

Original Research Article

Efficacy of diced cartilage graft in dorsal augmentation rhinoplasty and comparison with solid block cartilage

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ABSTRACT

Background: The aim of the study is to compare the results of dorsal augmentation rhinoplasty using diced cartilage graft wrapped in temporalis fascia and bare, solid block of cartilage.

Methods: This is a prospective study of a group of 25 patients who presented to ENT OPD from January 2011 to January 2016 with saddle nose deformity. All the patients underwent external septorhinoplasty with dorsal augmentation using either diced cartilage wrapped in temporalis fascia or solid piece of cartilage harvested from septum or concha.

Results: The patients were followed up for 18 months post-operatively and the results were recorded in terms of patient's satisfaction. Complications, if any were also recorded.

Conclusions: Comparison between the two groups yielded equal success rate with no evidence of graft resorption, infection or extrusion in either of the group.

Keywords: Rhinoplasty, Dorsal augmentation, Diced cartilage, Saddle nose

INTRODUCTION

We cannot overemphasize the importance of facial aesthetics in the present era. Rhinoplasty is the most frequent surgery resorted to enhance one's facial features. Celebrities go under the knife for a perfect nose whereas a common man resorts to it in event of trauma or birth defect. The most common aetiology for saddle nose are iatrogenic causes.¹ Rarely do we come across cases of nasal deformity secondary to infection or granulomatous diseases.

Aim

This study showcases the efficacy of diced cartilage in dorsal augmentation rhinoplasty in our institution. We have compared the results of diced cartilage with that of non-diced solid piece of cartilage. The common

complications that we have encountered have also been mentioned.

METHODS

This is a case series of 25 patients who presented to us in ENT OPD of our Medical College and hospital with varying degree of saddle nose from January 2011 to January 2016. The patients underwent septorhinoplasty by external approach with dorsal augmentation using either conchal or septal cartilage graft. Diced cartilage was used in 12 patients and non-diced cartilage was used in 13 patients. Septal cartilage alone was used in patients where it was sufficient. In cases where saddle nose was acquired postseptoplasty and there was a resultant deficiency of septal cartilage, conchal cartilage was harvested by anterior approach. In cases where diced cartilage was used, temporalis fascia was harvested and

desiccated and it was rolled over an insulin syringe which was filled with the diced cartilage. The ends of the rolled over fascia was sutured to make a bag into which the diced cartilage is filled. This assembly was placed over the dorsum which was exposed by external rhinoplasty with seagull's incision. It was secured with sutures to prevent displacement. The seagull's incision was sutured with 6-0 Vicryl. The patients were followed up for a period of 18 months postoperatively. The results were termed as satisfactory if there was no saddle the follow-up period (Figure 1). A two sample t-test was used as statistical tool in this study.



Figure 1: Harvesting the temporalis fascia, external approach rhinoplasty, making a scaffold out of the fascia and filling it with diced cartilage.

RESULTS

23 out of the 25 patients had prolonged supratip swelling following surgery. None of the patients had resorption

Table 1: Showing comparison of results in both the groups.

Results	Diced cartilage group (12) (%)	Solid block group (13) (%)
Graft resorption	nil	nil
Graft migration	nil	nil
Hypertrophied scar	nil	1 (7.7)
Prolonged Supra-tip swelling	11 (92)	12 (92)
Seamlessness of the graft achieved in	12 (100)	11 (85)
Patients requiring lateral osteotomy during the surgery	7 (58)	9 (69)
Nasal obstruction	nil	nil
Donor site morbidity	nil	nil

and secondary saddling following surgery (Table 1). Both the groups showed equal success rates in terms of graft uptake, longevity. There were 2 patients in the solid block group with minor irregularities on palpation but not visible. The diced cartilage group had all patients with graft blending seamlessly. None of the cases showed graft migration. However, there were minor discrepancies noted in the adjuvant procedures like lateral osteotomies done in cases where there was broad dorsum which was not adequately achieved in 2 such cases one in each group. All the patients were fairly satisfied with the postoperative results in appearance and relief of nasal obstruction. There was no donor site morbidity in any of the cases. One patient in the solid cartilage block group had a hypertrophied scar at the site of suture (Figure 2, Figure 3). The statistical tool used was a two sample t-test.



Figure 2: Preoperative and postoperative photograph of patients of diced cartilage in fascia group.



Figure 3: Preoperative and postoperative photograph of patient of solid cartilage block group.

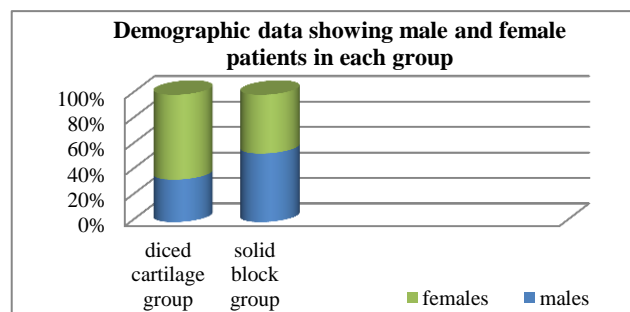


Figure 4: Percentage of male and female patients in each group.

DISCUSSION

Autologous cartilage graft is the most preferred graft material used in rhinoplasty. Cartilage grafts are preferred for minimal to moderate saddle whereas bone grafts are preferred for major saddle. Cartilage graft gives a natural feel to the nose and are resistant to infection and resorption as opposed to bone graft. Cartilage graft are easy to contour and can be placed directly under the skin in cases with deficient subcutaneous soft tissue particularly in posttraumatic and iatrogenic cases. Biocompatibility issues, infection and extrusion of alloplastic grafts like Gore-Tex has been observed by some authors.² Use of diced cartilage in reconstructive surgery was first described by Peer in 1943.³ It is useful in cases where a single solid piece of cartilage is not available such as in postseptoplasty cases or in cases where conchal cartilage alone is not sufficient. The diced cartilage can be wrapped in autologous or alloplastic grafts to hold it together and also blend seamlessly. It offers greater flexibility as a graft. Surgicel wrapped diced cartilage, also termed as “Turkish delight” has been used by Erol in a series of 2000 patients and by Daniel and Calvert in their series of 22 patients.^{4,5} The later reported their experience with surgicel wrapped diced cartilage as unsuccessful as in almost all the cases there was graft resorption and failure. Later Daniel had a successful series of 79 patients with diced cartilage wrapped in fascia graft.⁶ Comparison of diced cartilage in fascial sleeve with solid cartilage block has been done earlier and a study has reported solid block of cartilage better than diced cartilage. Due to the inflammatory response and fibrosis there is subsequent resorption of the diced cartilage.⁷ Firat et al have reported better results with use of bare cartilage than wrapping it with fascia.⁸ Excellent results have been reported with use of multi-fragmented cartilage graft wrapped in fascia in another series.⁹ However, in this study we have equal success rates in both group in terms of graft uptake and longevity whereas seamlessness is better in the diced cartilage group. Bullocks et al used autologous tissue glue (obtained from platelet rich and platelet poor plasma) as a scaffold for the diced cartilage graft in 68 patients and found this method to be safe and reliable for augmentation.¹⁰ Diced cartilage glue graft (Tisseel, a human thrombin and fibrinogen with bovine aprotinin as fibrinolysis inhibitor) has been tried by Tasman et al and a study of its morphologic longevity has been studied using ultrasound in a series of 28 patients and the results are encouraging in terms of reduced operating time and graft stability.¹¹

CONCLUSION

Autologous cartilage graft is ideal graft material in dorsal augmentation rhinoplasty. We have achieved good results with diced as well as solid piece of cartilage in terms of biocompatibility, longevity of the graft and patient’s satisfaction with their appearance postoperatively.

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Ethical approval: Not required

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