Simultaneous Total Microtia Reconstruction and Transcutaneous Bone Conduction Device (Bonebridge) Implantation in One or Two Stages

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Introduction:
We describe, for the first time, simultaneous auricular reconstruction for microtia and implantation of the Bonebridge (BB) transcutaneous bone conduction hearing device for auditory rehabilitation.

Methods:
Ten patients with unilateral or bilateral microtia underwent BB implantation combined simultaneously with either total auricular reconstruction using bespoke hand-carved Medpor framework or second stage auricular projection using autologous costal cartilage framework. Auditory aided and unaided sound fields were evaluated using (1) pure-tone average (PTA4), (2) speech reception threshold (SRT), and (3) Speech Discrimination Score (SDS) at a sound level of 65 dB SPL.

Results:
No major complications were encountered. One patient developed minor partial skin graft epidermolysis that healed uneventfully and another required prolonged (three months) auditory acclimatization to the BB device. Postoperatively, mean aided PTA4 decreased by 35.35 dB, while SRT was 54.5 dB HL unaided and 28 dB HL with a BB sound processor. SDS increased by 16.4 % to 65 dB SPL.

Conclusion:
Simultaneous BB implantation during total auricular reconstruction or framework projection for microtia patients who have aural atresia/stenosis is feasible and safe. This approach reduces operative stages, thereby minimizing schooling/occupational disruption and time to total microtia reconstruction and auditory rehabilitation.