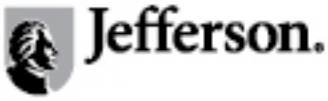

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Application of Tasman technique for congenital absence of nasal cartilage: A case report

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Introduction

Congenital absence of nasal cartilage is a rare phenomenon that can take place in isolation or as part of a syndrome, including Apert, Fraser, and Binder Syndromes. Embryologically, the nose begins its development during the 4th week of gestation with the migration of the nasal placodes. Specifically, the nasal septum begins its development during week 5, however, it is not until the 10th week that the primitive tissues begin their differentiation into cartilage and bone. The absence of these structures can have a devastating effect on both aesthetic and function of the nose.

The Tasman technique has been described previously and successfully applied to rhinoplasties that require substantial dorsum augmentation [1,2]. The procedure involves creating a dorsal onlay graft using diced cartilage and tissue sealant. Although sparse, current literature describing the technique does report satisfactory cosmetic results and low resorption rates up to 9 months postoperatively [2].

This technique can be customized in patients requiring both small and large dorsal reconstructions, such as saddle-nose deformity. In this case report, we describe employing the Tasman technique to reconstruct the nose of a patient with congenital absence of nasal cartilages.

Case report

This is a 17-year-old female who presented to the clinic for evaluation of her nasal deformity. She expressed difficulty with nasal breathing. She had no significant medical or surgical history. She denied medications and allergies. She had a short history of smoking tobacco and marijuana but denied alcohol use. Of interest, the patient did report that her biological mother used both alcohol and illicit drugs during the time of pregnancy.

Fig. 1 shows the patient preoperatively. Preoperative CT of the sinuses revealed absent nasal cartilages, hypoplastic nasal bones, and a reduced nasal aperture. Her maxillary sinuses were well developed and well aerated. The patient was taken to the operating room for functional rhinoplasty with nasal dorsum repair via the Tasman technique.

IRB approval for this study was waived on the basis of this being a case report with less than 2 patients.

On the day of surgery, the patient was draped and sterilized in normal fashion and bilateral marginal and transcolumellar incisions were created. Raising the skin-soft tissue envelope revealed underdeveloped lower lateral cartilages and complete absence of upper lateral cartilages. The nasal bones also appeared underdeveloped. The anterior septal angle could not be appreciated upon midline dissection. Bilateral mucosal flaps were raised and dissected posteriorly to the bony septum, which was present. There was complete absence of cartilaginous septum.

We then proceeded with the nasal reconstruction portion of the case. Two separate costochondral cadaveric cartilage grafts were selected and soaked in gentamicin solution. These were then carved using a dermatome blade and allowed to set in order to assess for warping. Two solid struts were selected to be fashioned into an L-strut. The caudal strut was sutured into position with 3-0 PDS suture after placing a drill hole in the anterior nasal spine of the maxilla. The dorsal strut was carved so that it accepted the nasal bones and stayed in position. Caudal and dorsal struts were then carved to accept one another and approximated using 5-0 PDS suture. Soft tissue from the region where

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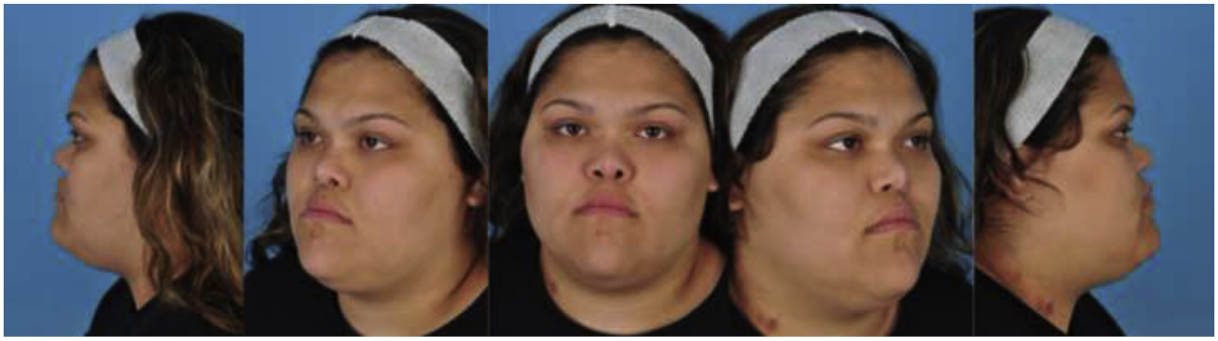

Fig. 1. Preoperative photographs.

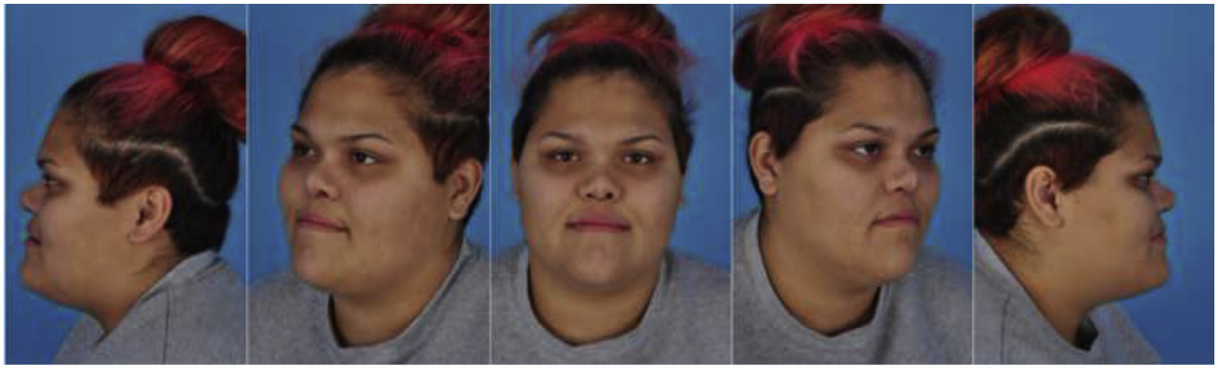

Fig. 2. Postoperative photographs, two months.

upper lateral cartilages would normally be was resuspended to the dorsal strut in an attempt to widen the internal nasal valve. After securing the L-strut, we turned to the Tasman technique to fashion our dorsal onlay graft from diced cartilage and Tisseel. A 5 cc syringe was carefully cut diagonally along its long axis with a #15 blade scalpel. Cadaveric cartilage was diced into pieces of 0.5 mm or less. They were placed in the modified syringe along with Tisseel fibrin sealant (Baxter Healthcare Corp., Deerfield, IL) and left to formulate. It was then used as an onlay graft along the dorsum from the radix to the nasal tip. Any remaining cadaveric cartilage was crushed and used to reconstruct cartilaginous septum. A medial crura fixation stitch was incorporated into the caudal strut in order to resupport the lower lateral cartilages and provide adequate tip support. Mucosal flaps were reapproximated and the nasal skin was redrapped without difficulty. All incisions were closed in normal fashion without need for local tissue rearrangement or flaps.

Discussion

Congenital absence of nasal cartilage is a rare entity, but one that has a profound impact on both function and cosmesis of the nose. The goal of this case report is to outline the novel use of the previously described Tasman technique for nasal reconstruction in a patient with congenital absence of nasal cartilages.

The Tasman technique was developed out of need for a stable, robust dorsal onlay graft that would avoid migration and warping as seen with costal cartilage, as well as resorption. The current literature available on this technique describe its successful application for large dorsal defects. There are no reports in the literature that describe applying this technique to patients with congenital absence of nasal cartilages. Our patient was followed for two months postoperatively, and in that time reported improvement to her nasal breathing and displayed no evidence of graft resorption or migration (Fig. 2). Additional follow ups will be necessary to determine the graft's long-term integrity.

Conclusion

Congenital absence of nasal cartilage is a rare phenomenon, presenting challenges for both the patient and the reconstructive surgeon. In this article, we describe the challenges associated with undertaking such a reconstruction. Specifically, we describe successful implementation of fragmented cadaveric rib graft and Tissel to create a custom dorsal onlay graft.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.xocr.2019.01.006.

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