Letter to Editor Open Access

Understanding the Original Shape of the Macintosh Laryngoscope

Koii Nishikawa'

Department of Anesthesiology, Nippon Medical School Tama Nagayama Hospital, Tokyo, Japan

*Corresponding author: Dr. Koji Nishikawa, Assistant professor, Department of Anesthesiology, Nippon Medical School Tama Nagayama Hospital, Nagayama, Tama City, Tokyo 206-8512, Japan, Tel: 81-42-371-2111(2233); Fax: 81-42-372-7381; E-mail: nagayamamasui60@yahoo.co.jp

Rec date: Feb 18, 2014, Acc date: Feb 26, 2014, Pub date: Feb 28, 2014

Copyright: © 2014 Nishikawa K. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Letter to Editor

71 years ago, the most popular curved laryngoscope in the world the Macintosh laryngoscope was designed by Sir Robert Reynolds Macintosh, which was expected to expose the larynx more easily under lighter anesthesia than that with the straight laryngoscope by elevating the epiglottis indirectly [1]. Although the design process of the Macintosh laryngoscope was mentioned in 1944, detailed features of the original design have not been well described [2]. The prototype of the Macintosh laryngoscope had a markedly flattened midportion, which contributed to improving the laryngeal view [3] (Figure 1a).

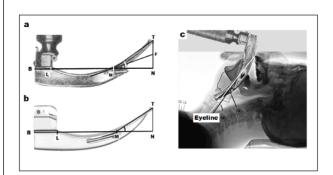


Figure 1: a) The prototype of the Macintosh laryngoscope. b) The current English Macintosh laryngoscope (size 3). Reference lines and points: line LN, a horizontal line drawn from the handle-mounting block; point T, the blade tip; line TN, a line drawn from the point T perpendicular to the line LN; point M, a point of intersection of the line LN and under surface of the midportion and point F, a point of intersection of the line TN and extended line of the midportion. The line BN is the length of the laryngoscope. c) The overlaying image of the original design of the Macintosh laryngoscope on the radiograph laryngoscopy image. The black eyeline: with the current Macintosh laryngoscope; the white eyeline: with the prototype of the Macintosh laryngoscope.

Unfortunately this feature disappeared in 1956, when the manufacturer started making the Macintosh laryngoscope of stainless steel from brass [4]. To easily understand differences in the shape between the original and current Macintosh laryngoscopes, scanned images of the prototype and English Macintosh laryngoscopes were digitally analysed and compared at matched size (size 3, length: line BN=130 mm). An angle and ratio were introduced to describe the two basic features of the Macintosh laryngoscope. In original design, the angle between line TM and MN (∠TMN) is approximately 36°; the ratio of MN to LM is 0.62 (i.e. a golden ratio). Furthermore, the flattened midportion (37 mm) starts at 35 mm from the blade tip and the angle between line FM and MN (∠FMN) is approximately 20°. The current Macintosh laryngoscope (Figure 1b) keeps the similar ratio of MN to LM with an entire curved spatula, the ∠TMN is approximately 32°. Overlaying the image of the original Macintosh laryngoscope on the radiograph laryngoscopy image with the current Macintosh laryngoscope in the patient with difficult laryngoscopy [5] (Figure 1c), it was noted that the original design with the larger ∠TMN and flattened midportion might theoretically contact the hyoid more easily to improve the laryngeal view.

Nishikawa., J Anesth Clin Res 2, 5:2 DOI: 10.4172/2155-6148.1000387

The author suggests these measurements can provide a better understanding of the original design and changes in the shape of the Macintosh laryngoscope during the past 70 years. Furthermore, these features should be sufficiently considered to design the video laryngoscope in the future for optimizing its dynamic and optical functions.

References

- 1. Macintosh RR (1943) A new laryngoscope. Lancet 1: 205
- 2. Macintosh RR (1944) Laryngoscope blades. Lancet 1: 485
- Raccz GB (1984) Improved vision modification of the Macintosh laryngoscope. Anaesthesia 39: 1249-1250.
- 4. Jephcott A (1984) The Macintosh laryngoscope. A historical note on its clinical and commercial development. Anaesthesia 39: 474-479.
- Nishikawa K, Yamada K, Sakamoto A (2008) A new curved laryngoscope blade for routine and difficult tracheal intubation. Anesth Analg 107: 1248-1252.