROM). It was also concluded that the most likely classification would be derangement or other, based on the pain being constant. Both classifications of dysfunction and postural can only present with intermittent pain.[11]

It was selected to begin the response-based repeated movement assessment with testing the response to repeated end-range extension in lying (REIL) for 10 repetitions (Table 2). REIL was selected for two reasons. The first reason was that if a directional preference was present, it would most likely be extension based. Within the MDT system directional preferences will often be identified in the direction of greatest movement loss.[11,12] The second reason being that it was demonstrated that extension in siting (i.e, sitting erect) and standing were not tolerated well by the patient and according to the force progression principles of MDT (Figure 1), patient generated movements in an unloaded position are of lower force than loaded movements.[11,12] Therefore, opting for an extension based movement in lying was hypothesized to be a more tolerable starting point for the patient. The 10 repetitions of REIL resulted in an increase in symptoms during the performance of the exercise that was no worse after completion. Within the MDT system's symptom response traffic light guide (Figure 3) this pain response is designated as an amber light, indicating that force progressions (i.e., more repetitions, load, or duration) or alternatives would be appropriate.[12] Subsequently, 10 more repetitions of REIL were performed, which again yielded the same response. Based on the AROM baseline of coccygeal pain being increased during right side glide AROM and the provocative right sided extension-rota-

tion test, movement testing was progressed to REIL with her hips off center to the left for 10 repetitions (Table 2). This resulted in her pain decreasing during the exercise which remained better after. This pain response was designated as a green light and suggested the presence of a directional preference for extension with a relevant right lateral component. Seeking continued pain reduction, this was followed by three more sets of 10 repetitions which did result in continued pain reductions. After completing the exercise, her functional baselines were re-evaluated, and she was asked to attempt sitting erect in the chair. She was now able to sit erect without increased pain.

Based on the response of symptom reduction and functional improvement following testing of REIL with hips off center to the left, a provisional diagnosis of a lumbar derangement with a relevant right lateral component was made. A home exercise plan (HEP) of REIL with hips off center to the left for 15 repetitions, six-to-eight times per day was recommended. Consistent with the principles of MDT, education on temporary avoidance of lumbar flexion was provided as this is would be expected to potentially worsen her pain symptoms as it is the opposite direction of her demonstrated directional preference.[11,20] Additionally, education on posture modification through the utilization of a McKenzie lumbar roll to promote lumbar extension while sitting was provided. To avoid unintentionally promoting maladaptive fear avoidance of flexion, it was reiterated that avoidance of flexion is only temporary.

Follow-up

Visit 2

Four days later, she returned to the clinic reporting compliance with the HEP, a NPRS score of 2/10, and that she no longer felt fearful of transitioning from sitting to standing. AROM and functional baselines from the initial visit were reassessed. The new AROM baselines were a mild loss of lumbar extension that no longer caused symptom provocation and full lumbar flexion, right side glide, and left side glide motions with no symptom provocation. The improved tolerance for sitting achieved during the last visit was maintained. To continue progressing reductive forces, tolerance to repetitive extension in standing

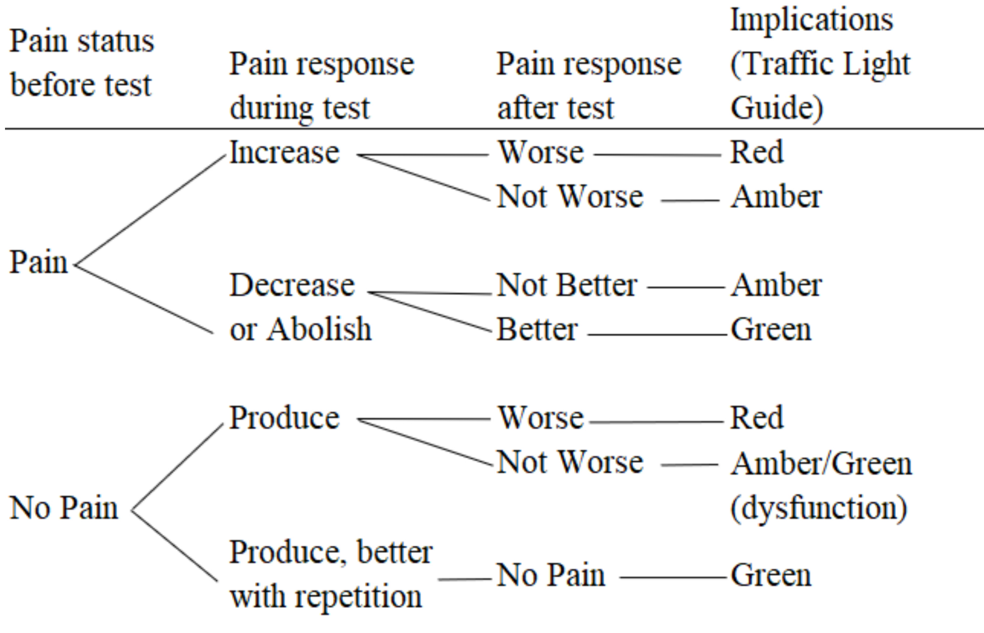


Figure 3.
Symptom response traffic light guide[12].

Table 1.
Baseline range of motion assessment.

Direction (Lumbar)	Range of Motion	Symptom Response
Extension	Moderate Loss	Increased Coccyx Pain
Flexion	Full	No Effect on Coccyx Pain
Right Side Glide	Mild Loss	Increased Coccyx Pain
Left Side Glide	Full	No Effect on Coccyx Pain

Table 2.
Summary of initial response-based repeated movement assessment.

Movement Testing	Sets and reps	Symptomatic Response		Functional Response
		During	After	
Repeated Extension in Lying	2 sets of 10 reps	Increase	No Worse	No Effect
Repeated Extension in Lying with Hips off Center Left	4 sets of 10 reps	Decrease	Better	Could sit erect more tolerably

(REIS) over a fulcrum was tested (Figure 4). She responded positively with a reduction in pain and increased AROM into extension. Her HEP was updated to REIS over a fulcrum for 10 repetitions, six times per day and REIL with hips off center to the left was discontinued. Based on the maintenance of improvement from the initial visit and continued improvement established at follow-up, the provisional diagnosis was confirmed.

Figure 3.
Repetitive extension in standing over a fulcrum

Visit 3

Nine days later, she presented pain free, with intermittent periods of a 1/10 pain and continued compliance with the HEP. Lumbar AROM assessment demonstrated full and pain free motion in all directions. Considering the continued progress, a recovery of function plan was implemented. To guide the recovery of function, a single-leg bridge with leg extension was performed (Figure 5). The single-leg bridge with leg extension was used as a functional assessment to evaluate stabilizing strategies utilized by the patient. During this testing it was noted that she had difficulty controlling her body in the transverse and sagittal planes. Subsequently, a HEP (Table 3) targeting these deficits was recommended to be completed one-to-two times per day in addition to the previously established HEP.

Figure 4.
Single-leg bridge

Visit 4

Two weeks later, she returned for care pain free and reported continuing to be predominately pain free with intermittent periods of a 1/10 pain. However, she reported that she was not compliant with the HEP and had an episode of a minor flare after a 3-hour car ride. In response to the flare, she reinitiated the HEP which resulted in symptom reduction. Additionally, she reported that when the pain was present it was on the left side of the coccyx. AROM baselines were reassessed. All lumbar movements were full and pain free. However, an extension-rotation test to the left was provocative of her 1/10 left sided coccyx pain and not provocative when completed on the right. This was opposite to her presentation at the initial visit. Further investigation with a response-based repeated movement assessment was conducted utilizing the extension-rotation test as the mechanical baseline. Testing began with 10 repetitions of REIL with the hips off center to the right. The response to this was not provocative of symptoms and did not change the extension-rotation test results. A progression of forces was implemented and 10 repetitions of REIL with the hips off center to the right with the utilization of a belt for overpressure were completed. There was no symptom provocation during this exercise. Upon completion of the force progressed exercise, the extension-rotation test was no longer provocative of symptoms. Improvement in the extension-rotation test was used to indicate the presence of a new directional preference to extension with a relevant lateral component to the left. She was then taught how to implement REIL with the hips off center to the right with belt overpressure at home. The HEP was updated to 10 repetitions of REIL with the hips off center to the right with belt overpressure followed by 10 repetitions of REIS over a fulcrum 3-5 times per day and continuation of the lumbopelvic exercises one-to-two times per day.

Table 3.
Home exercise plan.

Exercise	Sets	Reps
Supine 3-month hold	1	20 diaphragmatic breaths
Supine 3-month hold with anti-rotation	2	10
Lock clam	2	10
Half side bridge	2	30 seconds
Bird dog	2	5, 5 second holds

Visit 5

Two weeks later, she presented pain free and reported compliance with the HEP. During this visit she mentioned having a sense of being hesitant to stand after sitting for periods when her posture was more flexed. She stated that despite not having pain she was anticipating the pain to return after sitting like this. To address this concern, she was informed that flexion is not an inherently unsafe position for the spine to be in and the fact that she has being doing this and not having a recurrence of pain is supportive of that. Additionally, it was reiterated that during the initial visit we discussed that we would not plan to avoid flexion long-term and that it would be reintroduced. It was agreed that testing flexion tolerance would be the goal for this session. Prior to testing, AROM baselines were evaluated and all lumbar AROM directions were full and pain free. Testing began with 10 repetitions of repetitive flexion in sitting (RFISit). This had no effect on her symptoms or mechanical baselines. She was then progressed to 10 repetitions of repetitive flexion in standing (RFIS). Again, this had no effect on her symptoms or mechanical baselines. Lastly, 10 repetitions of RFISit with patient overpressure was implemented. This did not produce pain but created a sensation that was described as “not painful but just feels uncomfortable”. Subsequently, 10 repetitions of REIL were completed which abolished the uncomfortable sensation. Her HEP was updated to 10 repetitions of RFISit followed by 10 repetitions of REIS 3-4 times per day and to continue the lumbopelvic HEP as previously established. She was informed that avoidance of flexion was no longer necessary and that following up in one week would be sufficient to test her tolerance for flexion.

Visit 6

One week later, she returned pain free and reported having no increases in pain since the previous visit. She stated that she was compliant with the HEP and felt confident in her movement ability. She was then encouraged to engage in increasing her physical activity, continued implementation of extension exercises either REIL or REIS once per day as a preventative measure, and educated on self-management if a flare of coccyx pain occurred in the future. She was agreeable to this, reported feeling confident in her ability to self-manage if needed, and was discharged from care.

Outcomes

Over the span of six visits, her 11-point Likert NPRS decreased from a 7/10 to a 0/10 at its worst. Her impaired ability to “sit in a hard back chair”, “stand for long periods”, and “feed her baby in the rocker” on the PSFS at baseline was a 3/10, 8/10, and 3/10 respectively. At visit five, one week prior to discharge, the PSFS was updated which showed improved scores to a 7/10, 9/10, and 10/10 respectively. These scores were not updated at discharge due to clinical time constraints. However, on a phone call six weeks after discharge, she reported continued improvement and stated the week prior she completed a road trip which required four hours of uninterrupted sitting in the car, pain free. Despite not having an updated PSFS, these reports are consistent with a continued improvement in her functional ability. The YFRF was not updated as it was utilized to screening for psychosocial and pain related disability risk factors. Additionally, a chart review of her EHR revealed that over the past 15 months since being discharged from care for this complaint she has not sought care with a provider within the hospital-based healthcare system that this case took place for a recurrence of her coccygeal pain.

Discussion

Coccydynia, particularly in postpartum populations, is commonly attributed to local trauma or pelvic floor dysfunction.[1,2] Treatment is often focused on physical treatments targeting the coccygeal region directly or on symptom management.[2,5,6] Unfortunately, we were unable to identify any published literature on the rate of transition from acute to chronic coccydynia. However, in a prospective cohort, it was found that 51% of individuals with chronic coccydynia who received conservative treatment still had persistent symptoms three years later.[21] This suggests that current management options are inadequate for many patients with chronic coccydynia.

Pain localized to upper and lower extremity joints have been shown to have symptomatic and functional improvements when a directional preference of the cervicothoracic or lumbar spine is identified, despite the absence of spinal pain.[15] This has also been demonstrated in a case of non-cardiac chest pain.[16] While the differential diagnosis of postpartum coccygeal pain typically centers on localized mechanical or soft tissue causes,[1,2] it is reasonable to explore the possibility of referred pain from the lum-

bar spine in cases of coccydynia that have failed standard management strategies, similar to what has been describe in the upper and lower extremity joints.

To our knowledge there are no controlled trials or large cohort studies evaluating the use of MDT for chronic postpartum coccygeal pain. Additionally, there are no established MDT protocols for coccygeal pain.[11,12] Despite this, the MDT principles adhered to in this report were able to guide the identification of a movement strategy that satisfied the criteria for derangement syndrome of the lumbar spine in this patient with chronic postpartum isolated coccygeal pain who failed previous treatments.[11] The recurrence of mild symptoms during follow-up and the identification of a new directional preference later in care reflect the dynamic nature of derangements and the adaptability of MDT principles. This is important to note as MDT is first a method for evaluating musculoskeletal complaints with the goal of classifying the complaint into categories of derangement syndrome, dysfunction syndrome, postural syndrome, or other. Once a classification is made then treatment is tailored to the specific classification.

Not only did the MDT system aid in identifying a directional preference that produced symptom relief and functional gains, but it also aided in decreasing fear of movement and allowed for a process to reintroduce previously avoided movements (i.e., spinal flexion) without symptom recurrence. This is particularly relevant in populations with chronic musculoskeletal pain, where pain-related fear and functional limitations can negatively impact quality of life and caregiving roles. This emphasizes the biopsychosocial benefits of the MDT system which is often overlooked.[14]

Limitations

We do acknowledge that there are significant limitations to consider when interpreting the results of this case report. First, this case report is inherently limited by the lack of generalizability, inability to establish causality, and cannot be extrapolated to broader populations with chronic postpartum coccygeal pain.[22] Second, it is not possible to rule out the effect of placebo or natural history. Third, there was a short follow-up period of direct communication with the patient. We were able to track care seeking within the EPIC EHR for 15 months post discharge. However, this does not adequately capture long-term efficacy as it is possible that she may have received care for recurrence at an institution that does not utilize the EPIC EHR and allowed care seeking to go undetected. Lastly, the MDT system has been shown to be a valid and reliable method of assessment for spinal and extremity musculoskeletal complaints, when implemented by a credentialed or diplomate level clinician.[8,9] The treating clinician for the patient in this report was a credentialed level MDT provider which does strengthen the reliability of the results found in this report but makes our findings less generalizable to clinicians without a background in MDT. This case report was also strengthened by following the CARE checklist for case reports.[23]

Summary

This case demonstrates the utility of the MDT system in the evaluation and treatment of a patient with chronic postpartum isolated coccygeal pain who failed previous treatments. The patient's symptomatic and functional improvement following the identification of a directional preference of lumbar spine extension with a relevant lateral component supports the theory that lumbar derangements may present with distal symptoms and the absence of local symptoms. In cases of coccydynia that have been unresponsive to standard care options, lumbar sources of pain should be considered, and the MDT system may be of benefit to evaluate that possible source of symptoms. Further research is needed to better understand the relationship between coccydynia and lumbar derangements.

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