

## Short Communication

### Lidocaine Spray to Prevent Laryngospasm in Air Ways Surgeries

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#### Abstract

Laryngospasm is life threatening event that complicate airway surgeries requiring especial attention to prevent. To evaluate the advantage of pre intubation lidocaine spray to the laryngeal mucosa to prevent extubation laryngospasm.

80 patients of both sexes below 9 years old admitted for adenoidectomy or rigid bronchoscope foreign body removal included in this study. All patients were from risk groups to develop laryngospasm. At induction stage, before intubation and bronchoscope introduction 10% lidocaine sprayed to the laryngeal mucosa. The incidence of laryngospasm was noticed after removal of endotracheal tube and bronchoscope.

All patients included in this study for both types of surgical procedures not develop any type of laryngospasm whether partial or complete after extubation. Lidocaine spray can prevent laryngospasm in risk patients.

**Key Words :** Lidocaine, spray, laryngospasm, foreign body

#### الخلاصة

تقلص الحنجرة هو أحد مضاعفات جراحة المجاري التنفسية المهددة للحياة التي تحتاج للمتابعة واتخاذ التدابير اللازمة للوقاية منها.

هذه الدراسة أعدت لتقييم فعالية بخاخ الليدوكين قبل ادخال أنبوب التخدير او ناظور الحنجرة للمجاري التنفسية.

80 مريضاً تم اختيارهم ممن أعمارهم اقل من 9 سنوات خضعوا لعملية رفع الزوائد اللحمية او لإخراج الاجسام الغريبة من المجرى التنفسي. عند المرحلة الأولى للتخدير وقبل ادخال الانبوب او المنظار 10% من بخاخ الليدوكين تم وضعه على الحنجرة وبعد انتهاء العملية سجلت قابلية تقلص الحنجرة. لم يعاني أي مريض من تقلص الحنجرة ومن هذا نستنتج ان بخاخ الليدوكين اثبتت فعاليته للوقاية من تقلص الحنجرة لدى المرضى المعرضين له.

**الكلمات المفتاحية :** بخاخ الليدوكين ، تقلص الحنجرة، الاجسام الغريبة.

#### Introduction

Laryngospasm is one of the complications that interfere with surgical results render the patient to life threatening situation. Laryngospasm is a reflex closure of the upper airway because of the glottic musculature spasm [1]. Its protective reflex prevent foreign body aspiration but during surgery it may due to stimulation of glottic musculature by endotracheal tube, bronchoscope or secretions leading to partial or complete closure of the larynx postextubation, causing hypoxia and tachypnea [2,3].

Incidence of laryngospasm inversely related to age with higher incidence in children in the first 9 years [4]. Children with upper respiratory tract infection, asthma or irritable airway more prone to develop laryngospasm [5]. There is a close association between laryngospasm and the type of surgery. Highest incidence to tonsillectomy and adenoidectomy [6]. Many ways reported to prevent incidence of laryngospasm including pharmacological interventions like, intravenous lidocaine and topical lidocaine to larynx, magnesium sulphate,

acupuncture and the use of 5% carbon dioxide prior to extubation. However, none of these methods abolish laryngospasm completely [7,8]. The purpose of this study is to evaluate the advantage of pre intubation lidocaine spray to the laryngeal mucosa to prevent extubation laryngospasm.

### **Materials and Methods**

80 patients of both sexes below 9 years old admitted to AL-Hilla teaching hospital for adenoidectomy or rigid

bronchoscope foreign body removal included in this study. All patients were from risk groups to develop laryngospasm. All patients supplied with controlled general anesthesia. At induction stage, before intubation and bronchoscope introduction 10% lidocaine sprayed to the laryngeal mucosa. Surgical procedure took extended for about 10 minutes then incidence of laryngospasm noticed after removal of endotracheal tube and bronchoscope removal.

**Table 1:** Patients in relation to risk of laryngospasm

| <b>Risk of laryngospasm</b>                                                         | <b>adenoidectomy</b> | <b>Bronchoscopy</b> |
|-------------------------------------------------------------------------------------|----------------------|---------------------|
| Age                                                                                 | <9 years             | <9 years            |
| Recent upper respiratory tract infection                                            | 5 patients           | 12 patients         |
| Others (stimulation of the larynx by blood, tube, bronchoscope or suction catheter) | All patients         | All patients        |

### **Results**

All patients included in this study for both types of surgical procedures not develop

any type of laryngospasm whether partial or complete after extubation. Table 2

**Table 2:** Incidence of laryngospasm during extubation

|                    | <b>adenoidectomy</b> | <b>Bronchoscopy</b> |
|--------------------|----------------------|---------------------|
| Age by mean        | 6.8                  | 4.5                 |
| Number of patients | 60                   | 20                  |
| laryngospasm       | none                 | None                |

### **Discussion**

Laryngospasm is a problematic complication, which occurs often under general anaesthesia. Especially for patients at risk. Resolving this problem required special consideration related to depth of anesthesia, patient factors and pharmacological interventions [9]. In this study none of patients who are at risk develop laryngospasm during extubation. This could be explained by using lidocaine spray prior intubation as lidocaine is well experienced and cheap local anesthesia

that have the ability to stabilize upper airway mucosa preventing propagation of stimulus which is the main expected cause of laryngospasm. Many previous studies use lidocaine prior extubation and prove its efficiency to prevent laryngospasm like Baraka [10], that studied 40 children undergoing tonsillectomy and adenoidectomy and found that none of children who received an i.v. injection of lidocaine 2 mg/kg, 1 min before extubation developed laryngospasm after tracheal extubation, while four of 20

children of the control group developed severe laryngospasm. On the other hand, meta-analysis done by T. Mihara and college [11] prove the effectiveness of lidocaine topically and intravenously in prevention of laryngospasm. However, lidocaine spray provide better spread of drug over glottis, subglottic and vocal cord with minimum side effect than if applied intravenously and this explain why lidocaine spray chosen in current study.

As a conclusion, lidocaine spray can prevent laryngospasm in risk patients.

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