

# Management and treatment of coccydynia (tail bone pain)

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## **Abstract:**

Coccydynia is a common condition that is often self-limited and mild. Although the vast majority of patients who seek medical attention respond to conservative treatments, some patients require more aggressive treatments. In these cases, the etiology of the coccydynia may be complex and multifactorial. A multidisciplinary approach employing physical therapy, ergonomic adaptations, medications (NSAIDs), injections, and, possibly, psychotherapy leads to the greatest chance of success in these patients. Surgical coccygectomy generally is not recommended, and although different surgical techniques are emerging, more research is needed before their efficacy can be established.

**Key words: treatment, Management, pain**

## **Introduction:**

Coccydynia, or coccygodynia, is pain in the region of the coccyx. Simpson first introduced the term in 1859,<sup>1</sup> but accounts of coccygeal pain date back to the 16th century.<sup>1-4</sup> Despite the identification of chronic coccygeal pain hundreds of years ago, its treatment can be difficult and sometimes controversial because of the multifactorial nature of coccygeal pain. Many physiologic and psychological factors contribute to its etiology. Most cases of coccydynia resolve within weeks to months with or without conservative treatment, but for a few patients, the pain can become chronic and debilitating. This article provides an overview of the anatomy, physiology, and treatment of coccydynia.

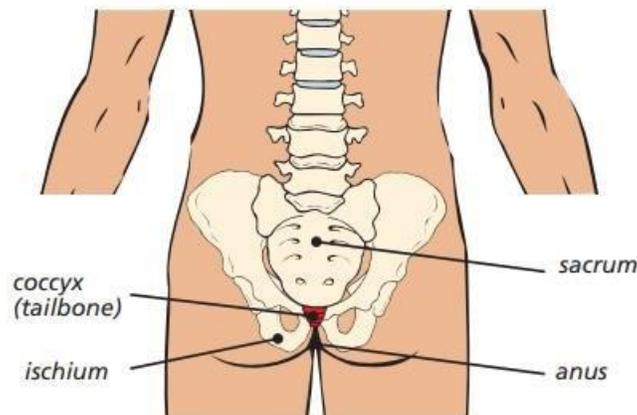
Coccydynia, also known as coccygodynia, is a challenging and poorly understood condition of the tailbone. A 2013 web-based survey of primary care providers found that only 50% of the 200 respondents were able to correctly diagnose coccydynia, and about the same number of providers believed there was no effective treatment for coccydynia.<sup>1</sup> Only 22% of providers placed specialty referrals for chronic cases and less than 10% believed that surgery would be effective.<sup>1</sup> Such findings are contrary to the literature on this condition, showing that 90% of cases can be treated effectively with conservative measures.<sup>2</sup> Although no preferred core management strategy has been described, a variety of modalities and options are available. The paucity of practitioners familiar with this condition drives the need for updated diagnostic and management guidance.<sup>5</sup> This review is designed to provide the primary care practitioner and internist an outline of the biomechanics and anatomy of the coccyx and the pathophysiology, diagnosis, and management of coccydynia. Emphasis is placed on the radiographic features of coccydynia and indications for diagnostic testing. A comprehensive array of conservative through invasive

treatments is outlined, as well as criteria for when to escalate treatment and when to consider specialty referral 6.

### Anatomy and Mechanics

The coccyx is a triangular structure of 3 to 5 vertebral bones attached to and articulating with the sacrum.<sup>10</sup> In conjunction with the 2 ischial tuberosities of the pelvis, the coccyx is 1 leg in a tripod providing balance and stability in the seated position.<sup>2</sup> Structurally, it forms the posterior boundary in a triangle of structures that support the anus.<sup>2,11</sup> The coccyx also serves as a crucial attachment site for the ligaments and muscles that form the pelvic floor, a sling of muscles.

### Coccyx (tailbone) location



### Morphologic Classification

A landmark study in 1983 by Postacchini and Massobrio<sup>12</sup> provides a morphologic classification of the coccyx within 4 essential types

- Type I: coccyx curved slightly forward
- Type II: coccyx more markedly curved and pointing anteriorly
- Type III: very sharply angled anteriorly
- Type IV: subluxed at the sacrococcygeal or intercoccygeal joint

Coccygeal bones with markedly forward curved, sharply angulated, subluxed, and scoliotic morphologies correlate more consistently with coccydynia.<sup>13</sup>

**Etiology:**

The exact incidence of coccydynia has not been reported; however, factors associated with increased risk of developing coccydynia include obesity and female gender.<sup>14</sup> Women are 5 times more likely to develop coccydynia than men. Adolescents and adults are more likely to present with coccydynia than children.<sup>15</sup> Anecdotally, rapid weight loss can also be a risk factor because of the loss of mechanical cushioning. The most common etiology of coccydynia is external or internal trauma. External trauma usually occurs due to a backwards fall, leading to a bruised, dislocated, or broken coccyx.<sup>15</sup> The location of the coccyx makes it particularly susceptible to internal injury during childbirth, especially during a difficult or instrumented delivery. Minor trauma can also occur from repetitive or prolonged sitting on hard, narrow, or uncomfortable surfaces.<sup>16</sup> Nontraumatic coccydynia can result from a number of causes, including degenerative joint or disc disease, hypermobility or hypomobility of the sacrococcygeal joint, infectious etiology, and variants of coccygeal morphology. Coccydynia can also be radicular or referred pain, although this type of pain usually is not associated with the hallmark coccygeal tenderness on physical examination. Less commonly, neoplasms have been associated with coccydynia. Coccydynia can also be associated with nonorganic causes, such as somatization disorder and other psychological disorders.<sup>17</sup>

**Pathogenesis**

Coccygeal mobility –During dynamic radiographs (sitting to standing), normal coccygeal flexion mobility has been determined to be between 5° and 25° when an individual is sitting [18]. Deviations from this normal range have been found in 70% of patients with coccydynia and this deviation is now associated with condition- Hypermobility: coccygeal flexion mobility exceeds 25° when sitting - Immobile: coccygeal flexion mobility is below 5° when sitting –Posterior subluxation is when the mobile portion of the coccyx displaces posteriorly when sitting. Anterior subluxation is more commonly seen in adolescents • Degeneration –Due of the presence of vertebral discs or disc-like structures in some coccygeal cadaver specimens, degeneration has been proposed as a possible cause of pain in patients with coccydynia. Coccygeal plexus –Nerve entrapment is a potential source of pain that has not been thoroughly investigated [19].

**Common causes of coccydynia might include:**

- injury or accident, such as a fall backwards
- repeated or prolonged strain on the coccygeal ligaments (tendinopathy – similar to that of tennis elbow)
- childbirth, particularly after a difficult delivery
- poor pelvic floor function (pelvic floor muscular structures attach to the coccyx –
- poor posture .(20)
- being overweight or experiencing rapid weight loss

- age-related wear and tear. Less common causes can include the coccyx being too flexible (hypermobility) or too rigid and very rarely, infection or cancer.

Although coccydynia can result from an injury to the coccyx or by straining the surrounding ligaments, sometimes no obvious reason or cause for the condition can be found. Very few people with coccydynia need medical treatment, as 9 out of 10 people get better spontaneously after a few weeks.(21)

## Symptoms

Tailbone pain is usually accompanied by other, more specific symptoms that can sometimes indicate how pain is occurring. Coccydynia may be further characterized by one or a combination of the following symptoms (22).

- **Localized pain and tenderness.** Pain is generally confined to the tailbone, and does not radiate through the pelvis or to the lower extremities. Pain is usually described as an aching soreness and can range from mild to severe.

Tightness or general discomfort around the tailbone may be constant, or pain may come and go with movement or pressure. (23).

- **Increased pain with sitting.** Coccydynia is generally more intense when weight is placed on the tailbone, as in when a person leans backward in a sitting position. Likewise, sitting on hard surfaces without a cushion (such as a wooden bench or a metal folding chair) or leaning back against a wall puts added pressure on the tailbone, causing pain to worsen.(23,24).

## Management:

Conservative or non-surgical treatments are typically the gold standard when treating coccygodynia, being successful for 90% of cases.(25) Non-operative treatments may range from the recommendation of non-steroidal antiinflammatory drugs (NSAIDs), activity modification, ergonomic adjustments, and physical therapy.<sup>(26)</sup> Surgery is usually only considered when patients continue to complain of coccygeal pain after the use of conservative treatments.<sup>(27)</sup> A coccygectomy, which is the removal of a section or all of the coccyx, is the most common surgical treatment performed.

## Physical Therapy Management

### Ergonomic Adjustments

The initial goal of treatment should be focused on providing postural education.<sup>(28)</sup> Individuals should be taught to correct their sitting posture by sitting more erectly on a firm chair.<sup>(29)</sup> A proper sitting posture ensures weight is taken off the coccyx and is instead loaded onto the ischial tuberosities and the thighs.<sup>(30, 31)</sup> Patients should be advised to avoid any positions or movements that might exacerbate their symptoms.

Physiotherapists may also recommend the use of cushions. Modified wedge-shaped cushions (coccygeal cushions), which can be purchased over the counter, help to relieve the pressure placed on the coccyx during sitting.<sup>(32)</sup> Donut shaped or circular cushions may also be used. Donut shaped cushions may actually increase pressure over the coccyx, but are more beneficial for rectal pain. The use of cushions can be recommended over a 6-8 week period.<sup>(32, 33)</sup> Although commonly recommended, the therapeutic outcomes of these conservative recommendations have not been evaluated in the literature.<sup>(33)</sup>

### Manual Therapy

The manual therapy techniques suggested in the literature range from massage, stretching, mobilization and manipulation, and may either involve internal or external contact with the coccyx.<sup>(34)</sup>

Internal techniques may include massage of the levator ani muscle or the coccygeus muscle, joint mobilization while the coccyx is hyperextended to stretch the levator ani, or repeated mobilizations while the coccyx is rotated.<sup>(35)</sup>

External techniques may include manipulations of either the coccyx or sacroiliac joint, mobilizations of the sacrococcygeal or intercoccygeal joints,<sup>[36]</sup> posterior mobilizations to the thoracic spine,<sup>[23]</sup> and stretching of the piriformis or iliopsoas.<sup>[23]</sup> The technique chosen will vary depending on what the originating cause of the coccygodynia is.<sup>[15]</sup> For example, massage or stretching of the levator ani might be chosen if the underlying cause is due to spasm of the pelvic floor musculature. Mobilization techniques may be the preferred technique when the goal of treatment is to increase coccygeal mobility. Manipulation techniques are helpful when the goal of treatment is to improve extension of the coccyx.<sup>1</sup>

### Treatment:

Many studies find that non-surgical treatments are successful in approximately 90% of coccydynia cases.<sup>37</sup> Treatments for coccydynia are usually noninvasive and include activity modification.

The first line of treatment typically includes self-care that can be done without the assistance of a medical professional, such as some of the following:

- **Non-steroidal anti-inflammatory drugs (NSAIDs).** Common NSAIDs, such as ibuprofen (Advil), naproxen (Aleve), or COX-2 inhibitors (Celebrex), help reduce the inflammation around the coccyx that is usually a cause of the pain.<sup>(38)</sup>
- **Ice or cold pack.** Applying ice or a cold pack to the area several times a day for the first few days after pain starts can help reduce inflammation, which typically occurs after injury and adds to pain.
- **Heat or heating pad.** Applying heat to the bottom of the spine after the first few days of pain may help relieve muscle tension, which may accompany or exacerbate coccyx pain. Common heat sources include a hot water bottle, chemical heat pack, long-lasting adhesive heat strip, or hot bath (as long as weight is kept off the tailbone in the bathtub).

- **Activity modification.** Alterations to everyday activities can help take cumulative pressure off of the tailbone and alleviate pain. These activity modifications may include using a standing desk to avoid prolonged sitting, using a pillow to take the weight off the coccyx, or adjusting posture so weight is taken off the tailbone when sitting.(39)
- **Supportive pillows.** A custom pillow that takes pressure off the coccyx when sitting may be used. Pillows for alleviating coccydynia may include U- or Vshaped pillows, or wedge-shaped pillows with a cutout or hole where the tailbone is. Any type of pillow or sitting arrangement that keeps pressure off the coccyx is ideal and largely a matter of personal preference. A supportive cushion can be useful in the car, as well as in an office, classroom, or at home.(38-40)

#### **Outpatient treatments for tailbone pain (coccydynia) include:**

- Blocking the nerve supply of the area — a Coccygeal nerve block — using numbing medications and steroids to decrease the inflammation.
- Massage therapy (usually only provides temporary relief).
- Stretching exercises and posture improvement guided by a physical therapist.
- Acupuncture. (41)
- TENS (transcutaneous electrical nerve stimulation).

#### **Surgical options include:**

- Partial coccygectomy (removal of part of the coccyx — extremely rare).
- Total coccygectomy (removal of the entire coccyx — extremely rare).

Recovery time from a coccygectomy can take a few months — maybe a year.

Unfortunately, there's no guarantee that the pain will go away even if the bone is gone. Again, this procedure is rare. (42).

Other symptoms that could occur along with coccydynia, such as depression, anxiety and sciatica, should also be addressed and treated as well.

#### **Prevention**

Because most cases of coccydynia are related to an injury of the tailbone, the best way to prevent coccydynia is to avoid injury or trauma to the tailbone, which might happen in car accidents or while playing sports.(43,44)

#### **Conclusion:**

Coccydynia refers to pain in the region of the tailbone. Most cases are related to mild injury, trauma, and childbirth. The primary care provider will come across this complaint in a small portion of patients presenting with “low back pain.” There are no comprehensive guidelines for treatment of coccydynia. A thorough evaluation in the office with physical examination and imaging are essential. Specialty referrals should be considered for complex or concerning cases

or with intractable pain. Injections, surgery, and neurostimulation are rare but acceptable options for certain patients.

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