Myringoplasty with and without cortical mastoidectomy in treatment of noncholesteatomatous chronic otitis media "a comparative study".

Thesis Submitted for Partial Fulfillment of Master Degree in

Otorhinolaryngology

By Tareq Muhammad Algarf

(M.B.B.Ch, Faculty of Medicine - Cairo University)

Under the supervision of

Prof. Louay El Sharkawy

Professor of Otorhinolaryngology

Faculty of Medicine

Cairo University

Dr. Hazem Mohammed Abdel Tawab

Lecturer of Otorhinolaryngology

Faculty of Medicine

Cairo University

Dr. Fadi Mahmoud Gharib

Lecturer of Otorhinolaryngology

Faculty of Medicine

Cairo University 2014

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Abstract:

Objective compare the outcome and success of repair of uncomplicated tympanic membrane perforations with myringoplasty alone and when combined with mastoidectomy. Methods a prospective study where forty patients with non cholesteatomatous CSOM were recruited during the period of June, 2013 to December, 2013 from the outpatient clinic of Otorhinolaryngology department, Faculty of medicine, Cairo University . Patients were managed medically and after dryness of their perforations they were operated upon. Twenty patients underwent simple myringoplasty alone and 20 patients underwent myringoplasty with cortical mastoidectomy. Underlay technique with temporalis fascia was done for all patients. Follow up period was at least 3 months. Results hearing improvement was comparable in both groups. There was no significant difference in graft uptake between the myringoplasty alone group (70%) and cortical mastoidectomy group (80%) (p=0.7). There was no significant difference in ear dryness between the myringoplasty alone group (75%) and cortical mastoidectomy group (90%) (p=0.4). Conclusion mastoidectomy performed in non cholesteatomatous CSOM gives a better chance for graft success rate and dryness of the middle ear. Mastoidectomy gives no statistically significant benefit over simple myringoplasty in the treatment of non cholesteatomatous CSOM.

Keywords: TM perforation, myringoplasty, cortical mastoidectomy.

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Introduction

Chronic suppurative otitis media (CSOM) is an inflammatory process of the mucoperiosteal lining of the middle ear space and mastoid. The mucus membrane may be thickened by edema, submucosal fibrosis, and infiltration with chronic inflammatory cells. Infection of the middle ear has been a problem encountered in the human race, and is as old as humanity itself (Smyth, 1976).

CSOM can be further divided into cholesteatomatous (atticoantral) and non cholesteatomatous (tubotympanic) disease or mucosal disease (Kenna, 1994).

Generally, patients with tympanic perforations which continue to discharge mucoid material for periods of from 6 weeks to 3 months, despite medical treatment, are recognized as CSOM cases (Kenna, 1994).

The WHO definition requires only 2 weeks of otorrhoea (Smith et al., 1996), but otolaryngologists tend to adopt a longer duration, e.g. more than 3 months of active disease (Goycoolea et al., 1991).

Both the start and the end of the disease process are difficult to define. Although healing is often observed over prolonged periods, there are more patients who develop either recurrent bouts of otorrhoea (active CSOM) or a dry but permanent tympanic perforation (inactive CSOM). Inactive otitis media refers to a previously discharging ear that has apparently ceased discharging without probability of resumption in the near future (Mawson, 1988).

The two principal aims of management are the eradication of infection and the closure of the tympanic perforation (WHO, 2004).

The surgical treatment of chronic suppurative otitis media is still controversial. It is well accepted that the main purpose of operation is to obtain a permanently dry ear and close the perforation. Myringoplasty with mastoidectomy has been identified as an effective method of treatment of chronic ear infection resistant to antibiotic therapy, but the effect of mastoidectomy on patients without evidence of active infectious disease remains highly debated and unproven (Kamath et al.,2013).

There are three opinions in this issue. The first is that mastoidectomy is useful for both infected and dry ears (McGrew et al., 2004). The second is that mastoidectomy is useful for infected ears, but not for dry ears (Mutoh et al., 2007). The third is that mastoidectomy is not useful for either infected or dry ears (Mishiro et al., 2001).

The Aim Of Work

To compare between myringoplasty with and without cortical mastoidectomy in the treatment of non cholesteatomatous chronic otits media. parameters to be studied are graft uptake, ear dryness and air bone gap.

Review Of Literature



Relevant anatomy:

<u>Tympanic membrane:</u>

The tympanic membrane is irregularly round and slightly conical in shape. the apex of the tympanic membrane is located at the umbo, which marks the tip of the manubrium. In the adult, it is angulated approximately 140° with respect to the superior wall of the external auditory canal. The vertical diameter of the tympanic membrane as determined along the axis of the manubrium ranges from 8.5 to 10 mm, while the horizontal diameter varies from 8 to 9 mm. The malleal prominence is a projection formed by the lateral process of the malleus and is located at the superior end of the manubrium. The manubrium is firmly attached to the tympanic membrane at the umbo and lateral process and is clearly visible throughout its length (the stria mallearis). The anterior and posterior tympanic spines, respectively. These striae divide the tympanic membrane into larger pars tensa below, and smaller triangular pars flaccida (or Shrapnell's membrane) above. The superior recess of the tympanic membrane is known as Prussak's space (figure 1), (figures 2A and 2B) (**Gulya and Schuknecht, 2007**).



Figure 1: The tympanic membrane TM (Gulya and Schuknecht, 2007).

Review of literature





TM(otoscope) Figure 2B

Figure 2 : Tympanic membrane (Gray 2000).

The pars flaccida forms the lateral border of this space as it attaches superiorly to the bony margins of the notch of Rivinus or tympanic incisura. The lateral malleal ligament limits this space anterosuperiorly as it extends from the union of the head and neck of the malleus to the periphery of the notch of Rivinus. Posteriorly, Prussak's space opens into the epitympanum. The anterior and posterior malleal folds mark the inferior limit of Prussak's space. The thickened periphery of the pars tensa, the tympanic annulus (limbus), anchors the TM in a groove known as the tympanic sulcus .The tympanic annulus and sulcus are absent superiorly in the area of the notch of Rivinus (**Ars, 1997**).

• Layers of tympanic membrane:

The tympanic membrane is composed of three layers: a lateral (cutaneous), an intermediate (fibrous) and a medial (mucosal). The cutaneous layer is derived from epithelium lining the meatus. The fibrous layer consists of two layers, a radiate

layer, the fibers of which diverge from the manubrium of malleus, and a circular layer, the fibers of which are plentiful around the circumference but sparse and scattered near the centre of the membrane (Drake et al., 2009).

• Innervation:

Innervation of the external and internal surfaces of the tympanic membrane is by several cranial nerves.

Sensory innervation of the skin on the outer surface of the tympanic membrane is primarily by the auriculotemporal nerve, a branch of the mandibular nerve [V3] with additional participation of the auricular branch of the vagus nerve [X], a small contribution by a branch of the facial nerve [VII] to the auricular branch of the vagus nerve [X], and possibly a contribution from the glossopharyngeal nerve [IX].

Sensory innervation of the mucous membrane on the inner surface of the tympanic membrane is carried entirely by the glossopharyngeal [IX] nerve (**Drake** et al., 2009).

• Blood supply and venous drainage:

Blood supply of the tympanic membrane is derived from the stylomastoid branch of the posterior auricular, deep auricular and anterior tympanic branches from the maxillary artery.

Venous drainage includes the external jugular from veins on the superficial aspect of the tympanic membrane and veins from the deep surface of the tympanic membrane draining to the transverse sinus and dural veins (Gulya and Schuknecht, 2007).