STUDY OF FACIAL NERVE COURSE AND ITS VARIATION IN TEMPORAL BONE DISSECTION

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ABSTRACT

Objectives: There are various anatomical variations of the facial nerve in the bony canal making it prone to injury during mastoid surgeries. The objective of the present study is to find the course of the facial nerve and its variation in 40 cases of temporal bone dissection and to evaluate various parameters of the tympanomastoid segments of the facial nerve and its relation with the important middle ear structures.

Methods: The present study was conducted in the Department of Otolaryngology, Uttar Pradesh University of Medical Sciences, Saifai, Etawah, on 40 temporal bones from January 2022 to December 2022. Various parameters of the tympanomastoid segments of the facial nerve and its relations with the important middle ear structures were studied in the present study.

Results: In the present study, out of 40 bones dissected, 34 bones (85%) were well pneumatized whereas 6 bones (15%) were sclerotic in nature. In the present study, tympanic segment length varied from 7.65 to 11.72 mm with a mean of 9.32 mm (±1.02 mm). Vertical segment length varied from 10.2 to 15.9 mm with a mean of 13.48 mm (±1.21 mm). The distance of the second genu from the outer cortex varied from 17.67 to 23.71 mm with a mean of 19.73 mm (±1.44 mm). The distance of chorda tympani from stylomastoid foramen varied from 3.2 to 7.6 mm with a mean of 5.54 mm (±1.41 mm).

Conclusion: Anatomical knowledge of facial nerve in the canal and its relation to surrounding structures is very helpful for ENT surgeons to avoid injury to it during middle ear surgeries.

Keywords: Temporal bone, Facial nerve, Anatomy, Dissection, Knowledge.

INTRODUCTION

The facial nerve is the longest nerve in a bony canal and has a complex and tortuous course in the canal [1]. There are various anatomical variations of the facial nerve in the bony canal making it prone to injury during mastoid surgeries [2]. Various facial expressions such as joy and sorrow are the result of 7000 motor fibers of facial nerve firing simultaneously. Paralysis of the facial nerve may lead to disfigurement and emotional distress to the affected person resulting in difficulty in social interaction. The facial canal may display anomalies in its usual course, congenital bony dehiscence, and anatomical variations. Anatomical knowledge of the facial nerve in the canal and its relation to surrounding structures is very helpful for ENT surgeons to avoid injury to it during middle ear surgeries. Therefore, the aim of the present study is to find the course of the facial nerve and its variation in 40 cases of temporal bone dissection and to evaluate various parameters of the tympanomastoid segments of the facial nerve and its relation with the important middle ear structures.

METHODS

The present study was conducted in the Department of Otolaryngology, Uttar Pradesh University of Medical Sciences, Saifai, Etawah, on 40 temporal bones from January 2022 to December 2022. Various parameters of the tympanomastoid segments of the facial nerve and its relations with the important middle ear structures were studied in the present study. Procedures used for the present study were modified radical mastoidectomy and facial nerve decompression. Only temporal bones of adult persons were included in the present study whereas diseased temporal bones and cholesteatoma bones were excluded from the study. This study was approved by the Institutional Ethics Committee.
in the present study coincide with the studies done by [4] and Yadav [6]. The distance of the second genu from the outer cortex varied from 22.6–23.5 mm and >23.5 mm. The results of the present study are in agreement with the present study.

In all cases, the degree of descent was noted as 30° which is similar to a study done by Yadav et al. [6] and Bibas et al. [3]. The influence of the present study is in contrast with the study done by Proctor where degree of descent was noted 37° in cases.

Out of 40 temporal bone dissections in the present study, dehiscence was found in 5% of bones in the tympanic segment. The incidence of dehiscence in the present study is low as compared to studies done by Beddard and Saunders [7], Hough [8], and Guild [9] where dehiscence was reported in the range of 8–70% but similar to studies done by Kharat et al. [1] and Proctor [5].

The distance of the second genu from the outer cortex varied from 22.6–23.5 mm and >23.5 mm. The results of the present study are in agreement with the studies done by [4] and Yadav [6]. The distance of the second genu from the outer cortex varied from 22.6–23.5 mm and >23.5 mm. The results of the present study are in agreement with the studies done by [4] and Yadav [6].

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Chorda tympani is used as a landmark for the identification of facial nerve in the mastoid. The facial nerve can be traced by tracing chorda tympani inferiorly to its origin.

Wetmore [11] and Hohman et al. [12] observed that chorda tympani can be used as a landmark to identify the facial nerve during middle ear surgery in the mastoid by tracing it inferiorly to its origin. Fowler [13] and Măru et al. [14] observed that the facial nerve was in a more lateral position than usual in their study. Therefore, ENT surgeons should be aware of it to avoid facial nerve injury during middle ear surgery.

CONCLUSION
The facial nerve has various anatomical variations of the facial nerve in the bony canal making it prone to injury during mastoid surgeries. Anatomical knowledge of the facial nerve in the canal and its relation to surrounding structures is very helpful for ENT surgeons to avoid injury to it during middle ear surgeries.

AUTHOR'S CONTRIBUTION
All four authors contributed equally to conceptualizing the research proposal, literature review, data collection and analysis, and manuscript writing.

CONFLICTS OF INTEREST
Nil.

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REFERENCES