A bench test of a modified gastro LMA for the insertion of the duodenoscope

Endoscopic procedures, including oesophagogastro duodenoscopy and endoscopic retrogradecholangio pancreatography (ERCP) often necessitate sedation or anaesthesia, and airway devices, such as the laryngeal mask airway (LMA) are often useful, particularly in certain populations, to maintain ventilation.[1]

The Gastro LMA (GLMA) of Teleflex (Teleflex · 3015 Carrington Mill Boulevard, Morrisville, NC 27560, USA) is built to allow both ventilation/breathing and the insertion of endoscopes – both gastroscopes and duodenoscopes.[2]

The LMA component functions as a regular LMA. The dedicated "gastro" channel has the entrance orifice on the right side of the respiratory connector. Its tract proceeds downwards and progressively behind the LMA one. Distally, the gastro channel ends midline behind the LMA cuff and above the entrance in the oesophagus. We have successfully used the GLMA in esophagogastroduodenoscopy with forward-viewing endoscopes. However, we have not used it yet for ERCP. Anecdotal reports describe difficulties passing the duodenoscope through the gastro channel due to the small difference between its internal diameter (14 mm) and the outer diameter of the duodenoscope.

The duodenoscope used in our institution has an outer diameter of 13.7 mm (Olympus Evis Exera II video duodenoscope TJF-Q180V, Olympus Corporation, Tokyo, Japan).

We performed a bench test, comprising two phases, of a modification to the GLMA to allow for easier passage of the duodenoscope via the channel.

During the phase 1, the anaesthesiologist held the GLMA in a stable fashion while the endoscopist tried to advance the duodenoscope through the "gastro" channel. Despite being very well lubricated, excessive force was needed to advance the instrument through the channel. The endoscopist was not satisfied as he had to exercise extremely high "to and fro" and rotational force to perform the specific movements required during the ERCP. These extreme forces could dislodge the GLMA, rendering the airway management problematic and resulting in a potentially cumbersome or even dangerous procedure. By slowly threading the duodenoscope down through the gastro channel, we were able to locate the point of maximum friction: the "knee" of the GLMA [Figure 1].

During the phase 2, we made a longitudinal cut from above the "knee" along the whole length of the gastro channel, resulting in a "U"-shaped configuration [Figure 2]. With this modification, the endoscopist reported smooth and effortless passage of the duodenoscope.

A previous article on the use of the GLMA describes the successful use of the GLMA without difficulties.[3] However, our bench observation suggests the contrary. Furthermore, our solution provides a simple way to overcome the problem of manoeuvreability of the duodenoscope through the "gastro" channel.

The outer diameter of most duodenoscopes on the market ranges from 13.1 to 13.7, depending on the manufacturer. We hypothesise that, without our modification, similar threading difficulty could be encountered while using other instruments too with the GLMA. We conclude that our modification is a simple solution readily applicable to facilitate the insertion of any duodenoscope through the GLMA. Even small modifications to current devices can help advance the technological improvement in anaesthetic care.[4]

Financial support and sponsorship
Nil.

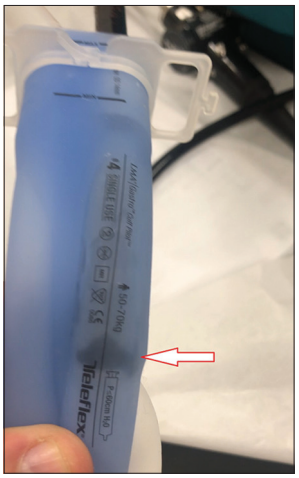

Figure 1: The friction point

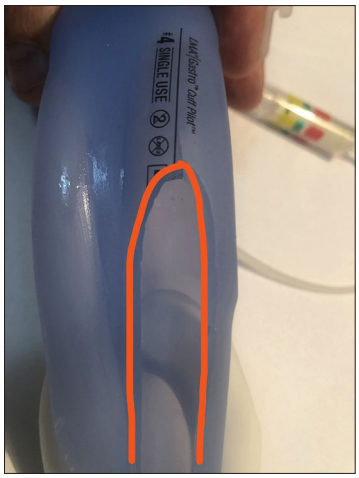

Figure 2: The U shaped cut all along the "gastro" channel

Conflicts of interest

There are no conflicts of interest.

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Submitted: 26-Mar-2021
Revised: 14-Apr-2021
Accepted: 26-Aug-2021
Published: 24-Feb-2022

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Access this article online	
Quick response code	Website: www.ijaweb.org
	DOI: 10.4103/ija.IJA_179_21

How to cite this article: Zilberman P, Davidovics Z, Benson AA. A bench test of a modified gastro LMA for the insertion of the duodenoscope. Indian J Anaesth 2022;66:159-60.