Correction of low or saddle nasal dorsum with a composite graft of fragmented conchal cartilage fixed to the perichondrium wrapped in mastoid fascia

Correção do dorso nasal baixo ou em sela com enxerto composto de cartilagem conchal fragmentada fixa ao pericôndrio envolvidos à fáscia da mastóide

Introduction: In many cases, augmentation rhinoplasty is more difficult than reduction rhinoplasty. Solid dorsal grafts performed with costal cartilage have been widely used for dorsal augmentation; however, they are associated with high rates of revision. Thus, many authors began to use cartilage cut into cubes wrapped in fascia. The mastoid fascia, connected to the perichondrium of the auricular conchal cartilage can form a composite graft to augment the nasal dorsum, which is also a treatment option. The objective is to demonstrate the possibility of using fragmented auricular conchal cartilage fixed to its perichondrium and wrapped in mastoid fascia to form a composite graft for augmentation of the nasal dorsum. Methods: This is a retrospective study of 9 patients who underwent operation between 2012 and 2016 at the Base Hospital of the Faculty of Medicine of São José do Rio Preto, in which the nasal dorsum was augmented with fragmented conchal cartilage fixed to its perichondrium and wrapped in mastoid fascia. Results: The patients were followed up for up 6 to 48 months. They were questioned about their satisfaction with the nasal procedure and hearing sensitivity, and provided a positive evaluation of the surgeons. Conclusion: The conchal cartilage seems a highly valuable alternative graft for nasal dorsum augmentation procedures. The technique of using cartilage wrapped in mastoid fascia seems to be an advantageous alternative when compared with those using cartilage wrapped in other fasciae: it has low morbidity and complications rates and can be a great option for saddle nose treatment.

ABSTRACT

Keywords: Rhinoplasty; Nasal acquired deformities; Nasal bone; Surgery, Plastic; Nasal Cartilages.
Solid dorsal grafts performed with costal cartilage have been widely used for nasal augmentation; however, they are associated with high revision rates because of resorption and visible shape changes\(^6\)\(^-\)\(^8\). Therefore, many surgeons started to use cartilage cut into cubes and wrapped in fascia.

The mastoid fascia is composed of two layers, superficial and deep\(^9\). We used the superficial fascia, which corresponds to the superficial temporal fascia. This is connected to the perichondrium of the auricular conchal cartilage, which is fixed to the conchal cartilage. A composite graft was used to naturally join these component structures into a single unit.

**OBJECTIVE**

The objective was to demonstrate the possibility of using fragmented auricular conchal cartilage fixed to its perichondrium and wrapped in the mastoid fascia, naturally joined in a single unit to form a composite graft augmenting the nasal dorsum and eliminating a new distant surgical site.
METHODS

This was a new proposal for nasal dorsal augmentation that was used in 9 patients operated between 2012 and 2016 at the Base Hospital of the Faculty of Medicine of São José do Rio Preto, SP, where nasal dorsum was augmented with a fragmented conchal cartilage fixed to its perichondrium and wrapped in the mastoid fascia. Eight patients were female, and only one was male. They all had a low or saddle nose as an ethnic or genetic trait, surgically derived, or even induced by traumatic sequelae. The proposed surgery was performed through an “open” technique.

The study was approved by the Ethics Research Committee of the Faculty of Medicine of São José do Rio Preto, under protocol No. 60203316.1.0000.5415.

Surgical technique

A “V”-shaped incision was made in the transition between the triangular and quadrangular forms of the columella to perform an open rhinoplasty technique. Nasal subunits were treated regardless of the dorsum, as the use of grafts or osteotomies.

After the end of this rhinoplasty phase and preparation of the space to augment the dorsum, the auricular conchal cartilage was captured along with its perichondrium and mastoid fascia. A spindle of retroauricular skin was removed without removing the perichondrium. The upper portion of the graft to be obtained (lateral side of the nasal concha; Figure 1) was cut. This was then removed from the skin of the anterior portion of the concha until the desired width and length of the graft was attained, and the lower part of the graft was entirely incised, anteroposteriorly, by preserving the perichondrium (Figure 2).

The graft was folded, and the mastoid fascia was detached from front to back until reaching the desired length and width (Figure 3). The fascia was incised and then fixed to the perichondrium. The cartilage was fragmented with a scalpel, maintaining the connection of the three structures. Subsequently, the cartilage was wrapped in the fascia and fixed to it with 6.0 mononylon wire, making these structures look like a cigar (Figure 4).

Once prepared, this composite graft (fascia, perichondrium, and cartilage) was positioned on the nasal dorsum (Figure 5).

The detached area should be appropriate to the volume and shape of the graft, and does not require its fixation. However, in cases where the dorsum is larger than the graft, the latter should be fixed to the dorsum or sutured. The plaster or moldable bandages were left for 2 weeks.
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RESULTS

The results obtained were of good aesthetic quality in all the patients. No complication occurred regardless of the infection, exposure, or graft migration. The patients were monitored for a period ranging from 6 months to 4 years, and were asked regarding their satisfaction with the aesthetic results obtained and hearing sensitivity.

The nine patients were satisfied (3) or happy (6) with the nasal procedure. The patients had no aesthetic complaints regarding the donor area of the graft, and 3 patients reported paresthesia in the posterior region of the ear in the first few postoperative months. Those with greater evolution who were monitored for a longer period did not report paresthesia eventually (Figures 6-9).
DISCUSSION

Conchal cartilage is a valuable alternative graft for nasal dorsal augmentation procedures, as demonstrated in this and previous studies. Complication rates are low, and the results are satisfactory. The cartilage is flexible but resistant, and its natural contours, along with its fragmenting procedure, allow an easy modeling.

This cartilage wrapped in the mastoid fascia seems to be an advantageous alternative when compared with using other fasciae (e.g., the deep temporal fascia), as the latter require an additional donor site. In relation to using the costal cartilage, the advantage relies on the lower morbidity and complication risks of its capturing procedure.

The use of this technique, maintaining the conchal cartilage fixed to its perichondrium and fascia, allows the graft to maintain a more stable length and thickness owing to the low movement of the fragments. The fact that they are naturally bound allows a better integration and vascularization of the components, which does not occur in grafts where parts are connected independently from each other.

CONCLUSION

Augmentation of the nasal dorsum in saddle nose with fragmented auricular conchal cartilage fixed to its perichondrium and wrapped in the superficial fascia of the mastoid is a procedure of easy execution and low morbidity, capturing the graft in a single surgical site of low risk, that provided aesthetic satisfaction in all the cases presented.

For a more positive conclusion, a greater number of operated cases would be required. However, the presented technique is an alternative in situations like these. The results obtained so far compel us to use the technique and search for improvements, as well continue research on the technique.

COLLABORATIONS

AMR Analysis and/or interpretation of data; statistical analyses; conception and design of the study; completion of surgeries and/or experiments; writing the manuscript or critical review of its contents.

ARB Analysis and/or interpretation of data; final approval of the manuscript; conception and design of the study; completion of surgeries and/or experiments; writing the manuscript or critical review of its contents.

CGS Conception and design of the study; completion of surgeries and/or experiments; writing the manuscript or critical review of its contents.
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MSF  Completion of surgeries and/or experiments; writing the manuscript or critical review of its contents.
CMRJ  Conception and design of the study; completion of surgeries and/or experiments.
DHL  Completion of surgeries and/or experiments; writing the manuscript or critical review of its contents.

REFERENCES


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