Aortic Homograft for Pharyngeal Closure after Total Laryngectomy: A Case Report of a New Method

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Introduction

Wound breakdown and fistula formation subsequent to total laryngectomy in radiation failure scenarios are commonplace. A variety of reconstructive strategies have been developed to avert this complication with varying degrees of success and complexity. We encountered analogous wound healing issues during partial laryngectomy procedures, which were successfully remedied using cadaveric aortic homograft for large caliber cancer resection airway defects. We therefore sought to examine the value of homograft aorta for reconstructing the pharynx in an irradiated field.

Materials

Study Design:
Case Report

Methods:

A total laryngectomy was performed on a 69yo male patient who had failed prior radiotherapy. Without using immunosuppression, a ~2.5cm x 3.5cm patch of homograft aorta was used to reconstruct the anterior wall of the neopharynx.

Figure 1: Commercially-available cadaveric cryopreserved aortic homograft (LifeNet Health, Virginia Beach, VA), shown with intraluminal view prior to valve removal.

Typically, after excising the valve apparatus from the homograft, the ascending aortic segment is used to create a convex onlay patch tailored to fit the surgical defect. Note the normal intrinsic curves of the aortic homograft, which were used to ensure the intraluminal convexity to enhance the pharyngeal caliber.

Vascular supply to the homograft comes from local muscle flap (i.e. sternocleidomastoid) rotation.

Discussion

Postoperative course for this patient was uneventful and he underwent a modified barium swallow study on POD # 10 which showed no evidence of fistula. The salivary bypass tube was removed in the office 1 month postoperatively. To date (8 months), the patient has no dysphagia to liquids or solids. Aortic homograft provides not only a novel approach to reconstruction of the neopharynx, but may also have potential for pharyngeal stenosis reconstruction.

Conclusions

Effective reconstruction of the neopharynx with cadaveric homograft aorta after total laryngectomy was achieved in a post radiation failure patient.

• The success of this approach is based on the following:
  • ease of handling of the soft tissue graft substrate
  • lack of immunogenicity
  • the practical incorporation of the aortic homograft into local soft tissues.

• The encouraging result was similar to our broader experience in laryngotracheal airway reconstruction.

• The neopharyngeal reconstruction is technically simple and within the skills of any head and neck surgeon.

• We present this isolated case due to the potential value of this approach for a variety of aerodigestive tract scenarios and the limited number of total laryngectomy procedures in our practice.

References

