

H. Surgery, Orthopedics and Rehabilitation**Review of Surgery in Leprosy****N. H. Antia¹**

Fear of leprosy is the fear of deformity. Were it not for the stigmatizing deformities, this disease would not have its much dreaded reputation. Until the very recent past deformity has meant branding for life.

It is now possible to correct all deformities except those resulting from the absorption of the digits, and even these can be masked by prosthesis. Reconstructive surgery has given a new approach to an age-old problem, has taken the sting out of this disease, and has given hope to the deformed patient. It has also brought leprosy to the general and teaching hospitals and introduced it to the various scientific disciplines. Surgery has rehabilitated the patient into society and leprosy into medicine. This has been achieved in the short span of less than two decades. Those who tried to stimulate this new approach in its early period now find that "the ambulance service" has outshone "those who are trying to put the fence at the top of the cliff". It is feared that this new and vigorous discipline with its dramatic and psychologic impact on the patient and public threatens to overshadow the other approaches to this disease, however important they may be.

It is therefore necessary at this stage to review this subject not only in terms of surgical evaluation but also in its relationship to the problem of leprosy as a whole. Let me first review a few of the surgical problems with reference to their successes and shortcomings.

Surgery of the face presents the most rewarding results, for all facial deformities can be corrected and they do not recur following surgery. Unfortunately the surgical correction of facial deformities is generally poor because of lack of adequate train-

ing in the principles of plastic surgery by most surgeons undertaking correction of leprosy deformities. This can and should be rectified.

Surgery of the hand has received the greatest attention. The mobile clawhand can be corrected and the movements of lumbrical function and thumb abduction can be achieved. Unfortunately the important transverse metacarpal arch cannot as yet be reconstructed. Lack of sensation, wasting of the pulp of the fingers and thumb, the all too frequent Z deformity, and inability to fully circumduct the thumb, result in a poor two-finger or three-finger pinch. The normal five-finger pinch is not possible because of loss of the transverse arch. Such a hand is at best only partially functional and cosmetically not totally acceptable.

Although the secondary "intrinsic plus" swan neck deformity of the fingers has to a great extent been eliminated by using wrist flexors or extensors for lumbrical replacement, the "sublimis minus" deformity in the ring and middle fingers is still seen when the sublimis tendons are used for transfer to the thumb or fingers. The operation devised for correction of such secondary deformities of the finger and thumb needs further improvement, as do those also for correction of dorsal expansion damage.

It may be possible to correct a clawhand in one operation, but generally it requires two or more procedures. This entails several months of loss of work, which the patient can ill afford even if hospitalization is free. This often results in disruption of an already strained family and social life and loss of a job over which he has a tenuous hold. Finding fresh employment may not be easy or may even be impossible.

Although a considerable amount of time,

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money and energy is expended in surgery, relatively little has been spent to investigate the long-term results of surgery of the hand. Even when early results are satisfactory, and this is not always the case, secondary deformities develop as a result of several causes. A couple of powerful transplanted muscles often fail to maintain the balance achieved by the normal intricate intrinsic musculature. The reconstructed but anesthetic hand is often put to abnormal stresses and is unconsciously subjected to trauma, infection and burns. Dorsal expansion damage is also a common complication. While surgery can greatly help in improving the function and appearance of the clawhand, it is necessary to assess the long-term results at this stage. Only thus can we realize the extent of our deficiencies and try to rectify them.

It is necessary also to investigate the use of orthotic, prosthetic and implantable devices which may be able to improve hand function without recourse to prolonged surgery. Recent advances in the technology of plastics and allied fields have provided us with interesting material for this purpose.

The present methods of assessment of the hand are based chiefly on anatomical considerations and have little relation to the use of the patient in his daily life. If assessment of the hand is to be of any practical value, it must be of a functional nature. The patient or employer is not interested in knowing the measurements of angles, and our present disability percentage ratings are evidently wrong, for anyone who has worked with leprosy patients knows that anesthesia of the hands is not a 100 per cent disability. Such a patient can compensate by visual aid. Tests must, therefore, be, not of anatomical measurement and stereognostic sense, but of movements used in daily life and at work, such as grasp, pinch and twist. We are all aware of the paramount importance of motivation, with-

out which the best of surgery is doomed to failure. A meaningful assessment may well require the assistance of a psychologist and vocational counsellor.

The greatest handicap in rehabilitation is recurrent ulceration of the feet. Surgery for foot-drop and other deformities of the feet, combined with footwear, has greatly assisted the patient. Prophylactic footwear has prevented many more feet from damage. Yet our present footwear is often unacceptable to the leprosy patient outside the leprosarium because of the fear of stigma attached to it. Present footwear does not mould accurately to the deformed foot and does not relieve the shear stresses unless it is in the form of an ugly wooden rocker. Prophylactic shoes do not have the controlled rigidity necessary for protection of anesthetic feet. Although sophisticated methods for the measurement of stress and strain are available in the aeronautical industry, they have not been used in assessment of the mechanics of the foot in leprosy, a disease which is responsible for crippling thousands of individuals. Even the accepted methods of electromyography or cineradiography have yet to be applied to this problem. Advances in the technology of plastics have provided material which would help greatly in care of these feet if the necessary applied research is undertaken. Above all, the prime cause of deformity of the limbs, nerve damage, has received scant study, even though well established techniques are available for neuromuscular investigation.

Reconstructive surgery has ushered a new era into the care of leprosy during the past two decades. Despite its many achievements, it must be realized that surgery and rehabilitation in this disease are in their infancy and are only two aspects in the total care of the patient in the overall program of leprosy control, and that much progress will have to be made in the years to come.