

Two manoeuvres to facilitate the oral insertion of LMA CTrach™

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ABSTRACT

Background and Aims: LMA CTrach™, a new intubating conduit, has a thicker shaft compared to that of the intubating laryngeal mask airway (ILMA) due to the embedded optical fibres of the system. This causes difficulty during insertion despite normal mouth opening. Utility of two manoeuvres to overcome this was evaluated. **Methods:** From our experience with LMA CTrach™ we found that two manoeuvres can be helpful to facilitate the insertion of LMA (a) dorsal and downward pressure over the shaft at the point where it hinges against the incisors while continuing the one handed rotational insertion of LMA (b) Lateral insertion of the LMA till the cuff is inside the oral cavity and then rotation of the LMA by 90° and then complete the insertion. A retrospective analysis of 200 insertions of LMA CTrach™ was done to evaluate the utility of these manoeuvres. **Results:** Out of 200 insertions, 15 were found to be difficult. Manoeuvre 'a' was applied in 13 cases to facilitate the insertion and manoeuvre 'b' was applied in 2 cases where insertion was not possible despite manoeuvre 'a'. Insertion was successful in these cases after the application of the described manoeuvres. **Conclusion:** The two manoeuvres described above can be useful when LMA CTrach™ insertion into the oral cavity is obstructed by the incisor teeth.

Key words: Fiber optic technology, intubation, laryngeal masks, rotation

INTRODUCTION

LMA CTrach™ (The Laryngeal Mask Company, Singapore) is an intubating conduit which allows for ventilation during the process of intubation along with the visualisation of the tracheal tube passing through the glottic inlet. It has been considered to have a promising role in a difficult airway scenario.^[1] However, the airway tube of this device is thicker compared to that of intubating LMA (ILMA). From our experience while using it, we found that two manoeuvres can be helpful to facilitate its insertion (a) a dorsal and downward pressure over the shaft at the point where it hinges against the incisors while continuing the one-handed rotational insertion (b) lateral insertion of the LMA CTrach™ till the cuff is inside the oral cavity and then the rotation of the device by 90° to complete the insertion.

MATERIALS AND METHODS

This retrospective study was initiated after obtaining

approval from the institutional ethics committee. The data of patients in whom LMA CTrach™ was successfully used for endotracheal intubation for elective surgical procedures from July 2012 to October 2014 was procured from the department of anaesthesia database.

In all the cases, intravenous anaesthetic agents for induction and muscle relaxants to facilitate intubation were used. Once data were retrieved, the patient anonymity was maintained by referring to them only

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by serial numbers. Individual consent of the patients for data analysis and publication was waived off.

The first, manoeuvre (a) was a dorsal and downward pressure over the shaft at the point at which it hinges against the incisors while continuing the one-handed rotational insertion of LMA CTrach™ [Figure 1a]. The second, manoeuvre (b) was lateral insertion of the LMA CTrach™ till the cuff is inside the oral cavity and then rotation of the LMA CTrach™ by 90° followed by completion of insertion [Figure 1b].

The data were analysed to assess the success of the manoeuvres in the insertion of LMA CTrach™.

RESULTS

LMA CTrach™ was used for endotracheal intubation in a total of 200 patients during the study. Amongst the 200 insertions using the conventional one-handed rotational technique, 15 were found to be difficult to complete the insertion.

In these 15 difficult insertions, manoeuvre (a) was successful to facilitate insertion in 13 cases. In the remaining two cases where insertion was not possible despite manoeuvre (a), manoeuvre (b) was applied and found to be successful.

DISCUSSION

LMA CTrach™, a modification of the ILMA incorporating a fiberoptic channel, is aimed to overcome the blind nature of intubation using ILMA and other intubation conduits.^[2-8] Although LMA CTrach™ effectively surmounted this major drawback, it also increased the diameter of the airway tube. Brain *et al.*, in their studies while engineering the ILMA had mentioned that the maximum outer diameter of the

ILMA was in the plane of the curvature of the tube where it is overlapped by the proximal part of the cuff. This is measured to be 20 mm in outer diameter.^[9] In LMA CTrach™, with the incorporation of the fiberoptic channel, this increased to 25 mm.^[8] [Figure 2] The optical fibres embedded in the shaft are responsible for this increase in diameter. This causes difficulty in insertion of LMA CTrach™ even in patients with normal mouth opening. The difficulty was pronounced in patients with prominent upper incisors as a result of hinging of the incisors on the outer silicone sheath of the airway tube.

We presumed that the concavity of the lower curvature of the airway tube can be exploited for our benefit. In the first manoeuvre described, the dorsal and downward pressure over the shaft at the point at which it hinges against the incisors created more space in the oral cavity during the insertion of the LMA CTrach™ using the one-handed rotational technique. In the second manoeuvre, the lateral insertion enables us to bypass the rigid shaft of the airway tube at its point of maximum diameter while crossing the incisors with the more compliant deflated cuff of LMA CTrach™. Once this point has been evaded, a 90° rotation will enable to bring the LMA CTrach™ back in alignment.

These two manoeuvres were found to be successful in the 15 cases studied. However, this was done in optimal conditions with adequate muscle relaxation. The first manoeuvre may not show the same success rate in patients whose jaws are not adequately relaxed or in patients with restricted mouth opening. In such cases, the second manoeuvre may be more promising. Moreover, the success of the first manoeuvre in cases

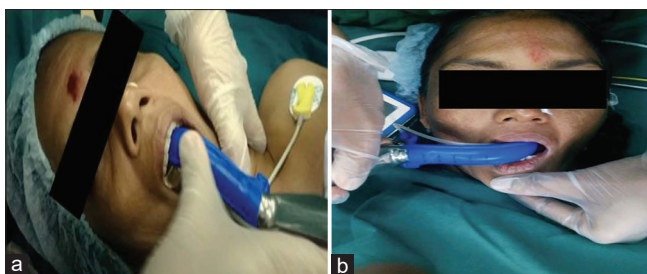


Figure 1: Manoeuvres described (a) a dorsal and downwards pressure over the shaft at the point where it hinges against the incisors while continuing the one-handed rotational insertion of LMA CTrach (b) Lateral insertion of the LMA CTrach till the cuff is inside the oral cavity and then rotation of the LMA CTrach by 90° to complete insertion

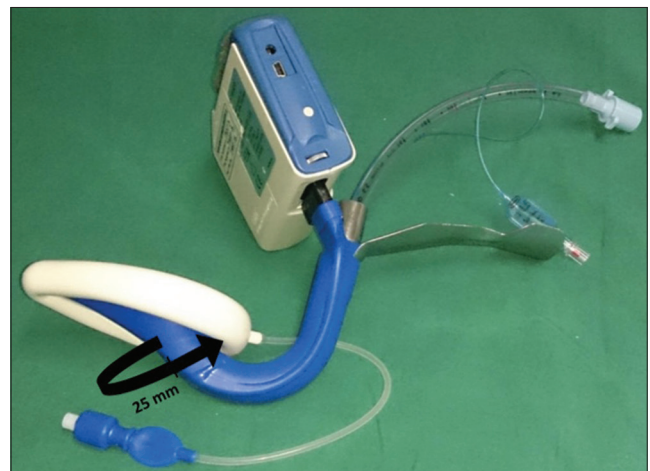


Figure 2: Diagram with arrow showing region of maximum diameter

where the second manoeuvre failed needs to be looked into. Further studies with a larger population needs to be done to validate the same.

CONCLUSION

The two manoeuvres (a) a dorsal and downward pressure over the shaft at the point at which it hinges against the incisors while continuing the one-handed rotational insertion of LMA CTrach™ and (b) a lateral insertion till the cuff is inside the oral cavity and then rotation of the device by 90° followed by completion of insertion can be useful when the insertion into the oral cavity is obstructed by the incisor teeth.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Nil.

Conflicts of interest

There are no conflicts of interest.

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