

## Case Report

# UNUSUAL COMMUNICATION BETWEEN THE MYLOHYOID NERVE AND LINGUAL NERVE IN A NORTH INDIAN MALE CADAVER: ITS CLINICAL SIGNIFICANCE

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## ABSTRACT

Variations and communications are frequently encountered in the branches of posterior division of the mandibular nerve. These unusual anatomical variations are rare and least conclusively described in the literature. During routine dissection, we found the presence of unusual communicating branch between mylohyoid nerve and lingual nerve in a middle aged male cadaver. Its clinical significance and surgical implications are also discussed in this report along with the possible role of the alternate path of sensory innervation of the tongue.

**KEY WORDS:** Mylohyoid nerve, Lingual nerve, Communicating branch, Auriculotemporal nerve, Inferior alveolar nerve, Mandibular nerve.

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## INTRODUCTION

Trigeminal nerve is the largest of all cranial nerves and it is considered as mixed nerve. It is attached to the ventral surface of pons by two rootlets large sensory and small motor root. The convex antero-lateral margin of the trigeminal ganglion gives attachment to three divisions - ophthalmic, maxillary and mandibular in the middle cranial fossa. The sensory mandibular division of the trigeminal nerve is joined by the motor root to form the mandibular nerve (MN), while its maxillary and ophthalmic divisions constitute predominantly sensory fibres. The MN immediately after its exit from the skull through the foramen ovale, divides into the anterior and posterior branches. Branches of the posterior division of the MN – namely the Lingual nerve

(LN), inferior alveolar nerve (IAN) and auriculotemporal nerve (ATN). The mylohyoid nerve (MHN) is a branch of the IAN, which arises before its entry in the mandibular foramen. The nerve then passes downward and anteriorly within the mylohyoid groove on the medial surface of the mandible. The nerve courses anteriorly and parallel to the mylohyoid muscle and giving branches that provide motor innervation to the mylohyoid and anterior belly of the digastric muscles.

The mylohyoid muscle plays an important role in chewing, swallowing, respiration and phonation [1]. It has been analyzed that the MHN may carry a sensory innervation of the chin and the lower incisor teeth through an alternate pathway. Abnormal communications most commonly

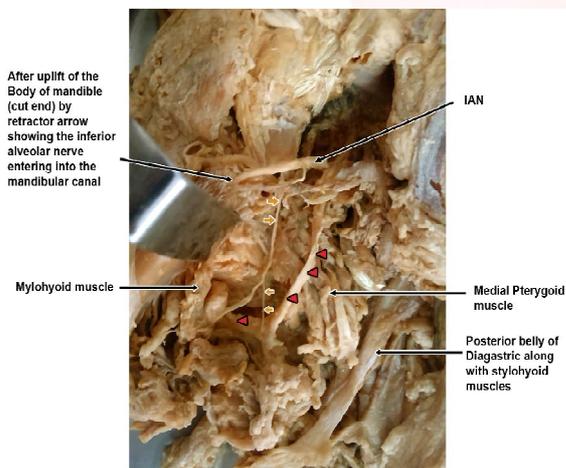
encountered among the posterior division branches of the mandibular nerve.

## MATERIALS AND METHODS

During the routine M.B.B.S practical, dissection of head and neck region of a middle-aged male cadaver in the Department of Anatomy, AIIMS, Patna, a rare unusual communication between the MHN and LN was noted. Dissection of Infra-temporal region was done carefully and all the branches of MN was traced. The MHN branch of the IAN was traced up to the mylohyoid muscle. The LN was dissected until its entrance into the submandibular region.

## OBSERVATIONS

In the present case, a thin communicating branch arising from the MHN at the below the level of mandibular foramen close to the intermediate tendon of digastric muscle, that joined LN (Figure 1 and 2). Thereafter, the MHN pierced the mylohyoid muscle and followed its normal course and branching pattern. No other anatomical variations were found in the origin of IAN or the LN. In addition, no communicating branches between these two nerves were found. The LN, after receiving this communicating branch from the MHN, was observed taking its normal course and branching pattern.



Many studies have revealed that there is lot of variation and communication between branches of the posterior division of MN [2].

The presence of communicating branches between the IAN and LN are very commonly mentioned in most of the anatomical textbooks [3]. Nevertheless, a communicating branch between the MHN and LN is seldom described by authors in the literature.

In present case report, a rare unusual communication between MHN and LN on left side was seen. Thotakura et al [4] studied 36 specimens, in two specimens they found abnormal communication between MHN & LN. Simarjit kaur et al [5] has also reported communication between the MHN and LN.

This communication occur after the LN passes in close relation to the third molar tooth. Since this close relationship of the LN and the third molar tooth makes it susceptible to injury during the third molar extraction [6]. The unusual communication can be an alternate pathway for the lingual general sensory fibres as well as the sensation from the teeth or chin skin that may pass through the MHN and IAN to joins the posterior division of mandibular nerve. This view is also supported by Kilic C *et al* [7]. The presence of a nerve communication like the one described in this case would help in the LN function recovery [8]. A communicating branch from the MHN to the LN is developmental in origin and assumed to convey proprioceptive fibres from the mylohyoid muscle through the LN [9].

These anatomical variations are explained on the basis of development. MN develops from first arch by neural crest cells [10]. It has been suggested that during the embryonic development few of the proteins liberated from somites such as T-cadherin, may be responsible for neural development. Abnormal expression of these proteins may lead to delayed regression of arches and anomalous communication between nerves [11,12].

## CONCLUSION

The presence of such communicating nerves among the posterior division branches of they are development in origin and thought to serve as an alternative route for maintaining the

functional integrity of the structures innervated by it. Knowledge of these alternative pathways is important in helping clinicians to obtain complete dental anesthesia as well as surgeons to avoid unnecessary complications during surgeries and in dental practice. Further research is necessary to obtain more detailed knowledge regarding variations of position and course of the mylohyoid nerve.

### ABBREVIATIONS

**MN** - Mandibular Nerve

**LN** - Lingual Nerve

**IAN** - Inferior Alveolar Nerve

**ATN** - Auriculotemporal Nerve

**MHN** - Mylohyoid Nerve

**Conflicts of Interests: None**

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