

Reconstruction of moderately depressed nose in leprosy (A Long term follow-up)

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Fifty seven leprosy patients having moderately collapsed nose were taken for nasal reconstruction. The bone graft was obtained from the second metatarsal of the foot. It was corticoperiosteal and placed in between lining and the nasal skin. 48 patients were reviewed periodically at 3 months, initially for 2 years and irregular visits at 3 to 5 year intervals in last 25 years. The nasal architecture and donor site problems were evaluated. 26 patients were completely satisfied, 14 patients were happy with shape of the nose along with some other problems. 6 cases showed the poor results. Two cases developed the deformity after seven years of correction. The details of the technique and the problems occurring during and long term follow up have been discussed.

Key words : Rhinoplasty, saddle nose deformity, Bone graft

Introduction

The nasal deformity in leprosy is synonymous to the disease. It is a significant cosmetic and social problem to the patient. The mycobacterium leprae directly infiltrate the septal cartilage of the nose, the recurrent inflammation and secondary infection results in absorption of septal cartilage and collapse of the nasal bridge. The turbinate, septum and nasal spine are the First structures to be destroyed. The nasal bones and lateral cartilages are affected later.

When the disease becomes more advanced the covering skin and the structures which are covered on both the surfaces with skin, e.g. vestibule and tip of nose are rarely destroyed (Antia 1963, Antia and Pandya 1977, Almast 1967,

Brand 1959).The destructive process is gradual.

The most popular method for correction of nose in leprosy is the one described by Antia and Pandya (1977). This is a two stage procedure in which a split skin graft is applied to the cavity of nose to replace the lost mucosal lining and an acrylic prosthesis is inserted into it to give a shape to the nose. At a second stage a bone graft is put into a pocket, dissected between the outer skin and mucosa.

The acrylic prosthesis has to be introduced through the mouth and needs removal for daily cleaning. This is cumbersome if the prosthesis breaks it is difficult to get a replacement. Moreover the oronasal fistula is not liked by the patients.

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Brand (1959) operated these cases by providing a rib or iliac crest bone graft. The bone graft was introduced between two layers of the nose either through the columella or in a retrograde manner. The rigidity of graft was poor and due its shape the scrupling was not possible as per the requirement. So the shape of the nose was not matching as prior to disease. The graft absorption was seen in more cases.

The severe nasal contractures are not seen very frequently due to availability of MDT. Simple one stage rhinoplasty procedures have much to offer to those patients who have the mild to moderate nasal collapse which is more common these days. We modified the original Brands procedure of nasal reconstruction in leprosy for moderately depressed noses.

Materials and Methods

During 1981 to 2008, 57 nasal deformities cases were undertaken for this procedure. 48 cases were on irregular follow-up of 3 to 15 years of interval. All these patients were on regular follow-up for initial 2 years, subsequently they reported whenever they had any problems related to the disease. Mean age of these cases was 45 years. Youngest was 25 year old while the oldest was 65. All except two cases were males. The onset of clinical disease varies in 10-15 years duration. The duration of nasal deformity was more than five years. All these cases were smear negative and took treatment as prescribed by WHO.

Preoperative deformity assessment

The nasal bridge was depressed in the middle to a variable extent (approximately 1 cm). The columella showed sagging in 24 cases. The alar cartilages were partially absorbed in 18 cases. The nasal bone was unequal in 30 cases. Palate was high arched in 20 cases and perforated in 4 cases. The nasal septum was almost completely absorbed in 12, posteriorly in 14 and centrally in 22 cases. (Table1)

The Patients should be free from planter ulcers and reactions and have taken regular treatment at least for a year. Three consecutive smears must be negative in last 6 months. The nasal cavity is cleaned by blowing the nose with water. Liquid paraffin nasal drops must be used to moisture the nasal cavity.

Operative Technique

Anesthesia

All operations were performed under local anesthesia. 2% xylocaine along with adrenaline (1:100000) used to pack the nasal cavity and 5% lignocaine was used to infiltrate the nose and nasolabial folds, columella and spine area.

Removal and preparation of graft

The second metatarsal was removed from the donor foot by longitudinal incision in the space



Fig 1 : Operative procedure

Table 1 : Preoperative deformity profile of patients

1. Depressed dorsal crest	-	48 (100%)
2. Sagging of columella	-	24 (50%)
3. Absorption of alar cartilage		
Prtial	-	18(37)
Complete	-	6 (12%)
4. Unequal nasal Bone	-	30 (61%)
5. Nasalseptum		
Complete absorption	-	12(25 %)
Posterior absorption	-	14(29 %)
Central absorption	-	22 (46%)
6. Adhesions to Bony frame		
Mild	-	36 (75%)
Moderate	-	12 (25%)
7. Bony Palate		
Perforated	-	4(8%)

between 1st and 2nd toe over the dorsum of foot. The graft was shaped as required. Operative procedure is shown in figure-1.

Preparation of recipient bed and placeman of graft

A semi lunar glabellar incision was given to create a pocket between two layers of the nasal skin and for the columellar support an additional incision was made in vestibule to create a pocket in columella.

The straight graft was introduced in to the Pocket through the glabellar incision while an L shaped graft was positioned on the spine through the vestibular incision. The external splinting was done by a plaster cast. The nasal splint was kept for 3-4 weeks postoperatively.

Results

Early post-operative complications

There was no infection seen at nasal site while 7 cases showed infection in the form of stitch abscess at donor site of foot. The basic antibiotics

along with anti-inflammatory drugs were given. 3 cases showed breakage of sutures, secondary suturing was done. Swelling over crest of nose was noted in some cases which subsided by 3rd week.

Follow-up

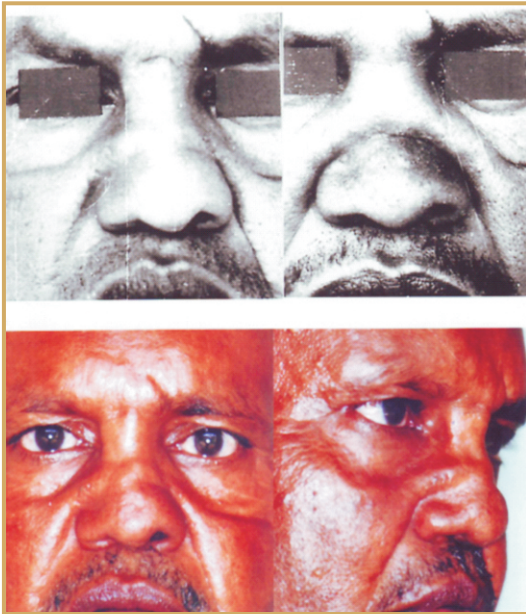
Till 2008, the 57 patients had been operated for nasal correction by this procedure. 48 cases were on irregular follow-up. The total follow for each patient was 3-5 years in last 20 years.



**Fig 2 : Operated in 1984
b. post operative after 5 years**



Fig 3 : Post operative after 20 years



**Fig 4 : Pre operative and post operative just after operation
b. post operative after 15 years follow up**



Fig 7 : Donor site after 15 years



Fig 5 : Pre operative and post operative at discharge



Fig 6 : Post operative after 10 years of follow-up

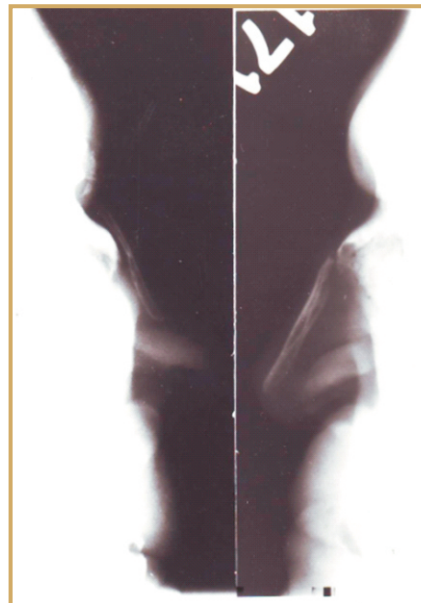


Fig 8 : Graft in nasal cavity after 15 years of follow up

Early results

All cases had good correction of the depressed nose with minimal complication like serous collection and reaction to skin suture at nasal side while haematoma formation at the donor foot side was seen.

Long term follow-up

57 cases had been operated by this procedure during 1984-2003. Only 48 cases were available for review at various intervals (3-24 months). 26 patients reported total satisfactory outcome while 22 patients had various complaints. Figure 2 to 8 depict the results of the procedure at different stages of treatment.

The appearance of nose after surgery was satisfactory in 26 patients. The depressed nasal bridge improved by 1cm while 14 patients were having some persisting nasal deformity because the improvement in depression of nasal bridge was not adequate. But the facial appearance was better than previous to nasal surgery. 8 cases had major problem with the shape of nostrils.

The bone graft was well stalled in 40 cases while in other 8 cases it was mobile. No extrusions were seen in any case. The graft appeared to have undergone molding in all the cases. However in 10 cases the graft was slightly absorbed but able to maintain the nasal architecture with slight concavity in the middle. While the 2 cases showed absorption of graft more than 70% only a small streak of bone visible in the x-ray.

The following problems were observed

1. Two patients complained feeling of nasal obstruction, but on examination of nasal cavity nothing abnormal was detected. It may be because of atrophic rhinitis. The regular use of liquid paraffin drops was advised.
2. In 2 cases x-ray showed absorption of the bone graft this may be because of the reactivity (relapse) of the disease developed in these cases.
3. Other major problems to patients were the sagging of columella in 8 cases, irregular shape of nostril in 8, collapse of nostril in 2 bulbous nasal tip in 2 cases.
4. While some local problems in nasal cavity like crust formation, mucous plaques and sometimes epistaxis were also reported.
5. 2 Cases complained of nasal myiasis.
6. At the donor site, toe deformity was observed in 30 cases. The toe was pulled up and was overriding on the 3rd toe. It was not a major disability but 6 cases complained about the cosmetic appearance. Periodic swelling over the donor site while walking long distance was also noticed in 5 cases. In 4 cases recurrent planter ulcer were seen which was cared after foot bear modification (MT Bar)

Discussion

The occurrence and development of saddle nose deformities in multibacillary patients with leprosy is known common cosmetic problem. Many workers had tried to correct the deformity. The following criteria for evaluation of results of rhinoplasty in leprosy have been recommended.

1. Adequacy of skin pocket
2. Shape of nose- crest, columella, nostril and projection.
3. Phonation
4. Blocking of air way crust formation, recurrent ulceration
5. Patient satisfaction

The most popular procedure for nasal correction in leprosy is posterior nasal epithelial inlay by Gillies followed by bone grafting. This is a two stage procedure, the nose have very sharp contour and not fitted with Indian look with the existing facial contour. It actually aggravates the geriatric look of the patient, the oronasal fistula and the regular removal, cleaning and replace-

ment of the prosthesis becomes difficult to deformed patients. The 2nd serious argument against the post nasal epithelial inlay operation is the graft bed which consists of a split skin graft. The graft is not properly retained and its resorption is a common complication.

Tovey (1965) described the 'cocketts' procedure. This is much technically difficult and needs cartilages graft from the rib cage.

Antia (1974) has experience of the slastick implants for mild case. The body acceptance with silastic implants was an important factor for extrusion. Tendency to recurrent ulceration in leprosy does not favor the use of alloplastic implants. Synthetic calcium phosphate implants are also available but are very expensive and difficult to get. If the split thickness graft is used in the first stage, the risk of extrusion of all parts in the second stage is very much due to lack of adequate support. Major risk involved with the use of alloplastic materials are dislocation of implant, intolerance and extrusion. The main complications of alloplastic materials are dislocation, intolerance and extrusion of the graft.

Farina (1971) used tibial graft to reconstruct 51 saddle nasal deformities where 42 cases belonged to leprosy. The graft was obtained from tibia and onlayed on bare nasal bone and was supported on a groove made in frontal bone. The graft was introduced through the nasal vestibule. The graft was not fixed with the nasal/frontal bone. The Aluminum splints were used to support the graft. The result was gratifying and obviated the need of L shaped graft for columellar support.

Brands (1959) also had the same procedure like us with deference of the bone graft. He had taken the graft from the rib or iliac crest. It was difficult procedure and donor site problems were much more. The graft rigidity was poor in comparison to metatarsal bone graft and difficulty to sculpture as per requirement.

The procedure adopted by us suits to the requirements of the patient. The Bone graft obtained from the 2nd metatarsal is long, easy to withdraw and may be sculptured as required from patient to patient. The donor side problems have been much less than ulnar olecranon, rib or iliac crest graft. The periosteum of the graft has an added advantage for better takes up. The cortical graft has rigidity and gives the elevation of bridge line with greater strength. The shape of nose fits to its original state. The crest of the nose elevated and accommodated with facial outlook.

Radiological evaluation stated that graft takes two-three years to acquire a real cavity surrounded by a clear cortical layer on surface.

Phonation was satisfactory in all cases studied. In cases of palatal perforation dental obturator was used. The overriding of toe was troublesome in few cases. The excision of extensor longus tendon of 2nd toe helped to overcome this problem. We operated all the cases when they are clinically inactive and the skin smears were negative in last three consecutive times, to prevent the further absorption of bone graft. The two cases developed relapse and became active, the graft was totally lost due to absorption. The shape of nostril is dealt in 2nd sitting to get a good overall appearance.

Atrophic rhinitis persisted in these cases; they were advised of nasal cavity care by putting liquid paraffin drops every night.

Our procedure is one stage and simple, it satisfies the requirements of patients. Nasal contour fits with the facial outlook, no removal or cleaning is needed every day. Hence we recommend this procedure for clinically subsided and smear negative cases for correction of mild and moderate saddle nose deformity which are more frequently seen these days in leprosy endemic areas.

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