# Coccygectomy for stubborn coccydynia

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【**Abstract**】**Objective:** To evaluate the preliminary clinical outcomes of coccygectomy in patients with coccydynia after a failure of conservative treatment.

**Methods:** From May 2002 to January 2010, 31 patients with coccydynia were treated by coccygectomy in our department after conservative measures had failed to produce significant relief. A questionnaire, which included the extent of relief in the painful area, improvement in quality of life, intensity of pain in the sitting position, and pain score during daily activities, was used to evaluate the results.

**Results**: All patients were followed up for 1 to 6 years (mean 3.3 years). The results were excellent in 20 patients (64.5%), good in 7 patients (22.6%), moderate in 3 patients (9.7%) and poor in 1 patient (3.2%). The excellent and good rates amounted to 87.1%. All patients except one had complete resolution of their symptoms and were subjectively highly satisfied with the outcomes of the surgery. Only 2 cases of superficial infection were observed postoperatively.

**Conclusion:** Coccygectomy is a feasible management option for patients with coccygodynia that has no response to conservative treatments.

**Key words:** ***Coccyx; Pain; Surgical procedures, operative***

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Coccydynia is a term that refers to pain in the region of the coccyx. Most cases are associated with abnormal mobility of the coccyx which may trigger a chronic inflammatory process and lead to degeneration of this structure.[1] Coccydynia can be caused by a variety of reasons, such as trauma, local inflammation, tumor, post-partum, and so on. So far, the mainstay of initial management of coccygodynia is nonsurgical. The commonly used methods are anti-inflammatory drugs, physical therapy, cushions, manual therapy, and injection of local anaesthetic with corticosteroid. The symptoms can be alleviated or subsided in most cases after conservative treatments and only a few patients may consider surgery when conservative treatments fail. From May 2002 to January 2010, we performed coccygectomy in 31 patients and the clinical effectiveness was good.

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## METHODS

### Clinical data

From May 2002 to January 2010, 31 patients with coccygodynia received coccygectomy in our department. There were 26 females and 5 males in the study, with an average age of 41.5 years (range, 20 to 65 years). The diagnosis before surgery is presented in Table 1. All patients selected for coccygectomy had a history of conservative treatment before surgery, but the results were poor. The average duration of pain prior to surgery was 9.6 months (range, 6-14 months).

### Operative technique

The operative technique was very simple. A midline skin incision about 5 cm long was made over the coccyx and carried through the skin and subcutaneous tissues to the coccyx. All the mobile coccygeal and/or sacrococcygeal segments were removed. After careful haemostasis, the wound was washed with saline and closed in three layers with absorbable suture. Suction drainage and wound dressing were used. The drainage tube was removed in 24-48 hours after operation. Sutures were removed 14 days after surgery. A postoperative laxative or enema was given on postoperative day 3 to mitigate pain and constipation. All patients received prophylactic antibiotics before surgery and postoperative dual antibiotics therapy for 72 hours.

**Table 1**. The diagnoses of 31 patients with coccydynia before surgery

| Diagnoses | *n* |
|---|---|
| Coccygeal fracture | 9 |
| Posterior luxation | 9 |
| Anterior luxation | 4 |
| Coccygeal fracture combined with luxation | 3 |
| Coccygeal spicule | 2 |
| Dysplasia | 1 |
| Idiopathic coccydynia | 3 |
| Total | 31 |

**Evaluation criteria for outcomes**

The evaluation of outcomes was performed according to the criteria described by Doursounian.[2] All the patients were given a questionnaire asking them to quantitate the following 4 factors: (1) pain relief as compared with the pain severity before surgery (four levels); (2) improvement in quality of life (four levels); (3) intensity of pain in the sitting position over the preceding 10 days using a visual analog scale (VAS) with 0 for no pain and 100 for very severe pain; and (4) pain during activities of daily living (ADLs) using a ten-point score scale.

Four outcome categories were established. For an excellent outcome, the following criteria had to be met: better than 75% pain relief, greater than 75% improvement in quality of life, less than 20% VAS-rated pain in the sitting position over the preceding 10 days, and a score of ADL-associated pain between 0 and 2. The criteria for a good outcome were better than 50% pain relief, greater than 50% improvement in quality of life, between 20% and 30% VAS-rated pain in the sitting position over the preceding 10 days, and a score of ADL-associated pain between 1 and 3. The outcome was rated moderate if pain relief was between 25% and 50%, regardless of the other results reported by the patient. A poor outcome was defined as one involving less than 25% pain relief regardless of the other results reported by the patient.

## RESULTS

All patients were followed up for 1 to 6 years (mean 3.3 years). The results were excellent in 20 patients (64.5%), good in 7 patients (22.6%), moderate in 3 patients (9.7%), and poor in 1 patient (3.2%). Excellent and good results amounted to 87.1%. All patients had complete resolution of their symptoms and were subjectively highly satisfied with the outcomes of the surgery. Postoperative complication included infection in 2 cases. Figures 1 and 2 are the preoperative and postoperative lateral radiographic and sagittal CT images of the two patients.

## DISCUSSION

The coccyx is a triangle which consists of three to five rudimentary vertebral units that are typically fused except the first coccygeal segment. It also serves as a site of attachment for the gluteus maximus muscle, the coccygeal muscle, and the anococcygeal ligament.[1] Pain in the vicinity of the coccyx has numerous aetiologies and is defined as coccygodynia. Patients with coccydynia mostly present with pain in and around the coccyx without significant low back pain or radiating or referred pain. It seems that women are more frequently affected by coccygodynia than men, and it is about five times more prevalent in women than in men.[3] This is because of the differences in pelvic anatomies between female and male.

The main management of coccydynia is still conservative treatment, which has shown good results in clinic[4-6] and the successful rate is about 90%.[7] Surgical intervention can be considered in symptomatic cases with functional impairment for which all appropriate conservative measures have failed to produce pain relief.[1,7-9] Several studies have reported good results of coccygectomy for patients who have persistent pain and is unresponsive to conservative treatment.[2,7,8,10-16] However, the treatment of surgery for coccydynia is controversial. It has been reported that patients with low back pain associated with degenerative disease of the intervertebral disc seem to experience a limited benefit from coccygectomy.[10] Also, Patijn et al[17] do not recommended coccygectomy because of the moderate long-term results and great chance of major complications. Therefore, the selection of appropriate patients before surgery is extremely important.

In this study, all patients had a history of chronic pain, conservative managements failed to bring significant or persistent diminishing of symptoms and two patients even felt the symptoms became more serious than before. Patients had pain due to degenerative diseases of the intervertebral disc or surgical

contraindications. The average duration of pain prior to surgery was 9.6 months (range, 6 months to 14 months). These patients were considered to be reasonable candidates for coccygectomy.

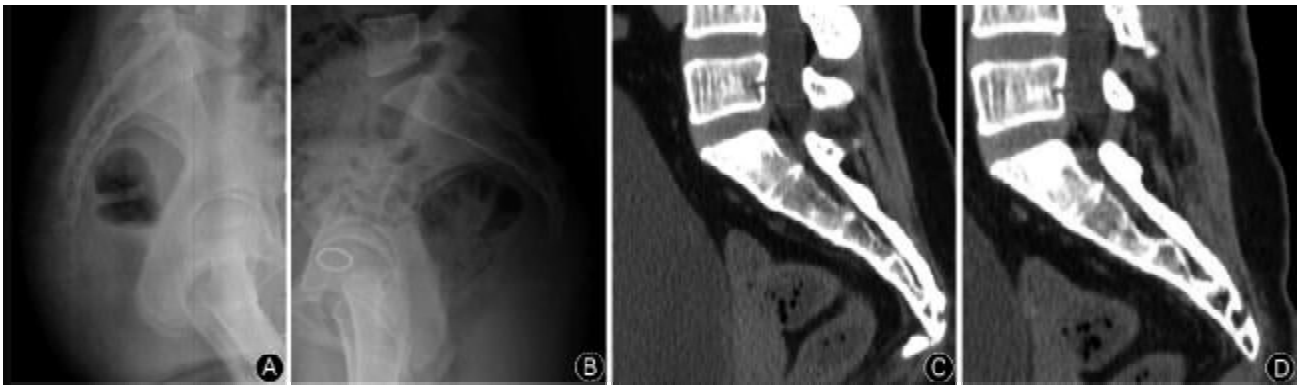


**Figure 1.** A 45-year-old female patient who had coccydynia after falling from a bike. Conservative treatments for 8 months have no satisfactory effects. Preoperative (**A**) and postoperative (**B**) lateral radiographs; preoperative (**C**) and postoperative (**D**) sagittal CT images.


**Figure 2.** A 38-year-old woman suffered from coccydynia due to a traffic accident. She received coccygectomy after failed in conservative treatment for one year. Preoperative (**A**) and postoperative (**B**) lateral radiographs; preoperative (**C**) and postoperative (**D**) sagittal CT images.

Lots of literature have reported successful outcomes in patients with coccygectomy. (In the series of Capar et al[7]and Trollegaard et al[8], coccygectomy in those who failed in conservative treatments reported 83.3% and 80.5% successful rates, respectively.) Excellent and good results amounted to 87.1% in our study, which corresponded with the reported successful rates of 60%-91%.[10-16] The majority of patients had complete resolution of their symptoms and were subjectively highly satisfied with the outcomes of the surgery. But the patient with poor result developed persistant pain in the coccyx stump after surgery and she refused to receive reoperation in our department. It was possible that the mobile coccygeal segments due to fracture were not removed cleanly or the end of the sacrum was not repaired completely during the surgery. Furthermore, that woman was very thin, and the remaining end of the sacrum may be prominent thus acting as a source of persistent pain.

Wound infection is the most frequently reported complication in patients taking coccygectomy. Pennekamp et al[12] observed that 19% of patients developed postoperative complications in their study. Sehirlioglu[13] reported that 5 in 74 patients (7%) developed a complication directly associated with the surgical procedure. In order to reduce the infection rate after coccygectomy, the surgeons have proposed various strategies, such as antibiotic prophylaxis before or after surgery, making a longitudinal incision[18], drainage, periosteal preservation and closure[19]. The present study suggests that prophylactic antibiotics over a period of 48 hours postoperatively would be the most reasonable measure in this surgery.[2] Cebesoy et al[20] reported no cases of infection in 21 patients undergoing coccygectomy, all of whom received preoperative prophylactic antibiotics for 5 days. In the series of Doursounian et al[21], 80 patients received coccygectomy with two prophylactic antibiotics over 48 hours, closure in two layers and pre-

operative rectal enema, and there was no case of postoperative infection. In our study, all patients received prophylactic antibiotics before surgery and postoperative dual antibiotics therapy for 72 hours. We found two superficial infections in postoperative complication, with the infection rate of about 6.5%. The infected wounds were treated with antibiotics and cared appropriately, and then they healed soon.

Although the number of cases in this study is small, the effectiveness of coccygectomy for coccygodynia is evident. The results of this study suggest that coccygectomy is a feasible management option in patients with coccygodynia who has no response to conservative treatments. Also, careful selection of appropriate patients for coccygectomy before surgery and prophylactic antibiotics are crucial to successful outcomes.

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