Case Report
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Coccygeal Disc Disease as a Possible Cause of Coccygodynia

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Abstract

Objective. The aim of the present study was to describe the causes involved in the pathophysiology of coccydynia, emerging from the coccyx or the anatomical tailbone region. **Case Report.** We present the case of a 64-year-old man with pain in the coccyx and numbness in the perianal area. After clinical examination and imaging evaluation, including plain X-rays and magnetic resonance, coccygeal disc disease was identified. Other findings, such as tumor and fracture were excluded. We decided to undertake conservative management and the pain was eventually relieved. This is the first case report of coccygodynia and perianal numbness attributed to coccygeal disc disease. **Conclusion.** Although there is no standard treatment, coexisting coccygeal disc disease should be always taken into account, with clinical and imaging examinations being considered of major importance to establish both medical diagnosis and treatment.

Key Words: Coccyx ▪ Coccygodynia ▪ Perianal Numbness ▪ Coccygeal Disc Disease.

Introduction

The term coccydynia was initially used by Simpson (1) and later by Foye (2) to describe pain–discomfort localized around the bottom end of the spine, or the lowest (most inferior) site of low back pain, where it was noted that it is produced when the coccyx or the coccygeal joints have been injured, or after prolonged sitting, due to the compression of the surrounding tissues or the muscles attached to the coccyx (1, 2). Moreover, in certain cases it is expressed as pain in the general area of the sacral perianal, in the absence of lower back pain or radiation (3). Nevertheless, fewer than 1% of subjects also manifest lower back pain (4).

The specific pathophysiological mechanisms related to coccygodynia are still vague. However, the majority of cases are linked to recent lumbar spine surgery, epidural injections and rectal surgery, whilst some cases of coccygodynia are idiopathic, or most subjects have a preceding traumatic event, such as falling on their tailbone, or the roots of this problem may even stem from childbirth (5). Posttraumatic coccygeal instability might lead to hypermobility or subluxation of the coccyx with chronic inflammatory alterations that may further lead to sacrococcygeal joint arthritis (6). Microtrauma deriving from inadequate body positioning, such as prolonged periods of motorcycle or bicycle riding, may lead to a chronic sprain of the coccyx (7, 8). It has already been established that female subjects are five times more likely to suffer from chronic coccygodynia than male subjects. This higher risk has been associated with differences in the female anatomy, where the sacrum and coccyx lie more posterior than in male subjects, whilst the coccyx is longer in women (9). Other factors related to an increased risk for this medical condition include an increased body mass index, local tumors and sacrococcygeal joint fusion (10).

In the literature, coccygeal discopathy as a causal factor of coccygodynia has not been previously

noted. To the best of our knowledge, only a few cases have been reported with coccygeal herniation derived from trauma, arthritis, a tumor or after coccygectomy (6, 9, 10).

On the basis of a literature review (2, 3, 7, 8-10), we report a case of coccygodynia and perianal numbness in a healthy man without a previous history of trauma, with a coccygeal disc herniation,

Case Presentation

A 64-year-old, Caucasian male white-collar worker, without a history of trauma, was referred to our department in August 2020 with a complaint of coccygodynia and a verbal report of mild perianal numbness. He had experienced pain in this region over the previous 2 months, and it was typically aggravated by sitting or lying on his back, but was not associated with neurological symptoms. There was no history of difficulty in defecation or micturition. The patient's body mass index was 23 kg/m^2 (specifically, 178 cm in height and 73 kg in weight). His lumbar spine range of motion was normal, with mild pain, especially in end range active flexion and extension, without exacerbation by overpressure or repeated movements. No motor deficits were noted after testing the muscles of the lower extremity, Lasegue's and femoral stretch test were negative bilaterally, and deep tendon reflexes were negative and comparable bilaterally. The overlying skin was normal, however there was mild tenderness localized to the sacrococcygeal joint. The patient reported a medical past of hypertension and hyperlipidemia, both under medication. Besides degenerative changes at level L5-S1, no abnormalities of the coccyx could be identified on plain X-ray. Magnetic resonance imaging (MRI) of the coccyx was performed, which revealed a disc herniation (Figure 1).

Conservative treatment which included the use of oral non-steroidal anti-inflammatory drug (NSAID), (naproxen 500 mg) twice a day for a

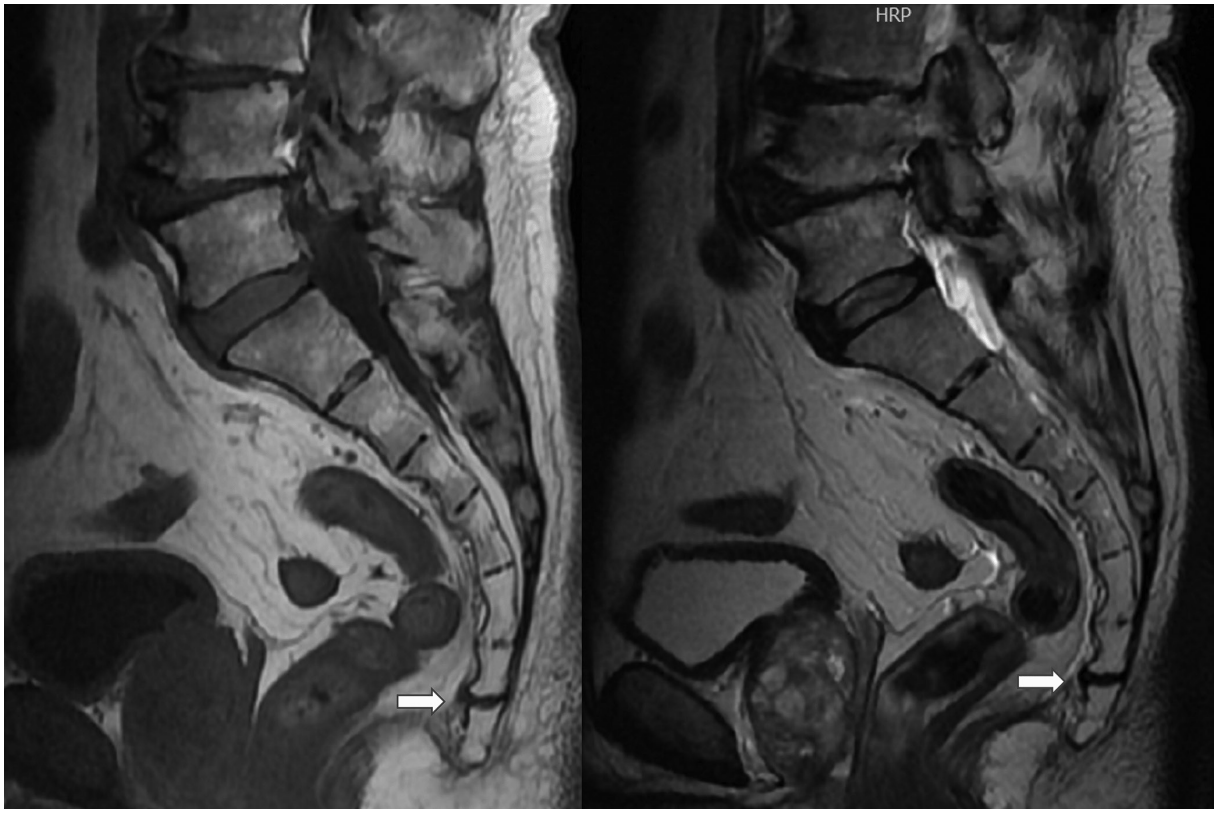

Figure 1. The magnetic resonance imaging in sagittal plane, revealing coccygeal disc disease.

period of 2 weeks was applied, along with seat cushions, and the avoidance of provoking activity, (avoidance of any positions or movements that might exacerbate his symptoms). The patient was also referred for physiotherapy, which included heat and cold application over the site, manual manipulation, massage of the levator ani muscle or the coccygeus muscle, and extracorporeal shockwave therapy, education focused on proper sitting posture, core stabilization, stretching and strengthening of the piriformis and iliopsoas muscles, thoracic mobilization, and pelvic floor muscle rehabilitation (diaphragmatic breathing, perineal bulges, intrarectal manual therapy). After two months of conservative management, with 3 visits per week, his symptoms were relieved and the patient was in good condition with no further symptoms at the follow-up date one year after his initial complaint.

Discussion

This case study presents coccygodynia in a white-collar male with normal BMI, without any history of previous trauma, and it emphasizes that coccygeal disc disease may be related to pain in the coccyx and perianal numbness. Coccygodynia is usually related to trauma, high BMI, sacral bone morphology, infection, posttraumatic arthritis, coccygeal mobility or tumors (7). It can also be associated with nonorganic causes, such as somatization disorder and other psychological disorders (11). Moreover, it can be referred pain from lumbar spine degeneration (7, 12), but in one-third of cases it is idiopathic (13). Coccygodynia may be related to long-term sitting and posture, and may be triggered by defecation, standing, and sexual intercourse. Additionally, it may be worse when rising from a seated position, and leaning backwards while seated. Another possible cause of coccygodynia may be an injury of the coccygeal plexus or its branches. It has already been well established that the coccygeal plexus is derived from the ventral rami nerve roots of the fourth and fifth sacral nerves, and the ventral rami of the first coccygeal nerve. The plexus is found within the ischiococcygeus muscle at the level of the first intercoccygeal joint (13). While there are numerous causes of pain in the coccyx area, a coccygeal disc herniation remains a rare entity. Interestingly, Maigne et al. suggested that common coccygeal pain might be discogenic, on the basis of findings of provocative discography. In their case series, fifteen out of twenty-one subjects had a positive result on provocative discography, whilst 25% of them had coccygeal luxation in the sitting position, which could be reduced in other positions (14). It seems that the presence of dynamic instability demonstrates that the cause of the pain is probably the result of degeneration, as it is also demonstrated in other regions of the spine. However, unlike lumbar discs, coccygeal discs are not known for developing osteophytes or syndesmophytes, due to the fact that they do not sustain compressive loads (14).

The diagnosis of this condition remains clinical, relying primarily on history and physical examination, and it should be investigated thoroughly. Any lower spine or rectal pathology must be recorded and examined appropriately by different specialists, such neurologists, neurosurgeons, orthopedic or colorectal surgeons. The pathophysiological pathway is yet to be established, and may be complex and multifactorial. Conservative treatment, such as rest, NSAIDs, pelvic floor physical therapy and utilizing seat cushions in the sitting position, is usually effective, and several studies have shown that this provides a successful outcome in approximately 90% of patients (3, 15, 16). Our report presents a possible case of coccygeal disc disease, causing pain and perianal numbness, that was treated successfully with conservative management.

Furthermore, imaging of the coccyx, and pinpointing the cause of the pain in the region is quite challenging, as the normal anatomy of the area is complex and can be anatomically variable. Knowledge of the morphological variants is a prerequisite for correct identification of the pathology (17).

Plain X-rays are usually unable to identify the etiology of the pain, but are very useful as a primary investigation tool to rule out or identify

fractures, and visualize the coccyx morphology. The most common cause of coccydynia is trauma, and X-rays are the first imaging modality used. When the radiographs suggest a fracture, a CT scan is recommended for definitive diagnosis.

Another difficulty in the diagnosis is assessing the mobility of the coccyx. This is best evaluated using dynamic X-rays (14, 17). A dynamic plain x-ray can visualize coccygeal mobility and can be very helpful in ruling out abnormal mobility. Hypermobility is defined as 25% or greater flexion while sitting compared to standing, where less than 5 degrees of motion is considered a rigid coccyx (15). Although comparison of sitting and standing films will show radiographic abnormalities in up to 70% of symptomatic coccygodynia cases, in everyday practice dynamic x-rays are not widely used due to the lack of a standardized technique and validated measurements (14).

Regarding MRI, special attention should be paid as many patients with coccygodynia are referred for MRI of the lumbar spine and the scan does not include the lower part of the sacrum or coccyx, thus missing the site of the pain. An area of T2 hyperintensity, with low T1 signal around the sacral or coccygean joint, is a common finding in patients with chronic coccydynia, and is indicative of Modic I changes. In our case, the disc was degenerative with concomitant herniation, and no actual Modic changes were noted.

Limitations of the Study

This study has some potential limitations. Firstly, our patient was unable to complete the MRI scan due to discomfort, and only sagittal views were available. Secondly, the main cause of pain remained unclear. Although, other potential factors previously reported, such as microtrauma caused by inadequate body positioning, or idiopathic coccygodynia may have been present in this patient's case. Even though we could not be certain that our patient's symptoms were caused by degenerative changes to the coccygeal disc, the conservative treatment of our patients with rest, NSAIDs and pelvic floor physical-therapy proved beneficial and relieved his symptoms. Thirdly, static or dynamic lateral films, provocative discography or dynamic MRI were not performed.

Conclusions

Patients suffering from coccygodynia require a thorough medical evaluation, which includes clinical and imaging examinations, according to the current literature. Since there are no standard treatment guidelines, the management of this condition remains challenging for physicians. This report refers to coccygodynia and perianal numbness, with concomitant coccygeal disc disease, treated with conservative methods.

What Is Already Known on This Topic:
Patients suffering from coccygodynia deserve thorough examination, including appropriate imaging, with, in most cases, conservative treatment to be considered as the treatment of choice for such a patient.

What This Case Adds:
Clinical and MR imaging examinations, are both considered to be of great importance to evaluate coccygodynia medically, with coccygeal disc herniation having a preponderant role in the explanation of the occurrence of either coccygodynia or perianal numbness.

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Conflict of Interest: The authors declare that they have no conflict of interest.

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