serious reactions such as the Stevens-Johnson syndrome and toxic epidermal necrolysis are not rare. Therefore, short course chemotherapy regimens containing thiacetazone may not be the ideal treatment in India.

At present there appears to be no alternative to using rifampicin throughout the standard 9 month or 6 month short course regimens. The cost of treatment may be reduced if rifampicin is administered biweekly in the continuation phase although the effectiveness of unsupervised bi-weekly treatment is yet to be evaluated. Government subsidies have considerably reduced the cost of rifampicin in India (Rs 2.50 for a 450 mg capsule) thereby making it affordable for most patients. However, success in controlling tuberculosis in India depends not only upon the easy availability of short course chemotherapy to patients but also to general improvements in environmental sanitation, nutritional status, and the level of education.

REFERENCES

Surgery for Leprosy

The fear of leprosy is the fear of the deformities associated with the disease. The unsightly leonine facies and contractures, ulceration, loss of the fingers and toes and, in endemic areas, early signs such as the thickening of the ear lobule or the loss of the eyebrows are recognized even by the lay person. These universally known deformities, have always made the patient with leprosy an outcast of society. The Atlas of Leprosy (1848) by Boeck of Norway was the earliest medical record of leprosy.1 Though it has been known since 1873 that leprosy is caused by a mycobacterium some members of the medical profession have refused to treat the disease. Like AIDS the fear is particularly manifested in surgeons who are exposed to contact with infected tissue. As a result the myth has been propagated that leprous tissues are 'rotten and fall off on their own, hence surgical wounds will not heal in leprosy'.

The surgical care of leprosy had, therefore, to await the discovery of dapsone (DDS) when, for the first time, there was a medical cure for the disease. Cochrane2 started the large-scale treatment of leprosy with DDS at the Victoria Hospital (now the Central Leprosy Training and Research Institute) at Chingleput, and stimulated a young orthopaedic surgeon, Paul Brand, at the Christian Medical College, Vellore to try and correct the deformities. Thus began the era of surgery in leprosy. Brand soon realized that the deformities of the hands and feet were similar to those resulting from traumatic nerve damage. He used the uninvolved forearm muscles, extended when necessary by plantaris tendon grafts,3 to replace the paralysed intrinsic muscles...
of the hand. He devised and popularized the extensor as well as the extensor-to-flexor tendon transfers to correct clawed fingers and the ring finger sublimis transfer for the thumb. The Bunnel sublimis transfer, however, resulted in over-correction of the deformity in the supple Indian hand. Standardized procedures were developed because the nerves were involved at specific superficial sites due perhaps to the lower temperature locally. Later, however, it was postulated that these sites were involved because of nerve entrapment. Nevertheless, the probably incorrect earlier hypothesis led Storrs to use the low body temperature armadillo for the multiplication of Mycobacterium leprae.

Brand then turned his attention to the deformities of the feet and rehabilitation of those whose deformities were corrected but whose persistent sensory loss posed a permanent disability problem. Physiotherapy, re-education of the surgically corrected but anaesthetic hands and feet, provision of protective gloves and especially of cheap footwear were important contributions.

In 1958, Antia, a plastic surgeon, devised operations to correct deformities of the nose, lagophthalmos, eyebrows and facial skin laxity. Working at the Kondhwa Leprosy Hospital with only elementary surgical facilities, he simplified complicated operative procedures which later became standard even in the West. The palmaris longus motor for correction of clawed fingers and radical metatarsectomy for chronic plantar ulceration were also part of this process of simplification.

Various dynamic as well as static procedures have been developed by Srinivasan, Fritschi and Palande. The limited facilities in most leprosaria and other centres have resulted in the description of simple procedures such as the fasciocutaneous palmar excision and the nasolabial and forehead lining flaps for nasal reconstruction, free grafts for the eyebrows and the nasolabial face lift. Arlokar (personal communication) has demonstrated that most of these operations including tendon transfers to correct the dropfoot which traditionally required two weeks in hospital can now be undertaken as outpatient procedures. Combined with release of the posterior tibial nerve, this helps in the healing of plantar ulcers.

It is estimated that about 10% of India's 4 million leprosy patients have physical deformities as well as sensory loss. Even if a small percentage of these were offered surgery, they would swamp all the available reconstructive surgical facilities in the country. The intelligent surgeon who perceives surgery to be only a means to alleviate the problems of patients with leprosy cannot also fail to be interested in measures to prevent deformities. While most simplified procedures can be undertaken by surgeons at hospitals or leprosaria with modest facilities under local anaesthesia, it must be realized that the major effort has to be towards the prevention of deformities. This can be achieved by early diagnosis and regular treatment, preventing and treating reactions, physical therapy to prevent contractures, caring for anaesthetic hands and feet and developing suitable tools and footwear.

While surgery may help only a very small proportion of those who can be benefited, it has had a wide impact because for the first time, it has been demonstrated that deformity need no longer be a permanent stigma. Leprosy surgery has hence had a far greater impact on leprosy than the mere technical correction of deformities.

During the 1950s and 1960s not only was surgery for leprosy patients begun but the disease was introduced into non-missionary medical teaching institutions. The Tata Department of Plastic Surgery at the J. J. Group of Hospitals and the Grant Medical College in Bombay was one of the first to do so. This reduced the stigma and fear of leprosy in the medical and nursing professions. The public were also made more familiar with the disease as these patients were admitted to the general medical and surgical wards. This also helped to create an interest in leprosy research especially into the causes of tissue and nerve damage resulting from the disease. Nerve biopsy has contributed to a better understanding of the pathogenesis of peripheral nerve damage and its Schwann cell damage. There has been an increased interest in the surgery of the nerves, an aspect of surgery which will play an increasingly important role in the prevention and even reversal of the nerve damage which is responsible for the majority of deformities. It has also contributed to the advances in plastic, orthopaedic and general reconstructive surgery. Surgery has thus
played a major role in the treatment of leprosy by attracting other disciplines like neurology and immunology.

The management of patients with leprosy has undergone a radical change over the past four decades. New drugs and multi-drug therapy are playing an increasing role in the control of this disease. The role of the reconstructive surgeon and the rehabilitation team cannot be underestimated because this deals with the personal problems of these patients and not merely with their disease.

Finally it is a matter of pride to record that the major developments in the surgery of leprosy and the rehabilitation of patients with this previously dreaded disease have been due to the efforts of doctors working in India.

REFERENCES
1 Danielssen D, Boeck GW. Atlas colorie de Bergen. Norway, 1847.