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DRILLING OF THE OS-CALCIS FOR PAINFUL HEEL WITH CALCANEAN SPUR

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Painful heel associated with bony spur of the os-calcis is a distressing condition. The patient feels severe pain on the inferior aspect of the heel, particularly in the morning and after a period of rest. The pain usually improves with activity and recurs after prolonged standing and walking. The condition is slowly progressive to the extent that the patient may become disabled.

Up till now the cause of the condition has been obscure; however, numerous factors have been claimed to produce painful heel with a bony spur (Table 1). These cases had been treated by various conservative methods (Table 1), or by a combination of one or more of them. Though successful in some cases, this treatment proved useless in the majority of them. For such cases various surgical procedures have been described (Table 2).

The variability of these surgical procedures denotes that none is entirely satisfactory. Moreover, the small number of the reported cases and the short period of post-operative follow-up can be easily criticized, so that the results reported are unreliable.

In our orthopaedic department, since 1966, 68 patients presented with inferior heel pain, associated with bony spur of the os-calcis; 26 of them were bilateral (52 heels). These cases were seen, investigated, and treated conservatively and finally assessed in 1973 for the sake of this paper.

The methods of treatment adopted were: (1) non-specific anti-inflammatory drugs using the phenylbutazone group of drugs; (2) leather heel pad with a hollow corresponding to the tender area; (3) local injection of 25 mg crystalline suspension of hydrocortisone acetate and 2 ml of 2 per cent novocaine.

Table 1. Causes and treatment of bony spur of the os-calcis.

Authors	Causes	Number of cases	Treatment
Swett & Stoll (1916)	Hereditary syphilis	9	Specific treatment.
Liberson (1932)	Gonorrheal	31	Deep X-ray therapy.
Blokhin & Vinogradova (1937)	Functional overuse	33	Conservative treatment.
Steindler & Smith (1938)	Functional overuse	49	Conservative treatment.
Davis & Blair (1950)	Strumpell-Marie disease	15	Conservative treatment.
Rose (1955)	Chronic strain of the plantar fascia	17	Insole in the shoe.
Kivel (1955)	Myositis	1	Insole & local cortisone with novocaine.
Blocky (1956)	No definitive cause	19	Local cortisone.
Eggers (1957)	Fasciitis & bursitis		Egger's heel pad.
Thurner & Boni (1957)	Degenerative	37	Conservative treatment.

Table 2. The surgical treatment of bony spur of the os-calcis.

Operations	Authors	Cases	Follow up	Results	
				Good	Bad
Excision of the spur	Baer (1906)	5	11 months	5	–
	Wachter & Sonnenschein (1915)	4	–	4	–
	Von Lackun & Palamoque (1930)	16	1–3 years	12	4
	Steindler & Smith (1938)	16	20 months	7	9
	DuVries (1957)	37	2 c es For 2 years	37	–
Plantar fasciotomy	Spitzy (1937)	9	10 months	9	–
Rotational osteotomy	Steindler & Smith (1938)	8	11 months	6	2
Countersin-King osteotomy	Michele & Krueger (1950)	2	1 year	2	–

RESULTS OF CONSERVATIVE TREATMENT

Excellent results

We obtained dramatic relief of symptoms in 16 cases (23.5 per cent). It was noticed that the duration of the pain in these cases was from 15–30 days. After a period of 6–9 months recurrence of pain occurred in 11 of these cases and they were treated surgically.

Our last follow-up of 1973 proved that the other 5 cases still have permanent relief since their conservative treatment in 1966. It is evident here that the very short duration of symptoms before treatment was instrumental in this relief.

Moderate results

We got slight immediate relief of pain in 39 cases (57.5 per cent) in which the duration of pain before treatment was from one to six months. After a period of 3–6 months recurrence of pain took place in 19 cases which therefore were subjected to operative treatment. In the last follow-up of 1973 for the remaining 20 cases, recurrence of the same pain occurred as before in 5 cases, 3 could not be traced, and the remaining 12 cases still have moderate relief and are satisfied though they are not completely free.

Bad results

Thirteen cases in which the duration of pain before treatment was more than 6 months did not respond to our conservative treatment and were therefore treated surgically from the start.

These resistant cases (13) together with the recurrent cases (11+19) and a group of 17 cases treated conservatively elsewhere without response were treated by drilling of the os-calcis.

MATERIAL AND METHODS

In the Department of Orthopaedic Surgery, University of Alexandria the simple operation of drilling of the os-calcis has been used in the last 6 years in the treatment of resistant and recurrent cases of painful heel with a bony spur, i. e. the chronic cases which did not respond to any of the conservative methods of treatment.

Sixty cases of resistant and recurrent painful calcaneal spur were the subject of our study; 8 of them were bilateral. There were 42 males and 18 females. The age of the patients ranged between 20 and 80 years; 34 were above 40, 8 between 20 and 30, and 18 between 30 and 40 years.

It was noticed that females were obese, and that all males were heavy workers and had to stand for long durations.

The patients complained of pain and tenderness over the inferior aspect of the heel. 28 could not put their heels at all on the floor. 32 felt pricking pain in the heel that interfered with their usual activities, and during rest deep aching pain was felt after walking for a short distance. All stated that the inferior heel pain was worse in the morning when getting out of the bed, or after a period of rest. The pain improved on walking, but returned on prolonged standing.

The duration of symptoms was 8–11 months in 10 cases, 1–3 years in 34 cases and 3–5 years in 16 cases.

Associated conditions

Eight cases had high arched foot and 7 had flat foot, 4 cases had hyperuricaemia. Osteoarthritis of the knees was present in 30 cases. Diabetes mellitus was found in 4 cases and hypertension in 6 other cases.

The right heel was affected in 30, the left in 22, and both heels in 8 patients.

All these patients were given the chance of conservative treatment by a combination of different measures, including repeated local injection of hydrocortisone acetate crystalline suspension (25 mg) mixed with novocaine 2 % solution. No improvement was obtained in 13 cases and pain recurred after a short duration of incomplete improvement in the other 30 cases. To these was added a third group of 17 cases which were treated conservatively in other hospitals without response; all these were considered resistant chronic cases of painful heel with calcaneal spur.

Operative technique

Under general or local anaesthesia, a small curved incision about 3 cm was made over the lateral surface of the heel extending below the lateral malleolus. It was deepened down to the bone, securing the sural nerve. The periosteum was stripped off the bone to the peroneal tendons anteriorly, and to the small muscles of the foot inferiorly. Bone levers were inserted between the bone and the tendo calcaneus, and between the os-calcis and the muscles of the sole. Multiple small drill holes were than made in the calcaneus traversing the bone from the lateral to the medial cortex. From 7–10 holes were usually made. The wound was closed and a soft bandage applied.

Post-operative management

The patient is instructed to walk on the third post-operative day, and the stitches are removed on the tenth day.

RESULTS

Sixty-eight operations were performed on 60 patients (8 bilateral) with resistant heel pain associated with bony spur of the os-calcis. In 62 operations there was immediate and dramatic relief of the heel pain and local tenderness on the second post-operative day. The patients

returned to their usual work two weeks after the operation. No pain recurred during the period of follow-up of two to six years. In two cases there was mild superficial skin infection which delayed the improvement for about one month. Four failures were encountered; the first case was gouty (blood uric acid was 6.8 mg per cent). The second case got bone infection, and the last two cases had rigid flat foot (Table 3).

Table 3. Results of the operation.

No. of operations	Excellent	Good	Bad
68	62	2	4

However, when this operation was applied to fairly recent cases, as was done by some of our colleagues, the results were not so favourable.

Advantages of the operation

1. It gives constant immediate and so far permanent excellent results in the resistant chronic cases not responding to conservative treatment.
2. It is a very simple surgical procedure which can be done under local anaesthesia.
3. It neither disturbs the normal anatomy of the region nor the biomechanics of the heel.
4. The post-operative care is very simple and short; the patient is hospitalized for not more than 10 days, and resumes his usual activities two weeks after the operation.

CONCLUSION

1. In our opinion, drilling of the os-calcis is an ideal operation for the treatment of chronic resistant cases of painful heel with a bony spur, but when applied to fairly recent cases or to cases with a definite etiological factor, the results are not so favourable.
2. The relief of pain in the way described in this paper for chronic resistant cases by simple drilling of the os-calcis suggests that this operation may induce a sort of decongestion or decompression of the calcaneus; however, this hyposthesis is a subject of further studies in our section.

SUMMARY

Sixty cases (68 heels) of painful heels resistant to conservative treatment and accompanied with calcanean spur were treated by a new surgical method in which the calcaneus was perforated by multiple drill-holes. The relief of pain was immediate in 62 heels. After a follow-up of 2 to 6 years no recurrence was noticed.

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