USE OF POST NASAL INLAY IN LEPROSY

Dr. Govila, A. M.S.,Ch.M.

Summary

The purpose of this paper is to present a hypothesis about the mechanism of causation of nasal deformity in leprosy, based on observations on 20 cases of nasal collapse. According to this observation the earliest site of maximum destruction and replacement fibrosis is the central point of the junction of the nasal bones and the upper nasal lateral cartilages (Referred as central core). From this point to a point on the most anterior part of the junction of the perpendicular plate of the ethmoid to the vomer. A fibrous remification forms at the posterior margin of the septal perforation. Contracture of this remification causes saddle deformity of the nose. Precise steps of the technique are defined and the complications arising from the faulty technique and their treatment is presented. A devise for the prevention of graft contraction is presented.

Leprosy—Post Nasal Inlay

The nose, only second to the eyes in the entire visual image of the person, stands as a hallmark of his character. Unfortunately this characteristic of the nose becomes a persistent plight for a patient with leprosy, as nasal deformities constitute 25% of all facial deformities due to this disease, [1], [2], [3], [4], [6]. It is the commonest organ of the face to be involved in leprosy.

Presence of the disease and the drug in the patient's body is the cause of one of the great sufferings that mankind has endured. Severity of nasal deformity gets worse with the progress of the disease, and advancement of the healing with replacement of more and more areas of ulceration.

In India, nasal collapse usually occurs and is often treated by post nasal epithelial inlay. This technique was first described by Sir Harold Gillies in 1923 after the war for the treatment of traumatic saddle deformity of the nose. This seems to be the extension of the original idea of epithelial inlay, described by J.S.F. Esser, in 1915 while working in Germany in his book called BIOLOGICAL FLAPS. Perhaps this Jewish Surgeon disappeared after the war as he did not write a single article after the war.

This technique was then used McLaren and Penney in 1957 in the treatment of syphilitic noses[7]. This was used for the first time for leprosy in India by Dr. Antia of Bombay.

Material and Method

I operated on 20 cases of nasal collapse due to leprosy by this technique. Eleven patients were male and nine female between 35 to 55 years age. All the patients lived about 12 miles from the Hospital in a reha-

*Registrar Plastic Surgery, Regional plastic Surgery Unit, Shoteley Bridge General Hospital, Durham.

bilitation Center and were followed up on a weekly basis.

Morbid Anatomy

Micro-bacteria Laepre prefers to settle in the humid and cool atmosphere such as in the respiratory mucous membrane. The nasal septum, being covered on both sides by such an ideal surface, offers easy ground for settlement, more over there is least resistence to fight. Mucosal ulceration starts spreading on both the surfaces of the septum, exposing the cartilage which dies of exposure necrosis.

If the condition is left untreated the process of septal destruction continues until the entire cartilagenous septum is destroyed and virtually disappears making the nasal cavity a common chamber. Subsequent description presenting a hypothesis is based on my pre-operative and post-operative observations.

Simultaneously or soon after the septal perforation, destruction also begins at the central point of the junction of the nasal bones and upper nasal lateral cartilages. To this point I shall refer as central core (see Figures 1 and 2). Central core is eroded very early, and also becomes the site for maximum fibrosis. From the central core to the bony septum, specifically the most anterior part of the junction of the perpendicular plate of the ethamoid to the vomer, a fibrous ramification forms at the posterior margin of the septal perforation. Contracture of this ramification causes saddle deformity of the nose.

From the central core fibrous ramification forms in many other directions, unilaterally or bilaterally, commonly to the junction of alar rim and nasal tip, producing unilateral or bilateral alar notches. Balanced or imbalanced forces of pull of these ramifications produces symmetrical or asymmetrical nasal deformity respectively.

As the disease advances mucosal ulceration not only spreads deeply, but also over the lateral nasal walls and anteriorly causing absorption of anterior nasal spines and tips of nasal bones producing ape like appearance of the face. The process of healing on the lateral nasal walls in combination with healing at other places finally causes nasal collapse. Nasal collapse compared with saddle deformities (where only the middle third of the nose is involved) is the involvement of the whole of the nose from nasal bridge area to the tip of the nose.

The maxilla which is rarely involved as confirmed by conventional teachings[5], was involved in two cases, and the pyriform apperture at the position of the alar bases was destroyed. Nasal bones are not destroyed but are displaced downwards by the pull of fibrosis.

Nasal tip is the last part to be destroyed as it is the thickest soft tissue component of the nose, having plenty of fibrofatty tissue between cartilages and has a thick skin cover. For a time the nasal tip is reminiscent of a flag of a sinking ship.

Selection of Patients

The following criterias were employed in the selection of the patient :

Absolute

1. Three consecutive negative nasal smears.
2. Three years of constant negativity.
3. No skin involvement (Breakdown).

Relative

1. Satisfactory general health.
2. Reasonably keen, intelligent and co-operative patient.
3. Majority of fingers in satisfactory functional state.
4. Satisfactory oral hygiene.
5. Minimal dental problems.

Pre-Operative Planning

Three standard photographic views, front, profile and oblique from below were taken in all patients. A normal profile was drawn by the ink in the profile view of the patient. This drawing was kept in the operation theatre as a reference and as a post-operative goal.

Surgical Technique

The operations were performed under general anaesthesia by the conventional approach through the upper buccal gingival sulcus from canine to canine teeth. No. 11 blade was made to enter from here into the common nasal cavity by incising the mucosal attachment to the lower part of the pyriform appearture. Incision was carried along the margins of pyriform apperture to the midline up to the fibrous central core which was released from its attachments to the nasal bones. The rest of the dissection was performed with the help of scissors freeing the skin envelope from all its attachments. In cases of severe degree of alar notches an additional incision was made from this central core to the distorted nasal apperture. If the nose was found to have shortened in length, then a transverse incision to this incision was made in its middle. Skin was freed right up to the glabella to allow the cavity over the nasal bones to open up, as this being the smallest part of the cavity has the maximum chance to contract. Graft contracture in this part is more difficult to treat.

Dental compound was softened in hot water and was introduced into the cavity and the impression was taken. As the alar bases are freed from their attachments to pyriform apperture, introduction of the dental compound lifts them and they are kept in position by the assistant by the pressure of his thumb and fingers of the left hand on the naso labial folds. Great care is taken in the region of nasal bones and glabella to fill it completely. Over all slight over correction is achived to compensate for later graft contracture. Before the mould hardens final shape is given to the nose by the help of fingers, according to the drawing planned on the photograph.

The mould is taken out when it is just firm and not hard, as otherwise the removal of the mould is difficult because the posterior surface of the mould assumes the curved shape of the concavity of the bone, and its extraction through the incision and over the flat surface of the anterior wall of the maxilla is difficult. This convex surface is made plain by cutting extra material with a hot knife. Two holes for the breathing are created in the mould by using a hot nail. Introduction of a hot nail tends to distort the shape of the mould which is quickly corrected. A small projection in this mould between columella and nasal spine was made for patients with poor functional hands. A hole was made in this projection and the patient provided with a wire hook to remove the prosthesis. This projection must not be too large or a monkey appearance of the upper lip is produced. The mould is draped in a medium thickness skin graft with the dermis on the outer side.

The length of the incision in the upper sulcus is important. If it is too long, retention is difficult and the mould may slip out. If the incision is too short, although the cavity may be adequate, the removal of the mould required each day becomes difficult and painful.

If the incision is too near the teeth and the graft is lost, the bone becomes exposed and is slow to heal and the area is tender. If the incision is too near the lip, the flap of mucosa prevents the daily cleaning of the prosthesis and the flap becomes tender. If the posterior surface of the mould is uneven, insertion and removal are difficult.

In the rare event of the maxilla near the pyriform fossa being eroded, care should be taken in the lateral undermining or the prosthesis will be unstable and liable to shift from side to side.

If the cavity anterior to the nasal bones is too small, contractures will cause the prosthesis to be displaced downwards and the naso labial angle becomes obtuse and finally the prosthesis may be extruded. The strapping is applied to retain the prosthesis, in position. On the 7th post operative day the strappings are removed and the mould is taken down and the cavity is inspected for the assessment of graft take. It takes 7 to 15 days for the cavity to heal. Once the cavity has healed the patient is left in the care of the prosthodontist who makes the final acrylic prosthesis. The patient is advised now about the daily care of his nasal cavity and also that of the prosthesis and is then kept under review for checking the graft contraction and resulting extrusion of the prosthesis which could not be appreciated by the patient.

Contraction of the grafted cavity may cause extrusion of the prosthesis. This difficult problem may be dealt with by a "S" shaped wire spring between the palatal obturator and the prosthesis, (See Figure 3). This method was used in two patients to maintain constant upward pressure; and was satisfactory, but the springs needed frequent replacement because of metal fatigue and breakdown. This caused difficulties with patients from distant centres. If the patient is edentulous, the prosthesis can be attached to the denture, but for both of these devices the patient must have all fingers intact.

Results

A satisfactory result, having criterias such as normal nasal profile, a normal size of nose, illimination of alar notches were achieved in 16 cases. (See Fig. 4). Four cases which failed to reach our satisfaction were caused by graft contracture post operatively.

Discussion

Nasal deformity due to leprosy where the skin is intact is best treated, in our experience, by post nasal inlay. The causes of different shapes of nose during the course of the disease is because of the selected areas of fibrosis which should be released to free the skin completely. Emphesis should be laid on the proper release and take up of graft the cavity of the nasal bones. The most common and difficult complication to treat is graft contracture. Once the graft is settled and stable then a bone graft could be incorporated.

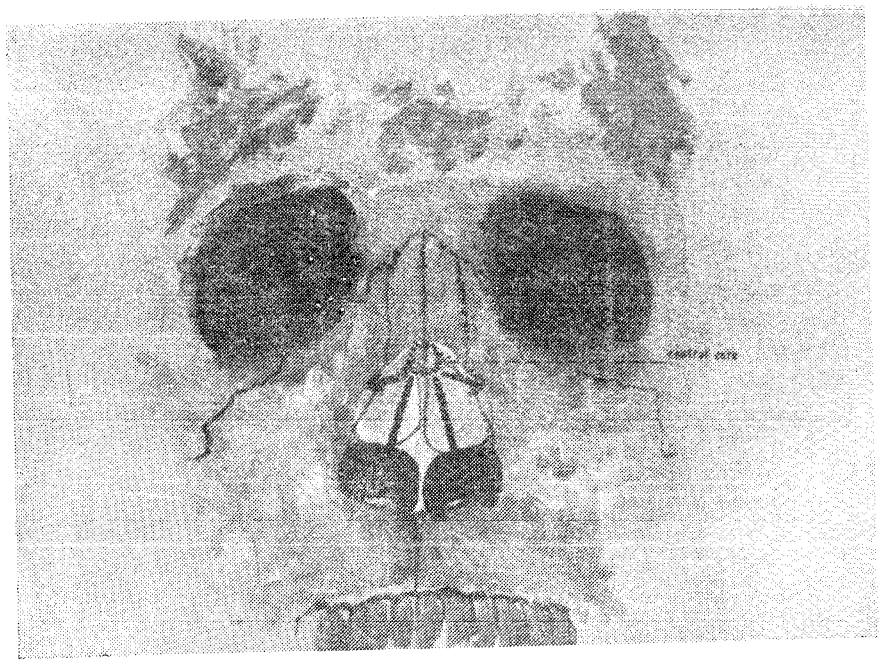

Fig. 1. Site of central core (Primary Pathology) and place of fibrous ramification.

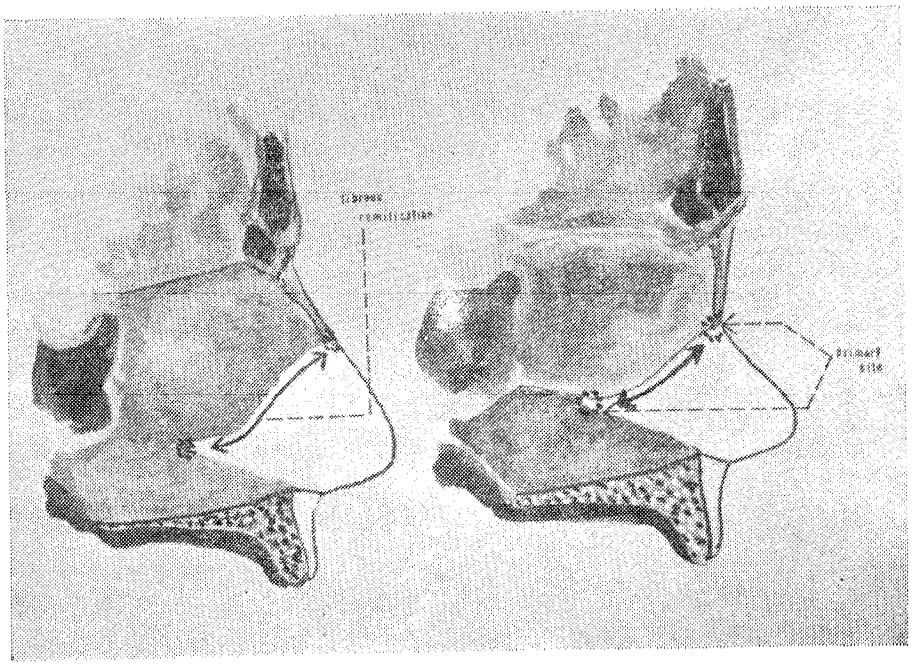

Fig. 2. Showing the saddle deformity as a result of contracture of fibrous ramification between two points shown by the circle.

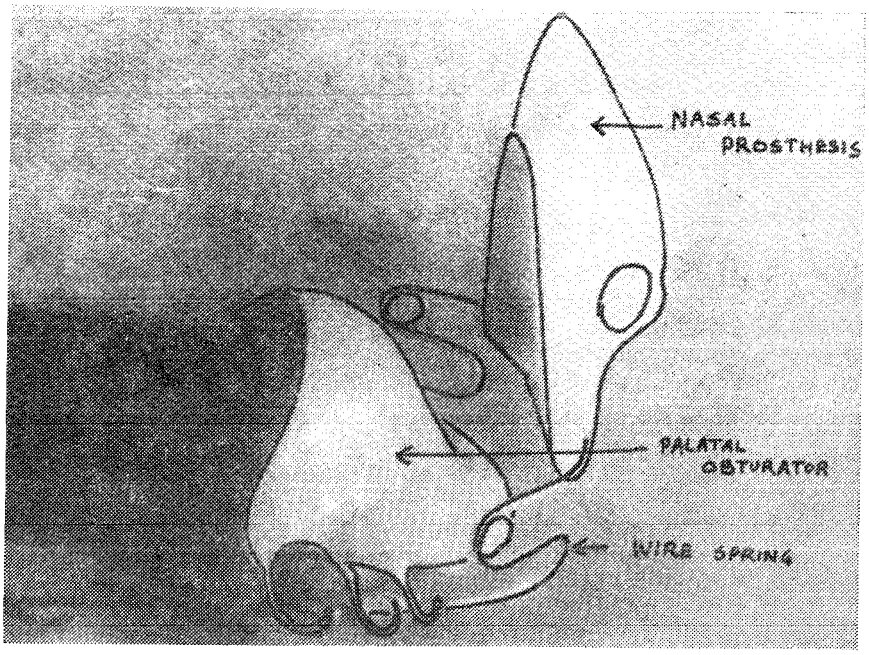

Fig. 3. "S" shaped wire spring attached to palatal obturator.

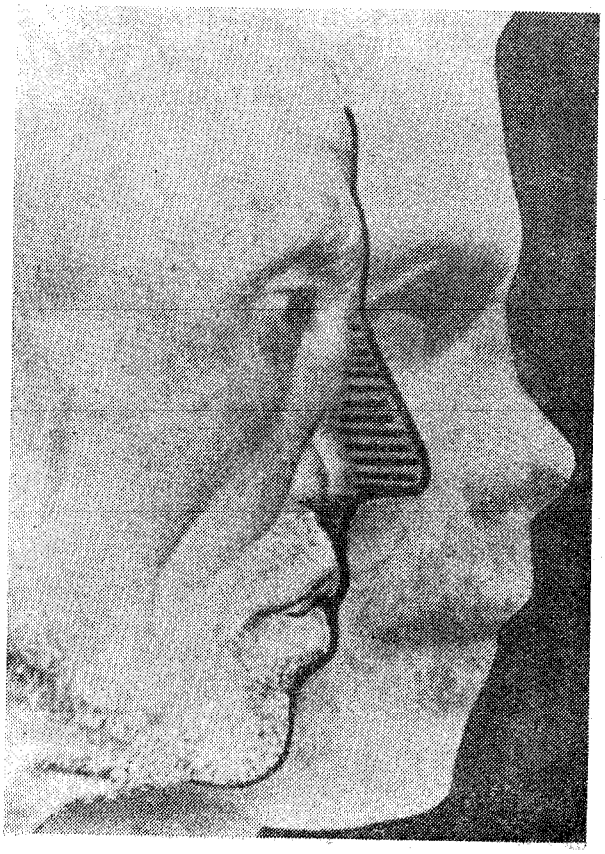

Fig. 4. Pre-operative picture, correction planned and the result achieved.

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