

Original article:

Study of comparison of postoperative complications of laryngeal tube and laryngeal mask airway in anaesthetized adult patients

Dr. Raviraj Kamble , Dr. Rahul Patil*

Department of Anesthesia, Government Medical College, Miraj, Maharashtra

Corresponding author*



Abstract:

Introduction: Laryngeal mask airway (LMA) and laryngeal tube (LT) are supraglottic airway devices (SAD). They provide an airway intermediate between the facemask and endotracheal tube in terms of anatomic positions, invasiveness and security.

Materials and methods: Patients were selected from general surgery and orthopedic department. Those were selected randomly undergoing different surgeries like lipoma excision, fibroadenoma excision, upper limb operative procedures like humerus nailing, radius-ulna nailing etc. Care was taken that each group contain equivalent number of cases of different surgeries, so that both groups were comparable for statistical analysis. Patients under the study had undergone thorough preoperative assessment including detailed case history, clinical examination and necessary investigations depending on age and disease of the patient.

Results: Airway trauma was noticed more in LMA group (16.67%) than in LT group (13.33%). However it is not significant statistically ($P > 0.05$). Airway obstruction was noticed in two patients (6.67%) of LT group but none in LMA group. But still this was not statistically important. Other complications like regurgitation and laryngospasm were not observed in both the groups.

Conclusion: Laryngeal tube insertion is easier than laryngeal mask airway. Both are comparable with respect to ventilation properties, haemodynamic changes, intraoperative and postoperative complications.

Keywords: laryngeal tube , laryngeal mask airway

Introduction:

Laryngeal mask airway (LMA) and laryngeal tube (LT) are supraglottic airway devices (SAD). They provide an airway intermediate between the facemask and endotracheal tube in terms of anatomic positions, invasiveness and security. ¹They designed to form a seal in pharynx between the respiratory and digestive tracts to protect the airway and facilitate the gas exchange. The LMA was conceived and designed by Dr. Archie Brain in the United Kingdom in 1981, and first used in a human patient the same year. Commercial production of LMA started in 1988 and by 1990 they were available in all hospitals with operating rooms in the United Kingdom. ²By the time the LMA entered the American Society of Anaesthesiologists' difficult airway algorithm (1996); it had been used in over 30 million patients. It has been nearly 30 years since Dr. Archie J. Brain introduced the Laryngeal Mask Airway (LMA).The

amazing success trail of LMA has spurred the more enterprising individuals to introduce over a dozen and a half new supraglottic airway devices. Some have stood the test of time while others have dwindled into oblivion.³

Materials and methods:

We had studied 60 adult cases of ASA Grade I and II posted for routine surgical procedures under general anaesthesia with controlled ventilation. Cases were divided randomly in two groups.

Group A- Classical Laryngeal Mask Airway (LMA)

Group B- Laryngeal Tube (LT)

Patients were selected from general surgery and orthopedic department. Those were selected randomly undergoing different surgeries like lipoma excision, fibroadenoma excision, upper limb operative procedures like humerus nailing, radius-ulna nailing etc. Care was taken that each group contain equivalent number of cases of different surgeries, so that both groups were comparable for statistical analysis. Patients under the study had undergone thorough preoperative assessment including detailed case history, clinical examination and necessary investigations depending on age and disease of the patient.

Inclusion Criteria

- Age group – 18 to 55 years
- Sex – both male and female
- ASA Grade – I and II
- Routine elective surgical procedures
- Surgical duration around 1 - 2 hrs.
- Patients with BMI < 30

Exclusion Criteria

- Patients at high risk of aspiration.
- Patients with respiratory tract pathology.
- Patients with inadequate mouth opening.
- Patients who have taken radiotherapy to neck.
- Patients requiring head and neck surgeries.
- Patients with significant cardiovascular, respiratory, neurological or endocrine diseases.
- Surgical position other than supine.

Clinical data analyzed consisted of 60 patients undergoing different surgeries during the period of 2012-2014. Thirty patients were studied with Laryngeal Mask Airway (LMA) and 30 patients were studied with Laryngeal Tube (LT). The data was collected, compiled and analyzed statistically. All continuous variables are reported as mean \pm standard deviation. Group comparisons of normally distributed variables were tested by two sample unpaired 't' test. Test of proportions has been applied for comparisons of qualitative variables and categorical data.

Results:

Table No. 1 :Postoperative complications

Complications	LMA	LT	P value	Inference
Sore throat	5(16.67%)	6(20%)	0.740	NS
Dysphagia	0	1(3.33%)	0.310	NS
Hoarseness of voice	1(3.33%)	2(6.67%)	0.550	NS

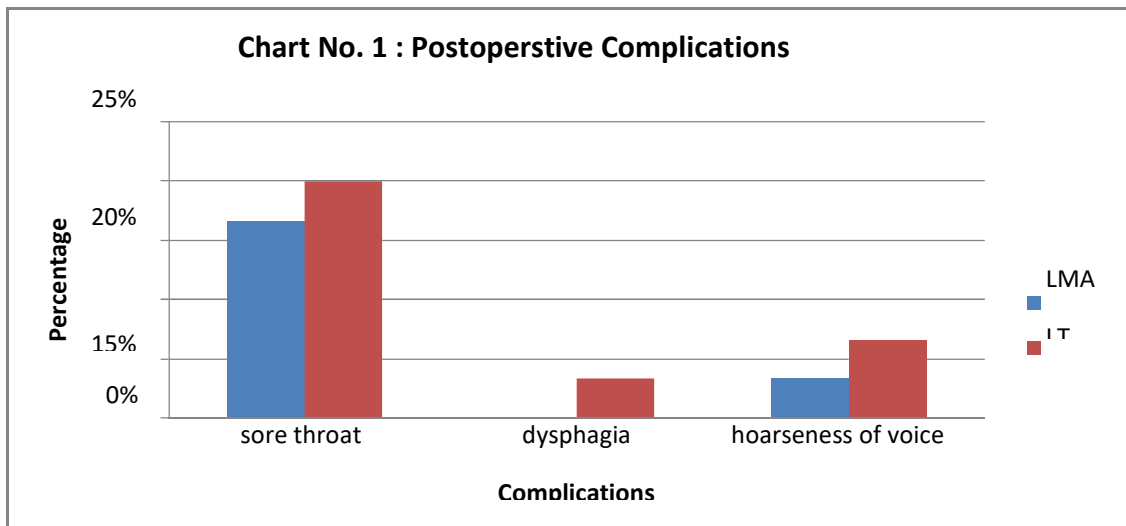


Table 1 and Chart 1 show postoperative complications in LMA and LT groups. By clinical observation sore throat incidence is more in LT group (20.00%) as compared to LMA group (16.67%). Dysphasia occurred in one patient of LT group and none with other group. Hoarseness of voice was seen in one patient (3.33%) of LMA group and in two patients (6.67%) of LT group. But by statistical analysis, all above different complications observed between these two groups were statistically not significant and none is better than another.

Table No. 2 : Intraoperative complications

Complications	LMA	LT	P value	Inference
Airway trauma	5 (16.67%)	4(13.33%)	0.720	NS
Airway obstruction	0	2(6.67%)	0.160	NS
Laryngospasm	0	0	-	-
Regurgitation	0	0	-	-

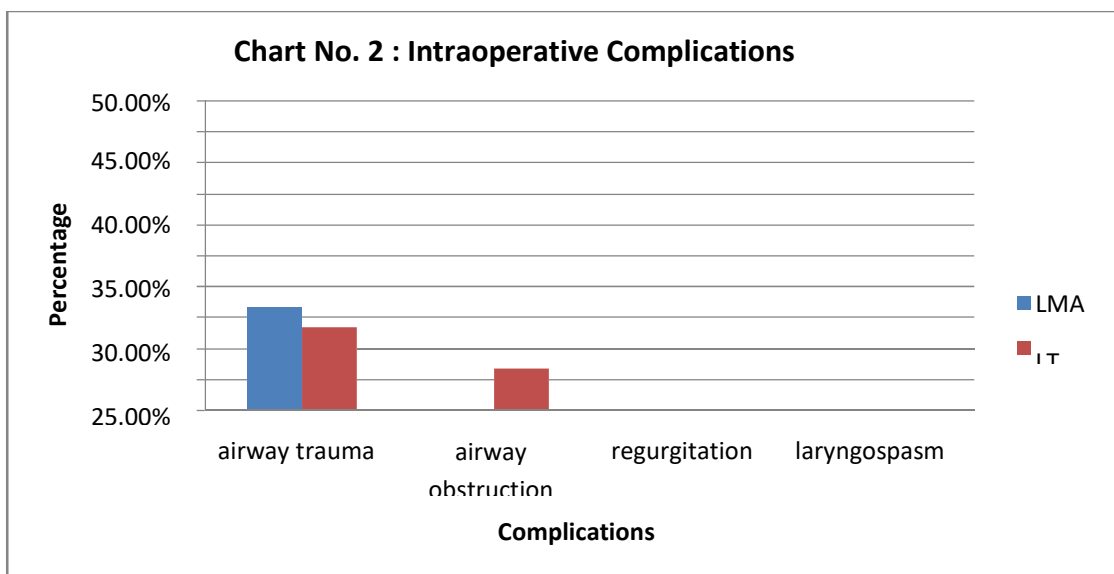


Table 2 & Chart 2 show intraoperative complications observed in both groups. Airway trauma was noticed more in LMA group (16.67%) than in LT group (13.33%). However it is not significant statistically ($P > 0.05$). Airway obstruction was noticed in two patients (6.67%) of LT group but none in LMA group. But still this was not statistically important. Other complications like regurgitation and laryngospasm were not observed in both the groups.

Discussion:

In our study various intraoperative complications observed. Airway trauma was considered if there was blood on the device after removal. It was observed in 5 patients (16.67%) belonging to group A and 4 patients (13.33%) in group B. However, this is statistically insignificant ($P < 0.05$). The bleeding occurred was minimal, also no active bleeding confirmed after extubation and patient

was reassured. Airway obstruction was noted in two patients (6.67%) of group B (LT). There was no adequate chest rise and air entry was severely decreased on auscultation. Immediate manipulations were done with readjusting the position and alignment of the device and clear airway was achieved. However, no such incidence was encountered with patients in group A (LMA). This is considered as statistically insignificant as P value is 0.16 (>0.05). The laryngospasm and regurgitation was not observed in any of the patients of both groups.

These results of our study, are comparable with the study done by T. Asai and K. Shingu⁴ 2005, T.M Cook et al⁵ 2003 where similar incidences of complications occurred with the use of LMA and LT and concluded that none was better than the other. In the post operative period, the patients were observed in recovery room and then followed up to a period of 24 hours in ward for any complications like sore throat, dysphagia and hoarseness of voice. Table 12 and Chart 12 shows the incidence of these postoperative complications up to 24 hours. There was complain of sore throat in 6 patients (20%) of group B (LT) and in group A (LMA) there were 5 patients (16.67%) with same problem. Dysphagia was present in one patient (3.33%) of group B (LT) but no patient from group A presented with this complication. Hoarseness of voice was present as a complication in one patient (3.33%) of group A (LMA) and two patients (6.67%) of group B (LT) in postoperative period. Incidence of complication when compared using Z test of proportion was found to be statistically insignificant between the two groups. ($p>0.05$).

These results of postoperative complications are comparable with study done by T. ASAI et al⁴ 2005, T.M. Cook and Mc Cormick⁶ 2003, Ashraf zia et al⁵⁵ where similar postoperative complications occurred in both groups which signifies that, LMA and LT both, causes similar postoperative complications when used for elective surgical procedure under general anesthesia with controlled ventilation.

Conclusion:

Laryngeal tube insertion is easier than laryngeal mask airway. Both are comparable with respect to ventilation properties, haemodynamic changes, intraoperative and postoperative complications.

Reference:

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