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Dextrose prolotherapy for recalcitrant coccygodynia

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ABSTRACT

Purpose. To present the results of dextrose prolotherapy undertaken for chronic non-responding coccygodynia in 37 patients.
Methods. 14 men and 23 women (mean age, 36 years) with chronic coccygodynia not responding to conservative treatment for more than 6 months were included. 27 of them had received local steroid injections. A visual analogue score (VAS) was recorded for all patients before and after injection of 8 ml of 25% dextrose and 2 ml of 2% lignocaine into the coccyx. In 8 patients with a VAS of more than 4 after the second injection, a third injection was given 4 weeks later.
Results. The mean VAS before prolotherapy was 8.5. It was 3.4 after the first injection and 2.5 after the second injection. Minimal or no improvement was noted in 7 patients; the remaining 30 patients had good pain relief.
Conclusion. Dextrose prolothearpy is an effective treatment option in patients with chronic, recalcitrant coccygodynia and should be used before undergoing coccygectomy. Randomised studies are needed to compare prolotherapy with local steroid injections or coccygectomies.

Key words: *coccyx; pain*

INTRODUCTION

Coccygodynia is a poorly understood clinical syndrome. Numerous hypotheses have been proposed as to the origin of coccygeal pain, but none is conclusive. Recalcitrant coccygodynia is difficult to treat. A number of treatment modalities have been described to control pain in chronic, recurrent coccygodynia.[1,2] Coccygectomy is the ultimate solution but is associated with considerable morbidity, as the coccyx is wrapped by a cuff of tough musculofibrous tissue making its removal technically difficult. We present a series of 37 patients who underwent dextrose prolotherapy for chronic non-

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responding coccygodynia.

MATERIALS AND METHODS

This was a prospective observational study performed between May 2002 and April 2005. 14 men and 23 women (mean age, 36 years) with chronic coccygodynia not responding to conservative treatment for >6 months underwent prolotherapy. 27 of the patients had received local steroid injections elsewhere. Four men and 2 women regularly participated in sporting activities and their Nirschl pain phase scores[3] were recorded. Patients with post-traumatic and post-delivery coccygodynia, unhealthy back skin, sacro-coccygeal subluxation, or a coccygeal spicule on radiographs were excluded. All patients underwent radiological examination of the coccyx to rule out any apparent organic bony pathology, and their visual analogue scores (VASs) for pain were recorded before and after prolotherapy.

Patients were asked to lie on the left side with hips flexed. The skin was carefully disinfected and 8 ml of 25% dextrose and 2 ml of 2% lignocaine was injected using a 22G needle over the most-tender spot of the coccyx, using an image intensifier to locate the sacro-coccygeal joint. No manipulation of the coccyx was performed. Patients were then followed up regularly and the second injection was given 15 days later, as this was the period considered necessary for inflammation to settle down. For patients with a VAS of >4 after the second injection, a third injection was given 4 weeks later. Patients were advised not to use any anti-inflammatory medicines during the period.

RESULTS

The mean VAS before prolotherapy was 8.5; being 8.8 in patients who received prior steroid injections. The mean VAS after the first injection was 3.4 and dropped to 2.5 after the second injection (Table). Minimal or no improvement was noted in 7 patients; the remaining 30 achieved good pain relief. Regarding the 6 athletes, the Nirschl pain phase recovered dramatically to phase 1 (from phases 6 and 5) in 4 of them, while in 2 there was no improvement. Complications during the course of treatment included superficial skin infection (n=2) and skin pigmentation (n=1).

Table
Visual analogue scores of pain in patients undergoing prolotherapy

Patient No.	Visual analogue scores			
	Before injection	After injection		
		1st	2nd	3rd
1	8	4	1	-
2	8	3	2	-
3	8	5	5	5
4	8	1	2	-
5	7	3	1	-
6	7	3	0	-
7	8	3	2	-
8	9	7	7	4
9	7	2	2	-
10	7	1	1	-
11	6	1	0	-
12	5	8	7	7
13	5	1	1	-
14	7	5	3	-
15	8	3	3	-
16	8	2	1	-
17	9	8	8	8
18	9	4	1	-
19	6	2	2	-
20	7	2	2	-
21	8	5	5	5
22	9	8	8	8
23	7	2	0	-
24	6	1	0	-
25	6	1	1	-
26	6	1	1	-
27	7	1	0	-
28	8	6	3	-
29	7	1	0	-
30	7	1	1	-
31	9	5	5	3
32	9	4	4	-
33	8	4	2	-
34	7	4	1	-
35	8	4	1	-
36	6	6	6	6
37	5	3	2	-

DISCUSSION

The exact aetiology of coccygodynia is unclear. In most patients, abnormal mobility is seen on dynamic standing and seated radiographs. Bone scans and magnetic resonance imaging may show inflammation and oedema.[4] For more than 100 years, injection of various solutions to induce a sclerosing effect has been used to treat soft tissue injuries.[5] Prolotherapy (proliferative therapy) induces inflammation and subsequently the formation of a stable scar in the ligaments and soft tissues that may be responsible for reducing pain. Prolotherapy in coccygodynia is well reported,[2,6] but its role in recalcitrant, chronic, non-responding coccygeal pain is less clear. There is no

widely accepted protocol for prolotherapy treatment of coccygodynia.

In a study reporting 200 patients with coccygodynia, prolotherapy of chronic, non-responding coccygodynia was not the focus, though the authors did conclude that coccygectomy was effective in those with intractable coccygeal pain.[1] In another study, coccygectomy was successful in 90% of the 120 patients undergoing this procedure for chronic, non-responding coccygodynia.[7]

Local injection appeared successful in patients with coccygeal pain for >3 months, while coccygectomy was recommended for non-responders.[4] Injection of ammonium chloride provided favourable results for chronic coccygodynia, although only symptomatic improvement in pain was measured, not the VAS.[8]

Our study shows that prolotherapy was effective and safe in non-responding, obstinate coccygeal pain. Most other studies propose coccygectomy in such patients. In view of high complication rates from coccygectomies, we recommend prolotherapy before resorting to surgery. However, randomised controlled comparative studies are needed to establish the superiority of prolotherapy over coccygectomy.

REFERENCES

1. Dagenais S, Haldeman S, Wooley JR. Intraligamentous injection of sclerosing solutions (prolotherapy) for spinal pain: a critical review of the literature. Spine J 2005;5:310–28.
2. Howorth B. The painful coccyx. Clin Orthop 1959;14:145–60.
3. Stern FH. Coccygodynia among the geriatric population. J Am Geriatr Soc 1967;15:100–2.
4. Ramsey ML, Toohey JS, Neidre A, Stromberg LJ, Roberts DA. Coccygodynia: treatment. Orthopedics 2003;26:403–5.
5. O'Connor F, Howard T, Fieseler C, Nirschl R. Managing overuse injuries: a systemic approach. Physicians Sports Med 1997;25:88–113.
6. Fogel GR, Cunningham PY 3rd, Esses SI. Coccygodynia: evaluation and management. J Am Acad Orthop Surg 2004;12:49–54.
7. Wray CC, Easom S, Hoskinson J. Coccydynia. Aetiology and treatment. J Bone Joint Surg Br 1991;73:335–8.
8. Wright BD. Treatment of intractable coccygodynia by transsacral ammonium chloride injection. Anesth Analg 1971;50:519–25.