Long term observation of skin reaction in children using the transcutaneous implants for BAHA

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Introduction:
Treatment and rehabilitation of patients with conductive and mixed hearing loss in cases of bilateral microtia with external auditory canal atresia or after chronic otitis media can be conducted applying Bone Anchored Hearing Aids (BAHA).

Aim:
Our aim was to assess the effects of application of different surgical techniques in implantation of titanium fixtures (U-graft technique, Dermatome technique, Linear incision technique, and hydroxyapatite-coated fixtures usage) affecting postoperative wound healing and occurrence of early and late skin reactions, requiring surgical intervention.

Material and Method:
Our material contents 65 patients with conductive and mixed hearing losses including young children from 3 year of age (with congenital malformations) and older children up to 18 year of age (with postinflammatory defects and single sided deafness (SSD)). Our method of choice in treatment of hearing impairments in presented cases of various defects of the ear was attachment of titanium implant to the temporal bone with or without removal of subcutaneous tissue in general anesthesia. Three skin incision techniques were used: U - graft technique, Dermatome technique, Linear incision technique and hydroxyapatite-coated fixtures (without collecting skin graft). Hearing aid fitting were performed after wound healing and osseointegration of the fixtures (6 weeks - 6 months – depending on bone thickness, length of the fixtures, one- or two-stage surgical technique and condition of the wound).

Universally adopted Holger’s classification of skin reactions was used to determine soft tissue reactions around the transcutaneous implants. In case of severe infection of the soft tissue in the implant site (Grade 4, according to Holgers scale) tissue reoperation was performed.

Results:
Assessing the results of treatment it was indicated that considering inflammatory tissue reaction in the implantation site (Grade 4) 9 reoperations, including 8 in patients after U-graft technique, one reoperation in a patient after Dermatome technique and one after Linear incision, were performed. It was observed that the skin incision technique affects significantly occurrence of reoperations (p = 0,00167). In the groups where Linear incision or U-graft techniques were used nearly 20% of patients required reoperation, and in the group operated using Dermatome technique reoperation was necessary in little above 2% of cases. Till now we haven’t performed any reoperation in patients with hydroxyapatite-coated fixtures.

Conclusions:
Assessment of the effects of different surgical techniques application in titanium fixtures implantation (U-graft technique, Dermatome technique and Linear incision technique and hydroxyapatite-coated fixtures) on postoperative wound healing and occurrence of early and late skin reactions indicated that the best result of wound healing and the lowest risk of skin reaction can be obtained using hydroxyapatite-coated fixtures and/or dermatome technique.

References: