ECONOMIC APPROACH TO THE MIDDLE EAR COCHLEAR IMPLANTATION

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Introduction: Mastoidectomy with posterior tympanotomy is established surgical techniques for active electrode insertion in cochlear implantation surgery. Many alternative, more economic approaches were developed in recent years. We propose our paracanal approach to the middle ear.

Operative technique: Since 1999 there were 102 implanted patients in the ENT University clinic of Sofia- Medical University. Among them 61 were operated with the developed by us paracanal approach to the middle ear for active electrode insertion in cochlear implantations. The “S” shaped skin incision is made behind auricle with formation of two skin flaps - frontal to the auricle itself and posterior to the mastoid planum. The periosteum arch like incision is followed by rising up the periosteum to the suprameatal spina. The next step is elevation of posterior wall canal skin up to the fibrous annulus and tympanic chord. We hold the elevated skin by another invention – the specialized skin retractor (fig.1). Using a House’s curette we gently remove part of the posterior canal wall bone that lies above chorda in order to reveal the incudo-stapedial joint (fig.2) and upper board of round window. We start drilling just behind the spine of Henle in direction that points the exposed incudo-stapedial joint. At the beginning, the opening is wider but at depth, it narrows. The main target here is to keep the new canal at least 1 – 1,5mm away from the posterior canal wall until the burr enters just above incudo-stapedial joint and tympanic chord (fig.3). The cochleostomy is performed through external auditory meatus in antero-inferior direction immediately above the round window using diamond burr at slow speed (fig.4). After attaching the implant, active electrode passes through parameatal channel to penetrate directly into cochlea. Finally, the canal skin is pushed back to the bony wall with sequential mild tamponade.

Conclusions: The benefits of paracanal technique are minimal invasive trauma to mastoid process, the shortening of operative time, and lowering the risk for facial nerve injury (if the exiting point of tympanic chord is strictly monitored).