

Coccygodynia: A Case Report of Post-Traumatic Pelvic Floor Pain Due to Myofascial Trigger Points

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OBJECTIVE: To report a case of post-traumatic pelvic floor pain caused by direct trauma to the coccyx with resultant myofascial trigger points and demonstrate that conservative care may resolve coccygodynia and prevent coccygectomy.

CLINICAL FEATURES: A 30-year-old female was unable to sit or walk comfortably because of post-traumatic myofascial coccygodynia.

INTERVENTION AND OUTCOME: One trigger point pressure release treatment of the levator ani, obturator internus, and coccygeal myofascial trigger points resolved chronic coccygodynia without manipulation of the coccyx. Immediately following the treatment, she was able to sit on a hard surface with 90% relief of the coccygodynia and ambulate with 70% reduction of the pain.

CONCLUSIONS: Health care providers and surgeons should consider myofascial evaluation and management prior to surgical excisions of the coccyx for chronic coccygodynia.

KEY WORDS: coccygodynia, coccydynia, coccygectomy, myofascial trigger point, and myofascial trigger point pressure release.

INTRODUCTION

Coccygodynia has been termed a “pain in the rear.”¹ The painful coccyx first coined as “coccygodynia” some 150 years ago is still a misunderstood symptom that affects women more frequently than men and most often after a traumatic incident.² Sixty percent of patients with common coccygodynia present with mechanical coccygeal lesions that most frequently follow a fall onto the buttocks.³ Forty percent of the patients with coc-

cygodynia present with normal alignment and proper function of the coccyx with “idiopathic” causes.⁴ Recently, a significant study implied that coccygodynia is primarily due to physical pathology rather than a manifestation of an underlying neurosis.⁵

CASE REPORT

A 30-year-old female chiropractic student with a chief concern of “pain in the tailbone” presented

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for evaluation and treatment on Nov. 17, 2008. Three months earlier, she slipped while walking in a muddy parking lot, fell onto the left side of her buttocks, and incurred some scrapes on her left hand. Initially, her hand bothered her more than the pain in the buttocks. During the autumn of 2008, she began a regular exercise program with an elliptical trainer and an arc trainer, which produce up to 90 degrees of hip flexion. The coccyx pain came on gradually after she began the exercise program, but within two weeks, it became unbearable. She had trouble sitting in class all day without pain. If she leaned back in her seat, she experienced a pain that radiated into her lower abdominal area and triggered a feeling of nausea. She avoided leaning back in her seat because she became apprehensive about experiencing these symptoms.

The patient described the pain as a local, deep, dull, ache that made her feel nauseated; she denied any radiations down her legs. Sitting, standing, and walking increased the pain while a recumbent position eliminated the pain. The patient avoided sitting on her coccyx in order to prevent pain in the tailbone. She graded the pain in the tailbone area while sitting to be a level of 9 of 10, but standing and walking produced pain that she graded at a level of 6 of 10. Coughing increased the pain, and she occasionally experienced pain upon rising to a standing position; however, she denied any increase in pain with sex or defecation. She denied receiving any treatment for the current condition, but one of the clinical professors elicited severe pain at the tailbone with external palpation of the sacrococcygeal region.

Her past history included a fall on her buttocks during the summer of 1992 at the age of 14 that caused pain around her tailbone for about one year. The pain was similar to the current condition and occurred with sitting but not while standing. Later, she injured her coccygeal area again in an automobile/pedestrian accident.

She provided a description of her history of the initial coccygeal injury:

In the summer of 1992, I was at a new friend's house and was in her bathroom for the first time. There were a bunch of girls doing their hair and

makeup, and I was just in there talking with them. I leaned back against what I thought was a wall but that turned out to be a shower curtain. With full force, I fell backwards into the bathtub directly onto my buttocks. The pain was excruciating. At that time, it was probably a 10 on a scale of 10. I was sore for a few days after the fall, but I never sought medical treatment for it.

A few months later on Nov. 4, 1992, I was crossing the street and was struck by a vehicle that was traveling in a turning lane. My view was obstructed by a van stopped at a red light, and I didn't realize that the turning lane had a green light. I ran into the vehicle at the area of its front left tire. I rolled up onto the hood of the car and shattered the windshield with my head. I was thrown off the car and fell to the pavement. Four layers of clothing were torn through, and I had an abrasion over my sacral apex by being thrown and skidding across the road on my buttocks. Due to the head trauma, my memory of the incident is a little blurry. The doctors in the ER didn't address this area as I was more concerned with leg and head pain at the time. Throughout the rest of my sophomore year, I remember having a hard time sitting in my seat at school due to the pain in my coccyx. It gradually went away by the summer of 1993.

Physical examination of the patient revealed pain in the area of the coccyx with both walking and sitting. She pointed to the coccygeal region as the site of the pain. Rectal examination revealed slight discomfort with passive extension of the coccyx, which she denied as the chief complaint. There were no signs of dislocation or instability of the coccyx, but palpation of the levator ani produced localized pain. The patient confirmed this pain replicated her chief concern. Palpation of the obturator internus produced referred pain down the posterior aspect of the lower extremities but not below the knees, while palpation of the coccygeal muscles produced localized pain bilaterally. Palpation of the pelvic floor muscles revealed tautness, nodular formations, pain, and eight myofascial trigger points in the levator ani, obturator internus, and coccygeal muscles with symmetrical distribution. There was an absence

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of frank blood with removal of the gloved examining finger.

The doctor explained to the patient that she was suffering from coccygodynia due to strain of the levator ani, coccygeal, and obturator internus muscles with resultant active myofascial trigger points. She received a complete explanation of the intra-rectal trigger point pressure release procedure (TPPR) with its expected results and possible complications of increased pain or a lack of response to care. The patient provided consent and requested the treatment. A female chiropractic student selected by the patient accompanied the attending chiropractor during the examination and treatment.

After the patient properly gowned, she assumed a left lateral decubitus position with her knees and hips flexed to 90 degrees. Following external coccyx palpation, the chiropractor performed an intra-rectal examination. Conservative manual medicinal management consisting of TPPR inactivated the central myofascial trigger points located in the pelvic floor muscles including the levator ani, coccygeus, and obturator internus muscles bilaterally. The chiropractor advised the patient that if the pain became intolerable, she should advise him to stop. Palpation and pressure over the trigger points re-created the lower abdominal pain and produced local pelvic floor pain. The intervention produced discomfort, but the patient tolerated it.

Immediately following the treatment, she was able to sit on a hard surface with 90% relief of the coccygodynia and ambulate with 70% reduction of the pain. The patient was to return for additional treatment only if the symptoms persisted. Eight months after the treatment, the patient explained how her pain had decreased, and recovery ensued.

My pain decreased immediately after treatment. That evening, I was able to sit down with less pain and no symptoms of nausea like I had been experiencing. I misunderstood the instructions, and I exercised the following evening. It caused a temporary increase in the pain again, but the severity was not as high as it

was before treatment. It was a 3 on a scale of 0-10. I was then instructed to not use the elliptical trainer for 6 weeks. I followed the instructions and used the treadmill instead. Since then, I have only experienced a few episodes of mild pain in the area, after prolonged sitting. The severity of these episodes never exceeds a 2/10. I currently have no pain today (0/10). I have also used the elliptical machine on numerous occasions with no pain as a result.

A consultation with the patient 17 months following the treatment revealed that she no longer experienced pain in the tailbone area with sitting or with exercise. She rated her improvement at 100%.

DISCUSSION

Anatomy

Three different muscles might cause coccygodynia owing to myofascial trigger points, according to Travell and Simons.⁶ Two of the muscles, the levator ani and the coccygeus, form the pelvic floor, while the obturator internus muscle forms the lateral pelvic wall. The obturator internus muscle is only indirectly accessible to myofascial trigger point therapy because of its connection to the levator ani.⁷

Levator Ani

The levator ani muscle comprises the pubococcygeus and the iliococcygeus muscles. Both muscles have bilateral pairs and connect in the center of the body, forming the anococcygeal ligament.

The pubococcygeus originates on the posterior body of the pubic bone and connects to the midline and the coccyx. The anterior fibers of the pubococcygeus include the levator prostatae in males and the pubovaginalis muscle in females. The levator prostatae forms a sling around the prostate and supplies an upward pressure on it. The pubovaginalis constricts the vagina, acting as a sphincter. The posterior fibers of the pubococcygeus, the puborectalis, form a sling around the anus and constrict it when contracted.

The iliococcygeus attaches from the ischial spine via the parietal pelvic fascia of the obturator in-

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ternus to the anococcygeal ligament and the coccyx. It supports the pelvic floor and resists increased intra-abdominal pressure. Branches of the pudendal nerve innervate the levator ani muscle.

Myofascial trigger points in the levator ani muscle may refer pain to the coccyx, the rectum, or the lower back. In females, it may refer pain to the vagina. Referred pain from this muscle makes sitting uncomfortable. The pain may be aggravated by lying on the back and by defecation.

Coccygeus

The coccygeus muscle attaches from the ischial spine to the lateral aspect of the coccyx and sacrum. It pulls the coccyx forward. It also provides stability to the sacroiliac joint and supports the pelvic floor against intra-abdominal pressure. The ventral rami of S4 and S5 innervate the coccygeus muscle. Myofascial trigger points in the coccygeus muscle may refer pain to the coccyx, hip, or back.

Obturator Internus

The obturator internus muscle originates at the inner pelvic brim, the obturator membrane, and the borders of the pelvis surrounding the obturator foramen. The fibers of the muscle form a tendon that passes through the lesser sciatic foramen and inserts into the medial aspect of the trochanter.

This muscle is innervated to the obturator internus, which arises from the ventral rami of L5-S2. The obturator internus muscle externally rotates the extended hip and functions as an abductor upon hip flexion. Myofascial trigger points in the obturator internus can cause rectal pain and a feeling of fullness in the rectum. The pain pattern may also continue down the posterior aspect of the thigh and may refer pain into the vagina.

Coccygodynia and Myofascial Pain

Coccygodynia is an anorectal pain syndrome⁶ and may present as chronic pelvic pain because of myofascial trigger points. The myofascial trigger point is a hyperirritable spot in skeletal muscle that is associated with a hypersensitive, palpable nodule in a taut band. The spot is painful upon

compression and may give rise to characteristic referred pain or tenderness, motor dysfunction, and autonomic phenomena.⁸ In most women who suffer from the type of musculoskeletal system compromise that leads to chronic pelvic pain, and in 15% of those with coccygodynia, myofascial trigger points are the cause.⁹

Coccygectomy

Orthopedic surgeons have long recommended excision of mobile segments of the coccyx for the treatment of coccygodynia.^{10,11} A study in Turkey concluded that after all conservative treatment options have been exhausted, surgical excision of the coccyx seems a justifiable alternative.¹⁰ Since not all patients obtain satisfactory results with either conservative care or coccygectomy, it has been suggested that surgeons become more aware of additional types of conservative care available to patients, together with relevant anatomical and pathophysiological mechanisms involved in the production and transmission of coccygeal pain, in order to develop innovative treatment strategies.¹²

Conservative Treatment

Conservative treatment or nonsurgical management options vary considerably. One study utilized nonsurgical management including nonsteroidal anti-inflammatory, analgesic medications, rest, hot baths, a cushion to protect the coccygeal region from repetitive trauma, diathermy, and ultrasound.⁵ Another study initiated a three-step program with injections of methylprednisone and bupivacaine around the coccyx. If the pain persisted at one month after the initial injection, a second injection was administered, followed by manipulation under general anesthesia. The manipulation under general anesthesia involved repetitive passive extension and flexion of the coccyx for one minute. Patient re-evaluation took place six weeks following the second step. Failure to relieve the pain with injection and MUA indicated the need to perform a coccygectomy as the third step.¹³

An allopathic physician reported that manual treatments provided satisfactory relief of coccygodynia for 24.3% of the cases at 2 years following

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treatment. The author concluded that myotherapy to the levator ani muscles was more effective than joint manipulation if the patient presented with a normally mobile coccyx.¹⁴ Another study reported that manual medicinal procedures produced decreased subjective pain intensity with treatment of coccydynia with 6-8 interventions.¹⁵ A chiropractor presented a case report that demonstrated complete relief of acute coccydynia with only one external instrument-assisted adjustment procedure to the pelvis and coccygeal area, primarily the sacrococcygeal ligament.¹⁶ Other external manipulation procedures have been described in the literature.¹⁷

One interesting version of conservative evaluation and management for acute coccydynia (<2 months duration) recommended 8 weeks of rest, stool softeners, adjustable seating, and nonsteroidal anti-inflammatory medications. Patients who did not respond to care, or patients with chronic coccydynia (>2 months duration), received dynamic MRI study, stretching, massage, and injection, while coccygectomy was recommended with recalcitrant cases.⁵

Trigger Point Pressure Release

Another conservative intervention for the treatment of coccydynia involves the manual treatment of myofascial trigger points with an intra-rectal protocol. *Trigger point pressure release* is an application of slowly increasing, non-painful pressure over a trigger point until a barrier of tissue resistance is encountered. Contact is maintained until the tissue barrier releases and increased pressure reaches a new barrier to eliminate the trigger point tension and tenderness.¹⁸

To the authors' knowledge, this is the first published report of TPPR in the treatment of coccydynia. In the authors' clinical experience, painful trigger points adjacent to the sacrococcygeal joint are common in patients treated for coccydynia. The success of treating external trigger points associated with other musculoskeletal complaints seems to be a reasonable rationale for treating these internal trigger points, as well.

Since improvement in motion and reduction of trigger points is effective in other musculoskeletal areas, it is reasonable to assume that it could be beneficial in coccydynia. Grassi demonstrated that the coccyx is normally mobile during defecation.¹⁹ The sacrococcygeal joint is a normal joint neurologically and mechanically, so it is reasonable to assume that it would suffer the same fate as other joints if mobility were restricted via joint hypomobility or muscle spasm.

Patient Safety and Informed Consent

Given the sensitivity of intra-rectal examination and treatment of the pelvic floor muscles or the sacrococcygeal joint, another member of the chiropractic staff should accompany the attending chiropractor during the procedure. A female staff member should assist if the patient is female.

Prior to treating the patient, the doctor must explain the benefits and risks of the proposed treatment, alternative treatments, or no treatment to the patient.

Lubricant/anesthetic used on the gloved finger can create problems. Bae et al. report a case of anaphylaxis due to chlorhexidine antiseptic used during a digital rectal exam.²⁰ Allergies to latex gloves commonly used in examination procedures have also been reported.^{21,22,23, 24} This further highlights the necessity of doing a thorough history and exam.

As in any invasive procedure, precautions exist. Chiropractors unfamiliar with doing rectal exams need to be aware of the problem associated with hemorrhoids. External hemorrhoidal tissue can present blind pouches. Insertion of the finger with a lot of pressure into one of these cul-de-sacs could cause pain, bleeding, and possible tissue damage.

Patient-Centered Care

The Institute of Medicine (IOM) has called for improvements in health care performance: safety, effectiveness, patient-centeredness, timeliness, efficiency, and equity. The IOM asserts that these improvements may be achieved in the existing health care system.²⁵ Physicians who match in-

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formed patients' preferences with viable treatment choices provide a key component of patient-centered care.²⁶ Perhaps surgeons who seek consultations with chiropractic physicians trained to evaluate and manage patients suffering from chronic coccygodynia prior to coccygectomy would demonstrate patient-centered care.

CONCLUSIONS

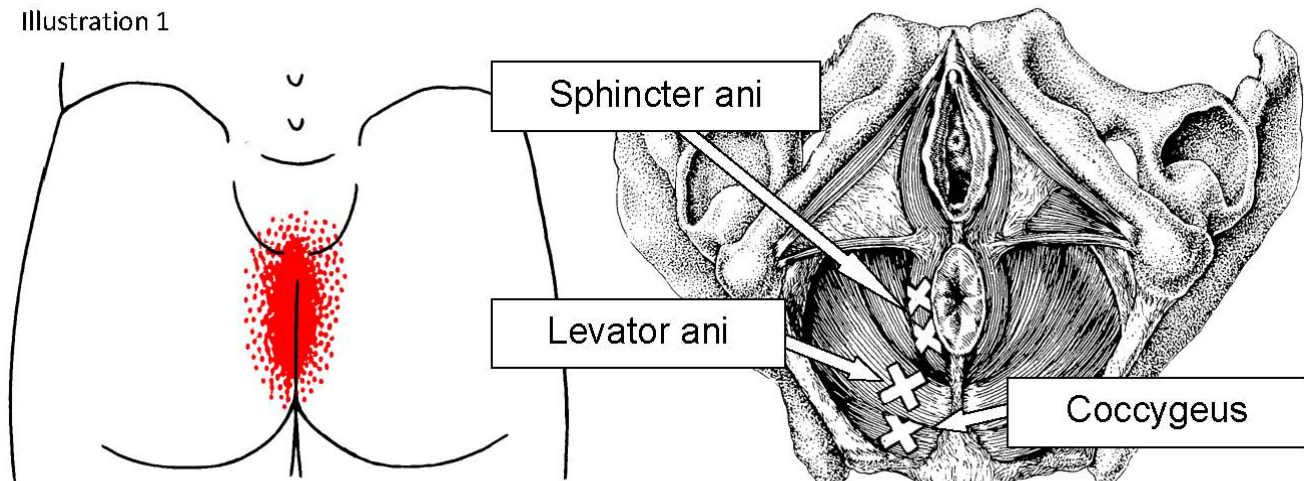
Patients presenting with chronic coccygodynia require examination for the presence of common myofascial trigger points in the levator ani, coccygeus, and obturator internus muscles, which might be the cause of post-traumatic pelvic floor pain. Active myofascial trigger points may be treated and inactivated with trigger point pressure

release (TPPR). This case report demonstrates a single treatment that resolved pelvic floor pain caused by myofascial trigger points.

It is reasonable for physicians and surgeons to consider trigger point pressure release as a method of conservative treatment of common coccygodynia with normal mobility of the coccyx. Health care providers should consider myofascial evaluation and management prior to surgical excisions of the coccyx for chronic coccygodynia.

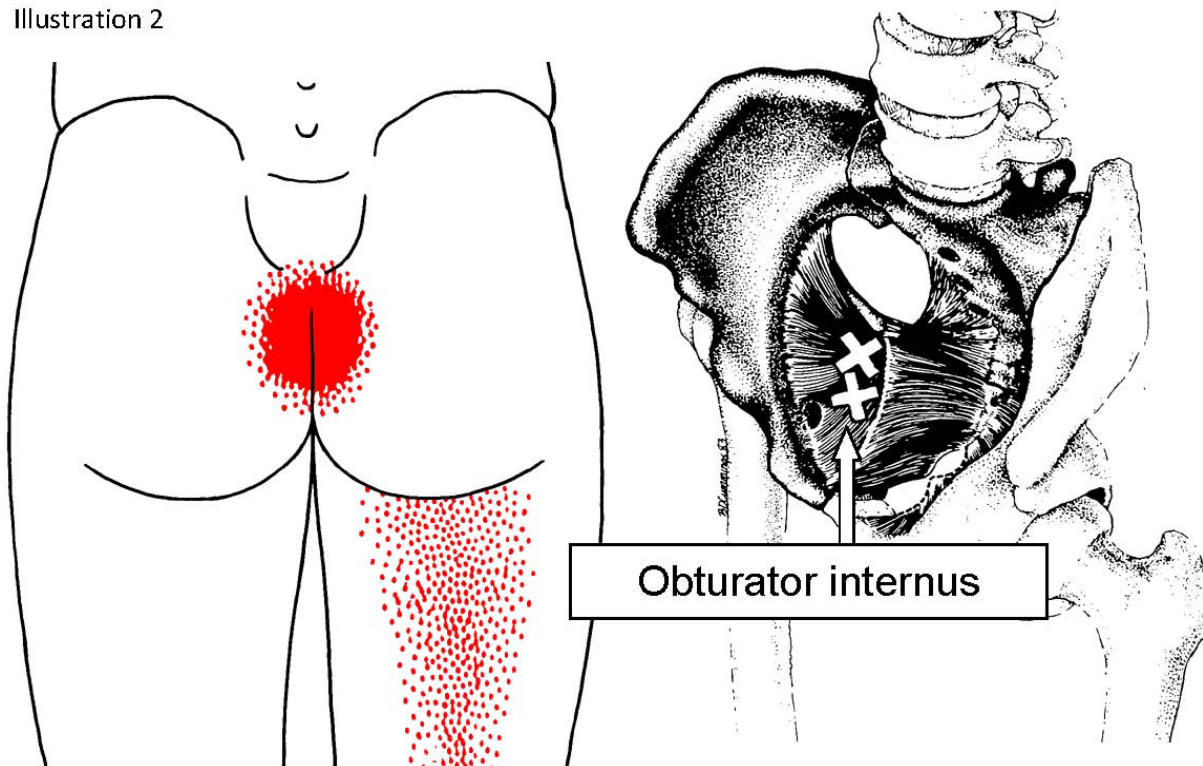
We suggest a multidisciplinary, prospective clinical trial in a larger population to assess the potential efficacy of TPPR for the treatment of coccygodynia. ■

Illustration 1



Source: Myofascial Pain & Dysfunction, 1999: Volume 2. Illustrated by Barbara D. Cummins, Williams & Wilkins, used with permission.

Illustration 2



Source: Myofascial Pain & Dysfunction, 1999: Volume 2. Illustrated by Barbara D. Cummings, Williams & Wilkins, used with permission.

CONSENT

Written informed consent was obtained from the patient for publication of this case report. A copy of the written consent is available for review by the editor-in-chief of this journal. The Barbara Cummings illustrations of myofascial trigger points were used with the publisher's permission.

DECLARATION OF COMPETING INTERESTS

The authors declare that they have no competing interests.

AUTHORS' CONTRIBUTIONS

JJL originally conceived of the research and served as the primary investigator. He was also the main writer, treating clinician, and editor of the manuscript. JJM was responsible for literature review and writing of the manuscript. DMD took part in writing the manuscript. All of the authors read and approved the final manuscript.

AUTHORS' INFORMATION

JJL trained to perform intra-rectal coccygeal manipulation for patients suffering with coccygodynia during his intern training in Canada following graduation from Logan College of Chiropractic in 1972. During 33 years of chiropractic practice in New Mexico, he modified his therapeutic approach to include myofascial treatment based on the teachings of Drs. Janet Travell and David Simon. He found that the response to care was excellent, with reduced costs and improved patient satisfaction. JJL has been a full-time assistant professor of clinical sciences at the University of Bridgeport College of Chiropractic since 2006.

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JJM has been teaching coccygodynia as part of musculoskeletal diagnosis for 10 years. He has more than 20 years' experience treating musculoskeletal complaints, including coccygodynia with manipulation. He is on leave of absence at this time but maintains his status as a member of the faculty at the University of Bridgeport/College of Chiropractic.

DMD is a 2002 graduate of the New York College of Health Professions where she received an Associate of Occupational Studies degree in massage therapy. She is currently in her fourth year of training at the University of Bridgeport/College of Chiropractic.

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