Video Laryngoscopy in the Field

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Short (Very) Hx of Laryngoscopy

- 1888 Alfred Kirstein first described direct visualization of the vocal cords
- 1913 Henry H. Janeway creates laryngoscope with a distal light source, batteries within the handle, a central notch in the blade, and a slight curve to the distal tip of the blade to help guide the tube through the glottis
- 1941 Robert A Miller invents the Miller lade
- 1943 Robert Reynolds Macintosh invents the Macintosh Blade
- Miller clan and Macintosh clan feud over patent rights from 1953 through to present
Why is tracheal intubation with direct laryngoscopy so difficult?
Line of sight from eye to glottis is required
Challenging Anatomy
Video Laryngoscopy

- Laryngoscope with a video camera on the blade that transmits real-time images of the glottis to an external monitor.
- Tracheal intubation performed viewing monitor screen rather than viewing directly through the mouth.
Advantages of VL in Tracheal Intubation

- Direct line of sight not required
- Can see around the tongue
- Structures are magnified
- Less deterioration of image by body fluids (blood, vomit, sangria)
Camera Image Behind the Tongue
Structures Magnified
Disadvantages of VL

- Different technique for more angulated blades of VL
- More or less retraining necessary
- Maneuvering endotracheal tube to target (glottis) more or less different/difficult because of steeper approach
- Stylets match “bend” of VL blade
Steeper Angle of Attack

- Arytenoid complex
- True vocal cords
- Undersurface of the epiglottis
- False vocal cords, vestibular folds
- Glottis
Does it pick up peanuts?

(Does it work?)
<table>
<thead>
<tr>
<th></th>
<th>Macintosh DL</th>
<th>Successful 418/495</th>
<th>84%</th>
<th>95% CI [81%, 87%]</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>C-MAC VL</td>
<td>Successful 248/245</td>
<td>97%</td>
<td>95% CI [94%, 99%]</td>
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</table>
CMAC vs Macintosh

- Grade I or II view obtained:
  - 117/125 93%; 95% CI (88%,97%) vs
  - 410/495 83%; 95% (79%,86%).

- First-attempt success (odds ratio 2.2; 95% CI 1.2 to 3.8)

Sakles JC
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<tr>
<th>Device</th>
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<th>Cost</th>
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<td>Verathon</td>
<td>Rechargeable</td>
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<td>Karl Storz</td>
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References


Mobile Integrated Healthcare Network, Screen Door Manufacturing and Communal Living Experiment
Concerning Code 3: Burt and Edna slam on the brakes and are rear-ended by six vehicles.