SURGICAL MEASURES IN LEPROSY

By MILROY PAUL, M.S. (Lond.), M.R.C.P. (Lond.), F.R.C.S. (Eng.)
Senior Clinical Tutor, General Hospital, Colombo
Visiting Surgeon, Hendala Leper Asylum

The position of a surgeon working in a leprosy institution is well summed up by Cochrane (1) when he writes: "There is a great amount of palliative surgery to be done, and much scope for a surgeon's ingenuity, in the conditions resulting from advanced leprosy." The present report, based on work done at the Hendala Leper Asylum, from September, 1933, to January, 1935, discusses some of the surgical complications that were observed and the results obtained from their treatment.

SUPERFICIAL ULCER OF THE FOOT

The superficial ulcer of the sole of the foot is the commonest lesion requiring treatment. There were 347 patients with this condition, out of a total of 658 inmates (52 per cent).

The ulcers occur on those parts of the sole which come into contact with the ground in walking. Their location varies, because in the deformed paralytic feet the actual area of contact varies with the habitual position of the foot in each case. The ulcer is large and superficial, extending down to the deep fascia, with a floor lined by clean pink granulated tissue from which a little serous pus is discharged daily.

The ulcers were treated by daily washing with a clean antiseptic lotion and the application of a protective dressing, a daily ritual occupying a good deal of the time of the nursing staff every morning. In spite of all this attention the ulcers would not heal, many of them being of several years duration. Labelled "trophic ulcers," these lesions were accepted as inevitable burdens.

The treatment of chronic ulcers by the method of strapping with adhesive plaster was recently reintroduced by Dickson Wright (3). Wright, working on the problem of varicose ulcers of the leg, believed the cause of ulceration to be stagnation of blood in the varicose veins, and he introduced the strapping method as a simple solution of a

problem in hydraulics. The dramatic cures obtained by this method stimulated great interest in these problems, and it was soon realized that the method was applicable to nearly all chronic ulcers of the skin.

The following sentence from Wright's article expresses a simple clinical truth. "Ulcers, if hermetically sealed with sticking plaster, will heal better than when treated with any antiseptic or stimulating lotion known." However, far from being a problem in hydraulics as Wright supposed, the problem would appear to be a mechanical one. A daily dressing defeats its object by removing the delicate, newly-formed epithelial cells which are endeavoring to cover over the ulcerated area. A chronic ulcer does not heal because the process of epithelialization is interfered with.

The strapping method covers the ulcer with an artificial scab of adhesive plaster, which leaves the newly formed epithelial cells undisturbed for weeks. The bathing of the ulcer in its own foul secretions, far from being harmful, appears to favor healing.

This conception of the rationale of the strapping method justifies the following deviations from the technique of Wright. It is unnecessary to apply the strapping firmly, and encirclement of the limb with bands of adhesive plaster can be omitted. The essential requirement is that the strapping should be left covering the ulcer undisturbed for weeks.

The strapping method was tried for the superficial ulcer of the sole in these patients suffering from leprosy, and it proved to be an unqualified success. These denervated tissues healed as rapidly as normal tissues, and ulcers of several years duration were healed in a few weeks. The details of the method as used by us are as follows:

The ulcer is cleansed with warm water, dried, and covered with straps of adhesive plaster which are stuck down to the surrounding healthy skin (Text-fig. 1,A). A protective dressing is applied over the plaster. A foul, sanious secretion soaks through the plaster into the overlying dressings, which are changed whenever they become soaked. The plaster itself is left undisturbed for three weeks, when it is removed. At this time removal is easy, because the strips of plaster are raised off the ulcer by a small pool of pus.

When the plaster is removed the ulcer is found to be quite clean. A new layer of epithelium growing inwards from the edge will have almost covered over the area of the ulcer. Reapplication of the plaster in a similar manner on one or two further occasions has sufficed to heal ulcers which had resisted treatment for several years.

The results were better when the patients had abstained from walking during the period of treatment. No chronic ulcer failed to improve under the treatment, and in all cases where the treatment was persevered with faithfully healing was invariably obtained.

PERFORATING ULCER OF THE FOOT

There were 27 cases of perforating ulcer of the sole of the foot amongst the 658 inmates of the Asylum. This ulcer is a chronic sinus opening on the sole of the foot, under the heads of the metatarsal bones or under the heel. In the former situation the sinus may have a second opening on the dorsum of the foot. The sinuses are usually of several years duration, and a little serous pus is constantly coming away from the opening.

The operation of excision of the entire metatarsal bone, advocated by Cochrane (2), is a very successful method of treatment for the sinus opening under the head of a metatarsal bone. At first sight the operation appears to be unnecessarily extensive, but the uniformly good results obtained from it, and the surprising lack of interference with function after it, fully justify its performance.

The operation affords a good opportunity for a study of the "pathology of the living." When an excised metatarsal bone is examined the head, neck and, to a varying degree, the shaft of the bone is seen to be carious, the tiny interstices being filled with pale-yellow granulation tissue. There is no line of demarcation between healthy bone and the affected portion of the shaft. The sinus is lined by granulation tissue which is surrounded by scar tissue, and it leads to the head of the metatarsal bone. Sometimes at operation it is difficult to decide which is the affected metatarsal bone, as the tract opens between two adjacent bones. In such cases a director should be passed into the sinus and the sinus opened towards the web of the toes. The opened tract will then be easily traced to the affected bone.

The technique of the operation is not difficult. No anesthetic is necessary in many cases, as the denervated tissues are sufficiently insensitive to permit the operation to be done without causing undue pain. A tourniquet should be used, as the dry operation field so obtained greatly facilitates the clean dissection of the tissues. The operation consists of a set excision of the bone, nothing being done to the sinuses at the time of the operation.

As Cochrane points out, the bone is best exposed from the dorsum of the foot, as the approach from the sole leads to needless mutilation of anatomical structures. An incision is made over the shaft of the bone, the tendons are retracted, and the shaft bared of periosteum with a sharp periosteal elevator. The head of the bone is cleared of the surrounding tissues with a few touches of the knife, and then with the shaft grasped in bone holding forceps the base is disarticulated by severing the strong ligaments in this region. The knife is kept close to the bone to avoid damage to the deep plantar arterial arch. Oozing of blood from the cavity left after removal of the bone is checked by a plug of gauze.

The extensive cavity takes a few weeks to close, but healing is steady and uninterrupted and a firm linear scar is the final result of the operation. No treatment of the sinus is necessary as it heals up of itself after removal of the bone. All our cases selected for this operation healed uneventfully, an eloquent testimony of the normal process of healing in denervated tissues and of the efficacy of the operation. Sometimes a perforating ulcer leads down to a pool of pus in which a dense sequestrum is found. Removal of the sequestrum is sufficient for cure of the sinus.

A perforating ulcer is sometimes the starting point of a cellulitis of the foot and leg. The absence of constitutional symptoms in such cases is noteworthy, and is probably due to the prior obliteration of the lymphatics by fibrosis. As in the treatment of cellulitis generally, early incision is to be deprecated. A few judicious incisions after the pus has localized give excellent results, whereas incising sodden tissues often results in a condition that requires amputation.

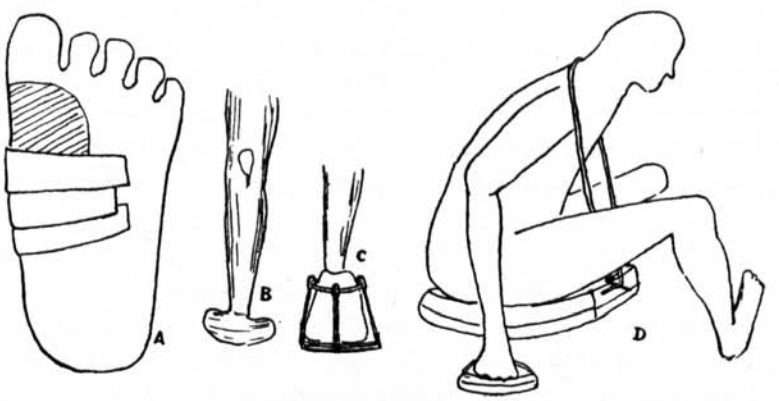
ORTHOPEDIC PROBLEMS

The deformed foot is a common disability of these patients. The paralyzed muscles undergo atrophy, the muscle fibers are slowly replaced by fibrous tissue, and ultimately these tissues surrounding the atrophied bones may reduce the foot to a fibrous cushion hanging inertly at the end of a wasted leg. When the patient stands the foot mushrooms out under his weight, causing the parts to resemble the leg and foot of a duck (Text-fig. 1,B).

The patient is faced with the problem of steadying the deformed foot on the leg, and the Hendala patients have devised a simple sandal worn over the foot to prevent it from wobbling and to enable them to walk in tolerable comfort. The foot is encased in a simple dressing and the sandal is worn over the dressing, a leather thong

over the ankle suspending the sole of the sandal to the leg by means of leather straps (Text-fig. 1,C).

The operation of amputation through the leg is one which should not be lightly undertaken by medical officers in leprosy institutions. In many cases this operation is a grave error of judgment. The average patient is most unwilling to undergo it, not from fear of the operation or from failure to appreciate the advantages of being rid of an ulcerated deformed foot, but because he knows that the experience of other patients who have had an amputation has been far from happy. Whereas before operation they could hobble about the grounds in tolerable comfort, after it they are often confined to the ward, compelled to crawl on the floor as best as they can.



TEXT-FIG. 1. A. Strapping for superficial ulcer of the foot. B. Mushrooming of wasted foot. C. Sandal supporting foot. D. Appliance used by patients who cannot walk.

The reasons for such deplorable after-results merit careful study by all interested in the welfare of these patients. The problem resolves itself into an analysis of the causes that prevent a patient from using either an artificial leg or crutches after the operation. An artificial limb calls for skilled movements of the good limb, which are beyond the powers of the weak and wasted legs of these patients. Sometimes the good leg is so weak that it cannot support the body even with the aid of crutches. Other patients cannot use either crutches or a stick, owing to crippling deformities of the hands.

Of the patients at Hendala who had had an amputation of the lower limb no less than seven could not use an artificial leg, for the reasons which have been detailed above, and four of them were reduced

to crawling about the floor. Amputations are therefore only to be done to save life, or for removal of a completely useless limb.

In the Hendala asylum, besides these patients, there are others who are reduced to crawling on the floor because of crippling deformities of the limbs. These unfortunate patients have devised a simple apparatus for getting about. Seated on a small sleigh, fashioned from the outer cover of a large motor tire, they propel themselves forwards by placing hands and feet firmly on the ground and pressing the trunk forwards. A strap around the neck drags the sleigh forwards with the body, and the hands are protected by sandals which are grasped in each hand (Text-fig. 1,D). This simple appliance is easily made and stands much wear and tear.

What of the patients who can be fitted with an artificial leg? These humble sufferers cannot afford to purchase such a leg as it is made commercially, but a simple peg-leg is easily turned out by patients who were ex-carpenters, and these have proved reasonably satisfactory. Great care is needed to secure a good fit, and careful padding is necessary to prevent the development of pressure sores.

BURNS

Being unable to appreciate the heat of articles held in the hand, the leper patient is prone to burn his fingers and his hand. There were 15 cases of such burns among the 658 inmates.

One cause of burns is the practice of permitting these patients to cook their own meals. This should be condemned. Another cause is the metal mug with a hot drink. Porcelain cups will be constantly dropped and broken by these patients owing to their clumsy movements. Bakelite is a material which is well suited for these utensils. It is not easily broken by falls, and it is a nonconductor of heat.

It is well to remember that tannic acid is not suitable for the treatment of burns of the fingers, as the firm coagulum so compresses the fingers as to lead to gangrene.

REFERENCES

(1) Cochrane, R. G. Leprosy Survey of Ceylon, 1933. Sessional Paper II. Ceylon, 1934, p. 12.
(2) Cochrane, R. G. Leprosy in India and Ceylon. Lep. Rev. 5 (1934) 28.
(3) Wright, A. D. Treatment of varicose ulcers. British Med. Jour. 2 (1930) 996.