



# Video Laryngoscopy: State of the Art & Practical Pearls



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## Introduction

The scope of devices for indirect visualisation of the vocal cords during intubation has undergone extremely rapid expansion in the last decade, and shows no sign of slowing<sup>1</sup>. New devices regularly appear, and the "venerable" devices of 10 years ago have advanced significantly in recent iterations. Practitioners from all disciplines who undertake airway management face a bewildering array, each with its own characteristics and requirements for skilful use. Mastery of direct laryngoscopy (DL) does not necessarily confer competence with video laryngoscopy (VL)<sup>2</sup>, nor does familiarity with one device guarantee effective use of another type. However, understanding the key structural and functional types and the associated techniques for VL intubation will equip any practitioner to use them to full potential.

VL has been shown to confer no advantage other than for training purposes in routine intubation.<sup>3</sup> However, the majority of established VLs improve success rates for intubation in patients with difficult airways, or where direct laryngoscopy has failed. Although less than 5% of patients have difficult airways,<sup>2,3</sup> emergencies and intubation in settings outside of the operating theatre cause increased difficulty.<sup>4</sup> Thus, emergency physicians and anaesthetists alike should be skilled in the use of video laryngoscopy.

## VL Design vs. Function

**Intubating endoscopes** are placed through the endotracheal tube (ETT) and can be used in conjunction with a conventional laryngoscope or alone. This requires additional skills.<sup>5</sup>

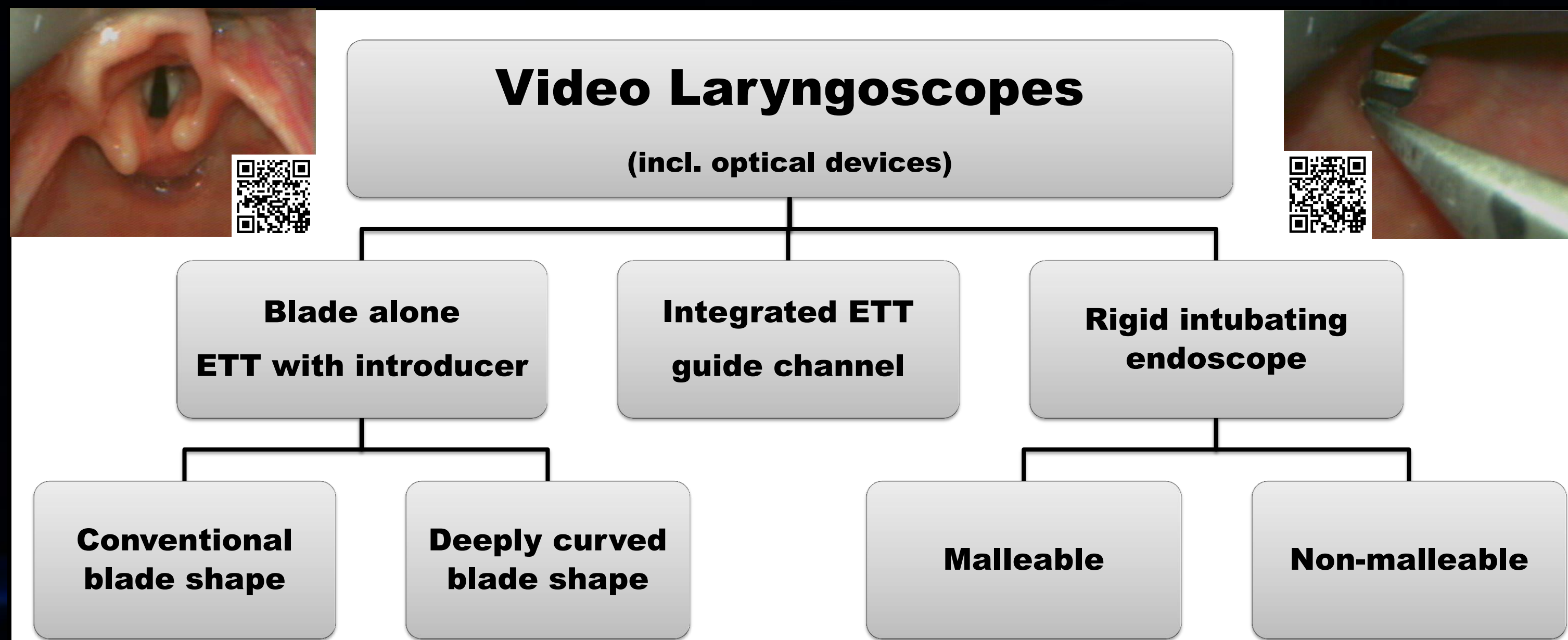
**Video-camera-equipped VLs** often offer recording capability, which is useful for training and medicolegal purposes. Fibreoptic and optical 'scopes can be equipped with cameras to create a hybrid.

**Conventional blade designs** allow the easiest transition from DL, and are effective teaching tools.<sup>6</sup>

**Deeply curved blade designs** are best suited to difficult airways,<sup>3</sup> especially where direct view is impossible or neck movement very limited (as in c-spine injury).<sup>7</sup>

**Blades with an ETT guide channel** are excellent in cases of limited mouth opening, swelling and confined space.

**Disposable blades** are more prone to fogging, but have a more rapid turn-around between cases.



## Understanding VLs – Making Sense of the Species

Feature	Class and example of type (Bold text indicates pictured example)		
<b>Fundamental structure</b>	Laryngoscope	Video/optical intubating endoscope*	
<b>Optics</b>	Video camera	Fibreoptic*	Optical (lens/prisms)*
<b>Blade design</b>	Conventional	Deep curve	ETT guide channel
<b>Insertion technique</b>	Conventional	Midline	Retromolar
<b>Display location</b>	Separate screen	Handle-mounted	Eyepiece*
<b>Light source</b>	Built-in	External (cable or pod)	Laryngoscope handle
<b>Disposal</b>	Sterilization	Disposable blades	Disposable unit
<b>Power source</b>	Rechargeable battery		Conventional batteries

\*NB: Not video laryngoscopes in the true sense of the term, but included here for comparison. Examples of types are not exhaustive.

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## Practical Pearls

### May I introduce...

VLs do not need a direct line of sight to the vocal cords, and thus allow intubation 'around a corner'. This requires more manoeuvrability of the ETT. Those an ETT guide channel should always be used with an introducer. In the case of optical or video stylets, the device itself is the introducer.

### Get down and bougie!

In the absence of a stylet, a bougie is very effective. VLs with a guide channel can be enhanced by placing a bougie inside the tube, creating a completely steerable solution.

### That's just swell

Airway swelling and obstruction require rapid intubation, but bulging soft tissue can obscure the camera. In this situation, a laryngoscope with guide channel (e.g. AirTraq) can push the swollen tissue away from the lens, allowing a good view. See this PDF<sup>8</sup> for more info:

### Bloody muck and secretions suck!

Any material on the lens will rapidly render a VL useless until cleaned, losing precious time. Have suction on hand and consider a quick clear before visualisation.

### What nice teeth you have...

...except when they lacerate the ETT cuff. Look at the mouth (not the screen) when the ETT is advanced into the oral cavity. Once the cuff is past the teeth, go for video games!

### Get away from me with that thing!

A frequent error is inserting the blade or 'scope too deep. Despite often achieving a 'good' view of the vocal cords, this causes lost perspective and manoeuvrability. To avoid this, introduce the blade systematically and identify the important landmarks: teeth -> tongue -> epiglottis -> vocal cords. The tip of the blade should be in the vallecula and the epiglottis should be visible. See this VL RSI video:

### Centre thyself

Concentrating on achieving a good view with the glottis opening in the middle of the screen and inter-arytenoid cleft in the lower half of the view has been demonstrated to greatly improve success rate.<sup>6</sup>

### The more you sweat in peace...

...the less you bleed in war. Like any other skill, video laryngoscopy takes time to achieve mastery. Each type of device has specific tricks and traits. The solution is frequent practice, preferably under controlled circumstances. Don't neglect using the VL for the first time until you can see the whites of their hypoxic eyes!

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