



“LEVITAN’S FIBREOPTIC STYLET: BEYOND BARRIERS “

- Our Perspective.

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ABSTRACT:

This is written to share our experience with Levitan’s fiberoptic stylet, the recent entry into our armoury of equipments to visualise the airway and the extent to which it has eased out our management of difficult airways. Also a comparison with the conventional equipments used in the visualisation and management of airway has been presented.

INTRODUCTION:

In this present era of triaging the patients with airway compromise from casualty to ENT wards directly and inherent difficulty in visualising the upper aero-digestive tract, there is an increased need to have proper airway management *training and equipments* for any such an unexpected airway threat.

Dr. Richard Levitan, an emergency medicine resident at Bellevue Hospital in NYC, 1994 felt that lack of imaging modalities in this crucial area is impeding the education and skill acquisition of novice trainees regarding airway management.^[1]

This has led to the invention of the Shikani Optical Stylet^[2] in 1999 and its shorter version the Levitan FPS, which has revolutionized the management of emergency and difficult airways by the Otolaryngologists, anaesthesiologists and emergency physicians all over the world.

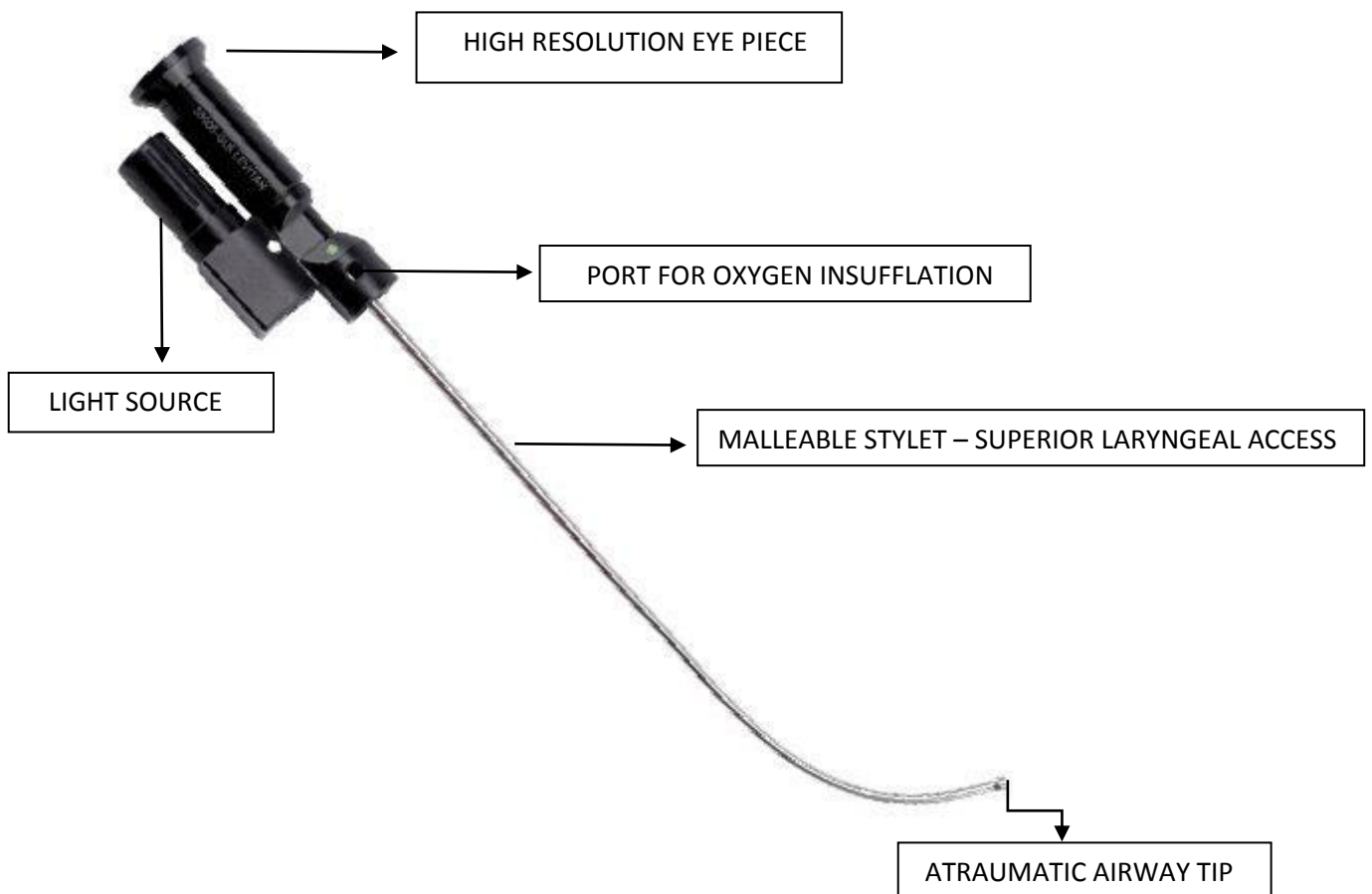
DESIGN OF LEVITAN’S FIBREOPTIC STYLET: ^[3]

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This has merged the direct laryngoscopy with fiberoptic intubation, hence dual purpose with improved safety.

It is made up of the following:

- Battery operated Light source
- High resolution eye piece
- Port for oxygen insufflation
- Malleable stylet
- Atraumatic airway tip



ADVANTAGES: ^[4]

- a) Narrow stylet diameter (5mm) allows it to pass through the nose or mouth.
- b) Flexibility allows it to conform to the anatomy of a patient.

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- c) High resolution eye piece with fibreoptics allow to navigate the endotracheal tube into trachea under visualisation and also to confirm it.
- d) The malleable Stylet (29cm) is helpful as an independent device for difficult intubations and for correct placement of endotracheal tubes.
- e) Working channel can be used to instil local anaesthetics and to provide oxygen.
- f) Fairly easy to use anaesthetic breathing system connectors or attachments which allow concurrent ventilation of the patient during intubation.
- g) Portable and reusable.
- h) Stylet being fully submersible cleansed using Cidex.
- i) Above all in connection with a CCTV system it aids in teaching and training.

DISADVANTAGES:

- 1) Expensive and universal unavailability.
- 2) Needs high skill level but can be acquired through training.
- 3) The tube stop in the stylet is not adjustable hence the tube length can be adjusted only by trimming the endotracheal tube to fit the shortened length of optical stylet.^[5]
- 4) The distal tip of the stylet if exposed to secretions, blood, or other material can easily compromise the image quality.^[5]
- 5) Needs chemical agents for sterilization.

APPLICATIONS:

- 1) Provides immediate clear visualisation of the laryngeal structures with its associated abnormalities.
- 2) In difficult endotracheal intubation mainly in significant trauma, small mouth opening, mandibular hypoplasia, an obstructed airway, extensive Head and neck reconstructive surgeries, post radiotherapy patients and those with lingual tonsillar hypertrophy, fixed cervical spine, fixed or restricted tongue movements.^[4]
- 3) For correct placement of endotracheal tubes and its immediate verification.
- 4) For difficult mask ventilation since associated with an oxygen insufflation port.
- 5) For Ryle's tube insertion by positioning it at the level of the cricopharynx.



Endotracheal tube on the Levitan fiberoptic malleable stylet

Advantages over conventional DL scopy: ^[4]

- Better views within a faster time.
- In supraglottic obstructing tumours where the conventional DL scopy blade on contact with tumour can cause bleeding
- Periglottic and Glottic Obstruction where it may be difficult to visualize the vocal cords by direct laryngoscopy and the glottic aperture may be significantly narrowed or distorted.
- Direct visualisation and working in subglottic and mid tracheal obstruction because of the thin and malleable stylet.

Disadvantages in comparison to DL scopy: ^[6,7]

- Availability only at few specialised places against universal availability
- Longer passage time.
- Limited success rate.

Advantages over conventional Macintosh laryngoscope blades: ^[4]

- Rapid oral intubation can be performed without the aid of Macintosh laryngoscope blade, hence avoiding the risk of injury to the lips, teeth or larynx.
- Allow concurrent ventilation during intubation since oxygen insufflation port present.
- Improved the laryngeal view and decreased time for tracheal intubation time in patients with difficult airway. ^[8]

Advantages over Lighted Stylet Assisted Tracheal Intubation: ^[9]

- Being done under visualisation can be used even in patients following trauma, with an expanding neck mass, oropharyngeal tumours, infections, morbid obesity and foreign body against

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a blind procedure.

CONCLUSION:

Although the Levitan's fiberoptic stylet has revolutionised the management of difficult airways, it can only be considered as *an added up facility and can never be a replacement* to the sound anatomical knowledge of the airway or its management skills using conventional equipments.

References:

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