

SACRAL RHIZOTOMY IN CASES OF ANO-COC CYGEAL PAIN

A Follow-up of 24 Cases

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The long-term effect of sacral rhizotomy in 24 patients with coccygodynia was evaluated. Prior to section of both the S-4 and S-5 roots all patients had coccygeal pain and tenderness which had not responded to several conservative and surgical therapeutic measures. In 8 patients the coccalgia (S-4 S-5 pain) was associated with unilateral pain in the S-3 area, in another 8 patients it was associated with disabling lumbago and in the remaining group of 8 patients coccalgia occurred without pain in neighbouring areas.

Only 6 patients responded well to sacral rhizotomy. All these patients belonged to the final group of 8 patients with pain distribution limited to the S-4 S-5 area.

Serious complications occurred after 6 of the 24 rhizotomies. Five of these patients belonged to the two groups who besides coccalgia also had disabling lumbago or signs of rhizopathy above the S-4 level.

A restrictive attitude to sacral rhizotomy in coccalgia is recommended especially when it is associated with pain in neighbouring areas and also if there is any reason to believe that there are factors present predisposing to the development of arachnoiditis.

Key words: coccygodynia; sacral rhizopathy; sacral rhizotomy

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Coccygodynia is a syndrome characterized by coccygeal pain and tenderness. Pain is accentuated by sitting and often by rising from a sitting position. Coccygodynia may develop after an injury such as a traumatic delivery or a fall on the buttocks or be the result of a rectal operation. Among other causative factors which have been suggested are tumour growth, inflammation associated with sacro-coccygeal arthritis and ano-rectal infections.

Very few patients with coccygodynia have clinically demonstrable specific lesions such as a nonunited sacro-coccygeal fracture or luxation. It seems probable that some injuries capable of producing coccalgia may pass unnoticed because

of inadequate diagnostic techniques. It has for instance been shown that transverse fractures of the sacrum may easily be missed radiologically if tomography is not undertaken (Fountain et al. 1977). The findings of Cameron et al. (1975) suggest that coccygodynia may emanate from coccygeal lesions such as avulsion of cartilage end-plates that pass unnoticed until the coccyx is removed and examined histologically.

It is, however, not mandatory that coccygodynia must originate in the coccyx itself or in its supporting tissues. Thus, it has been shown that coccygodynia may be associated with noxious stimuli in lumbar discs or elsewhere in the lumbo-sacral region and that the pain can be

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eliminated by abolishing its primary source, i.e. the herniated disc, without any involvement of the coccyx at all (Schapiro 1950, Dittrich 1951, Gardner 1972). Another causative factor suggested in coccygodynia is damage to the distal nerve roots in the cauda (Bohm & Frankson 1958). Kinnett & Root (1979) reported a patient with a schwannoma in the sacral sac, this being the cause of severe coccygodynia. Bohm & Frankson (1958) observed severe inflammatory changes in the two most distal sacral roots in operated cases of coccygodynia.

Surgery has been recommended in cases of disabling coccygodynia when available conservative measures have failed. Key (1937) reported excellent results of coccygectomy in 12 cases out of 15. However, Olesen (1954) reported good results in only 4 out of 13 coccygectomized patients. Gardner (1972) recommended coccygectomy only in cases where the pain presumably originates in the coccyx or its supporting tissues.

Guillaume & Sigwald (1947) successfully divided the S-5 roots bilaterally in cases of coccygodynia. Bohm et al. (1956) and Bohm & Frankson (1958) performed sacral rhizotomy of the S-4 and S-5 roots in 16 patients with "idiopathic coccygodynia" and achieved lasting relief of pain in 80 per cent of the cases (Bohm 1978).

The aim of this report is to present the results of sacral rhizotomies performed in patients with severe coccalgic pain at the Neurosurgical Clinic, Sahlgren Hospital, Gothenburg, during the years 1956 to 1975.

PATIENTS AND METHODS

From 1956 to 1975 rhizotomy was performed at the Neurosurgical Clinic, Sahlgren Hospital in 47 patients with sacral rhizopathy without known neoplastic disease. Of these patients 24 had ano-coccygeal pain as a major complaint with difficulties when sitting. The 24 patients had been referred to the clinic under the diagnoses coccygodynia, low sacral rhizopathy or proctalgia fugax. They had at that stage suffered from ano-coccygeal pain for 2 to 10 years. During this period a wide range of conservative measures had been tried to obtain relief of pain. Seven of the patients had also been treated surgically. Removal of disc protrusions had been carried out in four patients and two of these had

also been coccygectomized. One additional patient had been coccygectomized. A sacral cyst had been removed in one case and "presacral denervation" had been performed in another.

Although ano-coccygeal pain was the dominating feature, 10 of the 24 patients had additional lumbo-sacral pain radiating into the perineum and/or genitals. In two of these patients the lumbo-sacral pain was troublesome but the radiating pain of minor importance.

Only 8 of the 24 operated patients had symptoms confined to the ano-coccygeal region. The final group of 6 patients out of the 24 operated ones denied pain radiating into the perineum, genitals or legs but suffered from a more or less constant lumbo-sacral pain.

The 24 rhizotomized patients, 6 men and 18 women, with ano-coccygeal pain as a dominating complaint were between 23 and 71 years old at the time of the operation. The S-4 and S-5 roots were cut bilaterally in all cases. Additional sectioning of one dorsal S-3 root was performed in those eight patients with disabling pain in the perineum and genitals. The term "third sacral syndrome" (Bohm et al. 1956) is seemingly more adequate than coccygodynia in these cases.

The operations were carried out by six different experienced neurosurgeons. The operation technique included sacral laminectomy under local or general anaesthesia. In the former case the roots were mechanically stimulated and the patients were asked for the distribution of pain. The operation was then completed under general anaesthesia. The roots were crushed with clamps. Silver clips were used in some cases.

The sensibility of perianal skin was tested during the first postoperative week. During the next 4 months all patients except four were examined in the outpatient department. Sixteen of the 24 patients were re-examined at least once between 2 and 10 years after the operation. In four cases the re-examination took place at a country hospital (some patients lived more than 500 kilometers from Gothenburg). All patients who were not re-examined and some of them who had been re-examined only once answered a questionnaire 2 years or more after surgery. In several cases additional reports from patients were obtained both before and after a 2-year interval.

RESULTS

Twenty of the 24 rhizotomized patients experienced relief of pain during the first week postoperatively. In most cases this relief did not last for longer than 2 to 6 months. Even so, 14 of the 24 patients were satisfied with the result 6 months postoperatively. Two years after surgery the number of patients satisfied with the result was reduced to 11.

Table 1. Effect on ano-coccygeal pain 2 years after division of S-4 and S-5 roots, and in 8 cases (marked with an asterisk) also one S-3 root

Result	Localization of pain preoperatively		
	Ano-coccygeal area only	Associated lumbo-sacral pain	Associated lumbo-sacral pain radiating into the genito-perineal area
Excellent	5		
Good	1		
Fair	1		4*
No change		5	2
Worse	1	1	4*

Only two patients reported a worsening of their condition during the second year after the operation and none did so later on. Both the patients with "late relapse" and one additional patient were reoperated on because their pain had become worse than ever and all were found to have arachnoiditis with adhesions between all roots of the cauda but maximal involvement at the rhizotomy level. Sensibility to pain and temperature in the perianal skin had re-developed in all these three cases. Two of the three patients with verified arachnoiditis developed signs of anal and bladder incontinency. This complication had also been noticed in the immediate postoperative period in another two cases where reoperation was not performed. In all these five cases, and in an additional one without verified arachnoiditis or sphincter insufficiency, the ano-coccygeal pain became worse than ever. Two of these six patients had signs of a superficial wound infection during the early postoperative period.

Only 6 of the 24 operated patients (see Table 1) became pain-free or more or less so post-operatively. These six patients belonged to the group of eight patients who prior to surgery suffered from pain only in the ano-coccygeal area. None in the group of 10 patients who besides coccalgia had pain radiating into the perineum, or genitals became pain-free in the ano-coccygeal area after surgery. Four patients in the group of eight who were rhizotomized also on the S-3 level achieved some lasting reduction of pain in the ano-coccygeal area.

Altogether 13 of the 24 operated patients re-

ported no change in pain or increased pain in the ano-coccygeal area 2 years after surgery (Table 1). Only one of these dissatisfied patients belonged to the group of eight with coccygodynia in a "strict sense" (see above).

Only two out of seven patients who attributed their ano-coccygeal pain to a trauma became pain-free after the rhizotomy. Three other patients experienced a moderate reduction of pain (fair) after the operative procedure.

DISCUSSION

The 24 patients reported here represent three different groups of patients all with the coccygodynia syndrome defined as ano-coccygeal pain and tenderness. Although ano-coccygeal pain was considered to be the main discomfort by all the patients, 8 had additional disabling pain in the lumbo-sacral area and another 8 patients had disabling pain radiating into the perineum or genitals.

Bohm (1978) recommended rhizotomy in cases with pain confined to the ano-coccygeal area, tenderness at palpation of the tip of the coccyx and increased pain during active and passive movements in the sacro-coccygeal joint. Only 8 patients in the present study fulfilled Bohm's criteria and 6 of them responded very well to sacral rhizotomy. Twelve out of the 16 patients whose complaints were not limited to the ano-coccygeal area did not benefit at all from

sacral rhizotomy and 5 of them even became worse after surgery. These findings stress the importance of a very careful selection of patients for sacral rhizotomy in the treatment of coccygodynia.

Bohm (1962) had no serious complications after sacral rhizotomy. In the present report 6 patients were found to have increased pain after surgery and 4 of these developed anal and bladder incontinency which however later recovered spontaneously in 2 cases. Arachnoiditis was verified by re-exposure in 3 of these 6 cases and suspected on clinical findings in the other 3 patients.

All 6 patients with serious complications had prior to rhizotomy been exposed to operations which hypothetically could have involved nerve tissue damage. All 6 patients had been examined by contrast myelography, at least 3 of them using Kontrast U® as contrast medium. This contrast medium has been shown to increase the risk of developing arachnoiditis (Irstam 1974). Moreover, disc surgery had been performed in 2 and coccygectomy in 3 of the patients with serious complications. All 6 patients had been treated with multiple injections of local anaesthetics and at least 2 had been given injections of steroids in the subarachnoidal space. One or several of these diagnostic or therapeutic measures may theoretically increase the risk of developing complications after rhizotomy. They should be regarded as unfavourable factors when rhizotomy is discussed in the treatment of coccygodynia.

On the basis of the results presented here sacral rhizotomy can not be excluded as a means of treatment for coccygodynia. However, the risks apparently involved emphasize that sacral rhizotomy may be justified only in cases where there are clear signs (Bohm et al. 1956, Bohm &

Frankson 1958) suggesting that the ano-coccygeal pain is due to damage to the distal nerve roots in the cauda equina. When there are reasons to believe that the pain originates in the coccyx or its supporting tissues rhizotomy should not be considered as an alternative to coccygectomy.

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