



## Attenuation of Pressure Response to Laryngoscopy and Intubation by Using 2% Xylocard Spray :A case study of Thirt Patients

### KEYWORDS

Laryngoscopy,intubation,blood pressure,lignocain spray.

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**ABSTRACT** Background:Lignocain spray is recommended for attenuation of the pressure response to laryngoscopy and intubation

*Aims: The aim of the study to evaluate the efficacy of topical xylocard 2% for attenuation of the pressure response to laryngoscopy and intubation*

*Settings and Design: Pilot study*

*Materials and Methods: In this study thirty patients of ASA I AND II requiring endotracheal intubation, for different surgical procedures enrolled.After induction with thiopentone and succinyl choline laryngoscopy done and epiglottis, posterior part of tongue,valeculae are sprayed with 2% xylocard.PR, SBP, DBP just before intubation, just after intubation, and from one min upto five mins after intubation noted and compared to the base line i.e.just before intubation.*

*Statistical Analysis:Mean and S.D. is calculated and paired t test applied to compare in between the groups.*

*Results: There is significant difference between just before intubation and just after intubation[  $p < 0.05$ ] with respect to HR,SBP, DBP.There is significant rise in HR, SBP, DBP just after intubation.Then all parameters come near to base line i.e. just before intubation from first min to the fifth min of intubation.*

*Conclusion: Spraying the cords with 2% xylocard just after laryngoscopy is very good alternative without having any side effects for attenuation of the pressure response to laryngoscopy and intubation*

### INTRODUCTION:

Laryngoscopy and endotracheal intubation leads to reflex release of catecholamines resulting in {1,2,3} cardiovascular responses like hypertension and dysarrhythmias.These responses are self limiting in many patients ,however it leads to morbidity and mortality in patients having ischaemic heart disease and raised intracranial tension[4,5].These haemodynamic responses are due to sympathetic adrenergic response to the laryngoscopy and intubation.So many approaches are used to blunt the response using induction agents like propofol[6 ],analgesics[7],opioids[8,9],B-blockers[10,11],calcium channel blockers[12,13],sodium channel blockers[14],and latest alpha-2 agonist[15].Similarly few attempts are made by blocking the posterior part of the tongue and valeculae with nerve blocks like glossopharyngeal,laryngeal,and transtracheal nerve.

Lignocain has been used both topically and intravenously for the attenuation of the pressure response,but the effect of topical lignocain in attenuating the pressure response to laryngoscopy is controversial;as after topical administration,rate and extent of absorption dependent on concentration,specific site,and duration of exposure

But the age old lignocain used for topical application contain methyl paraben as a preservative,so to avoid the sensitivity and adverse reaction to preservative we decided to use xylocard 2% for topical anaesthesia just before intubation after induction of anaesthesia for attenuation of the pressure response to laryngoscopy and intubation.

### MATERIAL AND METHODS:

After taking informed consent,thirty patients of either sex, in age group of 16 to 60 ,belong to ASA I AND II physical status undergoing different surgical procedures requiring endotracheal intubation,without any difficulties in endotracheal intubation were enrolled in this study.

### Exclusion criteria:

Patients with IHD,hypertension,patients on B-blockers,anticipated difficult intubation Patients with significant hepatic and renal disease. On arrival in the operation theater, NIBP,ECG,SPO2,baseline values of heart rate,SBP,DBP and MAP measured.All patients were pre medicated with iv glycopyrolate 0.04 to 0.05 mg/kg, Iv midazolam 1 mg,Iv emeset 4 mg,with fortwin 30 mg.After preoxygenation with 100% oxygen,general anaesthesia was induced with iv thiopentone 5 - 7 mg/kg with succinyl choline 1.5 to 2 mg/kg to facilitate the endotracheal intubation.Laryngoscopy was done by senior anaesthetist after ventilating patients lungs with 100% oxygen and base of tongue,epiglottis, valeculae cords are sprayed with 2cc of 2% xylocard with use of a syring and needle which is bent in the middle to facilitate the spray. To avoid the accidental displacement of needle while spraying the adhesive tape is applied at the junction of needle and syringe and patients trachea intubated with appropriate number of endotracheal tube.SBP [systolic blood pressure] ,DBP[diastolic blood pressure],MAP[mean arterial pressure],HR[heart rate] monitored as baseline,just before laryngoscopy and intubation,just after intubation,and every one minute upto 5 minutes after intubation. Statistical analysis :All the values were calculated in mean and standard deviation.Paired t test is applied in the groups at various stages at 95% confidence interval.P value is considered to be significant if  $p < 0.05$  .

### OBSERVATIONS AND RESULTS:

There are several studies which shows that there is increase in the pulse rate, blood pressure after endotracheal intubation,similarly we are routinely experiencing the pressure response to the laryngoscopy and endotracheal intubation, so placebo was excluded in form of normal saline spray.

Parameters like heart rate, systolic blood pressure, diastolic blood pressure measured just before intubation, just after laryngoscopy and intubation and inflating the pilot balloon, and after every minute upto five minutes from endotracheal intubation

**TABLE:1:  
PULSE RATE AT VARIOUS STAGES:**

	JUST BEFORE Intubation	just after intubation	T1	T2	T3	T4	T5
MEAN	99.29	111.03	103.58	100.48	98.96	97.19	94.77
S.D.	20.36	14.67	16.8	18.25	16.21	15.94	15.59
t value		5.339	2.08	0.563	0.164	1.057	2.185
P VALUE		0	0.046	0.578	0.871	0.299	0.037

Here P value <0.05 [p=0.00] after laryngoscopy and intubation, hence there is significant difference in just before intubation and just after intubation after inflating the pilot balloon.

Similarly p < 0.05 at one min and at five min after intubation. Hence there is significant difference at one min and at five min as compared to just before intubation with respect to pulse rate.

**TABLE:2  
SYSTOLIC BLOOD PRESSURE AT VARIOUS STAGES:**

	JUS BEFORE INDUCTION Intubation	just after intubation	T1	T2	T3	T4	T5
MEAN	115.87	126.87	118.25	113.19	108.8	103.35	99.58
S.D.	13.86	21.12	11.31	12.4	13.14	13.13	12.66
t value		2.745	1.032	1.344	3.063	4.8	6.292
P VALUE		0.01	0.31	0.189	0.005	0	0

P value is highly significant [p = 0.01] just after laryngoscopy and intubation as compared to just before intubation

Similarly p < 0.05 at third min, fourth min, and fifth min as compared to just before intubation with respect to systolic blood pressure.

Hence there is significant difference in systolic blood pressure after laryngoscopy and intubation and at third, fourth, and fifth min as compared to just before intubation.

**TABLE : 3  
DIASTOLIC BLOOD PRESSURE AT VARIOUS STAGES:**

DIASTOLIC BLOOD PRESSURE AT VARIOUS STAGES							
	JUST BEFORE INTUBATION	JUST AFTER INTUBATION	T1	T2	T3	T4	T5
MEAN	71.29	83.25	74.96	70.7	66.12	63.77	60.48
S.D.	9.81	15.12	10.39	8.71	8.65	9.04	9.47
t valu		4.663	2.13	0.401	3.356	4.1666	5.27
P VALUE		0	0.04	0.691	0.002	0	0

There is significant difference in diastolic blood pressure just after intubation and laryngoscopy [p = 0.000]

Similarly there is significant difference in p value [p < 0.05] at one min, third min, fourth min, and fifth min. as compared to just before intubation with respect to the diastolic blood pressure.

**DISCUSSION:**

The precise mechanism which leads to haemodynamic changes to laryngoscopy and intubation is not known but it probably involves intense sympathetic discharge by stimulation of epipharynx and laryngopharynx[16]. In addition the longer duration of laryngoscopy, greater is the pressure response[17]

Mubarrak Jain et[18] used 10% lignocain spray to attenuate haemodynamic response to laryngoscopy and intubation and found significant success. In that method there was total 10 times spray 2 mins before induction.

Robert K. Slotting[17] used 2% viscous mouth wash and gargles five mins before induction and concluded that pressure was attenuated but increase in heart rate in response to endotracheal intubation was not blocked as viscous solution did not anaesthetize the cords and trachea.

Richard A Kraut[19] compared intravenous and topical laryngotracheal lignocain and found topical lignocain is preferred way to attenuate stress response to laryngoscopy and intubation. So we preferred the topical spray to attenuate the pressure response.

Takita et al suggested that endotracheal intubation performed two minutes after tracheal lignocain attenuates the cardiovascular response to endotracheal intubation.

In our study we sprayed the epiglottis, posterior part of tongue, valleculae, and cords with 2cc of 2% xylocard after induction of anaesthesia and after direct laryngoscopy. After endotracheal intubation and inflating the pilot balloon there is significant increase in the PR, SBP and DPP. There is significant rise in PR just after laryngoscopy and intubation and at first min after intubation [p<0.05]. After that pulse rate shows the following trend and again at fifth min after intubation pulse rate is less than its baseline value [p <0.05] [just before intubation].

Similarly there is significant increase in the SBP just after intubation p<0.05 and there after SBP shows the following trend and at third min, fourth min, and at fifth min SBP was less than its baseline value. [p<0.05].

There is significant rise in DBP just after intubation [p is highly significant] as compared to just before intubation. Than from first min to fifth min there is significant fall in DBP [P<0.05] as compared to just before intubation.

**CONCLUSION :**

From the present study it can be concluded that there was marked rise in PR, SBP, DBP immediately after intubation and inflation of tracheal cuff.

Xylocard 2cc 2% sprayed just before intubation and laryngoscopy blunts the cardiovascular response to intubation. The effect of xylocard spray is more marked on the systolic and diastolic blood pressure than on the pulse rate.

Thus xylocard spray just before intubation and after laryngoscopy is useful tool for attenuating the pressure response to intubation.

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