**ACTIVE TRANSCUTANEOUS BONE CONDUCTION IMPLANT: MIDDLE FOSSA PLACEMENT TECHNIQUE IN CHILDREN WITH BILATERAL MICROTIA AND EXTERNAL AUDITORY CANAL ATRESIA**

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**Middle fossa technique** for the active transcutaneous bone conduction implant was proven to be safe and effective for treating pediatric patients with external auditory canal atresia who cannot receive implants at the sinodural angle or in the retrosigmoidal position because of their altered anatomy and/or desire for future aesthetic reconstruction.

**Introduction**
Congenital aural atresia is the failure to develop the external auditory canal (EAC) and is often associated with microtia and compromise of the middle and internal ear. It affects 1 in every 10,000 to 20,000 births. Conductive hearing loss is the most common audiological finding.

Treatment options include a functional and a aesthetic approach. Bonebridge (Med-El, Innsbruck, Austria) is an active bone conduction implant that can be placed in the sinodural angle or in the retrosigmoidal position. Since a retroauricular incision (necessary in both approaches) limits the aesthetic pinna reconstruction, we present the middle fossa placement technique as a surgical alternative in children with bilateral microtia and EAC atresia.

**Material and Method**
Middle fossa technique was developed. A total of 24 patients were implanted in the middle fossa between December 2014 and December 2017.

**Surgical Complications**
No patient had serious complications; only minor complications presented in 4 patients, 3 of which had a syndromic comorbidity. Skin erythema occurred in 3 cases all of which solved by powering down the magnet strength. One case presented a scalp hematoma solved by puncture drainage and compressive bandage. The average follow up was 17 months, ranging from 2 to 36 months, with good results.

**Auditory Results**
Before surgery the average hearing threshold (PTA) was 66.5 dB (95%CI 64.2-68.9) and speech recognition 29.4% (95%CI 25.2-34.6). With the Bonebridge switched on after a month of use the PTA was 25.2 dB (95%CI 23.5-26.9) and speech recognition 96.4% (95%CI 92.7-100.2).

**Future research**
A longer follow-up time is needed to secure the correct functioning and lack of long term complications in the implanted population.