

# Coccygodynia treated by resection of the coccyx

Steen Hellberg and Hans Henrik Strange-Vognsen

**Sixty-five patients suffering from coccygodynia resistant to conservative treatment had total or partial coccygectomy, all without serious complications. Eight reoperations were performed. After an average of 15 years, 46 of the 55 patients seen at follow-up were satisfied. A normal radiograph of the coccyx does not exclude a good result from coccygectomy. We recommend total coccygectomy using a longitudinal incision in carefully selected and well-informed patients.**

Coccygodynia is a condition characterized by pain and tenderness in the coccyx and neighboring region. The pain can be of various intensity and related to locomotor activities or defecation. Several etiologies are possible, but most often it is direct trauma or childbirth (Key 1937, Edwards 1938, Pyper 1957, Johnson 1981). The female coccyx is more prominent than the male coccyx (Johnson 1981), and coccygodynia is about five times more frequent in women than in men (Thiele 1963). Before treatment of coccygodynia, inflammatory processes and tumors in the pelvis should be excluded (Duncran 1937, Thiele 1950, Hodge 1979). Many authors have abandoned surgical treatment (Dittrich 1951, Thiele 1963, Grant et al. 1975), whereas others advocate coccygectomy after unsuccessful conservative treatment (Wray and Templeton 1982, Postacchini and Massobrio 1983). However, most series are small.

We report the long-term results of coccygectomy in patients where conservative treatment of coccygodynia has failed.

## Patients and methods

In the period from 1955 to 1979, 65 coccygectomies were performed at the Orthopedic Hospital, Copenhagen, and at Gentofte Hospital. There were 58 females and 7 males, with an average age of 34 (12-65) years. All had tried conservative treatment, such as massage, short-wave therapy, and injections with local anesthetics. Sixty-three had persisting symptoms after conservative treatment for 6 months or more; 2 patients had had treatment for 3 months. Thirty-two patients could remember that their symptoms began after a definite accident; 21 of these had overt radiographic signs of fracture or dislocation, and only 3 showed no abnormality (Table 1). The radiographs from the 8 patients with coccygodynia related to childbirth showed no abnormality in 3 cases. Many of the 25 patients with coccygodynia of unknown etiology believed that the coccygodynia was related to a specific accident, but they were not quite sure.

The operations were performed by different orthopedic specialists. The patients, lying prone, were operated on under general anesthesia. The incision was longitudinal in 51, transverse in 10, and unknown in 4 patients. Total resection of the coccyx was performed in 36 and partial resection in 29 patients. Drainage was not used as a routine procedure. Information was obtained from the case records of all 65 patients.

On an average of 15 (2-26) years after the operation, 55 patients attended a standardized follow-up examination with questioning and physical examination including rectal palpation. Seven patients were dead, 1 had emigrated, and 2 could not be located.

Table 1. The etiology of coccygodynia and the diagnosis at preoperative radiography

	n
<b>Etiology</b>	
Trauma	32
Childbirth	8
Unknown	25
<b>Total</b>	<b>65</b>
<b>Radiography</b>	
Fracture or dislocation	29
Deformity or angulation	19
No abnormality found	13
Preoperative radiographs missing	4
<b>Total</b>	<b>65</b>

Table 2. The patients' evaluation of coccygectomy at follow-up

	n
<b>No pain</b>	<b>32</b>
<b>Substantial improvement</b>	<b>13</b>
<b>Some improvement</b>	<b>5</b>
<b>Unchanged</b>	<b>3</b>
<b>Deteriorated</b>	<b>2</b>
<b>Total</b>	<b>55</b>

## Results

There were no serious complications during surgery, and especially no perforation of or postoperative fistulization to the rectum. The only complications were 4 cases of superficial infection, 1 of these demanding surgery. At follow-up, 1 of these patients was dead, 2 had no pain, and 1 had improved.

Information about the duration of pain in the coccygeal region after surgery was obtained from the case records, but this information was not available in 7 patients. The pain subsided gradually within 3 months after surgery in 32 patients. In 3 patients the pain lasted between 3 and 6 months, and in 13 patients the pain disappeared after 6 months. In 10 patients the pain did not disappear after the primary operation.

Eight of the 10 patients with persisting pain had a reoperation. Six had conversion from partial to total coccygectomy. At follow-up, 2 of these patients had no pain and 2 had improved. One patient deteriorated, but gave a neurotic impression, and 1 patient was dead. Of 2 patients with primary total resection and reoperation because of persisting pain, 1 had a sacral exostosis resected, with some improvement as a result. The other, a very thin woman, underwent several plastic surgical attempts to cover the prominent end of the sacrum without success; the pain was unchanged.

Forty-six patients were satisfied with the result (Table 2). Nine were unsatisfied, and this group included all the deteriorated and unchanged patients, together with 4 of the 5 patients with some improvement. Of the 36 patients with total coccygectomy, only 3 were not satisfied, whereas the 29 partial coccygectomies gave 6 unsatisfied patients.

The clinical examination showed six unacceptable scars, four of these making a crescent-shaped fold as a result of a transverse incision. Seven patients had a bony prominence, five caused by the residual coccyx after partial resection and two by the inferior margin of the sacrum. In 17 patients, there was slight tenderness over the scar or upon rectal palpation; but the patients were satisfied.

Among the 9 unsatisfied patients, 5 acted neurotically at follow-up. They were very talkative and some presented long letters with complaints. No tenderness or objective pathology could be found at the clinical examination. One patient had lumbago. Another was only 13 years old at the time of the operation and has since had three childbirths, each worsening the pain. One man was very unsatisfied with the information about the operation and during the follow-up period; he has had both a pilonidal cyst and anal condylomas removed. The last patient was the thin woman already mentioned with unsuccessful plastic surgery. This was the only case where definite local tenderness and objective pathology could be demonstrated.

## Discussion

The coccyx is variable in size and shape; on the lateral radiograph, four types are defined (Postacchini and Massobrio 1983). In Type I the coccyx is curved slightly forward. In Type II the curve is more marked and the coccyx points straight forward. Type III is characterized by sharp forward angulation, and Type IV by subluxation in the sacro-coccygeal or intercoccygeal joints. Whereas two

thirds of the subjects without coccygodynia had Type I configuration, only one third of the patients with coccygodynia had this type (Postacchini and Massobrio 1983). The most comprehensive radiographic study shows that, except for fracture, dislocation, or arthrosis, any configuration of the coccyx in a patient with coccygodynia can be matched with the same configuration in a patient without coccygodynia (Duncran 1937). These findings are in agreement with ours, because radiographs in 21 of 32 patients with a definite traumatic etiology showed fracture or dislocation. Among the 13 patients without radiographic abnormality (Table 1), 4 were dead, while the rest of them were satisfied after coccygectomy. A normal radiograph does not exclude a beneficial effect from coccygectomy.

Conservative treatment for at least 3 months (Postacchini and Massobrio 1983) or 6 to 8 months (Hodge 1979) is recommended before coccygectomy is performed. Almost all of our patients had conservative treatment for more than 6 months, and we recommend this regimen.

Meticulous information to the patient is important because the pain subsides gradually and total pain relief cannot be promised.

It is important to exclude patients with symptoms not related to the coccyx, as well as emotionally unstable persons (Pyper 1957, Postacchini and Massobrio 1983). Of our 9 unsatisfied patients, 5 gave a neurotic impression at follow-up.

Because most of the unacceptable scars were results of transverse incisions, a longitudinal incision is recommended. We advocate total coccygectomy because there was a trend towards better results after this procedure than after partial coccygectomy. This does not agree with other reports (Wray and Templeton 1982, Postacchini and Massobrio 1983), who found little or no difference between partial and total coccygectomy. However, the distal edge of the sacral bone should be smoothed.

Coccygectomy relieved the coccygodynia in 73-88 percent in the series of Wray and Templeton (1982) and Postacchini and Massobrio (1983). This is in good agreement with our results. The coccygodynia subsided gradually within 3 months in most of our patients. This finding correlated well with other reports (Pyper 1957, Postacchini and Massobrio 1983).

In conclusion, total coccygectomy is an acceptable operation in disabling coccygodynia not responding to conservative treatment, but only for carefully selected and well-informed patients.

## References

- Dittrich R J. Coccygodynia as referred pain. *J Bone Joint Surg (Am)* 1951; 33: 715-8.
- Duncran G A. Painful coccyx. *Arch Surg* 1937; 37: 1088-104.
- Edwards M. Trauma of the coccyx and coccygodynia. *Am J Surg* 1938; 42(3): 591-4.
- Grant S R, Salvati E P, Rubin R J. Levator syndrome: an analysis of 316 cases. *Dis Colon Rectum* 1975; 18 (2): 161-3.
- Hodge J. Clinical management of coccygodynia. *Med Trial Tech Q* 1979; 25: 277-84.
- Johnson P H. Coccygodynia. *J Arkansas Med Soc* 1981; 77 (10): 421-4.
- Key J A. Operative treatment of coccygodynia. *J Bone Joint Surg* 1937; 19: 759-64.
- Postacchini F, Massobrio M. Idiopathic coccygodynia. Analysis of fifty-one operative cases and a radiographic study of the normal coccyx. *J Bone Joint Surg (Am)* 1983; 65 (8): 1116-24.
- Pyper J B. Excision of the coccyx for coccygodynia. *J Bone Joint Surg (Br)* 1957; 39: 733-7.
- Thiele G H. Coccygodynia. *Am J Surg* 1950; 79: 110-6.
- Thiele G H. Coccygodynia. *Dis Col Rec* 1963; 6: 422-36.
- Wray A R, Templeton J. Coccygectomy. A review of thirty-seven cases. *Ulster Med J* 1982; 51 (2): 121-4.