Lep. Rev. (1965), **36**, 4, 215/220

Reconstruction of the Nose in Leprosy Patients

DR F. I. TOVEY

The Mary Calvert Holdsworth Memorial Hospital, Post Box No. 38, *Mysore City, India*

The pathology of the nasal deformity which occurs in leprosy patients has been well described by Antia (1963) and others. The end result is a loss of lining of the nose with a perforation and absorption of the septum and partial absorption and depression of the nasal bones. The soft tissues and the skin usually remain complete and if freed from the underlying skeleton can be pulled out into the normal shape of a nose. Once this has been done there are three further requirements:

(1) To provide a new lining for the nose.

(2) To provide a new support for the crest of the nose and the columella.

(3) To fill in the space at the upper end of the nose in front of the nasal bones.

(1) *Provision of a new lining*

This is achieved by following the principles of the posterior nasal epithelial inlay as devised by Gillies.

(2) *Provision of a new support for the crest of the nose and columella*

Various methods have been used:

(i) A cartilage strut graft. Late results have shown that this is often extruded or absorbed in leprosy patients.

(ii) A plastic material used as a graft. These also are frequently extruded or become infected.

(iii) A removable prosthesis which is perforated to provide an airway. The results of this are good, but facilities are needed for the making of a prosthesis and a permanent opening has to be provided in the naso-labial sulcus for inserting and removing the prosthesis.

(iv) A crest graft of compact and cancellous bone obtained from the iliac crest and a columellar strut inserted through a columellar incision. This has the disadvantage in that it is very difficult to avoid having a ridge of bone showing at the end of the operation particularly in the upper part of the nose.

(v) A spear-head shaped cantilever graft obtained from the olecranon as described by Antia, inserted through an incision at the root of the nose and fixed by wire to the nasal bone. The results of this are good because the space at the root of the nose is filled out by the graft, but it has to be done as a second stage operation after having done a posterior nasal epithelial inlay.

(3) *Filling in of the space at the root of the nose*

No satisfactory procedure has yet been described apart from the above mentioned cantilever olecranon graft devised by Antia.

The cockett operation

The operation about to be described was devised by Dr Norman Cockett, FFARCS, when he was working at Mysore and Dichpalli in 1959. The operation is a one stage operation using a posterior nasal epithelial inlay and bone grafts for the bridge of the nose and columella obtained from the iliac crest, the innovation being the filling in of the space at the upper end of the nose in front of the nasal bone with minute chips of cartilage obtained from the costal margin.

Operative details

The patient is given a thorough dental toilet.

Anaesthetic. The operations have all been done under a lytic cocktail. For an average adult Morphia gr. $\frac{1}{4}$ and Hyoscine has been given S.C.I. one hour before operation. A lytic cocktail of Pethidine Mgm. 100, Chlorpromazine (Largactil) Mgm. 50, and Promezathine (Phenergan) Mgm. 50 has been made diluted to 20 ml. with normal saline (the Promezathine (Phenergan) has been omitted frequently with small sized patients). An intravenous drip of normal saline has been set up and 15 minutes

after the morphia and hyoscine has been given, 5 ml. of the cocktail has been given into the drip tubing and the dose has been repeated at 15 minute intervals until the total amount is given. After the second dose the patient has been tilted in the 45 degree head-up position to obtain postural hypotension. After the third dose the cords have been sprayed with 2 ml. of 4 per cent Lignocaine and the trachea has been intubated with a cuffed tube which has been inflated. The pharynx has been packed with gauze. On occasions the tube has been connected to a closed circuit anaesthetic machine with a flow of nitrous oxide and oxygen, but many cases have been done without this. Occasionally the patient may require a small dose of thiopentone during the operation but this has been rare. Flaxedil 40 Mgm. has been given to help with suturing the muscle layer after taking the iliac crest graft. A sand bag is placed behind the right buttock to elevate the iliac crest.

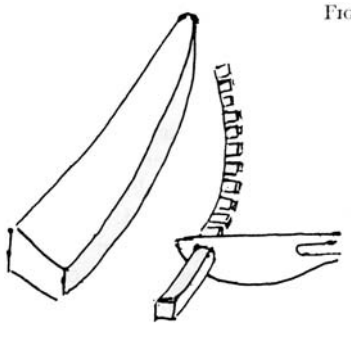
Taking of the grafts

(i) Bone graft

This is taken from the inner half of the iliac crest at its anterior end on the right side and includes part of the inner table resulting in an oblong graft about 2 in. long and $1\frac{1}{4}$ in. broad. The graft is taken with an osteotome making the two vertical cuts at the end of the graft first, a horizontal cut on the inner table next, and finally a cut along the length of the middle of the iliac crest between the vertical cuts to elevate the graft.

(ii) Cartilage graft

FIG. I.

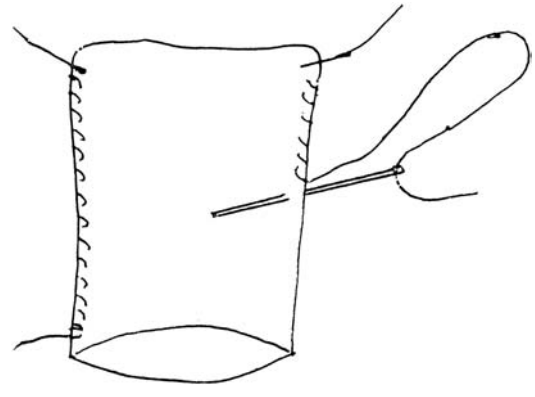


CUTTING OF CARTILAGE CUBES

A length of costal cartilage about 2 in. long is taken from the right costal margin.

The two incisions for taking the above grafts are closed.

(iii) Skin graft



SKIN GRAFT BAG FIG. II.

A split skin graft 3 in. $\times$ $1\frac{1}{4}$ in. approximately is taken from the right thigh.

The above grafts are placed in a solution of 2 per cent chloramphenicol in saline while the rest of the operation proceeds.

Freeing of the nose

An incision is made in the naso-labial sulcus sufficiently in front of the maxilla to leave enough mucosa posteriorly to hold sutures. The nose is freed from its skeletal attachments as far up as the glabella and pulled out into shape. The attachments of the bridge of the nose in particular are freed – small curved Mayo scissors are used for this purpose. The upper part of the perforated septum is divided as far back as possible where it joins the nasal bone leaving a small portion still attached anteriorly. The space thus formed is packed with ribbon-gauze and left for a while.

Preparation and insertion of the cartilage and skin grafts

The cartilage is cut into match-stick like strips which are cut across into tiny cubes – it helps if the perichondrium is not divided so that the cubes are still attached to one another rather like paper chains.

The skin graft is folded in half on itself to make a bag with the epithelial surface inside

and the two sides are sewn up with a continuous fine thread suture leaving the end open. The bag is packed with very small pledgets of cotton wool squeezed out in a 2 per cent chloramphenicol suspension in paraffin.

The gauze pack is then removed from within the nose and the nose is held forwards with a Langenbeck retractor inserted through the naso-labial sulcus. The space between the bridge of the nose and the nasal bones is then packed with the cartilage cubes and then the skin bag is put into the lower part of the post nasal space with its open end downwards. More pledgets of cotton wool squeezed out in chloramphenicol suspension are packed into the bag until the post nasal cavity is filled out and the nose assumes the desired shape. The free edges of the open end of the skin bag are then folded over one another and the incision in the naso-labial sulcus is closed with interrupted catgut.

Preparation and insertion of the bone graft

A columellar incision is made and with enucleation scissors a tunnel is made along the crest of the nose up to the glabella, and another small tunnel backwards along the columella as far as the maxilla. The length of the grafts required for the crest and the columella is gauged from the depth to which the scissors can be inserted.

COCKETT OPERATION

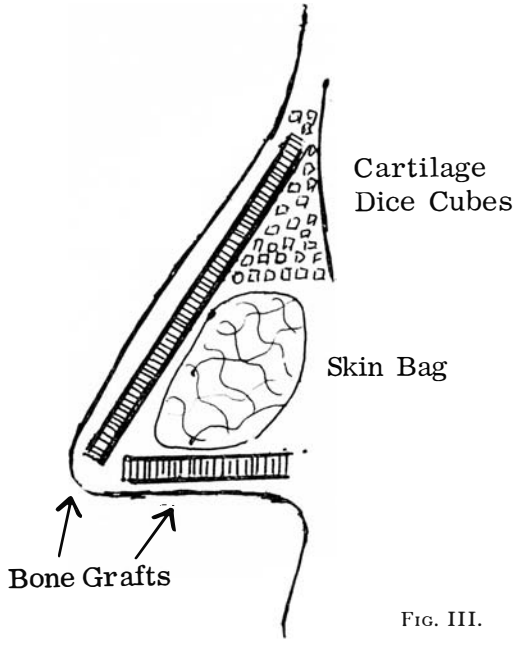


Fig. III.

INTRODUCTION OF BONE GRAFT

Fig. IV.

A graft of the correct length for the crest of the nose and about $\frac{1}{4}$ in. wide is cut from the iliac bone including the ridge of compact bone belonging to the crest of the ileum. This is trimmed and then introduced into the prepared tunnel. It can be slid into place between the blades of an opened-up pair of plain dissecting forceps placed in the tunnel, or a special introducer can be used. The graft is rotated so that the cortical bone faces anteriorly.

A smaller graft is now cut for the columella. A pair of non-toothed dissecting forceps is placed in the columellar tunnel and the graft is slid into place between the blades of these forceps. The upper end is lodged under the

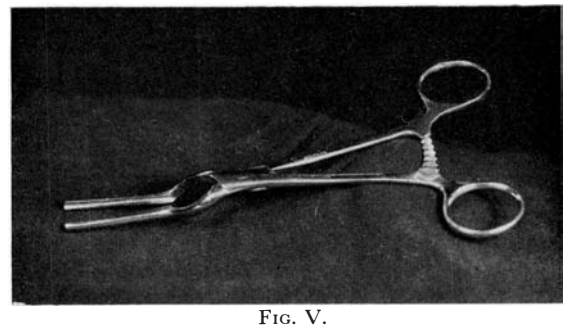


Fig. V.

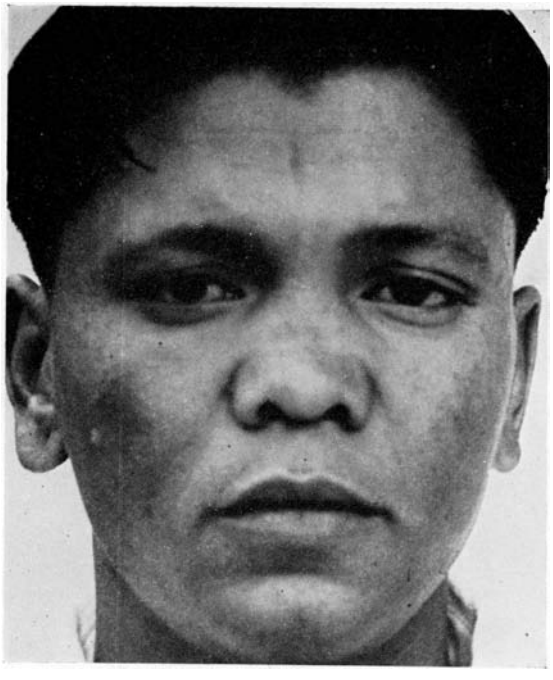


FIG. 6. Before operation.

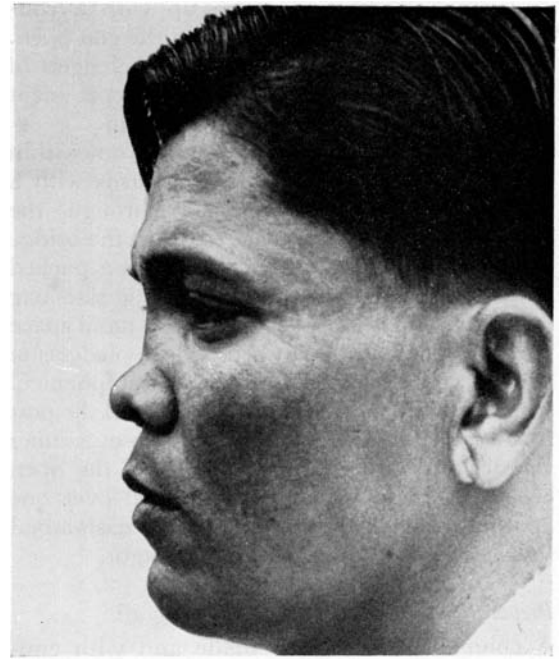


FIG. 6*a*.

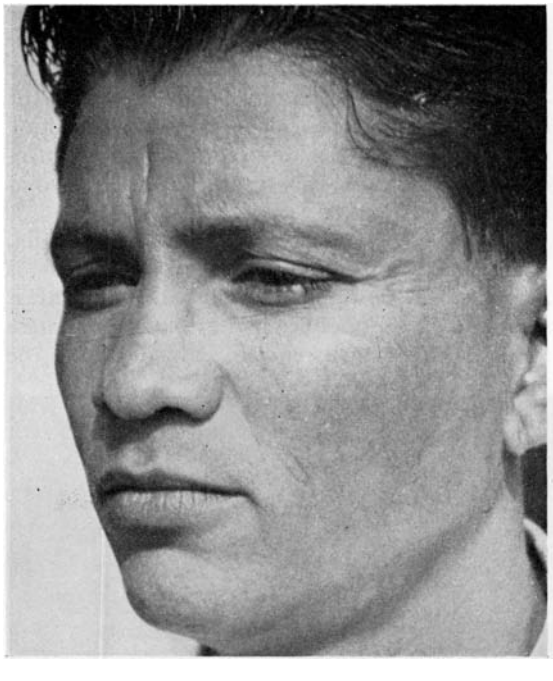


FIG. 7. 1 year after operation, showing partial absorption of crest graft.

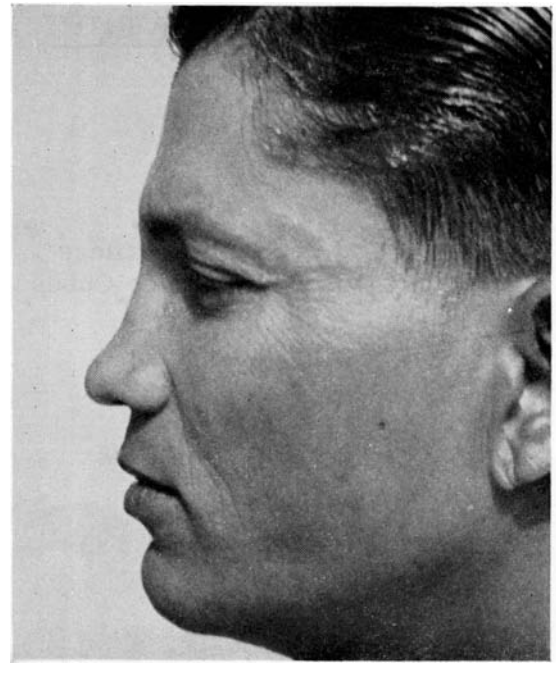


FIG. 7*a*.

bigger crest graft. The columellar incision is closed with fine Nylon sutures.

The anterior nares are packed with further pledgets of cotton wool squeezed out in paraffin and chloramphenicol suspension. This helps to push the skin bag more firmly in place, but care must be taken to see that these pledgets do not slip anteriorly into the space between the skin graft and undersurface of the nose.

Post Operative management

A small piece of gauze is strapped over the anterior nares and changed daily.

Penicillin 500,000 units and Streptomycin 0.5 gm. are given, I.M.I. twice a day for 5 days.

Between the 5th and the 7th day, if there is any discharge, the packing in the anterior nares is changed and fresh pledgets of cotton wool squeezed out in chloramphenicol and paraffin suspension are introduced.

Between the 10th and 12th day, according to the presence of discharge, the packing in the anterior nares is again removed and the presenting part of the skin bag is perforated. The enclosed packing is then removed and the posterior wall of the skin bag is perforated to establish an airway. The graft is usually found to have taken over the cartilage chips, and if by chance any cartilage chips are still exposed, they will be seen to be embedded firmly in a matrix of clot and granulation tissue resembling apple jelly. The cavity is lightly packed with ribbon gauze also squeezed out in chloramphenicol and paraffin suspension. This pack is removed after three or four days and any loose bits of skin graft are trimmed away. From then onwards the patient is asked to hold some normal saline in the cup of his hands three times a day and to inhale it to remove any crusts and secretions which may accumulate.

RESULTS

Thirty-one cases have been operated on to date and the immediate results in all have been good. The end results at follow up have also been good except in the few cases with late complications mentioned below.

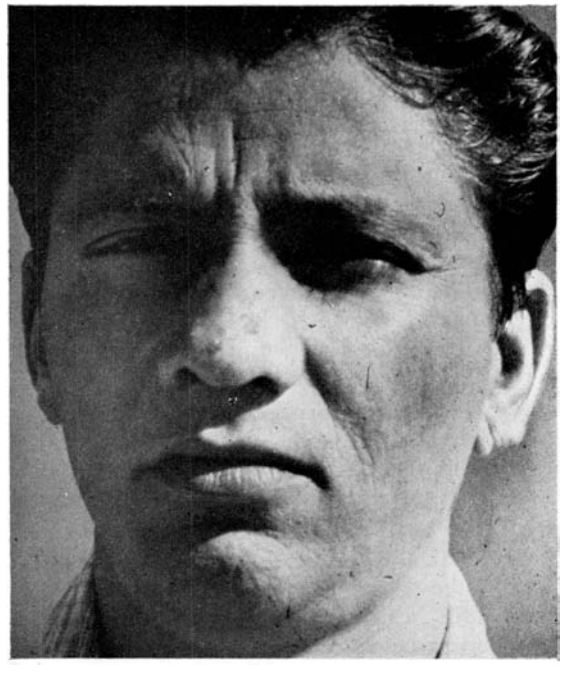


FIG. 8.

FIG. 8*a*.

After second revision operation.

Complications

The following complications have occurred:

A. Early –

(i) Non taking of the skin graft – one patient. A fresh graft bag was inserted during the second week after operation.

B. Late –

(i) Narrowing of the airway – four patients. In these cases it has been necessary to excise a shelf of cartilage and mucous membrane which caused narrowing of the opening between the nares and nasal cavity.

(ii) Complete absorption of the bone graft – two patients.
This has occurred in two patients and they have needed new bone and cartilage grafts and epithelial lining.

(iii) Partial absorption of the bone graft – three patients.
This has occurred in three patients. In one a new graft has been inserted and in one case the complete operation has been repeated.

SUMMARY

A new operation for reconstruction of the nose devised by the late Dr N. F. Cockett is described. After freeing the nose from the underlying bone through a naso-labial sulcus incision the upper part of the resulting cavity is filled with minute cartilage chips and the lower part with a skin graft bag as in a posterior nasal inlay. After closing the incision in the naso-labial sulcus a crest and columellar bone graft are inserted through a columellar incision.

ACKNOWLEDGEMENTS

I must express my thanks to the late Dr Norman Cockett who worked out the details of this operation, and also Dr Hebbar of Palghat, who has made the bone graft introducer.

REFERENCE

ANTIA (1963). *Ann. Roy. Coll. Surg. Engl.*, **32,** 71.