

# Plantar Fascia Release and Calcaneal Spur Excision for Sub-Calcaneal Heel Pain

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*Aim of this study was to evaluate the results of open plantar fascia release and calcaneal spur excision in patients with plantar fasciitis. The author studied retrospectively the results in 16 patients who had been treated with open plantar fascia release and calcaneal spur excision from 2002 to 2008. Two patients were men and fourteen were women. Their mean age was 43.3 years (39 to 52). Based on visual analog scale the results were pain free in 12 feet and some pain in four. There are two patients with superficial skin infection which can be manage with local wound care and oral antibiotic. We conclude that open plantar fascia release and calcaneal spur excision can relieve pain in patients who resist conservative treatment.*

**Keyword:** Fascia, Fasciitis, plantar, Heel, Pain

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Plantar fasciitis is a clinical syndrome characterized by pain and tenderness beneath the heel, typically worse in the morning with the first few steps<sup>(1,2)</sup>. Often, the pain subsides, only to return after prolonged activity. The injury itself is an enthesopathy (an abnormality or injury at the site of attachment of a ligament or tendon to bone) of the origin of the plantar fascia at the medial tubercle of the calcaneus due to excess traction<sup>(3-7)</sup>. Plantar fasciitis is generally believed to be due to repetitive partial tearing at this enthesis with associated chronic inflammation<sup>(3,5)</sup>. The treatment outcome for most plantar fasciitis cases is favorable and numerous authorities have indicated that plantar fasciitis will normally respond to conservative treatment modalities<sup>(8-10)</sup>. In refractory cases, surgery may be considered. Many surgical approaches and procedures have been proposed, with varying degrees of success. Previously described surgical procedures include isolated plantar fascia release from the os calcis, excision of the spur and medial calcaneal nerve neurolysis<sup>(11,12)</sup>.

Aim of this study was to determine result of open plantar fascia release for heel spur syndrome.

## Material and Method

We undertook a retrospective analysis of 16 patients who underwent open plantar fascia release and calcaneal spur excision at the HRH Maha Chakri Sirindhorn Medical Center during the period from January 2002 to June 2008. Age, sex, body mass index, duration of symptom, conservative modalities such as activity modification, orthotics, non-steroidal anti-inflammatory drugs, physical therapy (ultrasound, stretching, ice), numbers of local steroid injections and pain score were included in analysis. All 16 patients had failed to respond to conservative treatment, could not tolerate the pain or were unable to walk or work without regular interruption. None of these patients had undergone previous surgery.

## Surgical technique

Under a tourniquet and general anesthesia with the hip on the ipsilateral side externally rotated and the knee bent. Patient's big toe is dorsiflexed and the medial border of the plantar fascia is then outlined. The incision was made along the medial side of the calcaneus (Fig. 1). This incision was extended distally to a point 4 cm anterior to the medial tubercle. The

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superficial and deep surfaces of the plantar fascia were separated from the muscle and fat, the fascia was freed throughout its breadth. The fascia was incised transversely close to where it blends into the plantar surface of the calcaneus until the calcaneal spur was seen (Fig. 2). The spur was excised using a small bone nibbler. The lateral one-third of the plantar fascia was left intact; care was taken not to detach the plantar fascia completely. The skin was closed after careful hemostasis. The results were expressed as means and standard deviations. Significant differences were determined by a paired two-tailed t-test with  $p < 0.05$  taken as the level of significance.

## Results

Data were collected in July 2008. There were 16 patients, 14 of whom were females. The mean age is 43.3 years range from 39 to 52 years. The patients had had symptoms for an average of 1.9 years, varying from 1 to 5.5 years. Conservative measures include non-



**Fig. 1** The incision along the medial side of the calcaneus



**Fig. 2** The incision of the fascia close to plantar surface of the calcaneus

steroidal, anti-inflammatory drugs, orthotic, physical therapy (ultrasound and stretching). All of the patients were injected with triamcinolone acetonide at least three times (3-7). Three patients (18.8%) had body mass index (BMI) of less than 25 (normal weight), nine (56.2%) had BMI between 25 and 29 (overweight), and four (25.0%) had BMI of at least 30 (obese). The mean BMI was  $28.0 \pm 3.4$ . Based on a visual analog scale of 0 (no pain) to 10 (most pain imaginable), pre-operative heel pain was  $7.8 \pm 0.6$  (range, 6 to 9). Postoperative was  $0.8 \pm 0.3$  (range, 0 to 3). There was a mean decrease in pain of  $6.9 \pm 0.4$ , which is statistically significant ( $p < 0.05$ ). Twelve feet were reported to be totally painless, while four feet has some pain (VAS 2-3). All of the patients satisfied with result. There are two patients with superficial skin infection. All of them can heal by local wound care and oral antibiotic.

## Discussion

The basic treatment of plantar fasciitis is conservative management. This is complemented by non-steroidal, anti-inflammatory drugs, orthotic (supportive insole), physical therapy and infiltration with corticosteroid. In cases with persistent pain, in spite of conservative management surgery is indicated. There are many surgical procedures described in the literature; the author has no experience with endoscopic plantar fascia release now becoming popular<sup>(13)</sup>. The author performed medial fasciotomy and excision of calcaneal spur. This retrospective study indicates that surgical treatment of plantar fasciitis can be beneficial; three-fourth of patients undergoing surgical treatment for plantar fasciitis had significant relief of heel pain. Two patients had mild complications related to wound problems. This result is same as Perelman series which reported, by the same technique, 80% heel pain relief and 98% of patient satisfaction.

## Conclusion

Satisfactory pain relief can be obtained in patients undergoing surgical treatment for plantar fasciitis who have failed conservative treatment. Conclusion is based on results obtained by retrospective study (reviewing the notes of patients). There were some complications following surgery, the main complication being wound problems. Further larger, randomized, controlled trials are needed to ascertain the benefit of surgical management.

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## การผ่าตัด plantar fascia release ในผู้ป่วยที่มีอาการปวดส้นเท้า

### ยิ่งยง ต่อดุคม

**วัตถุประสงค์:** รายงานผลการผ่าตัด plantar fascia release ในผู้ป่วยที่มีอาการปวดส้นเท้าที่ไม่ตอบสนองต่อการรักษาแบบอนุรักษ์

**วัสดุและวิธีการ:** ศึกษาข้อมูลของผู้ป่วยปวดส้นเท้าที่ได้รับการรักษาผ่าตัด plantar fascia release ในศูนย์การแพทย์สมเด็จพระเทพรัตนราชสุดาฯ สยามบรมราชกุมารี ตั้งแต่ปี พ.ศ. 2545 ถึงปี พ.ศ. 2551 รวมระยะเวลา 7 ปี เก็บข้อมูล อายุ เพศ น้ำหนัก ส่วนสูง อาการปวด การรักษาแบบอนุรักษ์ที่เคยได้รับ จำนวนครั้งที่ได้รับการฉีด steroid และภาวะแทรกซ้อนภายหลังผ่าตัด

**ผลการศึกษา:** ผู้ป่วยทั้งหมด 16 ราย ผู้ป่วย 12 ราย ไม่มีอาการปวด 4 ราย มีอาการปวดเล็กน้อย ผู้ป่วยทุกรายพอใจต่อผลการรักษา มีปัญหาผิวหนังติดเชื้อหลังผ่าตัด 2 ราย ได้รับการรักษาด้วยการทำแผล และยาต้านจุลชีพชนิดรับประทาน

**สรุป:** การการผ่าตัด plantar fascia release ในผู้ป่วยที่มีอาการปวดส้นเท้าที่ไม่ตอบสนองต่อการรักษาแบบอนุรักษ์ได้ผลการรักษาอยู่ในเกณฑ์ดี ผู้ป่วยทุกรายอาการปวดลดลงเป็นที่น่าพอใจ 75% ของผู้ป่วยไม่มีอาการปวดเลย ส่วนที่เหลือมีอาการปวดบ้างแต่ไม่รบกวนการใช้ชีวิตประจำวัน ผู้ป่วย 2 รายมีผิวหนังติดเชื้อหลังผ่าตัดสามารถรักษาหายด้วยการทำแผลและยาต้านจุลชีพชนิดรับประทาน