

## Case Report

# Coccygeal excision for treatment of coccyx instability

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### ABSTRACT

### ABSTRAK

**Introduction:** Coccygeal excision or coccygectomy is a rare procedure for the treatment of coccygodynia. Coccygeal pain or coccygodynia, often successfully treated with conservative treatment, including steroid injection. In coccyx instability with persistent pain after failed with conservative and injection treatment, surgery is needed to remove the unstable tail bone segment.

**Methods:** We present one case of persistent coccygeal pain in a twenty-five year old male. The patient had a history of trauma on the buttock 12 years ago, which is getting worse for the last one-year period. The patient has already undergone conservative treatment, including two episodes of steroid injection, but the pain still persists. From the lateral plain X-ray, it was found displacement on coccyx segment. Failed in conservative treatment leads to coccygeal excision. The surgical procedure was done in prone knee-chest position, and intraoperatively assessed the tailbone stability with image intensifier. Partial coccygectomy was done to this patient.

**Results:** One month follow up showed painless tailbone, no surgical site infection, and no other complications.

**Conclusion:** We conclude that coccygeal excision is a good treatment of choice for coccygodynia due to coccyx instability.

**Pendahuluan:** Eksisi tulang ekor atau coccygectomy merupakan prosedur yang jarang dilakukan pada nyeri tulang ekor. Nyeri tulang ekor sering kali teratasi dengan terapi konservatif dan injeksi steroid. Namun, pada kasus ketidakstabilan tulang ekor dengan nyeri yang persisten, dibutuhkan tindakan pembedahan, yakni eksisi segmen tulang ekor yang tidak stabil.

**Metode:** Kami membawakan satu kasus nyeri tulang ekor yang persisten pada laki-laki usia dua puluh lima tahun. Pasien memiliki riwayat trauma pada tulang ekor 12 tahun yang lalu, dan nyeri memburuk sejak 1 tahun terakhir. Pasien telah menjalani terapi konservatif serta injeksi steroid sebanyak dua episode suntikan, namun nyeri kambuh kembali. Pada X-ray lateral, ditemukan pergeseran pada segmen coccyx. Oleh karena mengalami kegagalan dalam terapi konservatif, diputuskan untuk dilakukan eksisi tulang ekor. Eksisi tulang ekor dilakukan dalam posisi knee-chest tengkurap, dan intra operatif dilakukan penilaian kestabilan tulang ekor dengan menggunakan image intensifier. Pada pasien ini dilakukan partial coccygectomy.

**Hasil:** Pada follow-up, nyeri pada tulang ekor hilang, tidak terdapat infeksi pada luka operasi, serta bebas komplikasi lain.

**Kesimpulan:** Kami menyimpulkan coccygectomy sebagai pilihan tata laksana yang baik bagi coccygodynia yang disebabkan ketidakstabilan tulang ekor.

**Keywords:** coccygectomy, coccygodynia, coccyx instability

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## INTRODUCTION

Coccygodynia, or Coccydynia, is a pain within the coccyx (tailbone) with absence of lower back pain and radiating characteristics. Pain felt in seated position and also exaggerated with defecation, standing, and sexual intercourse. Female more prevalent compared to male, with ratio of 5:1.<sup>1</sup> Known risk factors include fusion of the sacrococcygeal joint and high body mass index (BMI). Majority of the causes were trauma-related, mainly fell with seated position directly to the buttocks, which leads to coccyx instability.<sup>2</sup> Another causes are childbirth, recent lumbar spine surgery, rectal surgery, epidural injection, or idiopathic. Coccygodynia is diagnosed clinically and radiologically through plain and dynamic X-ray. Dynamic X-ray, if compared between the standing and the sitting position, will reveal abnormality in 70% patients. MRI is used to exclude tumor or less common etiology.

Anatomically, tailbone is composed of three to five bones that attached to the sacrum. It has attachment of the sacrococcygeal ligaments, levatorani muscle, coccygeus muscles, and sacrosclatic ligaments. According to Postasshini and Massoprio, coccyx is classified into four types, Type I is moderately curved forward, type II is markedly curved forward, type III is sharply angulated forward, and type IV is subluxated.<sup>3</sup> Normally, the coccyx rotates between 5° and 25° when a person sits and stands. But in coccygodynia, the rotation is less than 5° (immobility) or more than 25° (hypermobility).

Coccygeal excision or coccygectomy is a treatment of choice when the conservative treatment failed considerably.<sup>4</sup> Although coccygectomy is considered as a rare procedure, several techniques exist as described by Key or Gardner. Coccygectomy can also differentiate into complete or partial.<sup>5</sup> For coccygodynia due to coccyx instability, this surgical procedure provides good result. We present a case of twenty-five year old male with persistent coccygodynia who underwent coccygeal excision.

## CASE ILLUSTRATION

The patient was a male, twenty-five years of age, BMI of 27.3 kg/m<sup>2</sup>, with chief complain of chronic, sharp non-radiating pain on his tailbone. The pain started getting worse for this last one year. The patient got a history of fell directly on his buttock twelve years ago.

Since that time, the patient didn't have any complain of tailbone pain, until last year. The pain was getting worse, especially in sitting position. There was no neurological deficit and no alteration in defecation and urination. The patient worked at an office and mostly involved sitting for hours, so it was quite disturbing to the patient. From physical examination, there was no marked deformity or skin abnormality observed on the tailbone site, or masses. Pain elicited from the tailbone was positive, especially with gentle palpation. No hypoesthesia around the buttock. Laboratory results yield no marked abnormalities.

From lateral plain X-ray, it was shown that there was a displacement on the coccyx, a sign of instability on his tailbone [Figure 1]. We diagnosed the patient as having coccygodynia due to coccyx instability. The patient then underwent a conservative treatment for the first three months consisted of rest, NSAID medication, physiotherapy, and cushioning, but to no avail. The patient then underwent a steroid injection, his pain subsided temporarily, but the pain resurfaced again and then the patient got a second steroid injection. After the second injection, the pain was still persisted. After these unsuccessful efforts, the surgery was decided to be done to the patient.



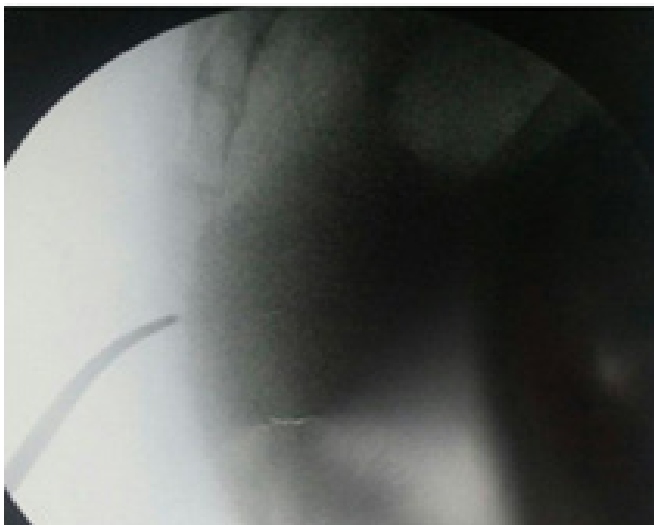
**Figure 1.** Lateral Plain X-ray of the unstable coccyx

The patient was in prone position, with the lower half of the body positioned lower than the upper half, similar to a knee chest position [Figure 2]. Then we fixated the buttock cheeks to the lateral side using an adhesive tape, to ensure good exposure of the surgical field. After we draped the patient, the tailbone was easily palpable, but to make sure, we used an image intensifier to guide the

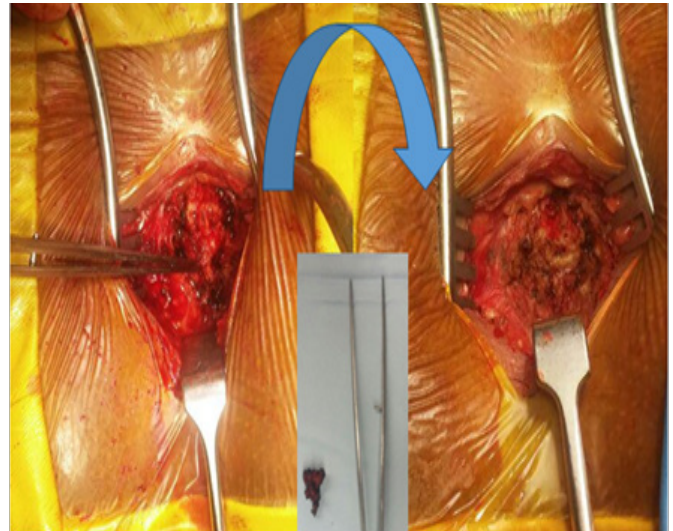
incision accurately [Figure 3]. Using the direct posterior approach to the coccyx, we exposed the coccyx, and with fluoroscopy guidance, we determined the unstable segment of the coccyx, which was at the same location as shown in the lateral plain X-ray. We then decided to performed partial coccygectomy, which only excised the unstable segment [Figure 4]. We worked the excision from caudal to rostral using an electric cautery with care to avoid injury to the rectum. After completed the excision, we smoothened the edge of the bone and closed the wound layer by layer, with interrupted suture leaving no drain inside the wound. We sent the excised coccyx to the pathology to rule out other etiologies. Post-operatively, we positioned the patient in lateral or prone to avoid pressure to the wound, and broad-spectrum antibiotics, as well as laxative, were used to mitigate the pain during defecation.



**Figure 2.** Prone knee-chest position



**Figure 3.** Intraoperative imaging for the unstable coccyx



**Figure 4.** Partial Coccygectomy. (Insert : Excised coccyx)

One week after surgery, the patient felt some improvement to the pain, with no wound problem. Pathology results showed no abnormalities on the excised segment of the coccyx. Two weeks after surgery, we removed the stitches, the wound was still in good condition. Four weeks after the surgery, we allowed the patient to sit without cushion, and the patient felt no pain on his tailbone area. The patient could resume his daily activities better compared to before surgery.

## DISCUSSION

This case is a twenty-five year old male with persistent coccygodynia. Based on the epidemiology, coccygodynia is more prevalent in female patient, however in this case, the patient is a male with history of trauma with seated position, so the pain came primarily from the history of that trauma, which then led to coccyx instability. The patient had BMI value of 27,3 kg/m<sup>2</sup>, which classified as overweight in Asian BMI classification. High BMI is a known risk factor for coccygodynia, which in our patient, further increase the morbidity caused by coccyx instability.<sup>6,7</sup>

Based on the lateral plain X-ray, it was shown that there was an instability of the coccyx. We didn't obtain the dynamic sitting X-ray, because the instability was obvious from the plain X-ray. Studies said that 70% of the coccyx abnormality will be shown when compared the standing and the sitting dynamic lateral X-ray.<sup>8</sup> From the lateral plain X-ray, we also observed that the coccyx type of the patient was the type I, in which the coccyx is curved slightly forward with its apex pointing



caudally. This type of coccyx represents majority (70%) of the coccyx anatomy, with no increase risk to develop idiopathic coccygodynia, compared to other type of coccyx.

Initially, the patient got a conservative treatment consisted of rest, NSAID medication, physiotherapy, and cushion. After that, the patient got two steroid injections before undergoing surgery. The main treatment for coccygodynia is still conservative treatment, which resolved 90% of cases.<sup>9</sup> However, in our case, the conservative treatment was considered failed because the pain did not resolve and instead relapse with the same intensity compared to before the conservative treatment. Coccygeal excision could be considered as treatment of choice with good results, more than 80% successful rate for cases like this. Some studies stated that coccygeal excision is controversial, because it does not produce good results with some cases and also increased complication from the surgery procedure. Therefore, the patient selection is essential for successful outcomes of coccygeal excision. (10)

The surgery was performed in prone knee-chest position. Several positions such as lateral decubitus with flexed hip could also be done to perform this procedure. We chose the prone knee chest position because this position gave easier access and exposure to the unstable coccyx segment. Also, the sterility before, during, and after surgery were very crucial in controlling the complication caused by wound infection. Wound infection account for the most frequent complication, i.e. around 19%.<sup>11</sup> Some studies mentioned the use of drain inside the wound before closing layer by layer. In our case, we did not put the drain, and the wound still healed uneventfully. Various strategies for minimizing wound infection complications have been proposed, such as prophylactic antibiotics before or after surgery, periosteal preservation, and wound closure techniques.

## CONCLUSION

Coccygeal excision is a good choice of treatment for persistent coccygodynia that is caused by coccyx instability. Good surgical preparation and technique, combined with post-operative protocol for prevention of wound infection, could assure good results to the patient.

## Acknowledgment

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## REFERENCES

1. Awwad WM, Saadeddin M, Alsager JN, AlRashed FM. Coccygodynia review: coccygectomy case series. *Eur J Orthop Surg Traumatol.* 2017;27(7):961–5.
2. Waldman SD. Coccydynia. *Pain Manag.* 2006;2:848–50.
3. Kwon HD, Schrot RJ, Kerr EE, Kim KD. Coccygodynia and Coccygectomy. *Korean J Spine.* 2012;9(4):326.
4. Ersen O, Ekinci S, Koca K, Akyildiz F, Bilgic S. Coccygectomy as a Surgical Option in the Treatment of Chronic Traumatic Coccygodynia. *Asian Spine J.* 2015;9(3):492.
5. Antoniadis A, Ulrich NHB, Senyurt H. Coccygectomy as a surgical option in the treatment of chronic traumatic coccygodynia: A single-center experience and literature review. *Asian Spine J.* 2014;8(6):705–10.
6. Maigne, Lagauche, Doursounian. Instability of the coccyx in coccydynia. *J Bone Joint Surg Br.* 2000;82(7):1038–41.
7. Hofstetter CP, Brecker C, Wang MY. Coccygectomy : Current Views and Controversies. *Contemporary Spine Surgery.* 2016;16(4):1–6.
8. Haddad B, Prasad V, Khan W, Alam M, Tucker S. Favourable outcomes of coccygectomy for refractory coccygodynia. *Ann R Coll Surg Engl.* 2014;96(2):136–9.
9. Mouhsine E, Garofalo R, Chevalley F, Moretti B, Theumann N, Borens O, et al. Posttraumatic coccygeal instability. *Spine J.* 2006;6(5):544–9.
10. Cheng S, Chen Q, Lin Z, Wang W, Zhang W, Kou D, et al. Coccygectomy for stubborn coccydynia. *Chin J Traumatol.* 2011;14(1):25–8.
11. Hanley EN, Ode G, Seymour R, Jackson BJ. Coccygectomy for patients with chronic coccydynia: A prospective, observational study of 98 patients. *Bone Jt J.* 2016;98B(4):526–33.