Videolaryngoscopes

Indirect Laryngoscopes
Laryngoscopy

• Direct Laryngoscopy

• Indirect Laryngoscopy
Indirect-Videolaryngoscopy

• What is indirect laryngoscopy?
• What devices are available?
• How do they work?
• What is their advantages?
• What are their disadvantages?
Camera at the tip - greater field of view increased around 60°
Mechanism of image capture

- complementary metal oxide semi-conductor device (CMOS) some may use charge -coupled device (CCD). In CMOS, A/D conversion is faster as it has large number of A/D converters

- CCD or CMOS sensor captures photons (fundamental particles of visible light) and stores them as electrical charge in proportion to the intensity of light, electrical charge is then amplified and converted into digital output.

- Source of light in VL vs FOS
# Indirect Laryngoscopes

## Optical stylets

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<th></th>
<th>Bonfils</th>
<th>Shikani</th>
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## Rigid laryngoscopes

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<th>Tube channel</th>
<th>Airtraq</th>
<th>Pentax AWS, King-vision</th>
<th>C-Trach</th>
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<td>Guiding plate</td>
<td>Venner APA</td>
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<td>None</td>
<td>Bullard</td>
<td>C-Mac</td>
<td>Glidescope</td>
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Direct Laryngoscopy

1. Visualisation of glottis and placement of tube is one stage procedure
Videolaryngoscopy

2 stage procedure

1. Visualisation of glottis
2. Placement of tube
Placement of tracheal tube

- Adequate glottic view

- Type of Videolaryngoscope
  Channeled vs nonchanneled/ type and size of blade
Technique of Videolaryngoscopy

• Midline vs para-glossal approach

Channelled: Midline

Non-channeled: midline or paraglossal to ensure some room for the tube in the oral cavity
Technique Videolaryngoscopy for Glidescope

- Try like direct laryngoscopy: look into the oral cavity – **direct view**
- Look at the monitor – **indirect view**
- Direct view of the airway, direct visualisation tube placement – **direct view**
- Tube through glottis and trachea – **indirect view**
Glidescope Videolaryngoscopy

Always visualise the tube. Do not lift up the larynx. Hence grade 2 view is fine

1. Direct view
2. Indirect view of Glottis
3. Insert the tube – direct vision
4. Withdraw the blade & Visualise the tube – indirect view
5. Advance the tube under Vision (indirect view)
Pentax Airway Scope vs Airtraq

Blade design alter the alignment of tube with larynx
If Airtraq close to glottis Tube tends to be directed to hypopharynx.
Hence back and up movement with Airtraq
Pentax-Miller Laryngoscopy include the epiglottis with the blade
Tube loaded on to Airtraq blade, note the large gap between the anterior lip of blade and tube
Tube loaded on to Pentax AWS blade, no gap between the anterior lip of blade and tube
A and B: tube impinging on to the epiglottis and aryepiglottic fold in MacIntosh type of laryngoscopy. C: Miller type laryngoscopy- ETT less likely to impinge, epiglottis is out of the way. Can still impinge on aryepiglottic fold which requires rotation movement to align the larynx with the tube tip
Pentax AWS laryngoscopy video
Grade 1 view not able to advance the tube or stylet/bougie. Impingement with anterior tracheal wall. In direct laryngoscopy because of straight line, this does not occur.
• C-Mac d blade video-demonstrates anterior impingement
Non channeled VLs

• Macintosh blade

• Angled blade
Blind Spot with single use D Blade
Complications of VL

• Technical problems: Malfunction
  Know your device well; How it works?, Trouble shooting/ electronics

• ETT cuff tear

• Patient: Airway injury-Blind spot
ETT Cuff Tear

- Airtraq blades: repeated forward and backward movement of the tube within the blade
Patient: Airway injury

• Palatoglossal arch tear

• Injury to tonsilar pillar

• Perforation of soft palate
Advantages

- Improved view of the larynx
- Doesn’t need straight line- neutral position
- Less force –less sympathetic stimulation
- Supervision of trainee
- External laryngeal manipulation by ODP
- Observe the effect of cricoid pressure
- Second opinion/witness for difficult intubation
- Record keeping
External Laryngeal manipulation
Clinical Pearls In Videolaryngoscopy

• Experience with Macintosh does not equate to skill with videolaryngoscope
• Experience with one type laryngoscope does not equate to skill with all videolaryngoscopes
• Good view of larynx does not equate to easy intubation
• A bougie may not help when in difficulty
• Videolaryngoscope should be selected according to indication (teaching: Macintosh type, unexpected difficulty-curved blade. For pre-hospital- screen should be visible under light).

Kelly FE, Cook TM, Seeing is believing, getting best out of VLscopy, BJA 117, S1 i9-i13, 2016
Summary

• Videolaryngoscopy gives indirect/ magnified view of glottis
• Laryngoscopy & intubation-2 step process
• Learning curve variable
• Channeled and non-channeled VLs
• Avoid blind spot/ avoid airway injury
• Definite role in difficult intubation
• Experience is essential