

ORIGINAL

PROF-1008

AUGMENTATION RHINOPLASTY

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ABSTRACT... Objective: To study merits and demerits of graft materials used for augmentation rhinoplasty. **Design:** Prospective. **Settings:** Study carried in the department of ENT Allied Hospital Faisalabad. **Period:** From Jan 2001 to Dec 2002. **Material and Method:** The majority of patients were admitted through ENT out patient department. The data was collected on the basis of history, physical examination, investigations, photography, management and follow up. **Results:** Total 30 patients 20 males (67%) and 10 females (33%). The majority of patients were from 3rd decade of life (53%). The duration of deformity in majority of patients was with in 2 years (73%). Majority of patients were belonged to the lower class (60%). In many of the patients indication for augmentation rhinoplasty was cosmesis (100%). In 50% patients autologous iliac crest bone graft was used. The etiological factor for saddle deformity in majority of cases was trauma (67%). The donors site morbidity was 32% as compared to other complications. Overall success rate was 90%. **Conclusion:** The autologous cartilage has many advantages over autologous iliac crest bone graft while performing augmentation rhinoplasty.

INTRODUCTION

The rhinoplasty is an operation planned to reconstitute and shape the anatomic features of the nose into a new more pleasing relationship with one another and the surrounding facial features¹. The rhinoplasty consists of septoplasty, tip remodeling hump removal, narrowing of nose with osteotomies and final correction of subtle deformities². For rhinoplasty good practical knowledge of the anatomy is necessary³. The results achieved in rhinoplasty are directly related to the surgeon ability to elucidate how subtle change in the bony and cartilaginous support of the nose will change its appearance⁴. Thus any rhinoplastic surgeon requires thorough and sophisticated knowledge and

understanding of the normal and pathologic anatomy of the nose⁵.

The cartilaginous septum and maxillary bone crest form the main support of the lower two thirds of the nasal dorsum. If there is insufficient cartilage to give support either due to absence or fibrosis of the cartilaginous part of the septum, nasal saddling to various degree will result⁶. Nasal saddling is therefore commonly seen after septal haematoma, septal surgery or trauma and if haematoma is infected nasal collapse is almost inevitable. Immediate grafting is advocated by some⁷ but in most instances grafting of the dorsum is deferred until the degree of saddling is evident.

Loss of septal support of the nasal dorsum although resulting mainly from trauma may follow many of chronic inflammatory conditions which involves cartilage such as sarcoidosis, tuberculosis and syphilis.

Malignant granuloma may also damage septal cartilage and lead to nasal dorsum collapse. Some degree of saddling may also be a familial or racial characteristic. Proper and standardized preoperative and post operative photograph is essential in rhinoplasty⁸. In addition to examination of the patient and its correlation with clinical experience and artistic judgment photograph are the best practical means for correct analysis. Photographs are essential for medical record and for medico-legal purpose. The photographs views which are commonly taken includes frontal view, right and left lateral views, basal view, and oblique view.

There are wide varieties of graft material available for nasal augmentation which are successfully used. A surgeon success with one or another of the implant material will determine his preferences. To be successful one must have a working knowledge of all the implant material available. Each portion of the nose has different characteristics that may require different augmentation material.

The grafts commonly used in augmentation rhinoplasty include iliac crest bone, costal cartilage, septal cartilage, auricular cartilage, sialastic prosthesis. Autologous cartilage has considerable advantages over allograft. It does not induce immune response and has a very much lower rate of infection and extrusion. It is also easily harvested and sculpted and is available in plentiful supply.

Finally the psychology⁹ of the patient should be kept in mind to avoid conflicts over the post operative appearance of nose.

MATERIAL AND METHODS

It was a prospective study conducted upon 30 patients suffering from saddle deformity of nasal dorsum in the department of ENT Allied hospital Faisalabad from Jan

2001 to Dec 2002. The patients were admitted and detailed history, clinical examination, routine investigations and special investigations including photography were carried out. Standard proforma was prepared dually filled for each patient. All the patients suffering from saddle deformity of nose were SELECTED operated for augmentation rhinoplasty using one of these autologous grafts i.e iliac crest bone, septal cartilage, auricular cartilage, costal cartilage.

RESULTS

Total 30 patients suffering from saddle deformity of nose 20 males (67%) and 10 females (33%) between 16Y to 50Y of age. The majority of patients were from 3rd decade of life (53%). The duration of deformity in majority of patients was with in 2 years (73%). Majority of patients were belonging to the lower class (60%). In many of the patients indication for augmentation rhinoplasty was cosmetic (100%). In 50% patients autologous iliac crest bone graft was used. The etiological factor for saddle deformity in majority of cases was trauma (67%). The donor site morbidity was 32% as compare to other complications. Overall success rate was 90%. Revision surgery was done in 2 cases (7%).

| No. | Duration in years | No. Of patients | %age |
|-----|-------------------|-----------------|------|
| 1 | 0-2 y | 22 | 73% |
| 2 | 3-5 y | 04 | 13% |
| 3 | 6-8 y | 02 | 07% |
| 4 | >8y | 02 | 07% |
| 5 | Total | 30 | 100% |

| No. | Disease | No. Of patients | %age |
|-----|-------------------|-----------------|------|
| 1 | Cosmetic | 30 | 100% |
| 2 | Nasal obstruction | 00 | 00% |
| 3 | Total | 30 | 100% |

Table-III. Nature of autologous grafts used for augmentation rhinoplasty N=30

| No. | Graft nature | No. Of patients | %age |
|-----|---------------------|-----------------|------|
| 1 | Septal cartilage | 06 | 20% |
| 2 | Iliac crest bone | 15 | 50% |
| 3 | Costal cartilage | 05 | 17% |
| 4 | Auricular cartilage | 04 | 13% |
| 5 | Total | 30 | 100% |

Table-IV. Etiology of saddle deformity in patients N=30

| No. | Etiology | No. Of patients | %age |
|-----|-----------------------|-----------------|------|
| 1 | Trauma | 20 | 67% |
| 2 | Infection | 04 | 13% |
| 3 | Familia / congenital | 01 | 03% |
| 4 | Surgery | 04 | 14% |
| 5 | Granulomatous disease | 01 | 03% |
| 6 | Total | 30 | 100% |

Table-V. Complications associated with autologous grafts used for augmentation rhinoplasty N=30

| No. | Complications | No. Of patients | %age |
|-----|----------------------------|-----------------|------|
| 1 | Absorption of graft (bone) | 01 | 08% |
| 2 | Infection | 01 | 08% |
| 3 | Donor site morbidity | 04 | 32% |
| 4 | Margins show | 01 | 08% |
| 5 | Total | 30 | 100% |

Table-VI. Success and failure rate of autogenous grafts used for augmentation rhinoplasty N=30

| No. | Graft nature | Success rate | failure rate |
|-----|---------------------|--------------|--------------|
| 1 | Septal cartilage | 93% | 07% |
| 2 | Costal cartilage | 97% | 03% |
| 3 | Auricular cartilage | 100% | 00% |
| 4 | Iliac crest bone | 90% | 10% |

DISCUSSION

Autologous grafts offer advantages over alloplast in that they do not elicit immune response in the recipient site this causes lower rate of infection, tissue reaction and extrusion of the implant¹⁰.

Autologous cartilage offers certain considerable advantages over autologous iliac crest bone graft that the tissue feels more natural, they are easy to mould and have a low index of resorption¹¹.

Nasal septum is often a useful supply of cartilage that is easily harvested at the time of surgery. Septal cartilage can be shaped and bent itself well to layering where it is necessary to build up more than one layer thickness of cartilage¹².

Conchal cartilage is an extremely useful source of cartilage for use in augmentation rhinoplasty. It can be harvested without any cosmetic change to the pinna as long as the antihelical fold is not transgressed. It can be shaped easily and has low rate of complications. Unfortunately it has the disadvantage of being slightly asymmetrical in the shape and this must be taken in to account when shaping of the graft is under taken¹³.

Costal cartilage graft is used in more extensive deformities. It has disadvantages of incurring significant donor site morbidity such as scarring of chest wall and possible complication of pneumothorax therefore it is used mainly when other source of cartilage is insufficient^{14,15}.

Iliac crest bone graft has the advantage that it is available in bulk amount and is very useful in case of severe saddle deformity involving both the cartilaginous and bony dorsum but the disadvantages with this graft are that the reshaping is difficult, due to hard nature of bone, look is unnatural and chances of skin necrosis and graft extrusion are higher than autogenous cartilage more over it is also associated with donor site morbidity¹¹.

In a study done by Godfrey NV on augmentation

rhinoplasty by using septal cartilage graft the success rate was 90% and failure rate was 10% where as in our study the success and failure rate of septal cartilage graft was 93% and 7% respectively¹².

In our study the success rate of rib cartilage graft was 97% and failure rate was 3% where as the study of C.S Mura Kami, T.A Cook and R.A Guida the success and failure rate of rib cartilage graft in augmentation rhinoplasty was 78% and 22% respectively¹⁶.

The success rate of auricular cartilage graft was 100% in our study and same results were seen in study conducted by Murrell and George¹⁷.

The study conducted by Sarukawa S, Sugawara Y, Harri K the success and failure rate of autogenous iliac crest bone graft in augmentation rhinoplasty was 90% and 10% respectively¹⁸.

The study conducted by Karacaoglan N, Uysal OA the success rate of autogenous iliac crest bone graft in augmentation rhinoplasty was 100%¹⁹.

In another study conducted by Goodman ws, Gilbert Rw the success and failure rate of autogenous iliac crest bone graft in augmentation rhinoplasty was 92% and 08% respectively²⁰.

In our study success and failure rate of autogenous iliac crest bone graft in augmentation rhinoplasty was 90% and 10% respectively.

The overall success and failure rate of autogenous cartilage in our study was 97% and 3% respectively where as the study conducted by Bateman N, Jones NS on results of autogenous cartilage in augmentation rhinoplasty the success and failure rate was 84% and 16%²¹.

CONCLUSION

The autologous cartilage grafts because of their low rate of infection, rejection, resorption, extrusion, low donor site morbidity, easy reshaping and due to their natural

look should be regarded as the graft of choice in Augmentation Rhinoplasty.

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