

# Conchal cartilage verses silicon implant in augmentation rhinoplasty: a case study

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## Abstract

Corrective nasal surgery is perhaps one of the most common types of cosmetic procedures performed today. Most of the times, rhinoplasty is performed because of the patient's desire to improve the facial appearance and personality. Aims of our study are to study the cosmetic and functional outcome of Conchal Cartilage and Silicon implant in Augmentation Rhinoplasty. And to study the post-operative immediate, delayed complication in Conchal and Silicon implant in Augmentation Rhinoplasty.

**Keywords:** Chonchal cartilage, silicon Implant, Rhinoplasty.

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## INTRODUCTION

Corrective nasal surgery is perhaps one of the most common types of cosmetic procedures performed today. Most of the times, rhinoplasty is performed because of the patient's desire to improve the facial appearance and personality. Some patients are motivated by career and even matrimonial considerations. Rhinoplasty is also indicated for a disfigured nose due to traumatic, congenital and racial factors. Functional nasal problems may also necessitate simultaneously realignment of the external nasal structures along with septoplasty, The precise assessment of the nasal septal deformities of the turbinate's to assess the nasal airways is mandatory to take care of the functional aspect along with the aesthetic aspect of the nose. It is not only the nose but the entire facial features should be evaluated. Sometimes chin also

needs mentoplasty along with nasal correction and improve the entire facial profile. Few patients asking for corrective rhinoplasty for minor nasal deformities may have underlying psychological derangements. These patients need psychological evaluation and counseling. Males are more difficult patients, psychologically for any cosmetic surgery. Thorough knowledge of anatomy, pathology and physiology of the nose, enables the optimal correction and reconstruction. One must understand the reaction of the tissues to surgery, and how to handle them during an operation. Utmost consideration is given to the preservation of important structures, prevention of hemorrhage and infection. Never guarantee to the patients miraculous results after rhinoplasty. Surgeon must understand his own capabilities and surgical limits. Discuss with; patients all the aspects of rhinoplasty including postoperative swelling and healing pattern. The augmentation rhinoplasty refers to elevating or augmenting the saddle nose deformity with or without the procedures to ensure proper alignment contouring and cosmetically acceptable nose. Autogenous cartilage graft has been one of the tissues of choice of this procedure. Many designer bio compatible medical alloplast are not able to stand the test of time, because of the host rejection, higher incidence of infection subcutaneous trauma and patient dissatisfaction due to pressure sensation. Hared implants tend to produce asymmetric

highlights. Infections or rejections with the consequent removal promote further scarring and disfigurement.

### AIMS AND OBJECTIVE

1. To study the cosmetic and functional outcome of Conchal Cartilage and Silicon implant in Augmentation Rhinoplasty.
2. To study the post-operative immediate, delayed complication in Conchal and Silicon implant in Augmentation Rhinoplasty.

### STUDY MATERIAL AND METHODS

1. Study Design : Retrospective
2. Sample size : 60 Cases
3. Inclusion Criteria : All patients with saddle nose deformity.

Patient of age

between 18 to 60 yrs.

Patient of both sexes are included.

4. Exclusion Criteria : Patient who are not willing to give consent.

Patients have

TB, Syphilis, HIV, leprosy

5. Study Procedure:

This study is RETROSPECTIVE OBSERVATIONAL study.

- All patients operated in ENT department in KEMH, Parel, Mumbai.
  - The study includes 60 patients with saddle nose deformity.
  - 30 using corneal cartilage augmentation rhinoplasty and 30 using silicone implants augmentation rhinoplasty.
  - Augmentation rhinoplasty was carried out either with Conchal cartilage or with silicone implant.
  - Post operative recovery period 6 week. Patient was admitted for 1 week at least.
  - Patients were followed up periodically after week and 1 month.
6. Study Population: Patient operated with augmentation rhinoplasty in Dept. of ENT KEM hospital from 2009 to 2012.
  7. Data Recording: All information recorded in predesigned case record.
  8. Data Analysis: All the data collected will be analyzed. As the outcome measured is qualitative (categorical), descriptive statistics and chi square test will be used. Fresh cartilage auto graft is does an ideal material either from auricle or nasal septum or rib. The auricle cartilage bio comparable free from absorption and warping and not liable for rejection. Acceptance by the patient to use material from his own donor site is

additional advantage . Another implant we are using in our study is Alloplast, silicone. Silicone is solid, non-porous implant which is not incorporated into surrounding tissues. So we are studying the post-operative immediate, delayed complications in conchal and silicone implant. Also the cosmetic and functional outcome.

### RESULTS

- Total 60 cases of saddle nose deformity operate for augmentation rhinoplasties were included in this study.
- One patient out of 60 cases was having associate tip deformity.
- 30 of which were undergone conchal cartilage augmentation rhinoplasty and rest 30 were undergone silicon augmentation rhinoplasty.
- 50% were male and 50% were female.
- In conchal cartilage augmentation rhinoplasty 60% were male and 40% were female.
- In silicon augmentation rhinoplasty 40% were male and 60% were female.
- Most common age was 25 yr and with range from 18-35yr of age.
- Etiological factor was traumatic in 24 patients and congenital deformity in 36 patients.
- Post operative recovery was good in all patients.
- There were no anesthetic complications in any of these patients.
- There was no post operative bleeding and infection in any of these patients.
- Immediate complications seen were breathing problems in 6%, contact dermatitis in 4%, Periorbital echymosis in 4% of all these 60 patients .Periorbital echymosis was in association with osteotomies.
- In conchal cartilage augmentation patient's immediate complications seen were breathing problems in 3%, contact dermatitis in 2%, and Periorbital echymosis in 2% of the 30 patients.
- In silicon implant augmentation immediate complications seen were breathing problems in 3%, contact dermatitis in 2%, and Periorbital echymosis in 2% of the 30 patients.
- Delayed complications seen were a skin change that is rigid skin and extrusion of implant.
- Skin changes in conchal cartilage augmentation were good.
- Post operative skin changes in cases of silicon augmentation rhinoplasty were rigid in 40% cases.

- Extrusion of implant was seen in one case of silicone implant augmentation rhinoplasty
- There were no any infections in patients post operatively.
- Two patients required osteotomies along with augmentation rhinoplasty.
- One patient required tip correction along with augmentation rhinoplasty.

## DISCUSSION

Septorhinoplasty is a surgical technique that requires a deep understanding of the anatomy of the nasal pyramid and its possible variants. However, we must take into account the long-term effects that may arise from the techniques used on the elements of the nasal pyramid. For these reasons, a long follow-up of patients is of great importance for the detection of potential complications. When evaluating the results of a septorhinoplasty, it is important to note that its goal is not to achieve a given surgical outcome, but the aesthetic and functional satisfaction of the patient. Consequently, the operation may meet the expectations of patient but not of the surgeon, and vice versa. The reconstruction of the nasal dorsum requires knowledge of different surgical techniques and resources, as well as the use of different types of implants, depending on the needs of each patient. In general, it is possible to classify the grafts used in ASR into 3 groups according to their nature: autologous (mainly cartilage or bone), homologous and alloplastic or synthetic. The ideal graft would be one combining biocompatibility, low rate of complications and long-term stable results, although this only exists as a concept for snow. Sixty patients with saddle nose deformity which were operated for augmentation rhinoplasty are selected for this study. Thirty were undergone conchal cartilage augmentation and thirty were undergone silicon augmentation rhinoplasty. Augmentation rhinoplasty was carried out by standard rhinoplasty techniques under general anesthesia. The conchal cartilage considered near ideal implant for special requirement of nasal tissues proved to be resilient useful for firm supporting and contouring. There is ample literature to support the use of cartilage grafts with long-term success. Tardy *et al*, a retrospective study of 2000 grafts performed over the course of 17 years concluded that complications were infrequent and often the result of surgical errors in graft contouring, or inaccurate and imprecise pocket preparation, and not due to the properties of the graft itself. Z. To sun *et al* reported that Cartilage grafts have great value in augmentation rhinoplasty. For most surgeons, an autogenous cartilage graft is the first choice in rhinoplasty because of its resistance to infection and resorption. On the other hand, an allogeneous cartilage

graft might be preferred over an autogenous graft to avoid additional morbidity and lengthened operating time. Allogeneous cartilage grafts not only have the advantage of averting donor site morbidity but also are resistant to infection, resembling autogenous cartilage grafts. The inherent springiness could be reduced or softened by simple cross hatching or thinning. Cartilage could be thinned by simple shaving or lamination of two layers of cartilage for abundant augmentation. The significant nasal depression was easily altered with autologous cartilage graft. The minimal metabolic sustenance survival in soft tissue pockets either placed in direct contact with bone. Alvarez-Buylla Blanco M *et al* reported that at present, autologous cartilage, and septal cartilage in particular, is the first option in ASR. If septal cartilage is not available, we always turn to grafts of conchal cartilage of one or both sides depending on the need for material Cardenas-Camarena and Guerrero reported on 930 rhinoplasties requiring cartilage grafting (64% medial crural strut, 36% tip graft, 19% dorsal) and reported 84% patient satisfaction after a mean follow-up time of 51 months, with secondary operations performed in 8% of the patients. In our study conchal cartilage augmentation patient's immediate complications seen were breathing problems in 3%, contact dermatitis in 2%, and periorbital echymosis in 2% of the 30 patients. All these complications were often the result of surgical errors in graft contouring, or inaccurate and imprecise pocket preparation, and not due to the properties of the graft itself. The complications and outcome of conchal grafting were acceptable and all patients were satisfied with the surgery results. All studies discussed above had matching results of complications and outcome as our study when conchal graft for rhinoplasty was considered. Care was taken to preserve the ultimate appearance of the ear without transgressing the antihelical fold. The immediate postoperative recovery was uneventful. Two patients required osteotomy and one case required tip correction. Anterior nasal packing removed routinely after 48 hours no troublesome epistaxis encountered. The antibiotics, anti inflammatory, anti histamine decongestant and B complex were given during the first post operative period. For two patients requiring osteotomies plaster of Paris splint applied for 3 weeks. For the rest of patients the splint applied for 2 weeks. None of the patients developed infection. Lin chuang er bi yan hou ke za zhi reported to evaluate the long-term effect of augmentation rhinoplasty with silicone. 360 patients underwent augmentation rhinoplasty with silicone. Improved "L" shaped implants were used in 343 patients. Among 360 patients, 334 cases were successful enough (92.83%). The key to the maintenance of the long-term effect is to use properly improved "L"-shaped implant, to choose a suitable tunnel,

to prevent various complications and to ask patient's opinions for implant design. Erlich MA, Parhiscar A reported that Silicone rubber has been used safely and effectively for facial augmentation for nearly 5 decades in eastern Asia. We have used silicone rubber nasal implants in primary ethnic rhinoplasty and have found consistent and long-lasting results with low complication rates. Silicone dorsal nasal augmentation in primary rhinoplasty avoids donor site morbidity and implant resorption as seen with autogenous implants. Silicone nasal implants have a low extrusion and infection rate. In the appropriate patient with proper placement, silicone nasal implant is nearly the ideal implant material. All patients were satisfied with results. JH Wang *et al* reported that Silicone implants mostly in the form of prefabricated silicone rubber remain the most commonly used materials for nasal augmentation in Asians. The present study analyzed the use of silicone sheets rather than silicone rubber for nasal dorsal augmentation rhinoplasty. Data from 27 patients who underwent dorsal augmentation with silicone sheets between April 2003 and July 2005 were retrospectively reviewed. All patients received silicone sheets to augment the nasal dorsum and/or radix. Twenty-four patients had satisfactory outcomes. One patient (3.7%) complained the implant was too visible, one experienced infection, and one experienced endonasal extrusion of the implant. All three cases were readily managed by implant removal and administration of antibiotics. Ham KS, Chung SC, Lee SH in 1983 reported that Nonporous and surrounded by a thin capsule after implantation, silicone behaves as a foreign body for the life of the implant. A major disadvantage of silicone is its notorious mobility after implantation and its propensity for extrusion if traumatized or exposed. Nevertheless, silicone has been very popular for nasal augmentation in Asian patients. Its success in this population is aided by the relatively thick skin-soft tissue envelope over the implant. Silicone graft shave given good results in primary but not in secondary rhinoplasty, where a 42% failure rate has been reported.<sup>2</sup> Ham and coworkers reviewed 1500 cases of augmentation rhinoplasty with silicone and found an 18% incidence of complications which they attributed to implant design, or unskillful operative technique.<sup>35</sup> All early complications (6.6%) occurred within 2 weeks, mostly a result of *Staphylococcus aureus* infections. The majority of the complications were skin problems, which occurred after 4 weeks (62.4%), consisting of discoloration, erythema, and overlying skin thinning. The discoloration of the skin did not improve after removal of the prosthesis. Other commonly experienced complications included malposition (8.5%) and extrusion (7.5%), with the tip being the most common site of extrusion Deva and

coworkers reported that 9.7% of 422 patients of Southeast Asian origin receiving silicone nasal implants required removal McCurdy J in 2002 concluded that the use of silicone seems to result in an unacceptably high complication and dissatisfaction rate based on large retrospective trials. Nevertheless, it infrequently used in Asia and McCurdy cites refinements in technique, the design of the implant (softer elastomer), and patient selection that may be responsible for a lower rate of complication than generally reported. In our study silicone implant augmentation immediate complications seen were breathing problems in 3%, contact dermatitis in 2%, and Periorbital echymosis in 2% of the 30 patients. One patient of silicone implant got graft rejection. Required revision surgery and then he satisfied with the outcome. In the present study delayed complications of silicon grafting were 12 cases of skin changes which were rigid in nature not requiring active intervention. All these complications were often the result of surgical errors in graft contouring, or inaccurate and imprecise pocket preparation, and not due to the properties of the graft itself. The complications and outcome of silicon grafting were acceptable and all patients were satisfied with the surgery results. All studies discussed above had matching results of complications and outcome as our study when silicon graft for rhinoplasty was considered.

## CONCLUSION

Augmentation rhinoplasty with autologous cartilage proved to be excellent material for the long lasting favourable outcome without rejection or extrusion. Augmentation rhinoplasty with silicone implant has one case of extrusion on implant. Conchal cartilage in particular was of appropriate tensile strength which could be modified as per requirement. In quantity wise comparison silicone implant could be available as per patients need. The conchal cartilage graft is cost effective for the poor patients who can't afford than the silicone implant. In case of revision surgery one can use silicone implant if there is no conchal cartilage which was used in previous surgery. It can be concluded in terms of convenience of and acceptance the conchal cartilage can be considered the near ideal material for the augmentation rhinoplasty. No surgeon would deny that if the perfect synthetic implant were available without the problems of infection or extrusion, it would be their preferred choice, thus avoiding a donor site. Synthetic materials offer real advantages in providing plentiful supply quickly and may have a place when large defects need to be corrected, but for small to moderate defects, auricular cartilage remains the better choice

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