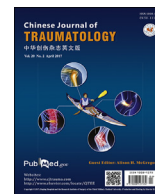




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## Original article

## Percutaneous planter fasciitis release under local anesthesia: A prospective study

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## ABSTRACT

**Purpose:** Plantar fasciitis is the most common cause of pain on the bottom of the heel. It occurs when the strong band of the tissue supporting the arch of foot becomes irritated and inflamed. The majority of patients can be treated conservatively but some resistant cases need surgery eventually. This study aims to evaluate the outcome results of percutaneous planter fascia release under local anesthesia for chronic planter fasciitis.

**Methods:** This prospective study was conducted in the Department of Orthopaedic Surgery in the School of Medical Science and Research, Sharda University, India from December 2010 to December 2013. Totally 78 patients with planter fasciitis for more than 6–12 months were recruited from the outpatient department. All patients were operated on under local anesthesia and followed up for a year.

**Results:** The clinical results were evaluated in terms of pain, activity level and patient satisfaction. Pain relief was achieved averagely at eight weeks after surgery. The results were excellent in 88.46% (69/78) patients and good in 6.41% (9/78) patients. Neither complications of lateral column instability, sinus tarsiitis and metatarsalgia nor wound-related complications were encountered. On subjective evaluations, 88.46% (69/78) patients reported full satisfaction and 6.41% (9/78) reported partial satisfaction after treatment.

**Conclusion:** Percutaneous planter fasciitis release under local anesthesia is a minimally invasive procedure that can be performed in the outpatient setting. It is easy, quick, effective and moreover with few complications.

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## Introduction

Plantar fasciitis is a common condition that causes heel pain in many adults. It occurs when the planter fascia shows myxomatous degeneration, connective tissue calcium deposits, and disorganized collagen fibers. Surgery may be required in 5%–10% of cases of planter fasciitis,<sup>1</sup> when a 6–12 months conservative treatment has failed to resolve the tissue. Plantar fascia release, performed by sectioning a part or the entire fascia via an open or endoscopic procedure, has been the mainstay of treatment.<sup>2</sup> However, partial and especially total release of the planter fascia results in instability of the medial column of the foot, along with lateral column overload and pain.<sup>3,4</sup> Overall, a surgical release has a 70%–90% success rate in treating patients with this condition.<sup>5–7</sup> A study found that endoscopic planter fascia release provides significantly improved outcomes for patients, especially those with less severe

symptoms.<sup>8,9</sup> Potential complications of surgical intervention include flattening of the longitudinal arch and hypoesthesia of the heel. Longitudinal arch strain appears to account for over 50% of the chronic complications.<sup>10</sup> An ultrasound-guided technique of percutaneous fasciotomy has been described to be able to treat persistent planter fasciitis. This technique would potentially allow the performance of a fasciotomy in an office setting.<sup>11</sup> The purpose of this study was to evaluate the outcome of percutaneous planter fascia release under local anesthesia for planter fasciitis.

## Materials and methods

## General data

This prospective study was carried out at the Orthopaedics Department of School of Medical Science and Research Hospital, Sharda University in India from December 2010 to December 2013. It has been approved by the institutional medical ethics committee. A written informed consent was obtained from all the patients. A

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total of 78 patients (13 males and 65 females) with planter fasciitis admitted to the institute were included in this study. The mean age of patients was 45 years (range 30–60 years). Sixty six cases were unilateral planter fasciitis and 12 were bilateral; 56 cases were found on the right side and 34 on the left side. All patients were followed up for a year. The indications for surgery were as follows: more than 6 months of persistent symptoms despite the aggressive conservative treatments, such as rest, drug therapy, splinting, physiotherapy & a history of more than 3 steroid injections for treatment, and functional impairment at work or home. Cases were excluded if the patient had experienced previous surgeries or other foot deformities such as rheumatoid arthritis, osteoarthritis, etc.

#### Percutaneous technique

The procedure was performed by using local anesthesia administered to the posterior tibial nerve or local infiltration. Then the surgeon marked the medial and lateral margins of the central band of the planter fascia beforehand, because landmarks can be blurred after the injection. A 1 cm-long incision was placed over the prominent fascial band, just distal to the fat pad of the heel. Incision placed too proximally will make identification of the fascia difficult. Distal incision has little fatty tissue under the skin, so identification is easy. Unfortunately, symptomatic heavy scarring of the subcutaneous tissue may happen. Therefore, the incision was placed in the distal aspect of the heel, where fatty tissue remains, but not the full thickness. The incision was deepened with sharp dissection until the planter fascia was reached. This was done blindly because no vital structures were present in this area. It was not difficult to feel the fascia when it was encountered. Spreading tissues with a hemostat or scissors should be avoided, in order to prevent injury to the fat pad and to minimize postoperative scarring.

Once the fascia has been reached, a self-retaining retractor was inserted. If a tourniquet was not used, retractor tension will essentially stop all active bleeding. The fascial margins were then isolated with retractors. With the patient's toes held in extension, the medial fascial band was severed. The area was then palpated, and any deep or stray fibers were cut. The wound was closed with a single deep horizontal mattress retention suture of 4-0 nonabsorbable material (prolene) and the wound margins were reapproximated with simple sutures of 4-0 prolene. A small gauze bandage was applied.

The patient was allowed to begin ambulation the next day. The dressings were changed on day 3 and suture removed on day 10, after which an athletic shoe can be worn as tolerated. The clinical results were evaluated in terms of pain, activity level and patient satisfaction. The follow-up data were obtained from the patients' charts and a questionnaire, and classified according to Grundberg and Dobson.<sup>12</sup> (Table 1).

#### Results

All patients were followed up for a year. Pain relief was achieved on average eight weeks after surgery. During the last examination, pain, activity and patient satisfaction were evaluated

**Table 1**  
Rating system used to evaluate the results.

Rating	Pain	Activity	Patient satisfaction
Excellent	No pain	Returned to work or activity	Patient satisfied
Good	Pain only with heavy use	Returned to work or activity	Patient satisfied
Poor	Pain unchanged	Not returned to work or no activity	Patient dissatisfied

(Table 1).<sup>12</sup> The results were excellent in 88.46% (69/78) patients and good in 6.41% (9/78) patients. We did not see any complication of lateral column instability, sinus tarsi or metatarsalgia. No wound-related complications were encountered. On subjective evaluations, 69 of the 78 patients were satisfied with the results of treatment. All the patients had a full range of ankle motion at the last follow-up examination and returned to their former occupations or activities. All of them were satisfied with the incision scar.

#### Discussion

A plantar fasciotomy is the most common surgical procedure for planter fasciitis but there are different techniques that can be employed.<sup>13</sup> These techniques include open, endoscopic, minimal incision, and in-step plantar fasciotomy. All of these procedures have been shown to have good postoperative results with satisfied patients.<sup>14</sup> Regardless of which procedure the surgeon prefers, the proper amount of plantar fascia incised is one of the keys to a successful outcome and can avoid possible complications.

Saxena et al<sup>13</sup> originally advocated complete resection of the plantar fascia; however, two years later they recommended that only the medial 2/3 of the plantar fascia be released.<sup>15</sup> With continued experience and evaluation of postoperative complications, their final recommendation is releasing only the medial 1/3 of the plantar fascia. In my view, the medial and a portion of central band of the plantar fascia should be released percutaneously with care to leave the lateral band or at least 25% of the total ligament intact. I consider that another comparison study would be beneficial to evaluate the outcome of percutaneous plantar fasciotomy with less than a 50% release of the plantar fascia. The extent of plantar fascia resected is an important contributing factor to the rate of complications and should be considered for any plantar fascial release surgery. The pain in the lateral column appears to be more consistent with complete fascial releases, which was avoided in this percutaneous procedure.

In addition, the placement of the incision is an important factor. Distal incisions through the fat pad tend to have more complications associated with nerve entrapments. I prefer a percutaneous approach that allows a shorter recovery time, and we encourage early postoperative mobilization therapy. The reason for the change in the amount of plantar fascia to be cut is to reduce the common complication of lateral column destabilization. When the lateral fibers of the plantar fascia are left intact, it is felt that the locking mechanism for the calcaneocuboid joint will not be disrupted. Morsy and Elsheikh<sup>15</sup> recommend partial release of less than 40% of the fascia to minimize the effect of arch stability and maintain normal foot biomechanics. Cutts et al<sup>16</sup> found that lateral column symptoms were more likely to present when more than 50% of the plantar fascia was released. In this study, we did not see any complications of lateral column instability, sinus tarsi or metatarsalgia. No wound-related complications were encountered.

DiGiovanni et al<sup>17</sup> stated that after 10 months of conservative management, 62 (74%) respondents chose surgery or extracorporeal shock wave therapy as their next step in management. De Jonge et al<sup>18</sup> stated that management of planter fasciitis can be quite expensive and often is not covered by insurances. Although no published studies are available in peer-reviewed journals supporting the use of platelet-rich plasma in planter fasciitis, one placebo-controlled study showed that it had no significant effect in patients with Achilles tendinopathy.

The limitation of this study was that the analysis was not made based on a comparison with other methods of anesthesia and surgical techniques, in which the incision would be mostly heavier

than the present method.<sup>19</sup> In our study the results were excellent in 88.46% patients and good in 6.41% patients.

In conclusion, percutaneous planter fasciitis release is a relatively simple outpatient procedure for the treatment of long standing cases. The results of this study compare favorably with other more invasive studies, even with an 88.46% satisfaction rate. Nevertheless, the nonoperative course should be maintained as first line therapy for at least six months before consideration of surgical intervention.

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