

## EXTENSION OF THE CEREBROSPINAL FLUID SPACE INTO THE PROXIMAL TYMPANIC PART OF THE FACIAL NERVE

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### ABSTRACT

The author presents an unusual extension of the cerebrospinal fluid space into the proximal tympanic part of the facial nerve, and points out the clinical and surgical significance of this anatomical variation.

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### INTRODUCTION

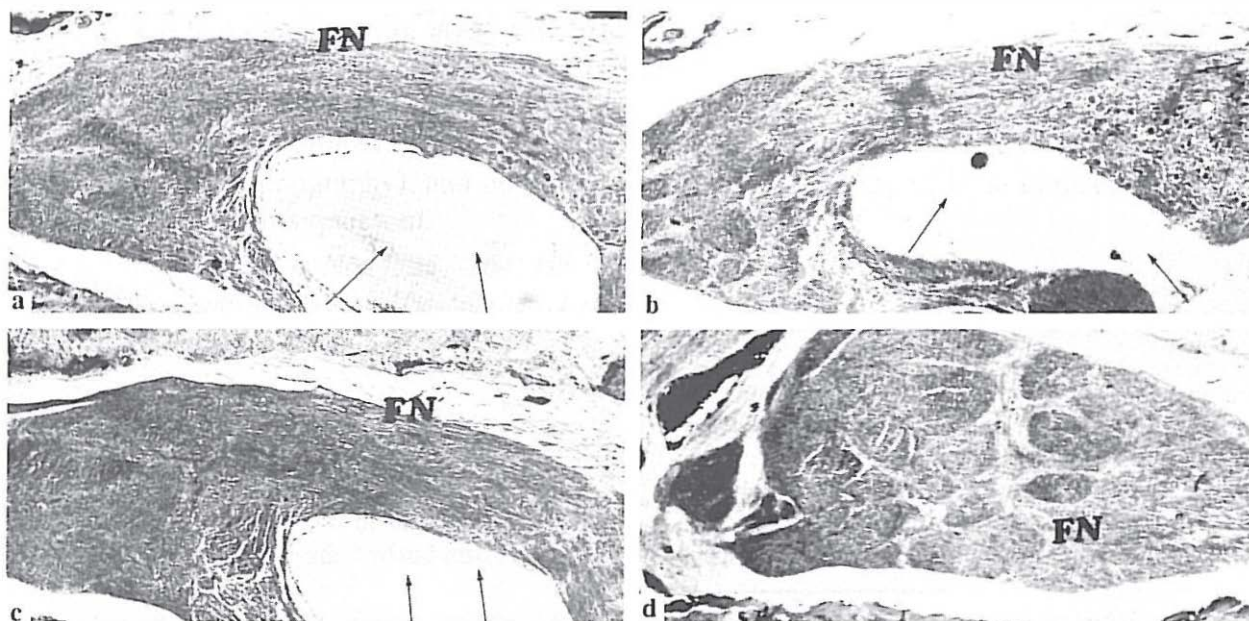
The labyrinthine portion of the facial canal and nerve is characterized by several morphological peculiarities, as:

A. This portion of the canal is the narrowest<sup>1</sup> and there is a slight constriction of the nerve.<sup>2</sup>

B. There is no anastomosing arterial arcade in the canal. This part of the nerve is poorly vascularized compared with the other two parts.<sup>3</sup>

C. The internal auditory canal portion of the facial nerve is surrounded by a sheath of meninges to the fundus of the internal auditory meatus. Occasionally, the meninges can extend in the neighbourhood of the foramen or even as far as the geniculate ganglion.<sup>4</sup>

The purpose of this report is to describe an unusual extension of the cerebrospinal fluid space into the proximal tympanic part of the facial nerve and to point out the clinical and surgical significance of this anatomical variation.



**Fig. 1.** Histological sections of the temporal bone. Extension of the cerebrospinal fluid space (csfs) into the proximal tympanic part of the facial nerve (arrows) (a-c). The distal tympanic part of the facial nerve without csfs. (d) (FN, facial nerve). HE,  $\times 25$ .

### MATERIAL AND METHODS

Materials used in this study are from the temporal bone collection in the Massachusetts Eye and Ear Infirmary in Boston. We have studied 44 temporal bones from 33 subjects who had chronic otitis media. During this examination we noted that one temporal bone shows extension of the cerebrospinal fluid space into the proximal tympanic part of the facial nerve.

### RESULTS AND DISCUSSION

Examination of serial sections from the temporal bone of a 63-year-old female with normal facial function revealed unusual extension of the cerebrospinal fluid space into the facial nerve. A clear space which might contain cerebrospinal fluid surrounded the labyrinthine portion of the facial nerve, the geniculate ganglion and extended through its proximal tympanic part. There is this space in the distal tympanic part of the nerve. The labyrinthine portion of the facial canal appeared normal. The lateral wall of the tympanic portion of the bony canal was destroyed due to chronic otitis media. (Figs. 1, a-d).

This rare anatomical variation has clinical and sur-

gical significance. In cases with congenital dehiscence or bony destruction of the wall of the facial canal, the facial nerve is directly exposed to the pathological process of the middle ear. The presence of the cerebrospinal fluid space in the tympanic part of the facial nerve in such cases can serve as a route for the spread of infection from the middle ear to the endocranium. This variation might challenge the surgeon if a middle fossa facial nerve exploration was required.

It is also important for surgical intervention on the facial nerve in its tympanic part. An awareness of this potential variation would be useful in the event it was encountered.

### REFERENCES

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