Original Article

Augmentation Rhinoplasty with Autologus Iliac Crest Bone Graft

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Abstract

Objectives: To study merits and demerits of autologus iliac crest bone graft in augmentation rhinoplasty. **Study Design**: Descriptive. **Setting:** ENT Department Allied Hospital Faisalabad. **Period:** From Jan 2007 to Dec 2011. **Material And Methods:** 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 50 patients 30 males 60% and 20 females 40%. The majority of patients were from 3rd decade of life 70%. The duration of deformity in majority of patients was with in 2 years (60%). In all patients indication for augmentation rhinoplasty was cosmetic (100%). The autologus iliac crest bone graft was used in all patients (100%). The etiological factor for saddle deformity in majority of cases was trauma (50%). The donor site morbidity was (16%). Overall success rate was (98%). Revision surgery was not done in any case. **Conclusion:** The autologus iliac crest bone graft has excellent outcome in augmentation rhinoplasty with minimal complications. **Key Words:** Augmentation Rhinoplasty, Iliac crest, Bone graft.

INTRODUCTION

The rhinoplasty is an operation planned to reshape the anatomic features of the nose in to a new more pleasing relationship with one another and the surrounding facial features[1]. The rhinoplasty consists of septoplasty, tip remodeling, hump removal, narrowing of nose with osteotomies and final correction of subtle deformities[2]. 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 appearance[4]. Thus any rhinoplastic surgeon requires thorough and sophisticated knowledge and understanding of the normal and pathologic anatomy of the nose[5]. 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 degrees will result[6] 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 some[7] but in most instances grafting of the dorsum is deffered until the degree of saddling is evident. Loss of septal support for the nasal dorsum although resulting mainly from trauma may follow many of chronic inflammatory conditions which involves cartilage such as sarcoidosis and tuberculosis. Malignant granuloma may also damage septal cartilage and lead to nasal dorsum collapse some degree of saddling may also be of familial or racial characteristic. Proper and standardized preoperative and post operative photograph is essential in rhinoplasty[8]. In addition to examination of the patient and its correlation with clinical experience and artistic judgment photographs 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 is a wide variety of graft materials available for nasal augmentation which are successfully used. A surgeon success with one or other implant material will determine his preference. To be successful one must have a working knowledge of all

the implant materials 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. Autologus grafts has considerable advantages over allografts. It does not induce immune response and has a very much lower rate of infection and extrusion. Finally the psychology[9] of the patient should be kept in mind to avoid conflicts over the post operative appearance of nose.

The iliac crest is a favoured donor site because of its accessibility and the large quantity of bone available. Within the ilium grafts may be harvested from either its anterior or posterior crest. The anterior ilium provides an adequate volume of bone for many reconstructive procedures requiring grafting. A variety of techniques have been devised to reduce morbidity associated with harvesting bone from the anterior ilium. The most commonly employed and least complex technique is to harvest a corticocancellous block through either a medial or lateral approach to the anterior ilium. Utilizing the anterior ilium allows the graft harvest to be performed simultaneously with the preparation of the recipient site, thereby reducing operative and anaesthetic time. The most frequently cited complications of iliac bone harvesting are gait disturbance, post surgical pain, excessive blood loss, and paresthesia. A 2% incidence of permanent sensory disturbance within the dermatomal distribution of the lateral femoral cutaneous nerve has been reported.

MATERIAL AND METHODS

It was a descriptive study conducted upon 50 patients suffering from saddle deformity of nasal dorsum in the department of ENT Allied Hospital Faisalabad from Jan 2007 to Dec 2011. The patients were admitted and detailed history, clinical examination, routine investigations and special investigations including photography were carried out. Standered Proforma was prepared dually filled for each patient. Only those patients were included in study who were suffering from saddle deformity of nasal dorsum in which autologus iliac crest bone graft was used and were available for follow up and those patients in which autologus iliac crest graft was not used for augmentation of nasal bridge were excluded from study. The follow up of cases was carried out from 6 months to 36 months. All the patients were operated for augmentation rhinoplasty using autologus iliac crest bone graft.

RESULTS

Total 50 patients suffering from saddle deformity of nose 30 maleps (60%) and 20 females (40%) between 16 years to 50 years of age. The majority of patients (70%) were from 3rd decade of life. The duration of deformity in majority (60%)of patients was with in 2 years. In all the patients indication for augmentation rhinoplasty was cosmetic. In all patients autologus iliac crest bone graft was used. The etiological factor for saddle deformity in majority of cases (50%) was trauma. The donor site morbidity (pain and haematoma) was 16% as compare to other complications. Overall success rate was 98%. Revision surgery was not done in any case.

Table-1
Duration of deformity at the time of presentation n= 50

No	Duration year	No of Patients	Percentage
1	0 – 2 Y	30	60%
2	3 – 5 Y	10	20%
3	6 – 8 Y	05	10%
4	> 8 Y	05	10%
5	Total	50	100%

Table-2
Indications for augmentation rhinoplasty n = 50

No	Disease	No of Patients	Percentage
1	Cosmetic	50	100%
2	Nasal obstruction	00	00%
3	Total	50	100%

Table-3
Nature of autologus grafts used for augmentation rhinoplasty. n = 50

No	Graft nature	No of Patients	Percentage
1	Iliac crest bone	50	100%
2	Total	50	100%

Table-4
Etiology of saddle deformity in patients n = 50

No	Etiology	No of Patients	Percentage
1	Trauma	25	50%
2	Infection	10	20%
3	Familial / congenital	03	06%
4	Sub Mucus Resection	12	24%
5	Total	50	100%

Table-5
Complications associated with autologus iliac crest bone graft in augmentation rhinoplasty n = 50

No	Complications	No of Patients	Percentage
1	Resorption of graft (bone)	00	00%
2	Infection	00	00%
3	Donor site morbidity	08	16%
4	Margin show	01	02%
5	Graft extrusion	00	00%

DISCUSSION

Autogenous grafts offer advantages over alloplasts in that they do not elicit immune response in the recipient site this causes lower rate of infection, tissue reaction and extrusion of the implant[10]. The results of autologous bone grafting are more predictable than the use of xenografts, cadaveric allografts, or synthetic bone substitutes because autologous bone grafts provide osteoinductive and osteoconductive properties, are not immunogenic, and are usually well incorporated into the graft site[11]. 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 grafts more over it is also associated with donor site morbidity[12]. Bone grafting from the iliac crest is a relatively benign procedure in terms of patient satisfaction, and the most significant morbidity is pain[13,14].

The study conducted by Schwartz CE et al shows Chronic iliac crest bone graft harvest site pain and discomfort is reported by a significant percentage of patients undergoing this procedure more than three years following surgery but this was not reported by our patients[15]. In our study there was no absorption of bone graft, extrusion or infection during the follow up period which is also shown by the study conducted by Ceil et al[16,17]. A fracture of the iliac wing after graft harvesting from the anterior iliac crest despite good surgical technique have been reported by the studies conducted by Zermatten P et al[18] and Ovalioglu AO et al [19] but this complication was not encountered in our stydy. In our study we harvested the anterior iliac crest bone graft in all cases because it is associated with a significantly lower risk of postoperative complications. On the basis of the results of our study, we recommend that iliac crest bone graft be harvested anteriorly whenever possible where as posterior iliac crest bone graft was recommended by the Elke Ahlmann et al [20,21]. The study conducted by NA Ebraheim et al shows that the region around the iliac tubercle is suitable for harvesting bicortical or tricortical bone graft [22]. The study conducted by Sarukawa and colleagues Y, Harrii the success and failure rate of autogenous iliac crest bone graft in augmentation rhinoplasty was 90% and 10% respectively[23]. The study conducted by Karacaoglan, Uysal OA the success rate of autogenous iliac crest bone graft in augmentation rhinoplasty was 100% [24]. In an other 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% respectively[25]. In this study success and failure rate of autogenous iliac crest bone graft in augmentation rhinoplasty was 98% and 02% respectively.

CONCLUSION

The autologus iliac crest bone graft has excellent outcome in augmentation rhinoplasty with minimal complications and it is highly suitable for those cases in which there is severe degree of nasal dorsum saddling moreover the blame of bone resorption in case of autologus iliac crest bone graft has not been proven in our study.

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