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A retrospective study on the clinical application of the Lan Shan Guide Core in tracheal intubation

Zhiyang Chen

Department of Oncology, Cancer Hospital, Shanghai Medical College, Fudan University, Shanghai, P.R. China, 200032.

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**Corresponding Author*
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Mailing Address :
Dr. Zhiyang Chen.
Vice Professor
Num.270, Dongan Road, District Xuhui
Anesthesia Department of Cancer Hospital
Department of Oncology, Cancer Hospital
Shanghai Medical College, Fudan University
Shanghai, P.R. China, 200032.

ABSTRACT

Although bronchofiberoscope (BFS) or a Gum elastic bougie (GEB) can be inserted into the trachea easily, the endotracheal tube can not be intubated easily along with them for the reason that the endotracheal tube may be impeded by the epiglottis and vocal cords. This problem can be resolved by increasing the guide core diameter of the BFS and GEB and by replacing the beveled distal end of the endotracheal tube with a flat opening. We initially used the LanShan Guide Core in a retrospective study on the clinical application of the LSGC in tracheal intubation. Normal guide core (NGC), BFS, GEB and LSGC were used in combination with ordinary tracheal tubes. The observation indexes included the first-attempt intubation success rates for the NGC, BFS, and LSGC; the tracheal insertion success rates for the BFS, LSGC, and GEB; and the tracheal tube blockage rates upon inserting the tracheal tube after the BFS, LSGC and GEB were successfully inserted into the trachea (blockage caused by the epiglottis and vocal cords). The differences between the LSGC and the GEB were compared.Both of LSGC and the GEB could be smoothly inserted into the trachea. But there were significant differences of the tracheal tube insertion blockage rates in cases with different Cormack-Lehane grades between them.The diameter of the LSGC is compatible with the inner diameter of the endotracheal tube; the first-attempt intubation success rate of the LSGC was higher, the insertion of the endotracheal tube was rarely impeded.

INTRODUCTION

An ideal tracheal intubation device should meet the following requirements: a high success rate, minor injury to the airway, simple operation, disposability, and low cost. Clinically, ordinary tracheal tubes with a common guide core are sufficient in cases of easy intubation (Cormack-Lehane grades I and II). The distal end of an ordinary endotracheal tube is beveled, which is designed to adapt to the "1"-shaped glottis (ASA, 2003;Zhiyang, 2010).

However, in cases of difficult intubation (Cormack-Lehane grades III and IV), the intubation operator does not have a direct view of the glottis when attempting to intubate. As a result, the sharp beveled distal end of the catheter may cause throat injury, particularly during forced intubation. A bronchofiberoscope (BFS1) and a gum elastic bougie (GEB2) are commonly used in difficult intubation. BFS-assisted tracheal intubation is recognized as a good method; however, this technique has disadvantages (Zhiyang, 2010; Rosenstock *et al.,* 2012).

In several cases, a view of the glottis may be obscured. Because of the difference between the body temperature of the patient and the temperature of the scope, the scope is prone to mist. In addition, after prolonged exposure of the glottis and repeated attempts at intubation, the airway may be injured and may indicate a hemorrhage or edema, which obstructs the field of view for the operating clinician.

The inability to view the glottis will result in unsuccessful intubation. Additionally, intubation may be impeded. In several cases, a BFS may be successfully inserted into the trachea, but the subsequent insertion of the tracheal tube along the BFS may be difficult because the inner diameter of the tracheal tube is significantly larger than