

COCCYDYNIA

AETIOLOGY AND TREATMENT

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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%.

Coccydynia is defined as pain in and around the coccyx; it is a symptom not a diagnosis. Typically, discomfort is felt when sitting and especially when rising from the sitting position.

Apart from those cases caused by local injury the aetiology remains obscure. Some rare but well defined pathologies include chordoma, giant cell tumour, intradural schwannoma, perineural cyst and intra-osseous lipoma (Hanelin, Sclamberg and Bardsley 1975; Kinnett and Root 1979; Ziegler and Batnitzky 1984). The glomus tumour theory has now been discounted (Bell, Goodman and Fornasier 1982). In the majority of cases of coccydynia there is no identifiable cause and these cases are often labelled as idiopathic. Some have believed that the pain is due to local pressure over an unusually prominent coccyx or to inflammation of the various ligaments attached to the coccyx (Key 1937). Others have thought that coccydynia is referred pain (Dittrich 1951), usually from a lumbosacral disc prolapse (Richards 1954). Yet a third view is that these patients have some form of neurosis or even frank hysteria (Bremer 1896).

Not surprisingly the variety of treatments offered

Table I. Results of a randomised study to compare local injection only with manipulation and injection

	Number of patients	Success* (per cent)	Late relapse
Local injection only	29	17 (59)	4
Manipulation and injection	33	28 (85)	8

*p < 0.05

reflects this uncertainty. At various times the following have all enjoyed some popularity: hot baths, rubber ring cushions, plaster jackets, suppositories, physiotherapy, massage, radiotherapy, psychotherapy, sacral rhizotomy, manipulation, epidural injection, local injections, and finally coccygectomy.

We undertook a prospective study to try to clarify the aetiology and to find an effective treatment.

PATIENTS AND METHODS

Over a five-year period patients referred to the Leicester-shire hospitals with a diagnosis of coccydynia were entered into a special study. The criteria for inclusion were that coccydynia was the main complaint and that the initial clinical examination confirmed this to be the case. Patients who gave a previous history of back pain were included provided this was a remote event or was clearly of secondary importance to the coccygeal pain.

The first 50 patients were extensively investigated by full clinical examination, plain radiographs of the lumbosacral spine, pelvis, and coccyx, CT scans of the lumbosacral spine, isotope bone scans of the sacrococcy-

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geal area, and a comprehensive personality/behavioural assessment. The latter was in the form of a questionnaire produced by the university department of psychiatry and covered social aspects, attitudes to pain and Eysenck's personality inventory.

These first 50 patients formed a pilot study from which we identified successful methods of treatment. The protocol consisted of a step-wise series of treatments, each more invasive than the last, the patient progressing to the next step because of failure of a particular treatment. All patients were initially treated by physiotherapy which consisted of two weeks of daily ultrasound followed by two weeks of short-wave diathermy. Those in whom these methods failed had a local injection of methylprednisolone acetate (40 mg Depo-Medrone, Upjohn, UK) and the local anaesthetic bupivacaine (10 ml of 0.25% Marcain, Astra, UK). The soft tissues around the sides and tip of the coccyx were infiltrated but no attempt was made to enter the sacrococcygeal joint. If necessary the injection was repeated after one month. If coccydynia persisted the coccyx was manipulated under general anaesthesia and the coccygeal region was again infiltrated with steroid and local anaesthesia. The manipulation was performed, with the patient in the left lateral position, using the index finger per rectum and the thumb overlying the coccyx. The coccyx was repeatedly flexed and extended over a period of approximately one minute taking due care of the rectal mucosa. If, six weeks later, the patient was still in pain sufficiently severe to justify it, coccygectomy was performed.

All patients were followed up for a minimum of one year (average two years nine months).

The pilot study showed that physiotherapy did not help but that local injection and manipulation with injection were both useful treatments. The second phase of the study therefore consisted of a randomised trial to compare the efficacy of these latter two treatments. A success was defined as an asymptomatic patient at the three-month review. Randomisation was by year of birth and the study was continued until 120 patients had been treated. Of these, 101 were female and 19 male. The average age of the women was 38 years (range 11 to 74) and of the men 47 years (range 13 to 76). The mean duration of symptoms prior to referral was 16 months (range six months to 10 years). Thirty of the patients gave a history of a fall; in 14 cases coccydynia started with parturition; in another 15 there was a story of some form of repetitive injury. These included the use of a 'keep-fit' rowing machine (2) and prolonged bicycle riding (3). In six patients the pain started following a surgical operation; three had been in the lithotomy position, suggesting that prolonged pressure can be the cause.

There were 14 patients who were excluded or who defaulted, six from the pilot study and eight from the randomised trial. Among these there were three men who had disease requiring immediate treatment. One had carcinoma of the rectum, another carcinoma of the

prostate with secondary deposits in the pelvis and the third had chronic prostatitis. Four men were content with reassurance that they did not have a malignant disease and thereafter declined treatment. Another man was clearly suffering from an acute anxiety state which necessitated prompt treatment. The females who declined treatment simply stated that their symptoms were not severe enough to justify it.

RESULTS

The pilot study. Of the 50 patients entered into the pilot study, only 16% were cured by physiotherapy; 38% of those undergoing local injection and 71% of those who had manipulation and injection were cured.

The randomised trial. Table I shows that local injection used as a first-line measure achieved a success rate of almost 60% and that manipulation and injection was successful in 85% of cases.

Recurrences. Over the whole period of follow-up, four (21%) of those who had a successful injection and eight (28%) of those who had a successful manipulation had a recurrence of their symptoms. Most relapses occurred in the first year. The same treatments were repeated, with success in all but two patients who both underwent a third manipulation, relapsed again and eventually had coccygectomies.

Coccygectomy. Of the 120 patients, 23 either failed to respond to injection and manipulation or relapsed following repeated treatment. They underwent coccygectomy. All the operations were performed by one surgeon (JH). The mobile coccygeal segments were excised and care was taken to smooth down any bony prominence at the lower end of the sacrum. Skin closure was with subcuticular Ethilon (Ethicon, UK). All wounds healed primarily, except one in which there was a slight delay. Of the 23 patients, 21 have excellent results with complete and sustained relief of pain. We cannot explain the two failures; their pre-operative symptoms and signs were indistinguishable from those of the successful cases. Their postoperative symptoms remain identical to their pre-operative complaints.

The influence of bony prominence on treatment. Of the 120 patients, 36 had unusual prominence of the coccyx, and 12 of these required coccygectomy. However, the majority (24) were cured by conservative measures which are certainly justified in the first instance.

Investigations

Radiographs. The radiographs were classified according to Postacchini and Massobrio (1983). The patients in our study who underwent coccygectomy were no different radiographically from the others. The only value of radiography is to exclude more sinister pathology.

Radio-isotope scans. These were all negative and are of no value in this disorder.

CT scans. Of the first 50 patients investigated, 13 were reported to have a disc prolapse, seven at the L5/S1 disc

level and six at the L4/5 level. A further 11 patients were reported to have bulging discs at these same levels. Thus, 48% of the patients had evidence of disc pathology though they had no significant back pain or sciatica at the time. There was a poor correlation between CT signs and a past history of back pain.

Personality/behavioural assessment. Of the 50 patients who underwent comprehensive assessment only three were considered to exhibit abnormal personality traits. One of the patients with a poor result after coccygectomy was one of these three. However, another patient who fared badly with the behavioural assessment did well following surgery.

DISCUSSION

Coccydynia is a neglected topic. Most papers report retrospective analyses of particular treatments or offer anecdotal comments on a handful of cases.

One of the views widely held is that patients with coccydynia are suffering from anxiety, neurosis or even hysteria. Bremer (1896) was a forthright exponent of this view, strongly denouncing coccygectomy and remarking that "the time will come when another generation of medical men will look upon such operations as one of the most remarkable aberrations of the science of medicine. The trouble is in the brain, but not at the periphery, neither bone nor skin". Several more recent authors have remarked that patients who were not cured by coccygectomy subsequently revealed psychoneurotic tendencies. On the other hand Wilson (1976) wrote that "patients suffering from this disability are not neurotic - it is only that their symptoms have not been understood". Our results undoubtedly support his view; clearly coccydynia cannot be regarded as an hysterical or a neurotic condition. Our behavioural assessment indicates that patients with coccydynia have a psychological profile similar to that of any other group of patients.

Many authors have considered coccydynia to be referred pain from a lumbosacral disc prolapse. Richards (1954) supported this hypothesis, observing that many people with disc protrusions complained of coccydynia in association with their sciatic pain and that nearly half his patients with coccydynia had initial backache. Several authors have recently commented on the coincidence of coccydynia and backache and have mentioned that patients failed to improve after coccygectomy and later underwent lumbar disc excision with relief of symptoms (Wray and Templeton 1982; Bayne, Bateman and Cameron 1984). It has been suggested that myelography should always be performed prior to surgery (Beinhaker, Ranawat and Marchisello 1977). Other authors have suggested that coccydynia may be a neuralgic state due to irritation of the sacral nerves (Bohm and Franksson 1958; Wright 1971).

Our CT scans in 50 patients with coccydynia might seem to support the idea that their pain was caused by

lumbosacral disc prolapse. However, since virtually all these patients were cured by treatment localised to the coccyx, we believe that the theory of referred pain from a lumbar disc prolapse has been effectively disproved. There are several previous reports of a high incidence of disc prolapse in asymptomatic patients. A myelographic study of 300 symptomless patients showed lumbar disc protrusions in 24% (Hitselberger and Witten 1968) and McRae (1956) found a 66% incidence of disc protrusion at post-mortem in patients over the age of 30 years.

There has been much debate concerning the relationship of lumbar spine problems to coccydynia (Schapiro 1950). Backache is common and clearly on occasion the two conditions can coexist. However, there are very few patients in whom the symptoms are so mixed that one cannot distinguish those with coccydynia from those with the more common back pain syndrome.

Local treatment whether by injection, manipulation or coccygectomy is successful in curing coccydynia. The cause must therefore lie in some musculoskeletal abnormality around the coccyx. Histological examination of the coccyx has not helped to reveal a cause and in our cases no remarkable features were encountered. It has been suggested that avascular necrosis is a feature (Lourie and Young 1985) and Cameron, Fornasier and Schatzker (1975) described the histological finding of an avulsion of the cartilage end-plate from the subchondral bone. The lesion was likened to that seen in 'tennis elbow'. Interestingly, one of our patients spontaneously remarked that her coccydynia was very similar to the discomfort she suffered with her 'tennis elbow'. We would support Postacchini and Massobrio (1983) who believed that in the majority of patients local factors play a primary role in the aetiology of coccydynia.

The preponderance of females in our study is in keeping with other series. The coccyx is more prominent in women and presumably more prone to injury. Coccydynia is sufficiently unusual in men to justify a high level of suspicion of some serious cause.

Local injection of steroid and anaesthesia around the coccyx is a straightforward out-patient procedure, and should generally be the first line of treatment. If there is going to be a satisfactory response then this will be achieved by two such injections.

If a second injection is unsuccessful then manipulation of the coccyx combined with another local injection is indicated. When manipulation of the coccyx with injection was used in the first instance there was an 85% successful response. Presumably manipulation stretches the ligaments and allows ordinary movements to become painless (Borgia 1964). After manipulation there is usually local discomfort for a few days but then the symptoms generally subside. We had no complications attributable to manipulation. The efficacy of manipulation has been reported by several authors (Duncan 1937; Stern 1967; Porter, Khan and Piggott 1981).

We have no experience of massage of the pelvic

floor muscles as proposed by Thiele (1963). He believed that spasm of the levator ani is responsible for the discomfort in coccydynia and that anorectal infection is often a causative factor. We disagree with his statement that pressure on the tip of the coccyx is not painful. The non-tender coccyx is most unusual in our experience.

In our study there was a 20% relapse rate in patients who had initial relief with conservative measures. Repeat therapy was usually effective in providing permanent relief. If coccygectomy is ultimately needed its result is not prejudiced by prolonged conservative therapy.

Coccygectomy was indicated for approximately 20% of our patients. Other authors (Duncan 1937; Borgia 1974; Wray and Templeton 1982) have reported a range of 10% to 20%. Our success rate (90%) matches the results of other series (Key 1937; Howorth 1959; Borgia 1964; Hodge 1979; Postacchini and Massobrio 1983).

A striking feature in this study was the patients' gratitude that their condition was taken seriously and treated sympathetically. Many had tolerated pain for a long time and felt that their symptoms had previously been belittled. Coccydynia is a readily treatable condition and deserves a better reputation than it has hitherto enjoyed.

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