Laser Cordectomy in Glottic Carcinoma

Prof. Yassin S. Bahgat
Department of Otolaryngology
Head & Neck Surgery
Alexandria University

Historical Review

“Endolaryngeal extirpation” of vocal cord cancers is a controversial issue over many decades
Historical Review

Transoral excision of vocal cord cancer

- Lynch (1920)
- New & Dorton (1941)
- Mc Cabe & Magielski (1960)
- Kleinsasser (1968)
- Littlie & DeSanto (1973)
- Le Jeune (1977)

CO2 laser excision of vocal cord cancer

- **Jako et al (1978):**
  - Excisional biopsy of suspected lesions
  - Excision of rec. VC cancer after radiation
- **Vaughan et al (1978):**
  - **Diagnostic:** bulky & post irradiation recurrence
  - **Debulking:** reduction of tumour mass
  - **Airway re-establishment:** avoid tracheotomy
  - **Therapeutic:** CO2 laser Cordectomy
Laser Cordectomy

Types

- **Superficial**
  - Partial
  - Total

- **Extended**

---

Partial
- Mucosa + Ligament + vocalis m

Total
- All VC + thyroid perichondrium

Superficial
- Mucosa

Prof. Yassin S. Bahgat
Laser Cordectomy

Types

- **Type I**: Tis
- **Type II**: T1a
- **Type III**: T1b
- **Type IV**: T2

The European Laryngological Society Classification

- The European Laryngological Society is proposing a classification of different laryngeal endoscopic cordectomies in order to ensure better definitions of post-operative results.
- The classification comprises eight types of cordectomies.

Prof. Yassin S. Bahgat
- **A subepithelial cordectomy (type I)**, which is resection of the epithelium;
- **A subligamental cordectomy (type II)**, which is a resection of the epithelium, Reinke's space and vocal ligament;
- **A transmuscular cordectomy (type III)**, which proceeds through the vocalis muscle;
- **A total cordectomy (type IV)**;
- **An extended cordectomy (type V)**:
  - encompasses the contralateral vocal fold and the anterior commissure (type Va);
  - includes the arytenoid (type Vb);
  - encompasses the subglottis (type Vc); and
  - includes the ventricle (type Vd).

Prof. Yassin S. Bahgat

---

**Combined Laser Cordectomy & External Surgery**

- **Endoscopic laser window laryngoplasty**  
  *Shapshay et al (1994):*  
  - Endoscopic laser cordectomy  
  - Creating a window in thyroid cartilage & en bloc removal of specimen  
  - Reconstruction of pseudocord with sternohyoid muscle flap

- **Fronto-lateral laryngectomy using a combined endolaryngeal and external approach**  
  *Conticello et al (1999)*

- **Medialization framework surgery for voice improvement after endoscopic cordectomy**  
  *Remacle et al (2001)*

Prof. Yassin S. Bahgat
Laser Cordectomy

- Anatomical Limitations

Prof. Yassin S. Bahgat

Superficial Cordectomy

Prof. Yassin S. Bahgat
Partial Cordectomy

Prof. Yassin S. Bahgat

Total Cordectomy

Prof. Yassin S. Bahgat
Extended Cordectomy

Basic Requirements:

**Adequate lesion exposure:**
- Select proper & wide laryngoscope
- Laryngoscope is properly inserted and fixed
- External laryngeal manipulation
- Use special retractors
- Lesion is put under tension
- Partial resection of ventricular band
Basic Requirements:

- **Adequate lesion resection:**
  - Laterally. Floor of the ventricle
  - Anteriorly. Anterior Commissure
  - Posteriorly. Vocal process of arytenoids
  - Inferiorly. 5-10 mm below free edge of VC

- **Histopathological Examination:**
  - Specimen's margins
  - Biopsy from the bed
  - Free from the tumour
**Basic Requirements:**

- **Regular Follow Up:**
  - Every 2 weeks for 2 months
  - D.L & Control biopsy after 6-8 weeks
  - Every month for first year
  - Every 3 months for second year
  - Every 6 months for three years

---

**Limiting parameters:**

- *Inadequate endoscopic tumour exposure*

**Contraindication to laser surgery**

---

Prof. Yassin S. Bahgat
Limiting parameters:

- The need to maintain sphincteric function of the larynx

Cordectomy with total arytenoidectomy leads to intolerable aspiration

Prof. Yassin S. Bahgat

Limiting parameters:

- Major vasculature not readily controlled endoscopically

Control such vessels with:
  - Diathermy cautery
  - Or arterial clip

Prof. Yassin S. Bahgat
**Surgical strategy**

- This depends on:
  - **Patient:**
    - Age.
    - General condition.
    - Patient's preference.
  - **Tumor:**
    - Site
    - Extent
    - Penetration
    - Inflammatory response
    - Histopathology

---

**Laser Cordectomy**

**Best indication:**
- Localized car. lesion
- Middle 1/3 of the cord
- Without deep infiltration
- Keratotic form + less inflammatory reaction
- Histopath: well differentiated mature squamous cell carcinoma
Indications:

- Anterior cordal lesion ± AC involvement:
  - Adequate exposure of the lesion
  - Superficial AC involvement
  - Limited subglottic extension
Laser Cordectomy

T1b Glottic Carcinoma

Prof. Yassin S. Bahgat

Indications:
- Early verrucaus carcinoma:
  - Affected cord is mobile
  - Lesion is adequately exposed
  - Minimal inflammatory reaction

Prof. Yassin S. Bahgat
Laser Cordectomy

**Indications:**

- *Bilateral cordal lesion:*
  - Superficial invasion
  - Keratotic form
  - Fully visualized

- *Selected T2 cordal lesion:*
  - Fully visualized
  - Superficial invasion
  - Limited supraglottic or subglottic extension

*Repeated laser surgery or Postoperative radiotherapy*
**Laser Cordectomy**

**Contraindications:**
- Diffuse or ill-defined lesion
- Deep invasive lesion
- Posterior cordal lesion +
  - paraglottic space extension
- Primary AC lesion +
  - pre-epiglottic space extension
- Marked subglottic extension

Prof. Yassin S. Bahgat
Laser Cordectomy

- The best treatment modality in T1 & T2 glottic carcinoma
  - Proper Patient Selection
  - Adequate Laser Surgery
  - Regular Follow Up

Advantages:
- Minimal invasive surgery
- Less morbidity and complications
- Preserves laryngeal function & voice
- Can be repeated if necessary
- Can be followed by open surgery or radiotherapy
- Short hospitalization & cost benefit
Thank you for your attention