

*Case Report***Bilateral Internal Triplication of Hypoglossal Canal**More Raghunath¹, Royana Singh², Neeraj Shende³, Sharad Pandey³¹Assistant Professor, ²Associate Professor, Department of Anatomy, IMS, BHU, Varanasi, UP, India³Senior Resident, Department of Neurosurgery, Sir Sunder Lal Hospital, IMS, BHU, Varanasi, UP, India

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*Received: 18/05/2015**Revised: 15/06/2015**Accepted: 16/06/2015***ABSTRACT**

The hypoglossal canal is bony canal (anterior condylar canal) in the occipital Bone of skull and is directed laterally and slightly forwards deep to each occipital condyle and transmits the hypoglossal nerve, a meningeal branch of ascending pharyngeal artery and emissary vein from basilar plexus internally and to the internal jugular vein externally. Hypoglossal canal is the permanent element of the human skull. The hypoglossal canal is situated above the occipital condyle at its junction of anterior one third and posterior two third and lies a little above and anterolateral to foramina magnum. The venous plexus is a dominant component of this canal. Sometimes it is divided by a spicule of bone leading to variant as double hypoglossal canal. Previous studies on hypoglossal canal may morph metric or non metric study duplication of hypoglossal canal reported frequently. But the triplication of hypoglossal canal not reported in medical literature as per Pubmed advanced search. We reported such a rare case of internal triplication of hypoglossal canal and possible reasons of its triplication.

Keywords: hypoglossal canal, triplication, hypoglossal nerve.

INTRODUCTION

The hypoglossal canal is bony canal (anterior condylar canal) in the occipital bone of skull and is directed laterally and slightly forwards deep to each occipital condyle and transmits the hypoglossal nerve, a meningeal branch of ascending pharyngeal artery and emissary vein from basilar plexus. ^[1]

Clinical consideration and pathological symptoms as fracture of occipital bone, intra- cranial neoplasm's and also congenital defects the hypoglossal canal is essential, clinical importance. ^[2-4] Venous plexus of hypoglossal canal creates a link between the marginal sinuses and superior

jugular bulb and indirectly, with the vertebral veins. ^[5,6] The venous plexus is predominant constituents of the canal in man sometimes it is divided by spicule bone leading to variant as double hypoglossal canal. Such double hypoglossal canal predisposes the roots of the hypoglossal nerve to entrapment in the occipital bone during ossification, and subsequently leads to an alteration in the tongue movement and speech. ^[7] There is no report from present available literatures on internal triplication of hypoglossal canal. So, tried to report such rare variation of hypoglossal canal.

CASE REPORT

In present case, demonstration of cranial cavity for medical undergraduate in Sir Sunderlal Hospital, Institute of Medical Sciences, Banaras Hindu University, Varanasi, Uttar Pradesh, India. We found bilateral internal triplication of hypoglossal canal. This was found in dry skull of adult male approximate 60 year age. Canals present internally and there is clearly seen bony separation as shown in below fig.1,2.

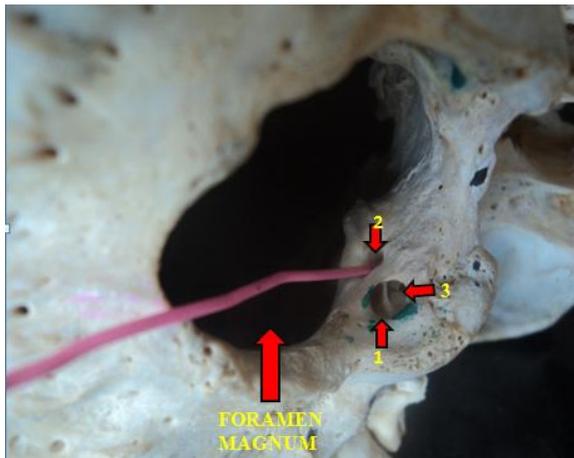


Figure No.1- Showing unilateral internal triplication of hypoglossal canal.

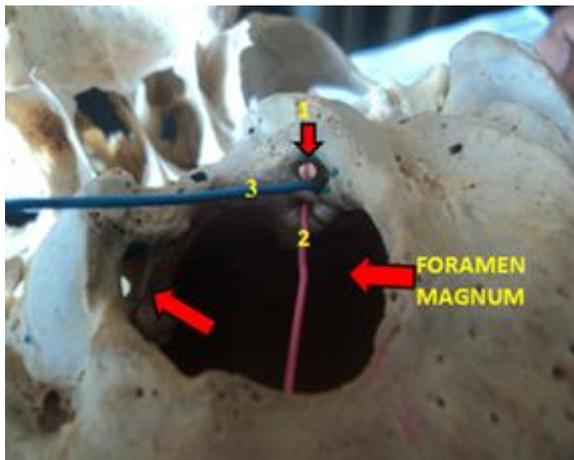


Figure No.2- Showing bilateral internal triplication of hypoglossal canal.

DISCUSSION

Hypoglossal canal shows much more variations noted by other researches they did the morphometric analysis as well as non-metric studies. The doubling of hypoglossal

canal by bony spicule is not rare phenomenon may be unilateral or bilateral and it has been studied in dry skull. Literature data it shows that it is double in 38% of Cases. [8] Unilateral double hypoglossal canal was noted in 25% of dry skulls and bilateral double hypoglossal canal in 3% of dry skulls. [9]

In our study internally triplication of hypoglossal canal was seen which is not reported by any other researcher working on this topic. But hypoglossal canal in rhesus monkey shows internal triplication. [8] Jarostaw et al [8] only reported such case in rhesus monkey, but not in human being. They had not mentioned possible reasons about the triplication. In present case report is on dry skull so it is difficult to explain exact reasons of triplication but possibilities are as follows:

1. There may be two roots of hypoglossal nerve pierces the Dura separately so Dura Matter between the roots get calcified and formation of two separate canal. Third Canal formed for emissary vein.
2. There may separate canal for hypoglossal nerve, ascending pharyngeal artery, Emissary vein.
3. There may be single canal for hypoglossal nerve and remaining two separate canals Formed for emissary veins.

Due to such triplication individual diameter of hypoglossal canal for nerve is small. The nerve roots might entrapment of nerve roots during ossification process of the occipital bone. Considering this variation in elderly patients there may be difficulties in movements of the tongue and subsequently speech. [10]

CONCLUSION

Study of hypoglossal canal is important to Anatomist, anthropologist, forensic experts and clinicians. The

knowledge of the variation of the hypoglossal canal is essential for radiologist and neurosurgeons for surgeries of the posterior cranial fossa for tumours like schwannoma of hypoglossal nerve and sleep apnea treatment. Best of our knowledge in available literature on same topic not a single case have been reported on bilateral internal triplication of hypoglossal canal. So this case report has special importance for clinicians.

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