Conservative laryngeal surgery

Dr S.K. Aremu,FWACS
Department of otorhinolaryngology
Unilorin Teaching Hospital
Ilorin,Kwara State
Nigeria

Outline

- Introduction
- What is conservative surgery
- Factors involved in conservative surgery.
- Why conservative laryngeal surgery?
- Options Available for conservative laryngeal surgery.
- Salvage surgery.

Introduction

- Radical surgery- function loss & deformity.
- Survival rate
- 1980/90 – cancer resection
- Radiotherapy/chemotherapy

What is conservative surgery?

- Surgical procedure – Radiotherapy/Chemotherapy same cure as radical surgery
- Goals - Function/ Structure
- Availability – treatment facility, personnel, affordability, financial and political.
- Europe/ North America

Factors involved in conservative surgery?

- Tumor
- Patient
- Operation
- Oncology Team

Tumor

- Site
- Size
- Extent
- Surrounding structures
- Spread

Patient factor

- Age, sex, well being,
- Discussion with patient
- Other modality available
- Component of the surgery

Team Approach
MULTIDISCIPLINARY TEAM

Head and neck surgery

- **Radiation oncology**
- **Medical oncology**
- **Plastic and reconstructive surgery**
- **Dentistry/prosthodontics**
- **Physical medicine and**
- **Dedicated Nurse**
- **Social services**
- **Nutrition support**
- **Pathology**
- **Diagnostic radiology**
- **Adjunctive services**
- **Neurosurgery**
- **Ophthalmology**
- **rehabilitation**
- **Speech and swallowing therapy**

Team

- Oncologist
- Surgeon – Resection, Experience, Risk
- Others
  - Radiologist
  - Dedicated Nurses
  - Speech therapist
  - Nutrition Team

Structure and Function

- Neck
- Larynx
- Pharynx
- Parotid
- Thyroid
- Sinuses

Conservative Laryngeal Surgery

- Controversy
- Treatment Variability
  - Pathological
  - Presentation
  - Financial
  - Political – positioning,

Why conservative laryngeal surgery?

GOALS

- Voice Preservation
- Structure Preservation
- Cosmesis

- **4 basic functions of larynx**
  - **Deglutition**
  - **Respiration**
  - **Phonation**
  - **Airway protection**

Introduction

- **Four Basic Principles**
  - **Must know extent of tumor**
  - **Cricoarytenoid unit is basic functional unit of larynx**
  - **Resection of normal tissue is necessary**
  - **Must consent patient for total laryngectomy**

Available Options

- Trans oral Laser resection (**Endoscopic**)
  - Partial Epiglottectomy
  - Partial Cordectomy
- Partial Laryngectomy
  - Supraglottic laryngectomy
  - Vertical Hemilaryngectomy
  - Supracricoid laryngectomy (Subtotal)
- Near Total Laryngectomy

Endoscopic Management of Supraglottic Lesions

- **CO2 laser** – T1 Suprahyoid Epiglottic tumor
- Rationale

- Risk of reduced oedema
- Debulk for good radiotherapy

Tracheostomy rarely required

Endoscopic Management of Supraglottic Lesions

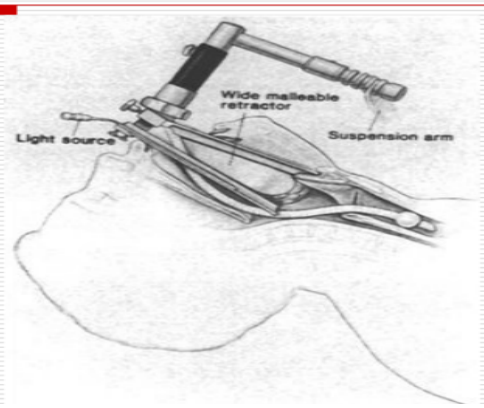
- **CO2 laser** – T1 Suprahyoid Epiglottic tumor
- Rationale

- Risk of reduced oedema
- Debulk for good radiotherapy

Tracheostomy rarely required

Endoscopic Management of Supraglottic Lesions

- **Must optimize exposure**
- **Boyce-Jackson position optimal: Extension at occipitoatlantic joint, flexion of neck on chest**



Endoscopic Management of Supraglottic Lesions

- **Lesions amenable to resection lie perpendicular to distal lumen of supraglottiscope**
  - **Suprahyoid epiglottis**
  - **Aryepiglottic fold**
  - **False vocal fold**
- **Clear margins usually obtained at time of laser excision because of pseudocapsule**
- **Complete excision of primary before XRT yields 20-35% tx advantage over XRT alone**

Endoscopic Management of Supraglottic Lesions

- Complications rare
- Patient's swallow - not usually affected.

Advantage

- Laryngeal protection relatively good with laser
  - SLN not disturbed proximal to larynx
  - Laryngeal elevation not impaired

Endoscopic Management of Supraglottic Lesions

- Poor candidates for open supraglottic laryngectomy still generally good candidates for laser
- Short hospitalization post-op - 1-3 day
- Open supraglottic laryngectomy remains standard surgical management for early supraglottic SCCA

Supraglottic lesions: Options

Supraglottic laryngectomy

Structures removed – Epiglottis, FVC, Arytenoids, thyrohyoid memb, Upper 1/3 of Thyroid cart.

TVC/Arytenoid - Retained

Indications

- T2 Carc. Limited to supraglottis
- Acutely Traumatised Supraglottis
- Delayed Stricture after infection/injur

Contraindication

- Tumor extension into Cricoid
- Bilateral arytenoid involvement
- Arytenoid fixation
- Extension into glottis – vocal cord immobility
- Thyroid cart. Invasion
- Tongue base > 1cm to circumvallate pappillae

Complications

- Aspiration
- Dysphagia
- Delayed Decannulation

Supracricoid Laryngectomy

- Partial horizontal laryngectomy
- Cricohyodoepiglottoplexy

Paraglottic, Pre-epiglottic, thyroid (TVC/FVC) and one arytenoid cartilage

- Epiglottis, cricoid, one arytenoids and hyoid bone.
- Three heavy suture

Supracricoid Laryngectomy

- Advantage

Early decannulation

arytenoids – speech and swallowing

- Neoglottis

- Damage to hypoglossal nerve

Indications

- T1 and Supraglottic lesion with ventricle extension
- T2 of infrahyoid Epiglottis
- Supraglottic lesion extending into the Glottis with VC^0
- T3 tumor with Limitation of VC Movt.
- Selective T4 with Thyr. cart. invasion

Contraindications

- Bulky Pre-epiglottic space
- Gross thyroid cartilage destruction
- Bilateral arytenoids involvement
- Fixed arytenoids
- Subglottic extension > 1cm ant/0.5cm post.

Advantage

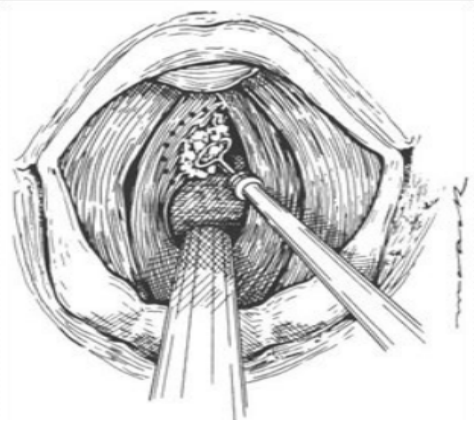
- 3yr survival is 80%
- Decannulation < 7days
- Normal deglutition and swallowing in about 75%
- Physiological speech within 2/12
- No permanent tracheostomy Stoma

Endoscopic Management of Glottic Lesions

- **Treatment options: Open conservation surgery, XRT, microendoscopic CO2 laser excision**
- **Favor laser: Tumor bulk**
- **Do not favor laser: Previous XRT**
- **Midcord :laser > XRT – 2nd line**

Endoscopic Management of Glottic Lesions

- Use of CO2 laser introduced in 1972
- Preoperative workup: Flexible laryngoscopy and videostroboscopy
  - –Must assess for presence of mucosal wave



Endoscopic Management of Glottic Lesions

- Excise with solitary laser bursts
- Orient specimen and send for frozen section
- Extend resection if margins positive
- "Safe" margin = 2-5 mm
- Only appropriate when close follow-up possible and adjuvant therapy available

Endoscopic Management of Glottic Lesions

- Exclusion criteria:
  - Deep involvement at AC
  - Vocal process involvement
  - Ventricle involvement (debated)
  - Subglottic extension (debated)

Endoscopic Management of Glottic Lesions

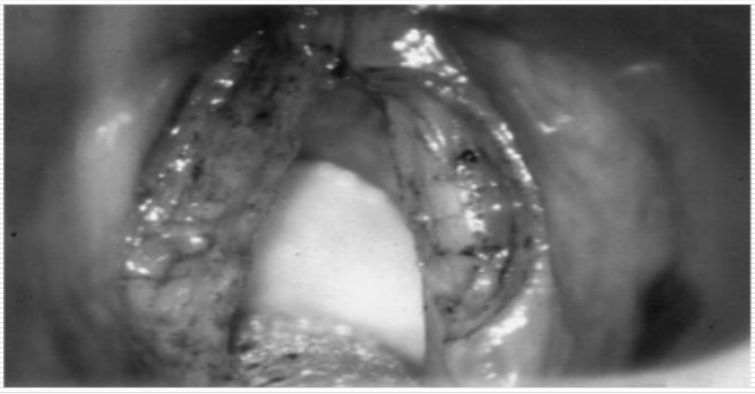
- Complications
  - Granuloma formation at AC (most common) – spontaneous resolution after months
  - Laryngeal hemorrhage
  - Pneumothorax
  - Aspiration pneumonia
  - Subcutaneous air
  - Prelaryngeal abscess
  - Anterior webs

Endoscopic Management of Glottic Lesions

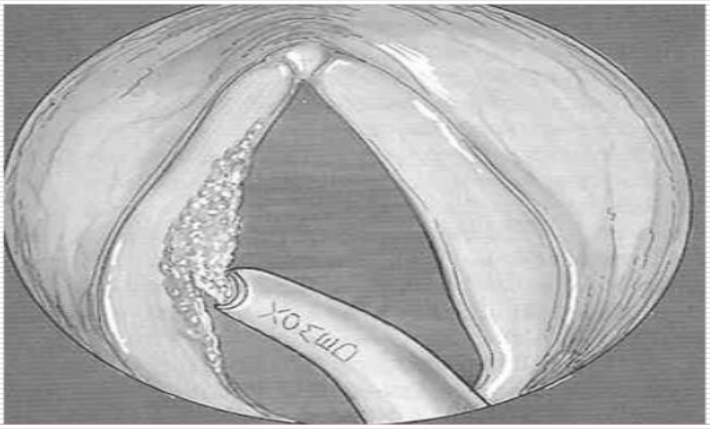
TABLE I.
Endoscopic Cordectomy: Classification by European Laryngological Society.

Subepithelial cordectomy	Type I
Subligamental cordectomy	Type II
Transmuscular cordectomy	Type III
Total or complete cordectomy	Type IV
Extended cordectomy encompassing the controlateral vocal fold	Type Va
Extended cordectomy encompassing the arytenoid	Type Vb
Extended cordectomy encompassing the ventricular fold	Type Vc
Extended cordectomy encompassing the subglottis	Type Vd

Endoscopic Management of Glottic Lesions



Endoscopic Management of Glottic Lesions



Endoscopic Management of Glottic Lesions

TABLE II.
Indication by Stage for Laser Resection.

T Stage	Type of Cordectomy	Indication
Tis	Type I	Depending on the extension of the involved area and the results of preoperative investigation (i.e., videostroboscopy)
	Type II	
	Type III	
T1a	Type III	Small superficial tumor involving the middle third of true vocal fold (∅ 0.5–0.7 mm)
T1a	Type IV	Tumor size > 0.7 mm and/or deep infiltrative pattern and/or extention to the anterior commissure
T1b	Type Va	Involvement of the anterior commissure or horseshoe lesions
	Bilateral cordectomy	Multifocal cancer

Contraindication

- Tumor>T1a
- Ant/Post. Commisure involvement
- Laryngeal ventr. Involvement

- Laryngofissure approach –poor voice

Vertical Hemilaryngectomy

- Indication in Glottic tumor

- large glottic Tx extending along one cord length
- T2 Lesion with supraglottic and not subglottic involvement
- Ipsilateral arytenoid tumor free

Vertical hemilaryngectomy

- Contraindication

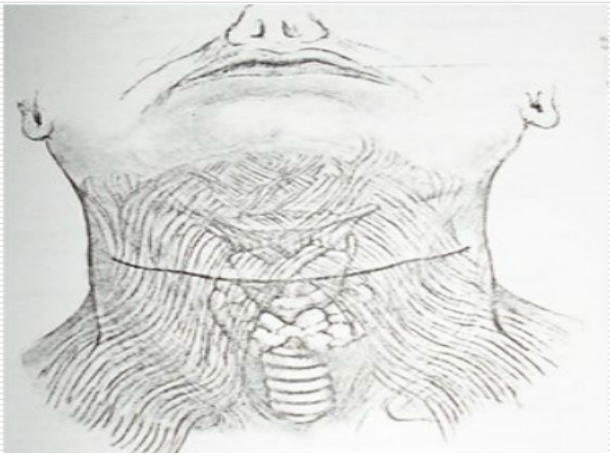
- Anterior comm. Cartilage involv.
- Preoperative swallow problems
- Poor pulmonary reserve

Require good motivation of patient – speech therapist/elation/social group

Vertical hemilaryngectomy

- **Lower ½ of FVC and all of TVC (including arytenoid as needed)**
- **May be extended to include entire endolarynx except for single cricoarytenoid unit and PC**
- **Keel must be placed at anterior commissure if both sides of endolarynx involved**
- **Central segment of thyroid cartilage may be removed if AC involved**

Vertical hemilaryngectomy



- Strap muscle
- Tracheostomy
- Excision of thyroid ala – Outer Perichondrium – oblique line
- Midline seperation

Subglottis

- Least suitable
- Invasion
  - Perichondrium – thyroid, cricoid
  - Lymph node metastasis – 20%

Salvage conservative laryngeal surgery

- Radiorecurrence – supraglottis, glottis and subglottis/clear area of resection

Conclusion

THANK YOU