The Osteopathic Approach to Treating the Coccyx

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INTRODUCTION

Coccyx pain, aka coccydynia or coccygodynia, is a common problem, however articles stating the prevalence of the condition have not been found despite extensive searching.

In his practice Stephen has seen 50 - 60 cases each year over the last three years, often referred in by other osteopaths who feel that their training in this area was weak and thus they refer to a "specialist" in the area.

It has been estimated at 1% of any population reporting back pain. This type of pain occurs five times more frequently in women than in men, with an onset around age 40 (but Stephen Sandler's youngest patient was 10 years old).

Coccydynia does not target a certain type of ethnicity or race.

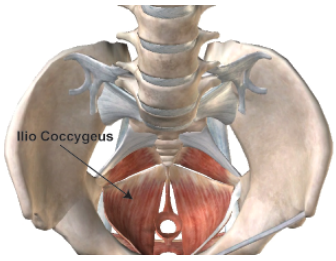
Pain may have existed for 20 years – 5 minutes of the correct technique can fix this

ANATOMY

Muscle and ligament attachments

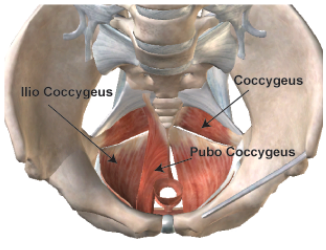
The coccyx is part of the weight-bearing tripod structure which act as a support for the sacrococcygeal symphysis when sitting.

When a person sits leaning forward, the ischial tuberosities and inferior rami of the ischium take most of the weight, but as the sitting person leans backward, more weight is transferred to the coccyx.



This can be a differential diagnostic question when taking a case history. However pain can occur on rising from sitting as the centre of gravity is transferred posteriorly and weight comes again to the flexed, traumatised coccyx.

The anterior side of the coccyx serves for the attachment of a group of muscles important for many functions of the pelvic floor (i.e. defecation, continence): the levator ani muscle, which include coccygeus, iliococcygeus, and pubococcygeus.



Through the anococcygeal raphe, the coccyx supports the position of the anus.

Attached to the posterior side is the gluteus maximus which extends the thigh during walking.

The Ligaments of the coccyx

Many important ligaments attach to the coccyx. Collagen being the building block, anything affecting collagen affects the ligaments.

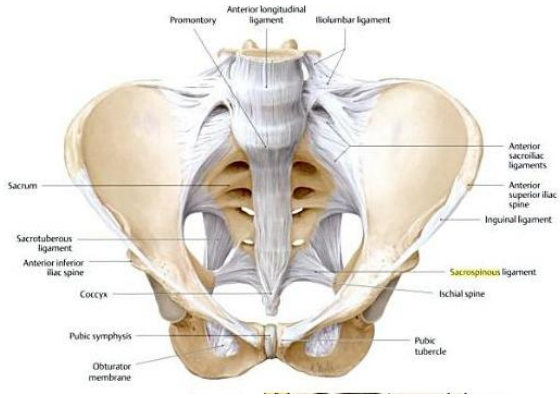
Women's ligaments become 8 times looser as they approach ovulation. Coccygeal pain tends to be worse around ovulation.

About 5% patients may have ripped the coccygeal ligaments and will not respond to treatment – you won't know this until after treatment

The anterior and posterior sacrococcygeal ligaments are the continuations of the anterior and posterior longitudinal ligaments that stretch along the entire spine.

The lateral sacrococcygeal ligaments complete the foramina for the last sacral nerve.

Some fibers of the sacrospinous and sacrotuberous ligaments (arising from the spine of the ischium and the ischial tuberosity respectively) also attach to the coccyx.



An extension of the pia mater, the filum terminale, extends from the apex of the conus, and inserts on the coccyx

DIFFERENTIAL DIAGNOSIS OF COCCYDNIA

The most important differential diagnostic tool is still the history.

The most important consideration in the history has to be "Is it coccygeal pain or not?"

The most important question has to be trauma or not – coccyx can remain displaced for years, but will still be treated (Stephen has successfully treated a woman who had injured her coccyx 20 years earlier)

Referred pain at the coccyx is very common

History taking

Coccygeal trauma The commonest trauma is falling on the buttocks, eg:

- Falls on ice
- Skiing
- Falls from horse

Prolonged bike rides especially mountain biking, or over speed bumps and bad road surfaces!!

We are looking for a fracture and if in doubt send the patient for a lateral coccygeal X Ray and if possible a dynamic view standing
If in doubt – get an Xray. Fractures will show straight away.

Important to be able to refer on when necessary – patient is entitled to expert advice

Lateral radiograph (**a**) and sagittal CT reconstruction (**b**) demonstrating a fractured coccyx in a patient who was diagnosed with coccydynia following a ground-level fall 6 months earlier

Effect of Weight bearing is very important: only 2 weight-bearing structures in the spine – disc and vertebral body. The differential diagnosis is referred pain from disc or coccyx injury.

When sitting:

- Especially hard surfaces are likely to aggravate
- Getting up from a soft chair can indicate either disc disease or coccygeal pain. Pain at the coccyx likely to be coccygeal in origin.

Is it an SIJ problem (especially inferior pole) rather than a coccyx especially post partum (especially with instrument delivery)

Post partum:

- Relaxin dissipates 48 hours post partum, but ligaments remain "waterlogged"
- Hypermobility problems often start at childbirth – hypermobile coccyx is very difficult to treat

Do not forget referred pain from the facet joints in the LS segment – can extend to coccyx
Patients sit on one buttock to avoid the painful coccyx

CONDITION AND SIGNS / SYMPTOMS

Lumbar spondylosis/disc herniation

- Pain is relieved by sitting.
- Pain and/or tenderness may involve the sacrum or lumbar spine, without specific tenderness of the coccyx.
- No pain or tenderness on palpation of coccyx or rectal examination.
- Pain may still be felt at the coccyx, but not provoked by palpation of sacro-coccygeal joint

Medical testing

- Injection of corticosteroid around the dorsal surface of the coccyx does not relieve pain, indicating pain is referred.

- MRI of lumbosacral spine may reveal the site of degenerative disc disease or disc herniation.

Levator ani syndrome

- Also known as puborectal syndrome, levator spasm, or pelvic floor myalgia.
- This category may include some cases of idiopathic coccygodynia.
- Dull ache or pressure sensation in the rectum, exacerbated by prolonged sitting or supine position, which may last hours to days.
- Tenderness of puborectalis muscle on rectal examination.
- Possibly trigger points in puborectalis, which will respond to inhibition

Medical testing

- Although some studies have shown increased anal canal pressure and correlated pain relief with a decrease in pressure, other authors have discouraged its routine use, citing unreliability in its diagnostic and predictive value.

Alcock's canal syndrome

- Entrapment of pudendal nerve within Alcock's canal in base of pelvic floor
- Also known as pudendal canal syndrome or pudendal nerve entrapment. Can be known as "Cyclist's Syndrome", due to effect of racing on very narrow saddles. Feels like coccygeal pain.
- Unilateral or bilateral burning, prickling, stabbing, or numbness in the perineum, external genitalia, or scrotum. Not typical for coccygeal problems.
- Pain is worse with sitting and there is a sense of a foreign object in the urethra, rectum, or vagina.

Medical testing

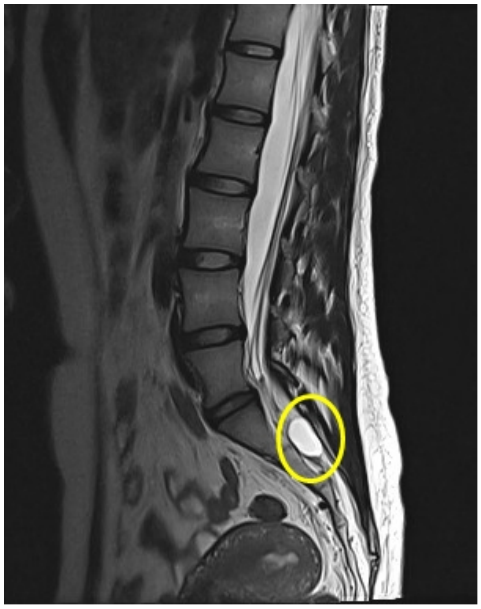
- Diagnosis is essentially clinical.
- MRI reveals normal anatomy, or intercurrent disease unrelated to the diagnosis, or occasionally may reveal a nerve sheath tumour.
- Pudendal nerve motor latency studies (nerve conduction studies) are usually normal, as sensory fibres are affected preferentially.
- Diagnostic nerve block, consisting of anaesthetic infiltration within the pudendal canal, results in pain relief for the duration of anaesthesia, but may be technique dependent.

- Osteopaths abroad are taught a PR technique to massage Alcock's canal, with reported success.

Tarlov cyst

- Rare cause of coccygodynia.

- Sacral perineural cysts may rarely present with coccygeal pain.
- May be accompanied by urinary disturbance and pain in the groin region.
- Not possible to diagnose clinically - may easily replicate coccygeal pain, often long-standing, but not previously symptomatic



Medical testing

- MRI of the sacrum reveals nerve root cysts of CSF density, bright on T2 weighted sequences.
- CT may reveal enlargement of the sacral foramina or thinning of the sacral lamina around the cyst.
- May or may not fill on contrast myelography.
- No relief of pain on coccygeal injection with corticosteroid

Treatment

- Difficult area to locate and drain, but may be attempted by neurosurgeon
- Epidural anasthaesia may give temporary relief

PELVIC PAIN OR COCCYGEAL PAIN?

Is there bleeding (on stools, in water, on paper)? The presence of bleeding with pain suggests :

- anal fissure,
- hemorrhoids
- carcinoma (continuous bleeding, especially over 60 – Red Flag)
- rectal prolapse especially after menopause
- and intussusception.

Is there a mass?

- The presence of rectal pain along with a mass would suggest
- internal and external hemorrhoids,
- rectal carcinoma,
- and perirectal or ischiorectal abscesses.

- However, in females, masses in the cul-de-sac (pouch of Douglas),
  - such as an acute salpingitis,
  - ectopic pregnancy (have to ask if any chance of pregnancy)
  - or endometriosis,
  - will cause rectal pain

- In males:
  - prostatic abscess,
  - foreign bodies,
  - and seminal vesiculitis

- may cause rectal pain.

Is there a purulent discharge?

- Fistula in ano,
- perirectal abscess,
- ischiorectal abscess,
- and submucous abscess
- may cause a purulent discharge.

PROTOCOL FOR EXAMINATION AND TREATMENT PER RECTUM

Diagnosis is important – if it's not coccygeal, no right to carry out internal technique

GOsC guidance:

Must be adhered to (first thing to be checked if there's a complaint)

Ethical Considerations

- You must read the GOsC document "Osteopathic Practice Standards" (in the Practice Guidance ->Fitness to Practise section of the GOsC website). This is the minimum standard that the register demands and is the document by which you will be prosecuted if you fall foul of the regulations.
- Stages:
  - Ascertain if it will be a problem
  - Introduce the suggestion to the patient
  - Send them away to consider it
  - Perform the treatment
  - Reassess, repeat treatment if necessary
  - Procedure can be varied in extremis (eg if patient travelling a long way), but consider seeking GOsC approval for your method of communicating the procedure to patient

- 5 minutes explanation beforehand is better than time spent in apology afterwards
- Remember there is a specific difference in the eye of the register between not getting a "no" and not getting a "yes" in response to you asking for permission.
- There is no such thing as implied consent, you either ask and receive positive consent or you do not proceed
- Use of aids/apps to illustrate procedures can be very helpful (eg The Visible Body app)
- Be extra special careful in the definition in your own mind about what exactly constitutes a " sensitive genital area".
- It can include areas such as the pubic symphysis or even soft tissue techniques to the buttocks and upper thighs!

Patient Concerns

Patients worry about:

- Making a mess on the table – won't happen, finger's in the way!
- Practitioner seeing their genital area – they will be covered
- It will hurt – it won't – functional technique, not HVT

Indications for PR investigation and treatments

- Cases where there has been direct trauma to the area
- Cases where you suspect trauma post partum after a long or difficult labour (forceps, episiotomy, ventouse)
- Cases of prostatic disease in elderly men (prostate can radiate pain to coccyx)
- Cases where there has been surgery to the pelvic floor in either sex where there has been scarring and thus a drawing up of the pelvic floor that can flex the sacro coccygeal junction

Contra indications to PR investigation and treatments

- Lack of express permission
  - Has the patient understood what you want to do?
  - Are they compos mentis?
  - Is it a child ? If so do you have the parent or guardian's permission?
- Large piles or anal fissures
- Ano rectal carcinoma
- Excess fear or pain in anticipation of the procedure – can be offset by good explanation

EXAMINATION

- Standing Exam
  - Static
  - Active movements
    - Observation and palpation both actively and passively standing to exclude other structures
    - Weight bearing tests +ve /-ve ?? If coccyx pain persists after weight bearing element is removed – unlikely to be a disc, likely to be coccyx
    - Is this referred pain or real coccydnia?

- Sitting tests
  - Slump test
  - Direct test to the coccyx.
    - This is a sensitive area and you MUST get permission before you start.
    - You MUST use a plastic skeleton or at least a diagram to explain what you are going to do before you do it. The only when you have heard the positive permission given can you carry on.
    - If in doubt DO NOT CONTINUE

- Supine Examination
  - Hip rotation for pelvic floor tone
  - SI joint testing

  - Ischial Tuberosity muscle tone testing
  - Get patient to actively contract the tone of the pelvic floor and assess
- Prone examination
  - Ask permission to reveal the buttock cleft
  - Palpate PSIS PIIS
  - Identify the SC junction and palpate from above and laterally before directly.

Summary

- Does the history reveal the likelihood of a coccygeal problem or is this an undiagnosed LS SIJ or Hip problem or even an unrelated pathology?
- Does the standing exam confirm or deny the suspicions raised by the history?
- Does the supine exam show hip disease or SIJ pain . What does the pelvic floor exam reveal when you compare one side to the other?
- Does the prone exam suggest pain coming directly from the coccyx and is there increased muscle tone in the muscles relating to the coccyx on one side or the other?
- Does the sitting exam give you the final proof you need?

The Test

- Ask the patient to sit on the plinth with their back towards you
- You should stand on the non painful side, if the pain is central then you should stand on the side of the non dominant buttock
- With one hand around their shoulders side bend the patient towards you
- With the index finger of the other hand at the scacro-coccygeal junction move the patient into full flexion and then back into extension.
- As they return to the midline use the index finger to hyper flex the s/c junction. Any increase in pain is a positive response to the test and an indication that the coccyx is flexed and needs an internal manipulation

THE TECHNIQUE

- The technique of choice is going to be a Functional Technique done with the patient in the side lying position.
  - Hypothesis
  - Test
  - Prove the hypothesis
  - Treat
  - Retest

- The osteopath uses gloves on both hands
- Ask the patient to lay with the painful side up.
- They lower their underwear to the knees. There is no need to remove it completely.
- They hyper flex the knees
- With one hand you separate the buttocks and inspect the anus
- Are there any piles fissures or other lesions ? If so be careful not to disturb them
- Place a little lubricant gel on your index finger and place at the anus.

- DO NOT PUSH AGAINST THE ANUS IT WILL PUSH BACK!!
- Gently press against the anus with the index finger and it will relax allowing your finger to penetrate.
- The other fingers of the hand should be clenched so that the knuckles can contact the perineum.
- The index finger inside the rectum moves up all the way to the s/c junction. This is done with the rest of the hand pushing against the perineum. It is a long way up, right to the end of the finger. When you reach the sacrum come down a little way.
- The external thumb is at the s/c junction and when the internal finger arrives you should be able to grasp the coccyx between the external thumb and the internal finger.
- If there is pain – stop. Withdraw the finger.

There are two phases to functional technique

- The investigation phase
  Pause
- The release phase

The usual parameters for functional technique apply

- F/E
- Lat Flex Right and left
- Rotn Right and Left
- Translation A/P
- Translation Lateral
- Cephelad and Caudad.
- Look for ease and bind in each parameter
- Hold the ease parameters until they are all identified and stacked up.
- Hold this phase for 20 seconds and then ask the patient to breath out and allow the tissues to release and unwind passively
- The tissues should feel soft and relaxed at the end of the technique.

The Adjustment

- At this point grasp the coccyx between the internal and the external fingers and hold it tight.
- Ask the patient to hyper extend their knees and hips and roll back towards you.
- The coccyx now comes back into extension without you having to pull it in any way.
- Now ask the patient to flex again and the coccyx has been replaced
- Gently withdraw the internal finger ,slowly and carefully. The anal sphincter will clean the finger of most of any faecal matter.
- Inspect for blood , there should be none.
- Give the patient some tissue to wipe their own bottom .
- They pull their underwear up and sit.
- They should now be able to rock on their buttocks if the technique has been successful.

Success rates of complete pain relief are common. Certainly most people are 90% symptom free within a few days.

Some will need a second manipulation a week later.

Approx 10% will feel little effect and the coccyx reverts to a flexed and side bent position.

A third manipulation is rarely used.

If the coccyx has returned it is an indication that the posterior S/C ligaments are torn and need prolotherapy or a cortico steroid injection.

It may be that coccygeal amputation is the only option of choice if injections fail.

Other ways of treating coccygeal pain

Invariably the patient will have seen the doctor first and will have been offered the following

- nonsteroidal anti-inflammatory agents (NSAIDs) and other analgesics,
- reduced sitting,
- doughnut pillow use and other postural adjustments,
- physical therapy.

They may have been offered a PR for differential diagnosis and rarely for treatment.

Surgery

- May be warranted for select individuals who continue to complain of disabling coccygeal pain despite the implementation of various nonoperative treatment strategies.
- In most instances, surgical management generally involves either excision of the mobile segment or a total coccygectomy.
- These procedures are ideally reserved for patients with evidence of advanced degeneration such as coccygeal instability (e.g., subluxation or hypermobility) or spicule formation since this population appears to exhibit the greatest improvement postoperatively, with published success rates between 60 and 91%
- The most frequent complication of coccygectomy is wound infection, which has been shown to occur in up to 22% of these operative cases
- There is also a high incidence of cases where it just didn't work and the patient was either no better off after coccygectomy or maybe even worse.
- The best advice in these cases is to choose the surgeon carefully and go for someone who has the most experience at this type of operation.

REFERENCES

This study from 1976 is often quoted as a reference source:

The treatment of chronic coccydynia with intrarectal manipulation: a randomized controlled study.

Maigne JY[1], Chatellier G, Faou ML, Archambeau M.

Spine (Phila Pa 1976)2006 Aug 15;31(18):E621-7.

Study Design: Randomized open study.
Objective: To evaluate the efficacy of intrarectal manual treatment of chronic coccydynia; and to determine the factors predictive of a good outcome.
Summary Of Background Data: In 2 open uncontrolled studies, the success rate of intrarectal manipulation of the coccyx was around 25%.
Methods: Patients were randomized into 2 groups of 51 patients each: 1 group received three sessions of coccygeal manipulation, and the other low-power external physiotherapy. The manual treatment was guided by the findings on stress radiographs. Patients were assessed, at 1 month and 6 months, using a VAS and (modified) McGill Pain, Paris (functional coccydynia impact), and (modified) Dallas Pain questionnaires.
Results:

- At baseline, the 2 groups were similar regarding all parameters.
- At 1 month, all the median VAS and questionnaire values were modified by -34.7%, -36.0%, -20.0%, and -33.8%, respectively, in the manipulation group, versus -19.1%, -7.7%, 20.0%, and -15.7%, respectively, in the control (physiotherapy) group (P = 0.09 [borderline], 0.03, 0.02, and 0.02, respectively).
- Good results were twice as frequent in the manipulation group compared with the control group, at 1 month (36% vs. 20%, P = 0.075) and at 6 months (22% vs. 12%, P = 0.18).
- The main predictors of a good outcome were stable coccyx, shorter duration, traumatic etiology, and lower score in the affective parts of the McGill and Dallas questionnaires.

Conclusions: We found a mild effectiveness of intrarectal manipulation in chronic coccydynia.

The following study in 1991 showed the effectiveness of adding injections to the therapeutic regime:

Coccydynia. Aetiology and treatment.

Wray CC[1], Easom S, Hoskinson J.
J Bone Joint Surg Br. 1991 Mar;73(2):335-8.

Abstract: A five-year prospective trial involving 120 patients was undertaken to investigate the aetiology and treatment of coccydynia. The cause lies in some localised musculoskeletal abnormality in the coccygeal region. Lumbosacral disc prolapse is not a significant factor. The condition is genuine and distressing and we found no evidence of neurosis in our patients. Physiotherapy was of little help in treatment but 60% of patients responded to local injections of corticosteroid and local anaesthesia. Manipulation and injection was even more successful and cured about 85%. Coccygectomy was required in almost 20% and had a success rate of over 90%.

Key Research Articles

1. Balain B, Eisenstein SM, Alo GO, et al. Coccygectomy for coccydynia: case series and review of literature. Spine. 2006;31:E414-E420.
2. Fogel GR, Cunningham PY, Esses, SL. Coccygodynia: evaluation and management. J Am Acad Orthop Surg. 2004;12:49-54.
3. Mlitz H, Jost W. Coccygodynia. J Dtsch Dermatol Ges. 2007;5:252-254.
4. Wray CC, Easom S, Hoskinson J. Coccydynia. Aetiology and treatment. J Bone Joint Surg (Br). 1991;73-B:335-338.
5. Hodges S, Eck JC, Humphreys SC. A treatment and outcomes analysis of patients with coccydynia. Spine J. 2004;4:138-140.

6. Karadimas EJ, Trypsiannis G, Giannoudis PV. Surgical treatment of coccygodynia: an analytic review of the literature. Eur Spine J. 2011;20:698-705.

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