Tracheal Stenosis

A CASE REPORT
36 yo female with a history of head and neck lymphoma (diagnosed 4/2004) creating compression of the trachea requiring tracheostomy after initial intubation to protect her airway.
Lymphoma was definitively treated with chemoradiation but need for tracheostomy continued and tracheostomy was ultimately revised times one
As of 3/2006 patient remained with a tracheostomy and had been unable to phonate since its initial placement almost two years before.
PMHx: lymphoma only
PSHx: tracheostomy with revision
Meds: none
Allergies: NKDA
SHx: non-smoker, no ETOH/IVDA
**Congenital**
- Membranous
- Cartilagenous

**Acquired**
- Intubation – duration (5-10 days), size of ETT, traumatic intubation, # of re-intubations
- Laryngeal trauma - high tracheostomy, cricothyroidotomy, inhalational (thermal or caustic), trauma blunt or penetrating trauma
- Autoimmune
- Infection
- GERD
- Inflammatory diseases – sarcoidosis, SLE
- Neoplasms
Combining principal in the acquired type of tracheal stenosis is that mucosal and/or cartilaginous injury results in inflammatory response and subsequent remodeling with healing by secondary intention and, ultimately, scarring with narrowing of the airway.
Three classification systems exist to help predict the chance of decannulation after treatment of tracheal stenosis.
Myer-Cotton staging system:

**Grade I** - less than 50% obstruction

**Grade II** - 51% to 70% obstruction

**Grade III** - 71% to 99% obstruction

**Grade IV** - no detectable lumen or complete stenosis.

Most useful for mature, firm, circumferential stenosis confined to the subglottis.
McCaffrey staging system:

Stage I - confined to the subglottis or trachea and are less than 1 cm long

Stage II - isolated to the subglottis and are greater than 1 cm long

Stage III - subglottic/tracheal lesions not involving the glottis

Stage IV - lesions involve the glottis.
Lano et al. (1998) staging system:

**Stage I** - involve one subsite

**Stage II** - involves two subsites

**Stage III** - involves all three subsites

Based on the number of subsites of involvement including the glottis, subglottis and trachea
Surgical Options

- Tracheostomy
- Endoscopic – Dilation (with or without stenting)
- Open procedures – cricoid split (pediatrics), tracheal resection
T = Tube; HT = High frequency jet ventilation tube
Risk factors for tracheal anastamotic complications

Wright et al 2004, retrospective trial of 901 patients with complications in 9%
Risk factors identified as diabetes, reoperations, lengthy resections, young age, laryngotraheal resections, need for tracheostomy before resection
For first-time resections greater than 4 cm the risk of anastomotic failure doubled.
Outcomes after resection:

observational experiences

Cotton (1984) – rates of decannulation were 97%, 97%, 91%, 72% based on his own staging system

Lano (1998) – rates of decannulation 94%, 78%, 20% based on own staging system

Grillo (1992) – overall rate of decannulation was 97%, however, 77.5% had some degree of voice dysfunction (60% were mild)
On 2/14/06 the patient underwent bronchoscopy – From above this showed complete occlusion of the tracheal lumen approximately 2.5 cm beyond the vocal cords, the airway proximal to the cricoid was normal, the airway distal as seen through the stoma was also normal. Approximately 3.5 cm of trachea was involved
On 3/22/06 pt underwent tracheal resection with primary anastomosis, no complications intra or post-op. Patient was discharged after 6 days able to speak with minimal hoarseness. Recently pt seen in clinic and continues to do well with eating/breathing/ and talking.