

# Rupture of the Plantar Fascia

*Rupture of the plantar fascia in athletes engaged in sports that require running and jumping has been reported. However, spontaneous degenerative rupture of the plantar fascia is not well documented in the literature. This paper reports a patient with degenerative rupture of the plantar fascia. (The Journal of Foot and Ankle Surgery 35(1):39-40, 1996)*

Key words: plantar fascia rupture; soft tissue trauma, foot

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Rupture of the plantar fascia is most often seen in athletes. Here, the rupture occurs at the time of injury by an acceleration type of motion (1). Repeated injection of hydrocortisone may account for spontaneous rupture of the plantar fascia (2). Although the effect of steroid was found to be deleterious to tendon in an animal study (3), this was disproved by Phelps (4). The present report is a case of spontaneous rupture of the plantar fascia following steroid injection in a 72-year-old man. To the author's knowledge, such a case has not been reported before in this age group.

## Case Report

A 72-year-old man presented to his general practitioner in February, 1992, with a history of sharp pain in his left heel following prolonged walking, particularly when playing golf. A calcaneal spur with plantar fasciitis was diagnosed. This was treated with a cortisone injection which provided extended relief of the patient's symptoms. His previous medical history was unremarkable. His surgical history included a repair of rotator cuff and excision of Dupuytren's tissue in the hand during the past 5 years.

Six months later, the patient related missing his footing on the steps and fell on to the back of his left foot. This caused considerable pain, which continued until the next day. His physician referred him to an orthopedic surgeon, who diagnosed plantar fasciitis and gave him a course of steroid injections (three over 6 months). In addition, he was treated with diclofenac, 50 mg., three times a day for 10 days. Contrast baths and a rubber heel cushion, used for 4 months, also gave him no relief. The pain in the instep was a dull ache, often being worse upon arising in the morning. The heel pain progressed and was present in two distinct areas. The

first area, his heel, was not as painful as the second area, which was over the midfoot at the instep. Normal ambulation caused severe pain in the instep, forcing him to ambulate on the ball of his left foot.

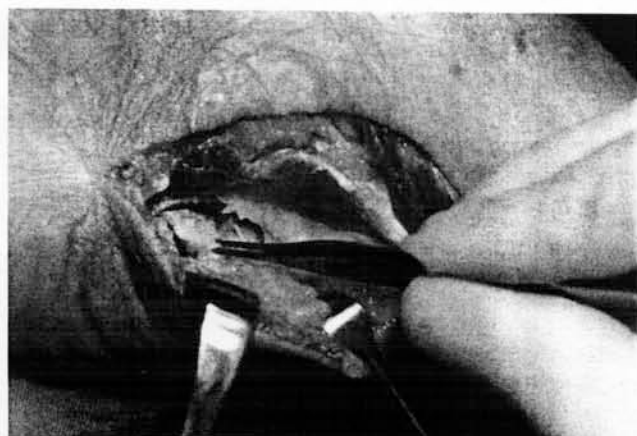
Fourteen months after initial treatment, he was referred to the orthopedic outpatient clinic at Hastings Hospital. Tenderness was maximum approximately 4 cm. anterior to the calcaneal tuberosity. At the site of tenderness there was a firm palpable swelling measuring 2 × 2 cm. Due to a past history of Dupuytren's contracture of the hand, a diagnosis of plantar fibromatosis was made, and the patient was scheduled for surgical exploration.

Laboratory investigations for diabetes and rheumatoid arthritis were negative. Radiographs consisting of four views of the os calcis did not reveal anything unusual apart from a small calcaneal spur. As rupture was not diagnosed preoperatively, no further attempt was made to investigate with magnetic resonance imaging.

The patient was placed under general anesthesia. The pathology was explored through an S-shaped incision on the plantar surface of the foot, from the middle of the first metatarsal to the weight-bearing prominence of the calcaneus. The deep part of the heel was exposed by incising the fascia over the abductor hallucis muscle. The plantar fascia was found to be detached completely from the calcaneal tuberosity and displaced distally. The ruptured surface was yellowish white and rounded, indicating an old rupture (Fig. 1). This retracted mass measured 2 × 3 cm. and was excised. The excised tissue showed focal fibroblastic proliferation, consistent with an old plantar fascial rupture.

The patient's postoperative course was uneventful. At 3 weeks he was partially weight-bearing with crutches, and at 6 weeks he was fully weight-bearing. Three months after surgery, the patient resumed his pre-injury recreational activities. Twelve months later, he remained almost asymptomatic and was pleased with his outcome. His only discomfort was a dull ache in the midfoot on

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**FIGURE 1** Intraoperative view of ruptured plantar fascia. The ruptured end is round and yellowish.

walking a long distance, which benefited from an arch support.

### Discussion

In 1922, Stiell stated, "Painful heel appears to be a condition which is seldom efficiently treated for the simple reason that the causation is not exactly diagnosed" (5). This entity remains enigmatic and is often frustrating to the physician as well as the patient. Complete rupture of the plantar fascia is uncommon. Leach, Jones and Silva reported six athletes with a clinical diagnosis of partial rupture of the plantar fascia (6). Rupture was confirmed at surgery in one case. Christel et al. reported 19 ruptures in athletes and advised surgical intervention if pain persisted, despite well conducted conservative treatment (7).

Rupture of the plantar fascia can be confused with plantar fasciitis. A high index of suspicion, along with clinical signs, is necessary for making the diagnosis. The patient often relates a history of definite injury. This is followed by acute pain which is so severe that the patient cannot continue his routine activity. The author agrees with Leach et al. (6) that in all patients with a ruptured plantar fascia, there is a tender lump in the sole of the foot. Magnetic resonance imaging may aid in making the diagnosis, although this was not performed in the present case. When rupture is diagnosed, treatment options include the use of crutches, anti-inflammatory agents, arch supports, and ice packs. Surgical treatment is indicated when pain persists, despite well conducted

conservative treatment (1, 2). Surgery includes removal of fibroblastic proliferation with release of the rest of the fascia when rupture is partial (6). According to Baxter, complete release of the plantar fascia may be harmful in a competitive athlete and prolongs recovery time (8). This statement has not been proved (1, 6).

The possible relationship between steroid injections and rupture of collagen structures has been described (3, 4). Balasubramanian and Prathap concluded that a steroid injection causes focal necrosis of collagenous tissue and definitely predisposes tendon or fascia to rupture (3). Although multiple steroid injections for plantar fasciitis are a common treatment, this author could find no reports of degenerative rupture of the plantar fascia in the literature.

### Conclusion

The author suggests that the apparent infrequency of this condition is due to difficulty in diagnosis. This condition must be included in the differential diagnosis of plantar fasciitis. Treatment of the spontaneous rupture in the elderly does not differ from that reported for younger patients (6).

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