Use of free vascularised flaps for repair of long segment crico-tracheal stenosis

Thesis

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In

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Abstract

Key words: cricotracheal-stenosis- radial forearm free flap

Long segment cricotracheal stenosis is a challenge. The techniques described to solve this problem surgically are not very successful. Being already established in Head and Neck reconstructive surgery, free flaps esp. Radial forearm free flaps form a very good material to replace the stenostic tissue. **Materials & methods:** 5 cases were recruited in a study to assess technique. 4 cases had a single stage procedure while one had staged prefabricated flap technique. **Results:** 2 cases had anatomical improvement by a single grade each, one case achieved decannulation. **Conclusion:** radial forearm free flaps are a suitable reconstruction tube being pliable and epithelial lined. Further investigations on the support of the flap and re-stenosis process are recommended.

بسم الله الرحمن الرحيم

قَالُوا سُبْحَانَكَ لَا عِلْمَ لَنَا إِلَّا مَا
عَلَّمْتَنَا ۖ إِنَّكَ أَنتَ الْعَلِيمُ
الْحَكِيمُ ﴿٣٢﴾

صدق الله العظيم

(البقرة- ٣٢)

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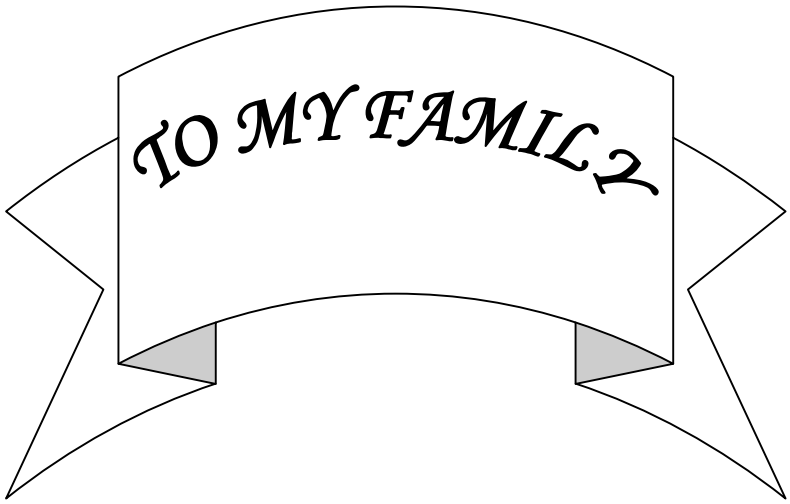
TO MY FAMILY

List of Abbreviations

Abbreviation	Expression
bFGF	Basic Fibroblast Growth Factor
ECM	Extracellular Matrix
GERD	Gastro-Esophageal Reflux Disease
IL	Interleukin
KGF	Keratocyte Growth Factor
LTR	Larygotracheal Reconstruction
LTS	Larygotracheal Stenosis
MMPs	Matrix Metalloprotinases
PCTR	Partial Cricotracheal Recontruction
PGE_2	Prostaglandin E_2
RFFF	Radial Forearm Free Flap
SGS	Subglottic Stenosis
VEGF	Vascular Endothelial Growth Factor
WG	Wagner's Granulomatosis

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Introduction

Introduction

The issue of tracheal stenosis deals with a wide spectrum of causes, manifestations, and disease severity, so multiple classification schemes for tracheal stenosis has emerged. Definitions have attempted to encompass morphology, severity, and mortality. Tracheal stenosis generally can be divided into acquired versus congenital forms, extrinsic versus intrinsic disease, and short-segment versus long segment stenosis. ***(HO and Koltai, 2008)***

Elliott et al. (2003) further proposed a classification for long-segment stenosis including the length of stenosis, the degree of tracheal involvement, the presence or absence of complete tracheal rings, and the extent of bronchial involvement. These factors influence whether a patient can be managed conservatively or the best approach if surgery is indicated.

Tracheal and laryngotracheal stenosis still constitute an important group of iatrogenic sequelae after intubation and tracheostomy. The reported incidence of tracheal stenosis following tracheostomy and laryngotracheal intubation ranges from 0.6% to 21% such a stricture may develop after only 36 hours of intubation. Symptoms usually are apparent 5 weeks after intubation. ***(Sarper et al, 2005)***

Surgical solutions for laryngotracheal stenosis are multiple, ranging from endoscopic laser sessions to open surgeries like resection anastomosis and various types of laryngotracheoplasties, each with its specific indications, advantages and disadvantages. ***(Monnier, 2010)***

Studies for cricotracheal resection are many, but few addresses long, high or recurrent stenosis for example, ***Friedel et al. (2003)*** retrospectively evaluated 110 tracheal resections and anastomses, the length of resected segments ranged between 2 and 6.5 cm (median 3.5 cm), complications occurred in 29 patients 26.4% While ***Rutter et al. (2004)*** recorded 14% failure of decannulation in as case series of 44 children who underwent tracheal resection adding that 16% of the successful cases needed revision procedures to achieve decannulation.

El-Nouri et al. (2005) studied results of 23 patients who underwent tracheal resection-anastomosis and recorded 5 failures 21.7% on the other hand, ***White et al. (2005)*** calculated the operation-specific decannulation rate for 89 patients who underwent cricotracheal resection and it was only 71%, with failure of decannulation in primary procedure in 29% of cases.

As for tracheoplasty, in a consecutive series by ***Forsen et al. (2002)***; 10 patients with congenital long-segment tracheal stenosis underwent costal cartilage tracheoplasty. Results were 40 % major postoperative complications, 20 % mortality and 12.5 % failure of decannulation while ***Kocyildirim et al. (2004)***; studied 34 patients underwent various types of tracheoplasty with overall 23.5% mortality and 35% recurrent stenosis after surgical intervention.

Also ***Beierlein and Elliott (2006)*** performed 26 Slide Tracheoplasties to repair complex forms of long-segment congenital tracheal stenoses; mortality rate was 7.6% and 13 patients (50%) required subsequent tracheal redo procedures.