Transverse approach for ultrasound-guided superior laryngeal nerve block for awake fiberoptic intubation

Sir,

Awake fiberoptic intubation (AFOI) is a commonly performed procedure for difficult airways. Various techniques to anesthetize the airway include nebulization, sprays, and airway blocks. Among the various nerves blocked, superior laryngeal nerve (SLN) is usually blocked blindly using a percutaneous approach based on anatomical landmarks. (Greater cornua of the hyoid bone [HB] and the thyroid cartilage [TC]). Recently, ultrasound (USG)-guided approach has been used, wherein the probe is placed in a longitudinal plane. Here, we describe a method in which we have placed the transducer transversely and achieved the nerve blockade successfully.

A 16-year-old male with burn contracture in the right side neck was scheduled for contracture release and skin grafting. Since it was an anticipated difficult airway, we had planned an awake fiberoptic aided oral intubation. Preoperative counseling and consent for the procedure was taken. On shifting to the OR, routine monitors were connected. An intravenous cannula was already in situ. Ten percent of lignocaine spray was used to anesthetize the back of the tongue. Since, there was neck contracture present on the right side of the neck, the probe was kept transversely over the HB. The following structures were identified: (1) body and greater cornua of HB (2) TC and its superior cornua [Figure 1]. The needle was inserted laterally to medially in plane to the probe. Two cc of 1% lignocaine was deposited below the greater cornua of the HB and above the superior cornua of TC to block the SLN. Following this, transtracheal injection with 2 cc 1% lignocaine was done. AFOI was done and the surgery commenced.

SLN is a branch of vagus nerve that bifurcates into an external and internal branch. The external branch provides motor innervation to cricothyroid muscle. The internal branch is a sensory branch innervating base of the tongue, epiglottis, and the mucous membrane of the larynx down to the vocal cords. The internal branch passes immediately inferior to the greater horn of the HB and approaches the thyrohyoid membrane accompanied by the superior laryngeal artery, a branch of the superior thyroid artery. This is the location where it can be blocked before it pierces the thyrohyoid membrane. Along with the topicalization of the oral cavity/nares and transtracheal topicalization, SLN block can be used to anesthetize the complete airway. This makes the AFOI a simple and comfortable procedure.

USG-guided block is very useful in patients with distorted neck anatomy: swellings, vascular malformations, and burns. Longitudinal technique has been described previously, wherein the probe is kept parasagittally and the following structures are identified: thyrohyoid muscle, thyrohyoid membrane, the interface between the luminal surface and
the superficial mucosae of the larynx. Initially, authors had suggested depositing the drug in superior laryngeal space.\(^2\) Lately in a case series by Sawka et al., they successfully visualized the SLN and accurately placed local anesthetic around it followed by AFOI.\(^3\)

Although the longitudinal approach of direct visualization of the nerve is a more accurate method, it is technically challenging as the nerve diameter is \(<1\) mm which makes it difficult to localize [Figure 2]. Furthermore, the longitudinal approach might not be possible in few cases such as burns, vascular malformations, and anatomical abnormalities. Hence, we suggest that transverse approach can be of use in patients where a longitudinal approach is difficult or not possible.

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Conflicts of interest
There are no conflicts of interest.

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