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CASE REPORT

Stridor due to Bilateral Implant Migration 5 Years after Bilateral Medialization Laryngoplasty

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ABSTRACT

Implants like silastic, titanium, Gore-Tex and autologous cartilage have been used for type I laryngoplasty. Though rare, implant extrusion or migration, wound infection and airway compromise are some of the complications of medialization laryngoplasty surgery irrespective of the implant used. We document a rare case of bilateral implant migration in a patient who had undergone bilateral medialization laryngoplasty 5 years ago. Gore-Tex extrusion resulted in stridor 5 years after the initial surgery. Endoscopic removal of the extruded implant is advised, if feasible, without the need for tracheostomy or transcervical approach. An update on current knowledge and management of implant extrusion or migration is discussed.

Keywords: Bilateral medialization laryngoplasty, Thyroplasty, Gore-Tex, Implant migration, Implant extrusion, Stridor.

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INTRODUCTION

Medialization laryngoplasty phonosurgeries have emerged as a dominant surgical intervention for paralytic and paretic dysphonia. Various modifications in surgical techniques, first popularized by Isshiki in 1975, have taken place over the years. The indications and techniques of bilateral medialization laryngoplasty have continued to evolve since Kauffman described it for vocal fold bowing in 1989. Presbylaryngis, bilateral vocal fold paresis, sulcus vocalis, unilateral vocal fold paralysis with contralateral bowing are some of the indications of bilateral medialization laryngoplasty. McCulloch and Hoffman described the first vocal fold medialization by Gore-Tex (expanded polytetrafluoroethylene) in 1998.[1] Gore-Tex is a biocompatible implant material which has gained popularity as it is adjustable within a small cartilaginous window.[1] Complications like implant migration and extrusion, wound infection and airway compromise do occasionally occur following thyroplasties.[2-6] Airway obstruction is uncommon yet life-threatening when it occurs, and one death has been reported.[7] Hematoma and implant extrusion can lead to airway obstruction preoperatively.

CASE REPORT

A 49-year-old female patient was referred to our hospital with chief complaints of stridor since 5 days, dyspnea on exertion since 3 months and hoarseness of voice since last 3 years. Patient had undergone bilateral medialization laryngoplasty for vocal fold bowing 5 years back at another center. The surgical notes suggested right silastic medialization and left Gore-Tex medialization. Further details were not available. Though postoperatively the voice improved, there was deterioration within 2 years. Videostroboscopy revealed bilateral sulcus vocalis in mobile vocal folds. There were florid granulations in subglottic area narrowing the airway. The patient was admitted and intravenous steroids and steroid nebulization was started. An urgent computed tomography (CT) scan with contrast revealed both the implants at the level of cricoid cartilage. The left-sided Gore-Tex implant was 2 cm below the true vocal fold and right-sided silastic implant was 2.3 cm below the vocal folds (Fig. 1). The patient was intubated with a

Fig. 1: CT scan showing bosselated appearance of Gore-Tex on the right side at the subglottic level

Fig. 2: Subglottic granulations with the tip of extruded Gore-Tex

Fig. 3: Extruded Gore-Tex removed endoscopically

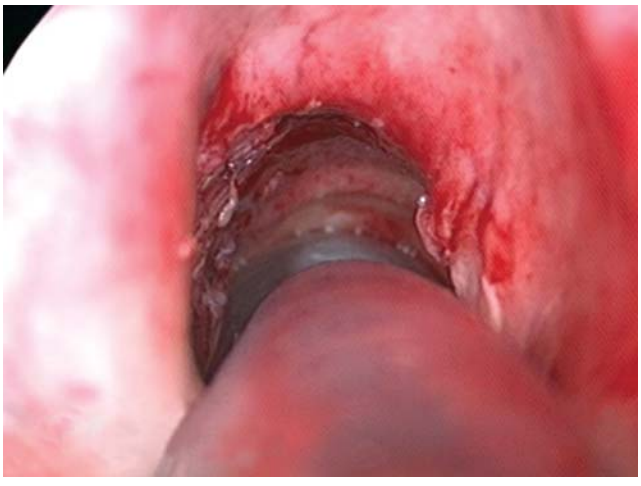

Fig. 4: Airway after removing Gore-Tex and granulations

five number Mallinckrodt laser safe metal endotracheal tube. A small tip of the extruded Gore-Tex was visible between the granulations (Fig. 2) and was gently removed endoscopically (Fig. 3). The granulations were excised with the CO_2 laser and hemostasis was achieved. Mitomycin C, 2 mg/ml was applied at the granulation site for 5 minutes. On the right side, the mucosa appeared intact and the airway had dramatically improved (Fig. 4). Thus, a decision was made to avoid an external open approach for removing the migrated silastic. The patient had an uneventful post-operative recovery.

DISCUSSION

Laryngeal framework surgery has become a preferred method of surgical intervention for glottal incompetence. Payr was the first to report medialization of vocal fold in 1915.[8] The modern laryngoplasty surgery has evolved from the extensive work done by Isshiki in 1975.[9] The indications of laryngeal framework surgery have extended to the management of atrophy, sulcus vocalis, defects from trauma or cancer resection.[10,11] Along with advances in surgical techniques, the implants used have also evolved. Silastic, titanium, Gore-Tex and autologous cartilages all have been used for medialization laryngoplasty. The most commonly used are silastic and Gore-Tex implants. Gore-Tex is malleable, requires a small thyroplasty window and is considered to be reversible and revisable.[12-14] However, complications with Gore-Tex do occur most commonly due to excessive elevation of the inner perichondrial pocket. This is responsible for implant migration, which could be a delayed complication also. Great care must be taken during blunt dissection and placement of Gore-Tex into soft tissue defects, because recalcitrant granulation develops, if there is transepithelial exposure.[14,15]

Ustundag et al conducted a study on rabbits for medialization laryngoplasty comparing silastic, Gore-Tex and human cartilages for medialization laryngoplasty.[16] The allergic reactions and inflammatory responses were minimal for silastic, followed by Gore-Tex and lastly for cartilages. He also suggested Gore-Tex's potential for migration within paraglottic space either acutely or overtime. A fibrous capsule barrier which forms between host tissue and implant material was more for silicone as compared to Gore-Tex. Ability of the implant to live in the host for a long period without being reabsorbed depends on this fibrous barrier. It also determines the ability of the implant material to be removed or replaced.[17] Though Gore-Tex is considered highly biocompatible and is also extensively used in vascular and plastic augmentation surgeries, risk of granulomatous reaction remains unpredictable and if possible should not be used in young adults and children.

Gore-Tex extrusion has been discussed in the literature, though very few authors have reported it. Only one case have been reported by Mohanty et al[12] (n = 47), Giovanni et al[13] (n = 13) and Zeitels et al[14] (n = 142). Our was a rare case of bilateral migration of implants in a case of bilateral medialization laryngoplasty done for bowing of vocal fold causing stridor on exertion and hoarseness of voice. The migration of implants occurred 5 years after bilateral medialization laryngoplasty, thus causing airway obstruction. We could find only one case of Gore-Tex extrusion into the subglottic area, 49 months after the surgery, which was removed endoscopically.[18]

If implant extrusion is associated with an intralaryngeal mucosal violation, removal through an external neck approach results in contamination of wound and immediate reimplantation is not safe because of infection risk.[19] Such cases can be tackled safely endoscopically.

CONCLUSION

Gore-Tex is widely used as an implant for medialization laryngoplasty. Implant extrusion or migration, wound infection and airway compromise are some of the possible complications of medialization laryngoplasty surgery. Migration or extrusion of implants can occur many months or years after medialization surgery. Endoscopic removal of the extruded implant is advised, if feasible, as it avoids the need for tracheostomy or transcervical approach.

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