

Metric study on depth of the sigmoid sinus plate in relation to suprameatal (Macewen's) triangle

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Abstract

Background The lateral wall of the mastoid antrum, which offers the usual surgical approach to the tympanic cavity, is formed by the postmeatal process of the squamous part of the temporal bone. Since the suprameatal triangle covers the lateral wall of the mastoid air system, it is of importance to otologic surgeons during mastoidectomy.

Objectives To examine the relationships of the surgical landmarks on the lateral surface of the mastoid bone with the landmarks in a deeper location. Morphometric measurements were performed between the surgical landmarks (Macewen's triangle) and the sigmoid sinus plate.

Methods 30 dry human adult skulls were investigated. Three marks were allocated on the left and right sides of the norma lateralis of these skulls namely the tip of the mastoid process, the asterion, and the region of the suprameatal triangle (posterior border).

Results The measurements of (D1+D2), (D1+D3) and (D2+D3) showed statistical significant differences. The correlations of D1, D2 and D3 on the right and left sides showed statistical significant differences

Conclusion The assessment of the depth of sigmoid sinus plate may be used as a mark that possibly point toward avoidance of the bleeding possibility during mastoidectomy. The suprameatal approach eliminates the need for mastoidectomy and avoids the damage of sigmoid sinus plate. If the depth can be assessed by measuring D1 and D2 on lateral X-rays of the heads as this study prove that we can avoid the dangerous complications which occur in the normal mastoidectomy.

Keywords Suprameatal triangle, mastoidectomy

Introduction

Mastoiditis results from a middle ear infection that causes inflammation of the mastoid air cell. This dangerous condition may spread from the antrum to surrounding structures and cause life-threatening infection. In particular the infection may spread through the tegmen tympani to the dura mater of the middle cranial fossa, to cause an extradural collection ⁽¹⁾.

The lateral wall of the mastoid antrum, which offers the usual surgical approach to the tympanic cavity, is formed by the postmeatal process of the squamous part

of the temporal bone. The mastoid antrum is located 15 mm deep to the lateral surface of the mastoid bone.

In adults, the lateral wall of the antrum corresponds to the suprameatal triangle on the outer surface of the skull ⁽²⁾.

The superior side of the suprameatal triangle, the supramastoid crest, is level with the floor of the middle cranial fossa. The anteroinferior side, which forms the posterosuperior margin of the external acoustic meatus, indicates approximately the position of the descending part of the facial nerve canal ⁽³⁾. The suprameatal approach eliminates the need for