

Subcutaneous Achilles Tenotomy in the Treatment of Perforating Ulcer of the Foot in Leprosy

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In a study of 202 patients at Hansen's Hospital, Jerusalem, 42 (20.7%) were found to suffer from trophic ulcers of the feet. The majority of lesions occurred underneath the metatarsal heads or the toes. The main factor producing ulcerations was anesthesia due to damage to either the common peroneal or posterior tibial nerve.

Among the factors contributing to the development of ulcers, an important role is played by mechanical forces. During the stance phase the body weight is transmitted perpendicularly to the plantar area, whereas during the stage of acceleration preceding the "toes off" position on walking, sliding, frictional or shearing forces prevail.

Although the basic disease process may now be controlled by chemotherapy, the problem of treating trophic ulcers is only partially solved. No treatment exists for the anesthesia of the feet. Various types of footwear give some protection but do not solve the problem. Paralysis and fixed-deformity associated with the condition may be treated by tendon transfer procedures and arthrodesis, which, however, require lengthy and costly hospitalization.

Subcutaneous tenotomy of the heel cord is an old and accepted orthopedic procedure. It was popularized by Louis Strohmeier⁽²⁾ of Hannover in 1831 in the treatment of clubfoot, and is used today in the management of foot deformities found in cerebral palsy, myelodysplasia, poliomyelitis, and the muscular dystrophies^(1,3). There are no reports, however, of its use in the treatment of the ulcerated, anesthetic lepromatous foot.

A fixed equinus position of the foot may easily be corrected by tenotomy of the heel cord. This gives rise to a functional length-

ening of the achilles tendon resulting in a reduction of the "acceleration push off," and a corresponding decrease in the forces applied to the forefoot. Tenotomy was performed with a tenotome approximately 3 cm. above the heel. A below-knee walking cast was then applied, and weight-bearing was permitted the following day. The cast was maintained for six weeks with the dual purpose of allowing healing of the ulcer, while preserving the correction obtained in the foot. Heel cord tenotomy was performed on eight patients, all of whom suffered from chronic bilateral forefoot ulcers (Table 1). Five patients showed fixed equinus deformities and absence of some digits; three presented forefoot ulcerations in a well balanced, freely movable and pliable foot.

During a follow-up period of four to five years, there was no recurrent ulceration in five of the eight patients. The active power of the gastrocnemius, weakened by the lengthening process, recovered after a period of immobilization. The postoperative period until healing took place was four to five months. One of the five patients suffered from perforating ulcers on both feet. The ulcer on the second foot was not treated and has not healed. In two patients the ulcers resumed, one after six months and the second after 12 months, when they suffered from a recurrent attack of erysipelas associated with tinea pedis, which healed again, however, when the inflammation subsided. In one patient the treatment was unsuccessful.

Although trophic ulcers have previously been treated by simple immobilization in a plaster cast, the results obtained in this small number of cases suggest that inclusion of heel cord tenotomy may lead to a significant improvement with long-term results, and be a worthwhile procedure, especially when the ulcerated lepromatous foot is associated with fixed deformities. By this

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TABLE 1. Results of subcutaneous Achilles tenotomy in eight patients with perforating plantar ulceration

Year of birth	Sex	Hospitalization	Diagnosis of leprosy	Length of illness (years)	Period of perforating ulcer (years)	Follow-up after operation (years)	Postoperative status
1921	m	Yes	LL	31	30	5	Not cured
1918	m	No	LL	18	2	4	Cured
1938	m	No	LI	19	9	5	Cured
1917	f	Yes	LI	24	18	5	Cured (left foot) ^a
1922	m	No	LT	25	8	4	Cured
1901	f	No	LI	35	10	5	Cured
1916	m	Yes	LL	40	8	4	Cured ^b
1941	f	Yes	LL	21	11	4	Cured ^b

^a Right foot with perforating ulcer was not operated on, serving for control; it showed no improvement.

^b Erysipelas recidivans and tinea pedis in operated foot; recurrence of ulcer.

simple method flexibility of the foot is regained and redistribution of mechanical forces acting on the plantar surface is achieved. It is also possible that in cases of anatomical distortion of the foot, especially in a fixed equinus position—without malperforans—the development of ulceration might be prevented by means of achillotomy.

SUMMARY

The development of plantar ulceration of the forefoot in leprosy patients is a relatively common occurrence. It is often associated with motor paralysis, fixed deformities and autoamputation of the toes.

During a four to five year follow-up period subcutaneous Achilles tenotomy proved successful in the treatment of seven

out of eight patients suffering from forefoot ulceration.

The tenotomy produced a functional lengthening of the Achilles tendon. As a result of this simple procedure, the mechanical effects producing ulceration were reduced and correction of the fixed deformity was achieved. The foot thus regained flexibility, and apparently a more even distribution of weight-bearing was attained.

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