Evaluation of LMA® Gastro™ as an Alternative Airway to Tracheal Intubation During Anaesthesia for Sleeve Gastrectomy

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Introduction

A Cochrane review of Supraglottic airway devices versus tracheal intubation in obese patients identified a number of advantages in avoiding tracheal intubation in this population including:
- Eliminating difficult intubation
- Smoother haemodynamics
- No coughing
- Easier tolerability of the artificial airway

Better oxygenation in the PACU


Aims

Recently, the LMA® Gastro™ (fig 2) has become available. This device allows the insertion of an Endoscope up to 42 FQ (14 mm) via a dedicated channel and has shown promise during upper GI endoscopy.

During a failed intubation in a male patient with a BMI of 40 we successfully used a LMA® Gastro™ size 5 to complete the anaesthetic for sleeve gastrectomy. We then performed an evaluation of the LMA® Gastro™ as an alternative airway to tracheal intubation during 10 sequential elective sleeve gastrectomy cases.

A 12 mm Silicone surgical sizing bougie was easily inserted and positioned via the endoscope channel in all 10 patients.

The LMA® Gastro™ was an effective artificial airway in the steep head up position with pneumoperitoneum and neuromuscular blockade.

Our aims were to establish:
1. Whether elective blind placement of the LMA® Gastro™ was an effective artificial airway during sleeve gastrectomy in the steep head up position with pneumoperitoneum and neuromuscular blockade.
2. Whether the surgical sizing bougie could be effectively placed and maneuvered into position to achieve surgical placement.
3. Whether any difficulties or complications were encountered during clinical use of the LMA® Gastro™ in this population.


Methods

After initial experience with the LMA® Gastro™ during a case of failed intubation and encouraged by our prior experience in specific bariatric patients undergoing upper gastrointestinal endoscopy: Ten sequential sleeve gastrectomy patients were managed effectively with this airway and a data sheet was completed. Our existing sizing protocol dictated that patients less than 100 Kg were managed with a size 4 and patients above 100 Kg were managed with a size 5 device irrespective of gender.

General anaesthesia was induced and maintained with a propofol-remifentanil or a propofol-opioid free TOI-TUA technique. Neuromuscular blockade was established and maintained using Rocuronium while using Sugammadex for reversal.

Table 1

<table>
<thead>
<tr>
<th>Patient Sequence</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
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</thead>
<tbody>
<tr>
<td>LMA Gastro</td>
<td>Size 4</td>
<td>Size 5</td>
<td>Size 5</td>
<td>Size 5</td>
<td>Size 5</td>
<td>Size 5</td>
<td>Size 5</td>
<td>Size 5</td>
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</tr>
<tr>
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<td>40</td>
<td>31</td>
<td>40</td>
<td>21</td>
<td>30</td>
<td>41</td>
<td>50</td>
<td>31</td>
<td>40</td>
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<tr>
<td>BMI</td>
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<td>32</td>
<td>36</td>
<td>37</td>
<td>35.9</td>
<td>46.4</td>
<td>49.7</td>
<td>49</td>
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<td>Ease of LMA Gastro Insertion</td>
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<td>5</td>
<td>5</td>
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<td>5</td>
<td>5</td>
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<tr>
<td>Position of LMA Gastro</td>
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<td>Taped</td>
<td>Taped</td>
<td>Taped</td>
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<td>Involuntary Movements of the Gastro (5G)</td>
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<td>0</td>
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<tr>
<td>Duration</td>
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<td>18</td>
<td>30</td>
<td>25</td>
<td>18</td>
<td>30</td>
<td>25</td>
<td>18</td>
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<tr>
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<tr>
<td>Leak Fraction</td>
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<td>&lt;50</td>
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<td>&lt;50</td>
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<td>&lt;50</td>
<td>&lt;50</td>
</tr>
</tbody>
</table>

No patient suffered malposition of the airway, airway displacement, inadequate ventilation, or gastric acid aspiration. In none of the ten cases was it necessary to replace the LMA® Gastro™ with a tracheal tube at any stage of the procedure.

No patient complained of sore throat and there was no evidence of blood soiling on removal.

In patient #2 the surgeon noted gastric insufflation after induction and insertion of laparoscopic instruments. This was easily resolved by emptying the stomach via a 16 FG an on-gastro tube inserted via the endoscope channel, a technique that was added to the standard protocol after patient #3. onwards. Since this evaluation was completed we have continued to use the LMA® Gastro™ as the default airway for sleeve gastrectomy in at least another 50 patients.

Background

Our unit has had long standing experience with the extended use of second-generation supraglottic airways (SGAs) during laparoscopic gastric banding. The LMA® Supreme ™ had in fact become the default airway for Gastric banding.

Over the last two years our case mix has changed with many more Sleeve Gastrectomies being performed during which an SGA technique is precluded when the surgeon requires the use of a sizing bougie 36FG.

**Sultana A The ProSeal ™ LMA is an ideal airway for gastric banding surgery AnaesthIntensiveCare2009; 37(4): 660-1

Conclusions

- Effective blind placement of the LMA® Gastro™ was an effective artificial airway during sleeve gastrectomy in the steep head up position with pneumoperitoneum and neuromuscular blockade
- A 12 mm (36FG) Silicone surgical sizing bougie may easily be inserted and positioned via the endoscope channel of the LMA® Gastro™
- In this limited sample size no adverse events were recorded using the LMA® Gastro™ as an elective airway for laparoscopic sleeve gastrectomy, we recommend elective emptying of the stomach via a gastric tube prior to placement of the sizing bougie.
- The LMA® Gastro™ may be used as an alternative to tracheal intubation during routine sleeve gastrectomy
- Future bariatric indications for the LMA® Gastro™ may include intra-operative endoscopy and subject to further evaluation, gastric bypass

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