Hands-On
Cadaver Seminar
February 21-23, 2024
Celebration, Florida

TIME WOUNDS ALL HEELS

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Conflict of Interest Disclosure

RICHARD M. COWIN, DPM, JD has no financial relationship with companies and/or products which could affect the objectivity of this lecture.

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3 PHASES OF HEEL PAIN

Phase 1

*PLANTAR FASCITIS (classic symptoms)

*No radiographic evidence of plantar calcaneal exostosis

*No clinical evidence of calcaneal congestion (hypertension)

3 PHASES OF HEEL PAIN

Phase 2

*PLANTAR FASCITIS (classic symptoms)

* POSITIVE RADIOGRAPHIC EVIDENCE OF PLANTAR CALCANEAL EXOSTOSIS

*No clinical evidence of calcaneal congestion (hypertension)

3 PHASES OF HEEL PAIN

Phase 3

*PLANTAR FASCITIS (classic symptoms)

*POSITIVE RADIOGRAPHIC EVIDENCE OF PLANTAR CALCANEAL EXOSTOSIS

*CLINICAL EVIDENCE OF CALCANEAL CONGESTION (HYPERTENSION)

CONSERVATIVE VS. SURGICAL TREATMENT

Phase 1 Heel Pain *usually* responds to conservative treatment

*Cortisone or PRP Injections
*NSAIDs or Steroid Dosepacks
*Orthoses
*Physical Therapy
*Calf Stretching
*Ice
*EPAT

Extracorporeal Pulse Activation Therapy (EPAT)

CONSERVATIVE VS. SURGICAL TREATMENT

Surgery for ***Phase 1 Heel Pain*** may include:

*Plantar Fasciotomy

*Extensor Tendon Lengthenings

*Cryosurgery

CryoSurgery

Figure 1. The cryoneedle with a 1-cm ice ball used in the treatment of plantar fasciitis.

CONSERVATIVE VS. SURGICAL TREATMENT

Phase 2 Heel Pain *sometimes* responds to conservative treatment

*Cortisone or PRP Injections
*NSAIDs or Steroid Dosepacks
*Orthoses
*Physical Therapy
*Calf Stretching
*Ice
*EPAT

CONSERVATIVE VS. SURGICAL TREATMENT

Surgery for ***Phase 2 Heel Pain*** may include:

*Plantar Fasciotomy

*Extensor Tendon Lengthenings

*Cryosurgery

*Plantar Calcaneal Exostectomy

CONSERVATIVE VS. SURGICAL TREATMENT

Phase 3 Heel Pain *rarely* responds to conservative treatment

*Cortisone or PRP Injections
*NSAIDs or Steroid Dosepacks
*Orthoses
*Physical Therapy
*Calf Stretching
*Ice
*EPAT

CONSERVATIVE VS. SURGICAL TREATMENT

Surgery for ***Phase 3 Heel Pain*** may include:

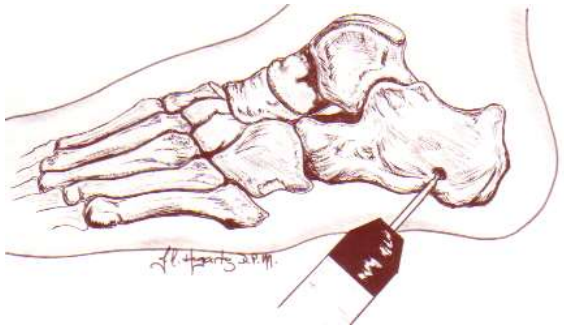
*Plantar Fasciotomy

*Extensor Tendon Lengthenings

*Cryosurgery

*Plantar Calcaneal Exostectomy

*Calcaneal Decompression



CONSERVATIVE VS. SURGICAL TREATMENT

You may wish to utilize any and all conservative treatments AFTER surgery, as well:

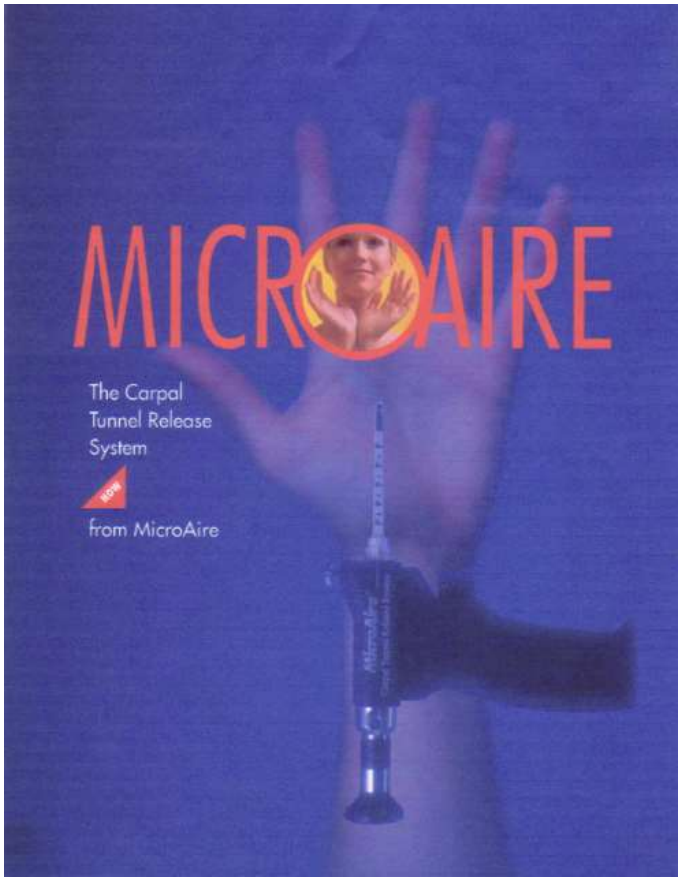
*Orthotic Devices to control pronation

*Physical Therapy to reduce post-operative pain and inflammation

*NSAIDs or Steroid Dosepacks to reduce post-operative pain and inflammation

*Etc., etc., etc.

PLANTAR FASIOTOMY PROCEDURE TAKEN FROM HAND SURGERY



MICROAIRE CARPAL TUNNEL RELEASE SYSTEM

MicroAire Carpal Tunnel Release System

Technological innovation that improves the quality of patient care.

The MicroAire Carpal Tunnel Release System is a technological breakthrough in carpal tunnel surgery. This innovative system, using a minimally-invasive approach, provides significant patient benefits.

A small incision at the base of the wrist creates an entry for the disposable blade assembly. An endoscope, connected to a standard video camera system, provides a clear view of the underside of the transverse carpal ligament. With the disposable blade assembly accurately positioned beneath the transverse carpal ligament, the surgeon elevates the retractable blade by means of a trigger, and withdraws the blade assembly–incising the ligament.

Patient Benefits

Patients benefit from a procedure which requires only a minimal incision at the wrist, resulting in less morbidity. Recovery time is lessened, with patients benefiting from:

- Early return to activities of daily living
- Early return to work–almost 50% faster than those who undergo conventional open carpal tunnel surgery[1]
- Improved cosmetic results

Surgeon Benefits

Surgeons benefit from the extensive research and design work that has been clinically tested, resulting in:

- A simple, easy-to-use design
- A complete set of supporting instrumentation
- A surgical protocol developed and tested by a panel of hand surgeons[1]
- Documented results[1,2]
- Improved patient satisfaction

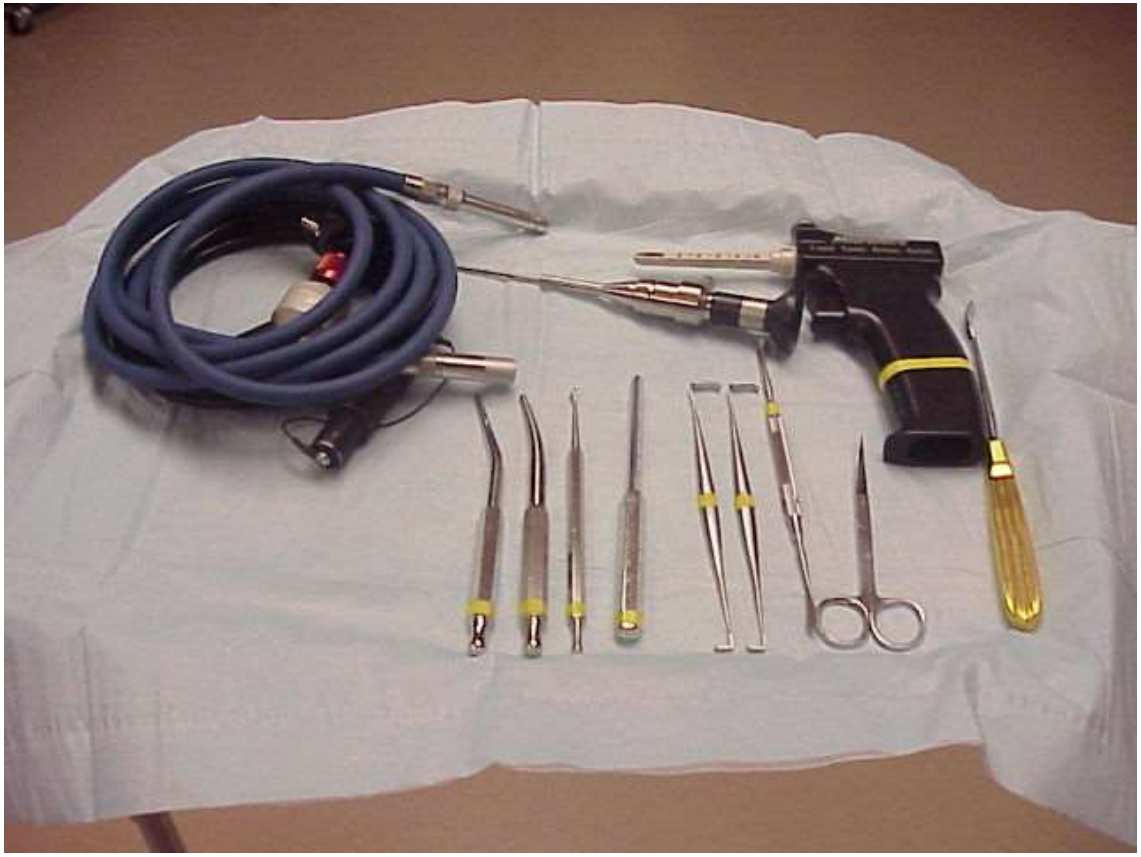
[1] Agee, JM et al: Endoscopic release of the carpal tunnel: A randomized prospective multicenter study. *Journal of Hand Surgery* 1992; 17(6): 987-995.

[2] Agee, JM et al: Endoscopic carpal tunnel release: A prospective study of complications and surgical experience. *Journal of Hand Surgery* 1995; 20A(2): 165-171.

System Components

- **A** Disposable Blade Assembly: Convenient dispenser box holds six individually-packaged, sterile, disposable blade assemblies.
- **B** 3.0mm Eyepiece Endoscope. This version connects to a standard camera coupler.
- **C** Handpiece
- **D** Synovium Elevator: Separates the synovium from the underside of the ligament for better identification of the ligament anatomy.

ENDOSCOPIC TRAY SETUP



ARTHROSCOPY/ENDOSCOPY TOWER

STEP 1: MARK ATTACHMENT OF PLANTAR FASCIA INTO CALCANEUS

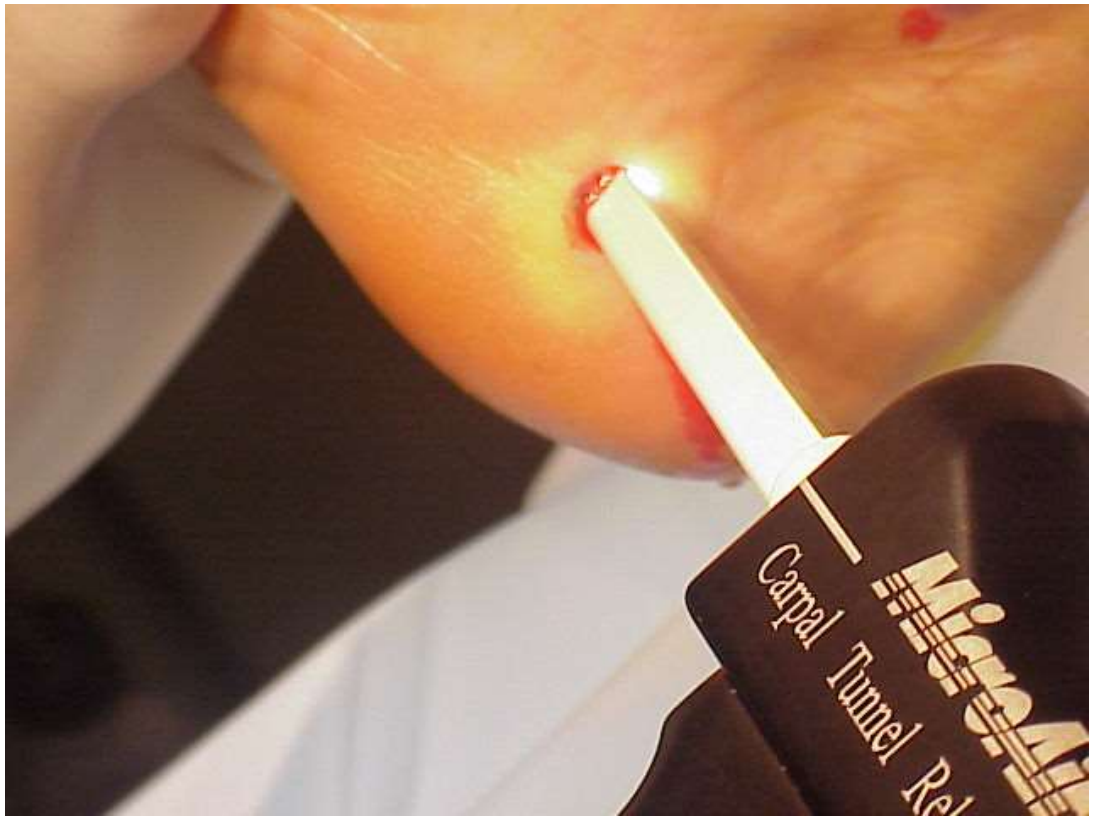
STEP 2: MAKE A 1 CM. TRANSVERSE INCISION

STEP 3: INSERT SYNOVIUM ELEVATOR

STEP 4: INSERT SMALL HAMATE FINDER

STEP 5: INSERT MEDIUM HAMATE FINDER

STEP 6: INSERT MICROAIRE SYSTEM



ENDOSCOPIC VIEW OF STEP 6

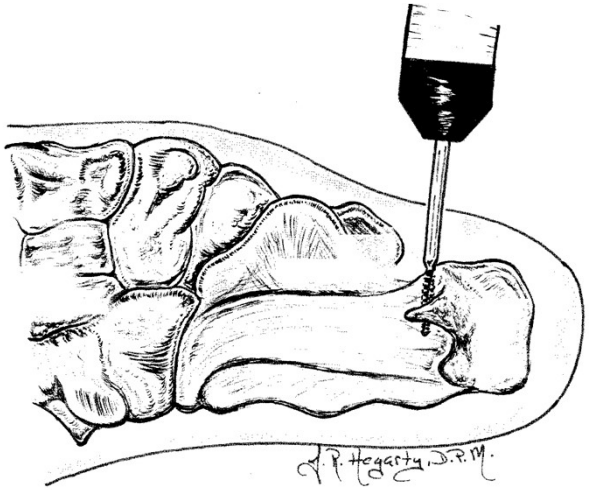
STEP 7: SQUEEZE TRIGGER AND WITHDRAW MICROAIRE SYSTEM

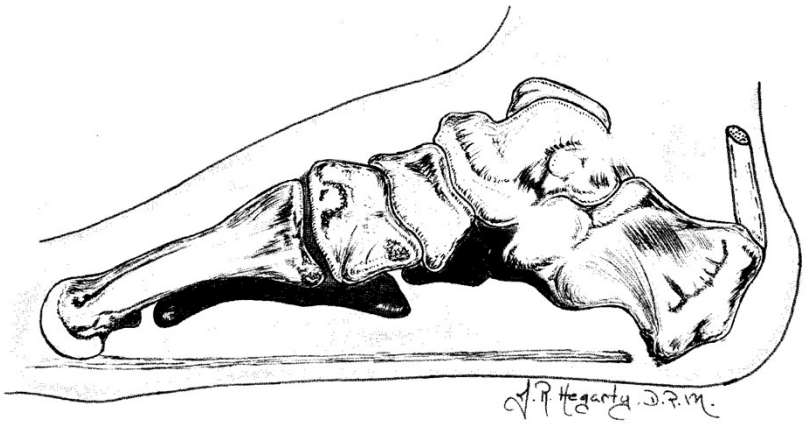
ENDOSCOPIC VIEW OF STEP 7

ENDOSCOPIC VIEW FOLLOWING PLANTAR FASCIOTOMY

STEP 8: PERFORM PLANTAR CALCANEAL EXOSTECTOMY

PLANTAR CALCANEAL EXOSTECTOMY

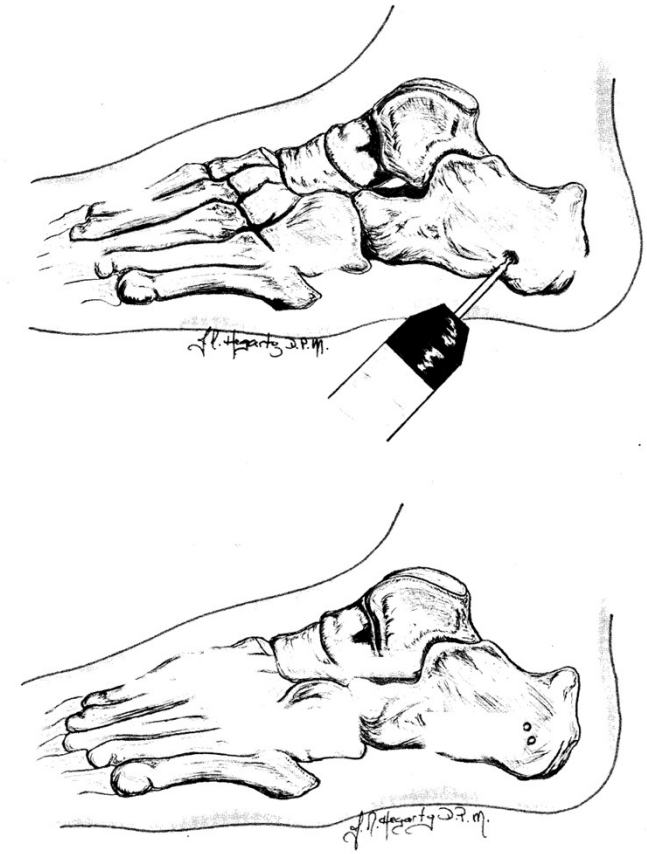




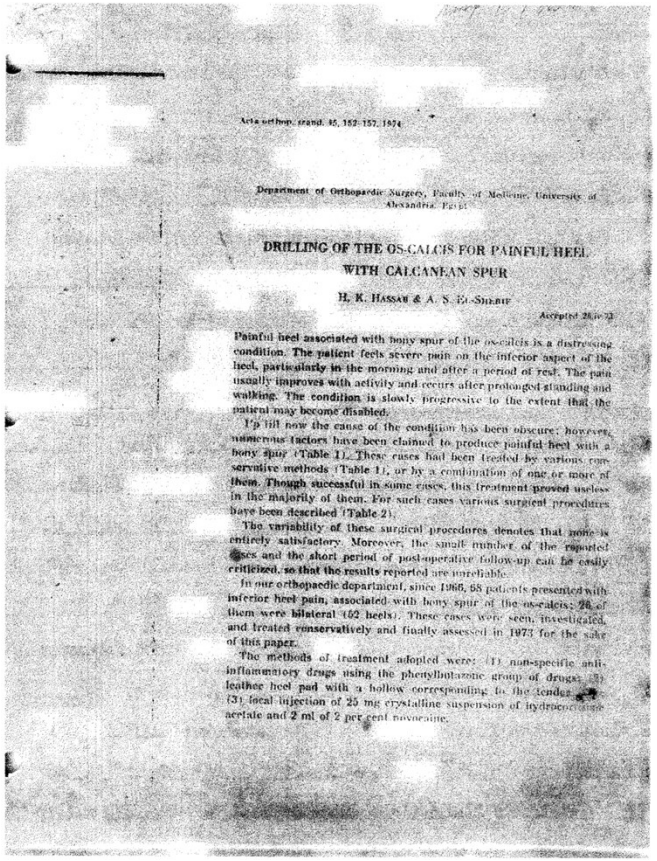
STEP 9: FLUSH SURGICAL SITE

STEP 10: SUTURE INCISION SITE (3-0 NYLON)

CALCANEAL DECOMPRESSION



ORIGINAL PAPER ON CALCANEAL DECOMPRESSION



Acta orthop. scand. 45, 152-157, 1974

Department of Orthopaedic Surgery, Faculty of Medicine, University of Alexandria, Egypt

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

H. K. HASSAN & A. S. EL-SHERIF

Accepted 28.iv.73

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 [illegible] (3) local injection of 25 mg crystalline suspension of hydrocortisone acetate and 2 ml of 2 per cent novocaine.

ADDITIONAL PAPER ON CALCANEAL DECOMPRESSION

Persistent Painful Heel and Intracalcanean Pressure

Xu Zhen-hua, MD*, Wang Yi-sheng, MD*, Zhai Fu-ying, MD*

Painful heel is a common condition seen in the orthopaedic clinic. Conservative measures give satisfactory results in most of the cases; however, in some the response to the same kind of treatment is poor, resulting in persistent painful heel.

Material and methods:

From July 1981 to June 1982, a total of 121 cases of painful heel caused by different etiologic factors were treated in our orthopaedic clinic. There were 34 cases of persistent painful heel, accounting for 28.1% of the total. 23 (46 calcanea) of the 34 patients were subjected to the following examinations:

1. Measurement of the intracalcanean pressure. A metal cannula with inside diameter of 0.95 mm was inserted percutaneously into both calcanea from the lateral side. The cannula was connected to a measuring and recording system with polyethylene catheter filled whth heparinised saline. The measurements were done on both sides at the same time.
2. Intracalcanean phlebography. After the pressure was measured, 2 ml. of 50% sodium diatrizoate was simultaneously injected into the calcanea through the bilateral cannulae. A series of X-ray films was taken immediately and at intervals of 30 minutes thereafter.
3. Scintigraphy. 15 mci of 99m Technetium pyrophosphate (Tc-PYP) was administered 2 hours before the examination by using Anger-III Gamma camera and SCINTIPAC-200 electronic computer - a Japanese device from Shimazo Co.

According to the character of the pain, these 23 cases were divided into two groups:

a. Rest pain. 15 patients (22 calcanea) in this group complained of dull aching, throbbing and pricking pain in the calcaneum and over the inferior aspect of the heel at rest. When getting up in the morning, or after a period of rest, the patients could not put their heels on the floor at all because of the pain was worse when they started bearing weight. Following a few painful steps, the pain improved, but became more severe again on prolonged standing or walking.

b. Mobile pain. 8 patients (14 calcanea) suffered from severe pain of the heels on standing or walking. The pain never presents at rest.

Findings:

1. In the group with rest pain: the mean value of intraosseous pressure of the normal

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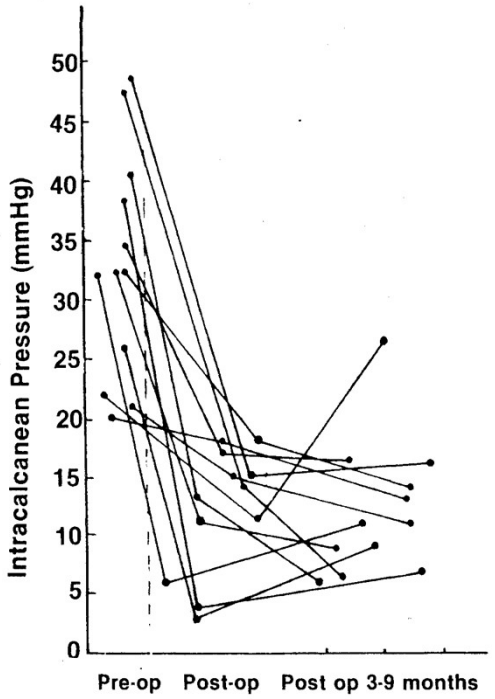

Pre-op and post-operative intracalcanean pressure.

ADDITIONAL PAPER

Treatment of Painful Heel with Combined Traditional Chinese Medicine (TCM) and Western Medicine (WM) A Clinical Analysis of 900 cases

Chen Bao-xing M.D.* Chao Yu-lin M.D.*

Abstract: In a ten year period from 1973 to 1983, a totai of 900 cases of painful heel were treated with TCM and WM, which consisted of local steroid injections, herb medicine and acupuncture. 650 cases were cured by the conservative methods and 250 cases without response to the same kind of treatment for more than ½ year were grouped as persistent painful heels; of them 52 cases were treated with drilling osteotomy which was effective in most of the cases. In only a small number of cases the etiology was clearly due to trauma, extremely obesity or rheumatoid periostitis, while in the majority a causal event was not apparent and the condition was considered idiopathic. X-ray films of the os calcis were taken for the 250persistent cases and calcaneal spurs were demonstrated in 229 cases; however, further analysis revealed no direct relationship between the spurs and the heel pain.

I. Clinical data:

The age of the patients varied from below 30 years to above 70 and the peak incidence occurred in the 41-50 year range. There were 300 males and 600 females giving a male to female ratio of 1:2. The history of illness before treatment ranged from 3 months to 30 years and the average was 2 years. In about 2/3 (621 cases) the heel pain was unilateral and in 279 cases the heel pain was bilateral (Table 1)

TABLE I: Age Distribution

Age of the patients:	No. of cases:
Below 30	42
31 - 40	156
41 - 50	361
51 - 60	241
61 - 70	70
Above 70	30
TOTAL	900

Male/Female ratio 1:2
Yen Shi County Hospital Henan, PRC

II. The etiological factors and the subca caneal spurs:

Most of the patients (815 cases) were workers or farmers engaged in physical labor requiring long time standing. Only in less than one tenth (85 cases) the heel pain was related to obesity, chronic strain, rheumatoid calcaneal periostitis. X-ray films were taken for the 250 cases that failed to respond to conservative treatment. In 229 cases subcalcaneal spurs were demonstrated. 166 cases (72.4%) had bilateral spurs and 63 cases (27.6%) had unilateral spurs. The relationship of the spurs and the heel paln can be classified into 3 kinds (Table II); I. in 124 cases (54.15%) the spurs bear

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IV. Drilling osteotomy of Os-calcis for painful heel

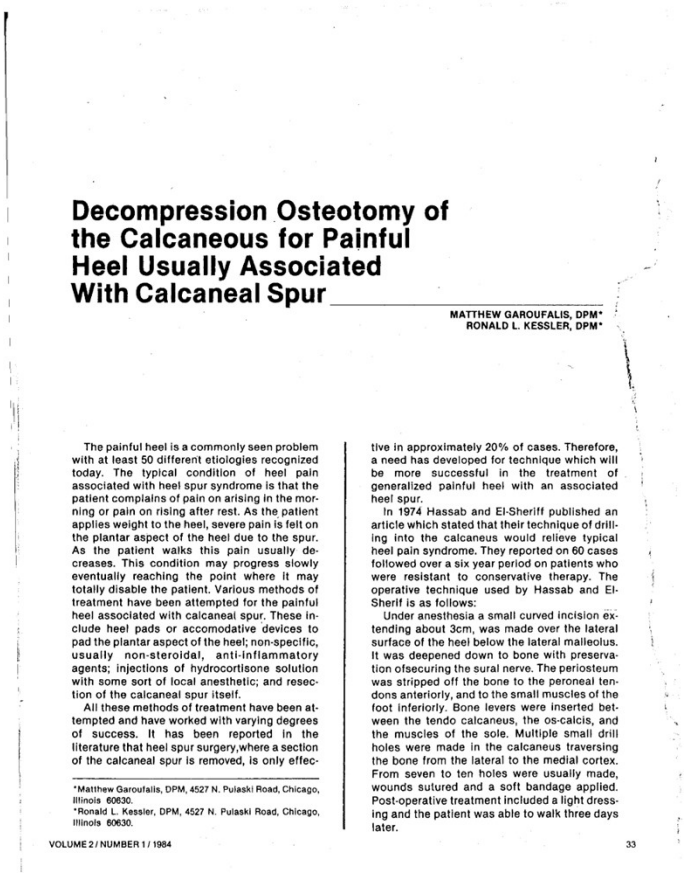
Since January 1975 to January 1984, 52 cases (92 heels) were treated with drilling osteotomy of the os-calcis. They were selected from the 250 cases not responding to conservative treatment. Not all these cases were treated with surgery, either because the patient has associated conditions such as diabetes mellitus, cardio-vascular diseases etc. unfir for operation, or the patient herself or himself did not want to have surgical treatment. Forty cases (78 heels) were operated upon using the technique previously reported[6] and for 12 cases (14 heels), Kessler's technique[7] with small incisions were used in the out-patient department condition. Upon completion and achievement of local anesthesia, 6-7 incisions of 0.2-0.3 cm were made over the lateral aspect of the calcaneum. Separate drill holes were made through each ncision going through the lateral cortex and touching upon the medial cortex of the calcaneum. After suturing the incisions, a light bandage dressing was applied to the heel and the patient was allowed ambulatory. The small incision osteotomy was equally effective and more convenient. The same criteria were used as for the evaluation of the results of conservative treatment. (Table IV)

Table V. Results of Drilling Osteotomy in 52 cases (92 heels)

RESULTS:	EXCELLENT	GOOD	POOR
	(NUMBER OF HEELS)		
Period of follow-up			
within 3 months	69	19	4
more than 1 year	82	4	6

Effective rate: short term: 95.6%
long term: 93.4%

ADDITIONAL PAPER



Decompression Osteotomy of the Calcaneous for Painful Heel Usually Associated With Calcaneal Spur

MATTHEW GAROUFALIS, DPM*
RONALD L. KESSLER, DPM*

The painful heel is a commonly seen problem with at least 50 different etiologies recognized today. The typical condition of heel pain associated with heel spur syndrome is that the patient compiains of pain on arising in the morning or pain on rising after rest. As the patient applies weight to the heel, severe pain is felt on the plantar aspect of the heel due to the spur. As the patient walks this pain usually decreases. This condition may progress slowly eventually reaching the point where it may totally disable the patient. Various methods of treatment have been attempted for the painful heel associated with calcaneal spur. These include heel pads or accomodative devices to pad the plantar aspect of the heel; non-specific, usually non-steroidal, anti-inflammatory agents; injections of hydrocortisone solution with some sort of local anesthetic; and resection of the calcaneal spur itself.

All these methods of treatment have been attempted and have worked with varying degrees of success. It has been reported in the literature that heel spur surgery,where a section of the calcaneal spur is removed, is only effective in approximately 20% of cases. Therefore, a need has developed for technique which will be more successful in the treatment of generalized painful heel with an associated heel spur.

In 1974 Hassab and El-Sheriff published an article which stated that their technique of drilling into the calcaneus would relieve typical heel pain syndrome. They reported on 60 cases followed over a six year period on patients who were resistant to conservative therapy. The operative technique used by Hassab and El-Sherif is as follows:

Under anesthesia a small curved incision extending about 3cm, was made over the lateral surface of the heel below the lateral malleolus. It was deepened down to bone with preservation ofsecuring 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 tendo calcaneus, the os-calcis, and the muscles of the sole. Multiple small drill holes were made in the calcaneus traversing the bone from the lateral to the medial cortex. From seven to ten holes were usually made, wounds sutured and a soft bandage applied. Post-operative treatment included a light dressing and the patient was able to walk three days later.

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*Ronald L. Kessler, DPM, 4527 N. Pulaski Road, Chicago, Illinois 60630.

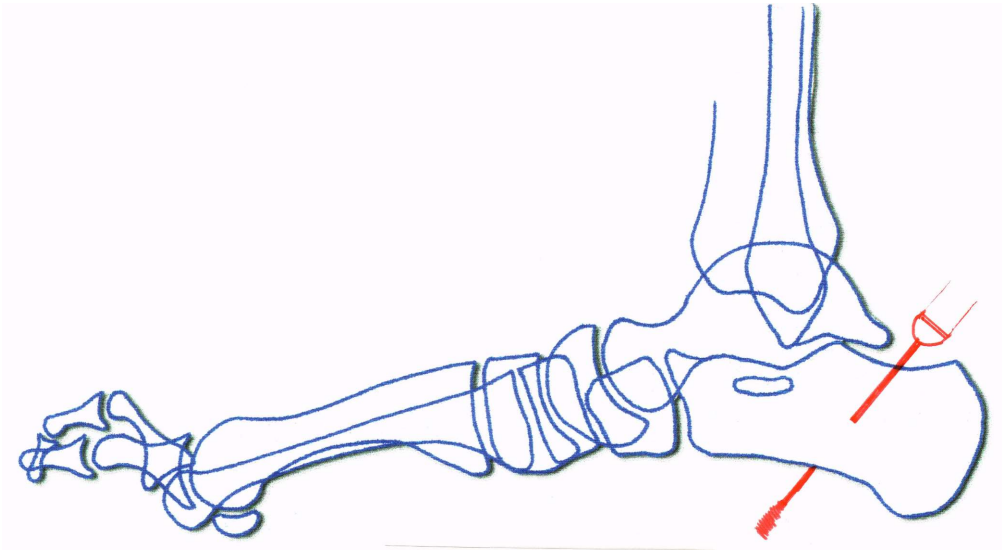
The authors feel that this type of procedure is much less disabling to the patient than a radical heel pur resection and that this procedure is much preferred by the patient in relief of typical heel spur pain syndrome.

HOW TO PERFORM CALCANEAL DECOMPRESSION

*Anesthetize the lateral surface of the calcaneal area with PLAIN local anesthetic agent
*Utilize a Galuzzo Pin, a K-wire, or a #44 Shannon Bur
*Make 4 to 7 holes through the lateral side of the calcaneus

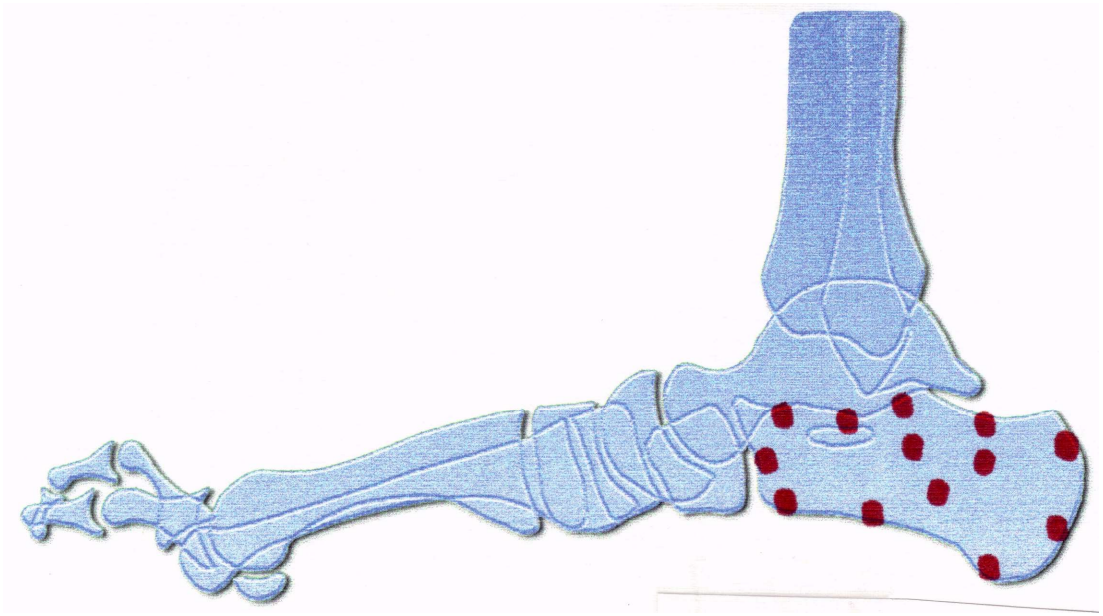
THINGS TO AVOID WHEN PERFORMING DECOMPRESSION

*DO NOT penetrate too deeply into the calcaneus



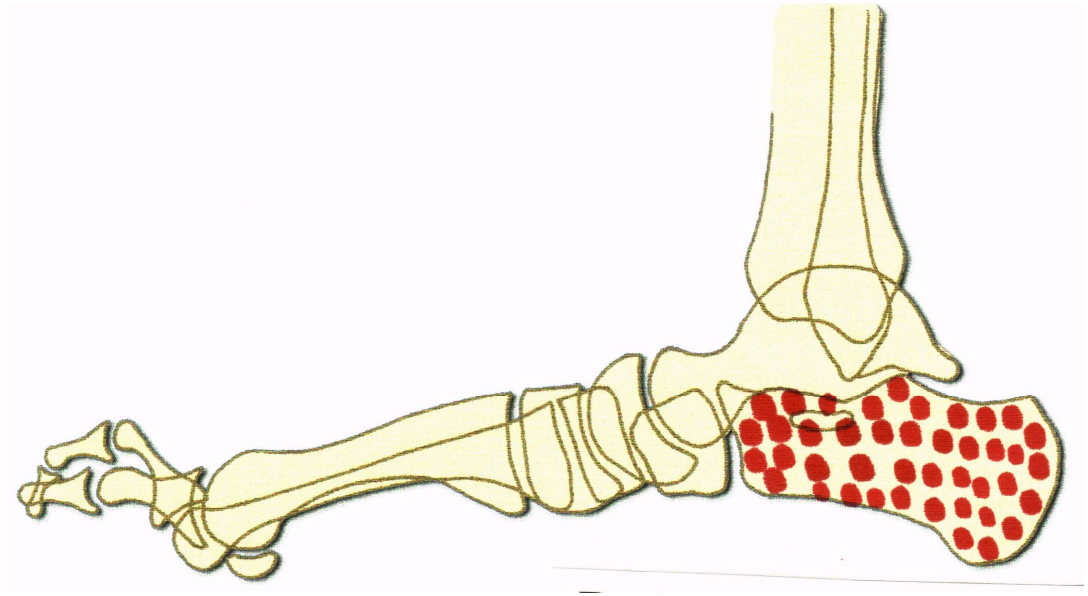
THINGS TO AVOID WHEN PERFORMING DECOMPRESSION

DO NOT drill near the cortices of the calcaneus



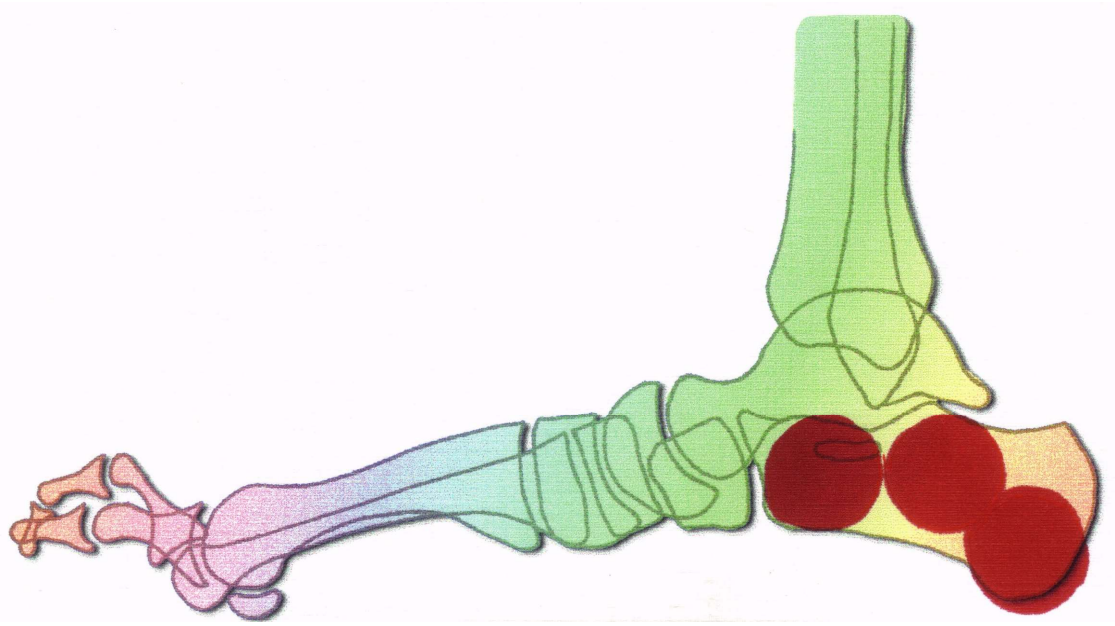
THINGS TO AVOID WHEN PERFORMING DECOMPRESSION

*DO NOT make too many holes



THINGS TO AVOID WITH DECOMPRESSION

Diameter of holes should NOT exceed 2.0 mm.



STEP 11: APPLY LIGHT COMPRESSION FLUFF DRESSING

STEP 12: DISPENSE HEEL WEDGE POST-OP SHOE

POSTOPERATIVE CARE PROTOCOL

*Immediate ambulation with heel wedge or regular post-op shoe
*Dressing and foot remain dry for 2 weeks (shower boot)
*Dressing is changed after 1 week and is removed along with suture(s) in 2 weeks
*At 2 weeks post-op, pt. begins white vinegar/water soaks x 20 minutes BID followed by the application of antibiotic ointment and a fabric Bandaid.
*At 2 weeks post-op, pt. may return to casual footwear

Hands-On Cadaver Seminar

February 21-23, 2024
Celebration, Florida

THANK YOU!

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Academy of Minimally Invasive Foot & Ankle Surgery