

A Very Rare Anatomical Variation of Chorda Tympani Nerve

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Abstract:

Introduction: Iatrogenic injury to chorda tympani nerve is a well known complication of middle ear surgeries because this nerve is known to have number of anatomical variations. A very rarely described site of chorda tympani is presence of this nerve in between external auditory canal skin and bone. Here we are presenting a case having chorda tympani at this rarely described anatomical site.

Case Report: A 37 years old female patient was diagnosed of having chronic suppurative otitis media of tubotympanic type. She was posted for tympanoplasty and while elevating external canal skin, chorda tympani was found in this rarely described site. Thus we present this very rare variation of chorda tympani nerve.

Conclusion: Operating surgeon must be careful at the time of elevating tympanomeatal flap. Any shiny chord like structure should be handled with at most care in order to avoid injury to chorda tympani nerve.

Keywords: Chorda Tympani nerve, Otitis Media, Tympanomeatal flap

I. Introduction:

The chorda tympani nerve is the second branch of the nervus intermedius segment of the facial nerve and it arises about 6mm above the stylomastoid foramen and after its origin it runs in posterior canaliculus It then curves anteriorly in the substance of tympanic membrane between its mucus and fibrous layers crosses medial to the upper part of handle of malleus to the anterior wall where it enters the anterior canaliculus and then it exits the skull at petrotympanic fissure. Then it joins the lingual nerve from its posterior aspect and supply anterior two third of tongue and secretomotor fibres for submandibular and sublingual glands.

The chorda tympani nerve may show variations and anomalies in relation to its origin from the facial nerve as well as its course through the tympanic cavity. The extremes of these variations may be really challenging even for the experienced surgeons leading to doubt if involuntary trauma had been already performed or not. Its anatomic variations are of interest in certain otology surgical procedures like tympanoplasty where it is vulnerable of traction or transection while elevating tympanomeatal flap. Injury to nerve may lead to hypogeusia and dysgeusia along with evidence of atrophy of fungiform papillae. There are limited reports in the literature about the variations of the chorda tympani and among them a rarely described site is presence of chorda tympani nerve between the external auditory canal skin and bone.

Here we present this rare variation of chorda tympani nerve in a 37 years old female who was posted for tympanoplasty procedure.

II. Case Report:

A 37 years old female patient presented with complaint of left ear discharge and decreased hearing in left ear since 5 years. On examination there was moderate central perforation in left tympanic membrane with moderate conductive deafness. After all preliminary investigations she was posted for tympanoplasty. Post aurial incision was taken and meatotomy performed. Incisions were taken over external auditory canal skin at 12 and 6 O'clock and tympanomeatal flap was elevated. While elevating the tympanomeatal flap shiny cord like structure was noted approximately 5-6 mm medial to point of meatotomy. After careful dissection that structure was identified as chorda tympani nerve which was present between tympanomeatal flap and bone of external auditory canal. Chorda tympani nerve has entered in external auditory canal at a point approximately 1 cm lateral to tympanic annulus, and then it travelled between external auditory canal skin and bone in order to enter tympanic cavity from beneath the annulus. After that it ran upward and anteriorly over the incus and under the malleus neck before exiting through the petro tympanic suture.

There was no any postoperative complaint of taste disturbance.

III. Discussion

The chorda tympani convey taste sensation from the anterior two-thirds of the tongue and parasympathetic secretomotor fibres to the submandibular and sublingual salivary glands.^[1]

The chorda tympani is vulnerable to injury during a wide range of surgical procedures such as surgeries are myringoplasty, ossiculoplasty, cholesteatoma surgery, bony meatoplasty, removal of bone to access retraction pockets involving the facial recess, otosclerosis etc.^[2]

Numerous factors influence whether injury to the chorda tympani causes symptoms, including the extent of injury, type of surgery, age of the patient, anatomical variables and subjective adaptation. Although most patients experience gradual symptomatic recovery, complaints can be persistent and troublesome.

Between 15 and 22% of patients experience post-operative taste disturbance and mouth dryness after middle ear surgery as a result of iatrogenic injury of the chorda tympani.^[3] In their study of 140 patients Michael P. et al commented that postoperative taste disturbances were found in 15% patients and these were common with nerve traction rather than nerve transection. No recovery was seen in 24% symptomatic cases and those who recovered, required 12 months for complete recovery.^[3]

Number of anatomical variations of chorda tympani nerve has been noted in literature like Nager and Proctor who noted that the origin of the chorda tympani may vary from 1mm distal to 11mm proximal to the stylomastoid foramen. They also observed an extra temporal origin of the chorda in 2% cases of their study where it travelled in its own separate canaliculus parallel to the facial canal.^[4] Durcan et al. who reported a bifurcation of the chorda tympani nerve in 3 cases.^[5] But there are very few reports like that by Kalcioğlu MT et al^[6] who reported the case in which chorda tympani was presented between external ear canal skin and bone.

Thus being a very rarely known site for chorda tympani nerve, where nerve is much more prone for either tractional injury or direct complete transection while elevating the tympanomeatal flap.

IV. Conclusion:

Knowledge of different variations of chorda tympani nerve is of value in otologic surgeries. Operating surgeon must be careful while elevating the tympanomeatal flap as this nerve can be encountered in between external auditory canal bone and skin flap also. So he must recognise the chorda tympani and should avoid damage to this as function of this nerve might be disrupted not only by transection but also by applying traction to it.

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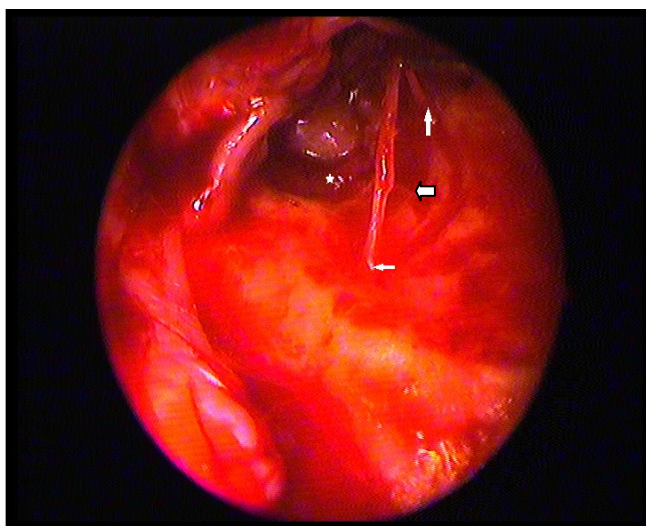


Fig. 1: Showing chorda tympani () with its entrance in the middle ear 1 cm lateral to bony annulus () and its exit anteriorly by crossing long process of incus ()

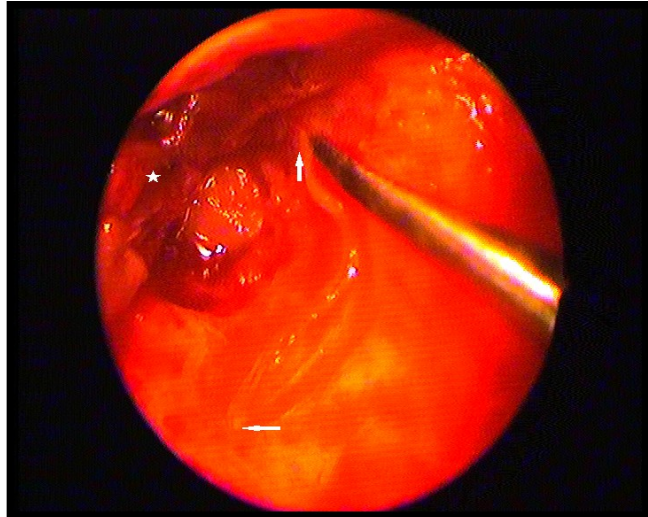


Fig. 2: Showing origin and insertion of chorda tympani and elevated tympanomeatal flap

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