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Refining the Pathway to the Trachea: Fiberoptic Intubation Using AMBU Aura Gain Versus LMA Fastrach

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Abstract

Introduction: Effective airway management is a cornerstone of anesthesiology and critical care, especially in patients with difficult airways. While direct laryngoscopy is the traditional method for tracheal intubation, it can be challenging in anatomically complex cases. Fiberoptic-guided intubation offers a safer, more controlled alternative, particularly when used in conjunction with supraglottic airway devices (SADs). The Ambu Aura Gain and LMA Fastrach are commonly employed SADs that serve as conduits for fiberoptic intubation. The Fastrach features a rigid design with an epiglottic elevating bar, while the Aura Gain offers a softer, anatomically curved profile with integrated gastric access. Despite widespread use, direct comparisons of their performance as fiberoptic conduits are limited. This study compares these two devices in terms of ease of insertion, success rate, and clinical utility in difficult airway management.

Methodology: This prospective, randomized study included 80 ASA I–II patients aged 18–60 years, allocated into two groups (n=40 each) for fiberoptic-guided tracheal intubation using either LMA Fastrach or Ambu AuraGain. Following standard preoperative preparation and induction, the assigned supraglottic device was inserted. Demographic data (age, gender,

BMI) were recorded. Glottic view was assessed using the Brimacombe and Berry scoring system. Ease of intubation was evaluated by number of attempts and perceived difficulty. Complications such as mucosal trauma, desaturation ($SpO_2 < 95\%$), and failed intubation were documented. Data was collected by a blinded observer and analyzed using SPSS.

Results: The demographic profiles of both groups were comparable, with no significant differences in age ($p = 0.38$), sex distribution ($p = 0.500$), or BMI (mean = 24.6 kg/m^2). This indicates effective randomization. Success rates of ETT insertion were similar across groups. However, fiberoptic glottic view was significantly better with Ambu AuraGain, showing more Grade 4 views (80%) compared to LMA Fastrach (50%) ($p = 0.021$). Intubation time was significantly shorter with Ambu AuraGain, both pre-SAD removal ($p < 0.001$) and overall ($p = 0.003$).

Conclusion: Both Ambu AuraGain and LMA Fastrach proved effective as conduits for fiberoptic-guided tracheal intubation. Ambu AuraGain demonstrated significantly better glottic visualization and faster intubation times. Success rates and ease of insertion were comparable between the groups. No major complications were noted in either device. Ambu AuraGain may offer advantages in scenarios requiring efficient and clear airway access.

Keywords: AMBU Aura Gain, LMA Fastrach, Fiberoptic guided intubation, Glottic view, Laryngoscopy

Introduction

Mastering the airway is a non-negotiable skill in the realm of anesthesiology, critical care, and emergency medicine. It stands as the first and most vital step in stabilizing patients undergoing surgery, experiencing respiratory distress or suffering from traumatic injuries. While direct laryngoscopy has long held its place as the gold standard for tracheal intubation, its utility often falters in the face of anatomical complexity or airway unpredictability. Scenarios such as restricted mouth opening, cervical spine instability, and maxillofacial trauma can turn even routine intubation into a high-stakes challenge, increasing the risk of hypoxia, aspiration, or failed airway access.

Enter the fiberoptic bronchoscope—a game-changer in difficult airway management. This elegant tool offers real-time, high-resolution visualization of the airway, allowing for guided, controlled passage of the endotracheal tube, often while the patient maintains spontaneous respiration. It has transformed how clinicians navigate the airway, especially in high-risk or anatomically challenging cases, and is now firmly embedded in modern airway protocols and international guidelines.

Yet, even the most sophisticated fiberoptic techniques benefit from a reliable conduit—and this is where supraglottic airway devices (SADs) shine. More than just rescue tools, SADs have evolved into strategic airway allies, enabling oxygenation, ventilation, and intubation in a single setup. Among the front-runners in this category are the LMA Fastrach and Ambu AuraGain—each with distinct design philosophies aimed at centralizing the airway and easing the path for endotracheal intubation.

The LMA Fastrach, or Intubating Laryngeal Mask Airway (ILMA), boasts a rigid, anatomically curved structure with an epiglottic elevating bar and ergonomic handle, making it ideal for both blind and guided intubations. On the other hand, the Ambu AuraGain is a next-generation SAD that pairs a softer, anatomical

curve with a built-in gastric channel and bite block, offering both safety and versatility.

While both devices are widely used and recommended in difficult airway algorithms, head-to-head comparisons of their performance during fiberoptic-guided intubation remain limited. This study aims to bridge that gap by evaluating and comparing the Ambu AuraGain and LMA Fastrach in terms of glottic visualization, ease of intubation, time efficiency, and safety profile—offering insights into which device truly leads the way in advanced airway management.

Materials and Method

This prospective, randomized study was conducted in the Department of Anaesthesiology and Intensive Care, ASCOMS Jammu, after obtaining approval from the Institutional Ethics Committee. A total of 80 patients ASA I–II, aged 18–60 years, scheduled for elective surgery under GA were included and randomized into two equal groups (LMA Fastrach and AMBU Aura GAIN n=40 each) using computer-generated random numbers and sealed envelope allocation. Blinding was maintained for both patients and the data-recording anaesthesiologists.

After informed consent and pre-anesthetic evaluation, patients fasted for 8 hours and received oral pantoprazole 40 mg the night before surgery. On the day of surgery, IV access was established, premedication given, and standard monitors applied. Following 3 minutes of preoxygenation, induction was done using IV fentanyl (1 mcg/kg), propofol (2 mg/kg), and rocuronium (0.8 mg/kg). After confirming mask ventilation, the assigned SAD (LMA Fastrach or Ambu AuraGain) was inserted per guidelines. Placement was confirmed via capnography and chest rise. A fiberoptic bronchoscope was used to assess the glottic view (Brimacombe and Berry grading), and tracheal intubation was performed through the SAD. After confirming tube placement, the SAD was removed. Basic demographic profile, Glottic visualization, ease of insertion (No. of Attempts) , and complications were recorded by a blinded observer. Failed cases were conventionally managed and excluded from analysis.

Results

The two study groups—patients intubated using Ambu AuraGain and LMA Fastrach—were demographically similar, with no statistically significant differences observed, indicating successful randomization (Table No. 1).

Endotracheal intubation was notably quicker in the Ambu AuraGain group compared to the LMA Fastrach group (Table No. 2).

Furthermore, fiberoptic assessment demonstrated better glottic visualization with Ambu AuraGain, showing a significantly higher proportion of Grade 4 views (p = 0.021) (Table No. 3).

Table and Graph 1: Comparison of basic demography profile between two groups i.e Ambu Aura Gain and LMA Fastrach

Variable	Ambu AuraGain (n=40)	LMA Fastrach (n=40)	Total (n=80)	p-value
Sex				
Female	22	21	43	0.500
Male	18	19	37	0.500
Age (years)	44 ± 13	41 ± 13	–	0.38
BMI (kg/m²)	24.6 ± 3.2	24.6 ± 3.4	–	0.99

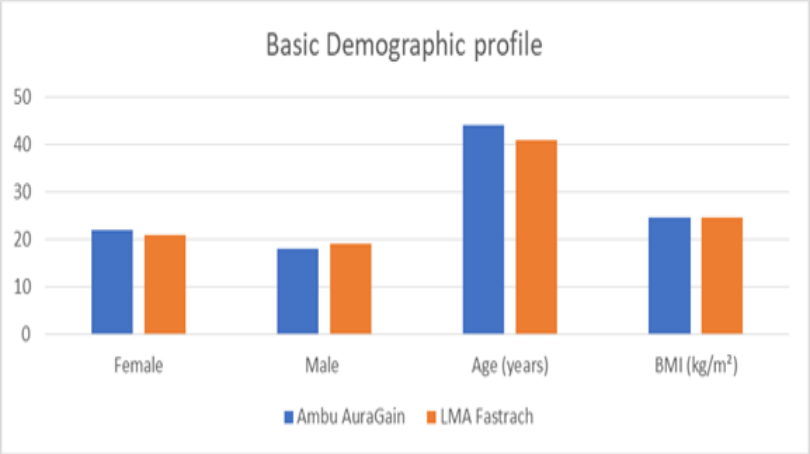


Table and Graph No. 2: No. of Attempts required for successful intubation i.e Ease of Intubation

No. of Attempts	AuraGain (n=40)	%	LMA Fastrach (n=40)	%	p-value
1	35	87%	30	75%	
2	4	10%	8	20%	
3	1	3%	2	5%	0.138

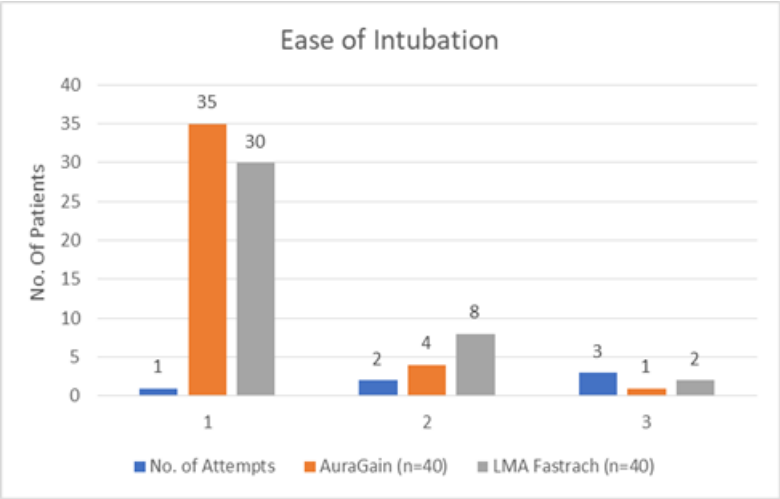
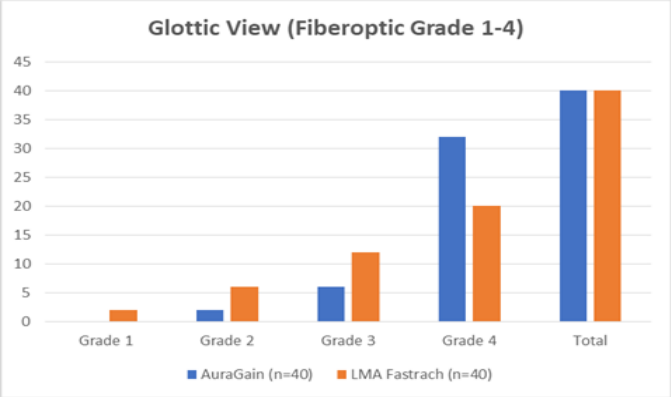


Table and Graph No.3: Comparison of Glottic View grades between Ambu Aura Gain and LMA Fastrach

Fiberoptic Grade	AuraGain (n=40)	%	LMA Fastrach (n=40)	%	p-value
Grade 1	0	0%	2	5%	
Grade 2	2	5%	6	15%	
Grade 3	6	15%	12	30%	
Grade 4	32	80%	20	50%	0.021
Total	40	100%	40	100%	



Discussion

When the going gets tough—difficult airway kind of tough—fiberoptic-guided intubation steps in as the true most valuable partner of airway management. With its unparalleled ability to deliver precision and minimize trauma, it has become the gold standard for anticipated and unanticipated difficult airways. Alongside it, supraglottic airway devices (SADs) like the Ambu AuraGain™ and LMA Fastrach™ bring versatility and innovation, acting as both ventilatory aids and conduits for tracheal intubation. Endorsed by the Difficult Airway Society (DAS) and American Society of Anesthesiologists (ASA), both devices have earned their stripes in routine as well as high-stakes airway scenarios. This study set out to compare these two SADs—Ambu AuraGain™ and LMA Fastrach™—in adult patients undergoing elective surgeries under general anesthesia. The performance of each device was evaluated based on four key endpoints: demographic variability, fiberoptic-guided glottic visualization, ease of insertion and procedural efficiency, and complications, if any. Our aim was not only to assess performance under controlled conditions but also to understand how these devices might fare in emergency or rescue settings.

Airway management literature emphasizes that patient characteristics—age, sex, and body mass index (BMI)—can influence SAD performance. However, a well-matched baseline eliminates bias. In our study, the demographic variables were closely matched between the two groups, effectively nullifying potential confounders. The mean age in the Ambu AuraGain and LMA Fastrach groups was statistically similar ($p = 0.38$). Likewise, sex distribution and BMI showed no significant differences ($p = 0.99$). These findings mirror those of Raiger et al. (2022) and Sarma et al. (2021), who similarly concluded that demographic factors did not significantly influence SAD efficacy.

One of the most striking differences emerged in fiberoptic glottic visualization. Conventional airway theory tells us that successful intubation correlates strongly with the clarity of laryngeal view. Here, the Ambu AuraGain™ significantly outperformed the LMA Fastrach™, with 80% of patients achieving a Grade 4 view (vocal cords only), compared to 50% in the Fastrach group ($p = 0.021$). This suggests that the AuraGain aligns more naturally with the laryngeal inlet, making navigation with a fiberoptic bronchoscope smoother and more intuitive. The anatomical curvature and positioning of the AuraGain likely offer a straighter path to the glottis, facilitating both visualization and tube passage. Despite these differences, ease of insertion and overall success rates for endotracheal intubation were comparable. Both devices were inserted with ease and demonstrated high success rates. The first-pass success rate was 87.5% in the AuraGain group and 75% in the Fastrach group, though the difference was not statistically significant ($p = 0.184$ and $p = 0.138$, respectively). These findings highlight the clinical reliability of both devices when operated by trained anesthesiologists under fiberoptic guidance. It reinforces the fact that operator skill remains a crucial determinant in airway success, especially in elective scenarios.

Our results are strongly supported by previous literature. Preece et al. (2018) found that the AuraGain yielded better fiberoptic views and faster intubation than the LMA Fastrach, a benefit they attributed to its anatomical design. Similarly, Mishra and Bharadwaj (2020), while evaluating the Ambu Aura-i (the predecessor of the AuraGain), reported higher first-pass success and superior visualization. These studies collectively strengthen the case for AuraGain as a more efficient and effective conduit for fiberoptic-guided intubation.

In summary, while both the Ambu AuraGain™ and LMA Fastrach™ are effective SADs with commendable success rates, the AuraGain offers notable advantages in terms of glottic visualization and no. of attempts of intubation. Its anatomical design seems better suited to align with the laryngeal inlet, providing an edge in clinical performance—especially when seconds count. In the ever-evolving landscape of airway management, devices that offer enhanced visibility, quicker intubation, and consistent reliability are the ones that truly elevate care. The Ambu AuraGain™, with its design-driven advantages, may just be one step ahead in that race.

Conclusion

In conclusion, the Ambu AuraGain exhibited superior fiberoptic glottic visualization and significantly reduced intubation time compared to the LMA Fastrach, while maintaining comparable first-pass success rates and ease of insertion. These findings, supported by balanced demographic data and existing literature, underscore the clinical efficacy and procedural advantages of the AuraGain in fiberoptic-guided intubation.

Limitations: This study's limitations include its single-center design, exclusion of high-risk and pediatric patients, reliance on experienced anesthesiologists, and lack of long-term follow-up, limiting generalizability to broader populations, varied clinical settings, and emergency or difficult airway scenarios.

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