Direct Laryngoscopy under Topical Anaesthesia and Superior Laryngeal Nerve Block for Laryngeal and Hypopharyngeal Lesions in ENT Patients

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Abstract

Introduction: Direct laryngoscopy is a common procedure being done by otorhinolaryngologists under general anaesthesia for various pathologies of the larynx and hypopharynx. Regional anaesthesia using topical spray and bilateral superior laryngeal nerve block is an alternative for the direct laryngoscopy. Aim: To evaluate the effect of bilateral block of superior laryngeal nerve (SLN) and topical anesthesia in direct laryngoscopy for diagnostic purpose as well as for taking biopsies from the larynx and hypopharynx. Materials And Methods: This is a prospective study done on 20 patients in age group of 50 to 70 years with laryngeal and hypopharyngeal growth. All these patients underwent diagnostic direct laryngoscopy with biopsy under regional block which include bilateral superior laryngeal nerve block with 2% lignocaine and topical anaesthesia of oral cavity and transtracheal through cricothyroid membrane with 10% lignocaine spray and 4% lignocaine respectively. Result: Success rate in our study was 85% in supraglottic, transglottic, pyriform growth and only 15% in glottis and postcricoid growth based on assessment of hemodynamic stability and patients comfortable score before and after the procedure under regional block. Conclusion: Direct Laryngoscopy under topical anesthesia and superior laryngeal nerve block for biopsy is a good alternative to general anesthesia for the patients presenting in ENT with laryngeal and hypopharyngeal pathologies.

Keywords: Supraglottic, hypopharyngeal, superior laryngeal nerve, block, topical anaesthesia.

Method

This study was conducted in the Department Of ENT in GMC, Jammu, on 20 patients over a period of 6 months from 1st January 2019 to 1st July 2019. An informed and written consent was
obtained from the patients. A good rapport was developed with patients and the procedure was explained. History regarding systemic disorder such as hypertension, diabetes mellitus, ischemic heart disease and congestive cardiac failure was taken. Thorough examination of cardiovascular system, respiratory system and airway was done.

**Inclusion criteria**

Patients with Supraglottic, Glottis, Transglottic, Hypopharyngeal growth with or without tracheostomy.

**Exclusion criteria**

A) Patients with Subglottic growth.
B) Patient not giving consent for direct laryngoscopy under local anesthesia.

**Technique**

Patients were shifted to the operating table and they were made to lie in the supine position. Pulse and blood pressure were recorded. An intravenous infusion was secured in one forearm. With the patient lying supine the head was maximally extended and the hyoid bone identified by palpation. Since hyoid bone does not articulate with any other bone, it is readily movable, and this mobility serves as a useful identifying sign. After cleansing the neck with iodophore, a 21 gauge needle was introduced laterally at the greater cornu of the hyoid. After contacting the bone, the needle was then moved caudally until it slipped off the hyoid, just through the thyrohyoid membrane, and in to a closed space bounded by thyrohyoid membrane laterally and laryngeal mucosa medially. This space contains the ramifications of the internal branch of the superior laryngeal nerve. A careful aspiration is done to see that no air or blood is aspirated. This helps us to ensure that the needle does not lie in the lumen of vessel or that of the larynx. 1-2 ml of 2% lignocaine was injected. The block was then repeated on another side in the same manner. 2ml of 4% lignocaine was injected via cricothyroid membrane puncture at the end of maximal expiration. As the anaesthetic agent enters the trachea, patient coughs thereby spreading anaesthetic agent throughout the trachea and supraglottis. Tip of the epiglottis and oropharynx may retain some sensitivity. Patient was asked to open his/her mouth and the tongue was gently held protruding out. A spray of 10% lidocaine was applied while introducing the laryngoscope. Pulse and blood pressure was again recorded during the procedure in each patient.

Defending movement of head and hands during the block provide a reliable indication of depth of the needle.[5]

Patient comfortable score during direct laryngoscopy included the following parameters:

No reaction
Slight grimacing
Heavy grimacing
Verbal objection
Defencing movement of head and hands

**Statistical Analysis**

All the data was analysed using software SPSS 17.0. Characteristics of the patients was analysed using the descriptive analysis.

**Results**

This study was conducted on 20 patients presenting with growth larynx among which 19 were male and one was female. All these patients were in the age group between 54 to 70 years with mean age of 62 ± 5.6 years. After giving block to the patients, hemodynamic parameters i.e pulse and BP were noted before and during the procedure. Table 1,2,3 shows the hemodynamic parameters in case of supraglottic, glottis and pyriform sinus growths respectively. We had 2 patients with trans-glottis growth and one patient with post cricoid growth.

| Table 1: Haemodynamics of the patients in Supraglottic growth (n=10) |
|---------------------|---------------------|---------------------|
| Parameters         | Mean ±SD            | During procedure    |
|                    | Before procedure    | During procedure    |
| Pulse rate         | 75.44±10.44         | 90.6±10.25          |
| SBP                | 118.6±10.28         | 133.5±10.40         |
| DBP                | 76±11.66            | 87.5±7.96           |

| Table 2: Haemodynamics in the Pyriform sinus growth (n=4) |
|---------------------|---------------------|---------------------|
| Parameters         | Mean ±SD            | During procedure    |
|                     | Before procedure    | During procedure    |
| Pulse rate         | 78±10.54            | 87.5±11.08          |
| SBP                | 115±15.59           | 128.5±2.28          |
| DBP                | 74±11.575           | 84±11.83            |

| Table 3: Haemodynamics in the Glottic growth (n=3) |
|---------------------|---------------------|---------------------|
| Parameters         | Mean ±SD            | During procedure    |
|                     | Before procedure    | During procedure    |
| Pulse rate         | 76±7.48             | 96.67±4.11          |
| SBP                | 115.33±3.40         | 148.67±8.15         |
| DBP                | 72±1.63             | 98.33±4.11          |

Table 4 shows patient comfortable score during the procedure. Patients were having hemodynamic stability and good comfortable score in supraglottic, transglottic, pyriform sinus growth thus allowing surgeon to access the growth and to take biopsy.
Success rate in our study was 85% (17 out of 20 patients). In remaining 15%, i.e in glottis and postcricoid growth, direct laryngoscopy was abandoned as patients showed defencing movements and hemodynamic instability. In case of supraglottic growth, patients showed slight grimacing and were comparatively comfortable till the completion of the procedure. Similarly, in transglottic and pyriform growths also, patients showed slight grimacing and were comfortable during procedure.

Discussion

In the present study of 20 patients, direct laryngoscopy done using bilateral superior laryngeal nerve block along with topical anaesthesia mostly consisted of older patients unfit for general anaesthesia. Older patients are usually unfit for general anaesthesia due to multiple systemic disorders[7]. This procedure provides adequate anaesthesia for about 45-60 minutes during which a detailed examination of the larynx can be done and adequate biopsy can be taken from any lesion. This technique is well tolerated in multiple injections in vocal folds during type 1 thyroplasty, CO2 laser ablation of respiratory papillomatosis and soft tissue biopsy as well[8], a similar type of local anaesthesia has been described for diagnostic endoscopy of the airway to the carina and in indirect laryngeal surgeries. The superior laryngeal block was not used in such procedures[9,10]. These tools prove to be useful not only in operating room setting but also in emergency room and intensive care area as well and also add to the confidence and abilities of the practitioner[11]. Direct laryngoscopy was successful in 85% of cases in our study which is nearer to the success rate reported by study done by Sivakumar et al[7] with 82.5% of success and low failure rate of 17.5%. Failure rate in their study was attributed to the lack of proper skill in the initial period of the study. In our study failure rate was due to patients not tolerating the manipulation in the growth of vocal cords and in the postcricoid region. However, examination in these patients was complete but they did not allow to take the biopsy. Procedure was abandoned due to poor patient comfortable score and unstable hemodynamic parameter. Breathing and voice usually remained normal. Patients complained about the heaviness or numbness in the throat as distressing to them. These patients are well counselled and reassured about this phenomenon being temporary due to the effect of topical anaesthesia. There could be loss of pitch while speaking loudly due to inadvertent anaesthesia of external branch of the superior laryngeal branch and impairment of deglutition[10].

Conclusion

Direct Laryngoscopy under topical anesthesia and superior laryngeal nerve block becomes easy to perform and comfortable to the patients. Patients presenting with supraglottic and hypopharyngeal growths can be undertaken for direct laryngoscopy and biopsy using this technique. This technique is a good alternative to the general anesthesia and can avoid any undue delay in management and treatment of the patients. This technique of regional anesthesia for direct laryngoscopy has minimal haemodynamic instability in the patients, effective anesthesia and is associated with little risk to the patients.

Conflict of interest

None

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References