The feasibility of performing BCHI in younger children with earlier processor loading – Our experience

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Introduction

Previously, in our unit:

- Bone conduction hearing implantation (BCHI) was only performed in children aged 12 years or older.

This was because previous literature had suggested implant loss rates of:

- 40% in under 5 year olds
- 8% in 5-10 year olds
- 1% in greater than 10 year olds

- Hearing processors (HPs) were loaded at 3 months.

This was due to concerns regarding:

- Bone quality and thickness and subsequent implant instability
- Objective implant stability measurements were not available.

Objectives

Our aims was to:

- Include all children greater than 5 years old.
- Evaluate implant stability objectively.
- Load hearing processors early if stable.
- Record rates of implant loss.

Methods

- All children older than 5 years having a BCHI between 01/2017 and 01/2018 were included.

- Bone conduction implant stability was measured objectively using:
  - Resonance-frequency analysis to generate Implant stability Quotients (ISQs)
  - Mean ISQs were undertaken intra-operatively and at 7 and 30 days postoperatively. They were deemed stable if greater than 30.

- If implants were stable hearing processors were loaded early at:
  - Day 30, instead of day 90.

- Implant loss rates were recorded
  - Through regular follow up by BCHI and audiology teams

Results

17 BCHIs were performed in 10 children

- 3 unilateral
- 7 bilateral
- Mean age was 11.3, Range 5-17.
- All implants inserted were 4mm.

- All children had suitable ISQs at day 7 and at day 30.
- At day 30 all hearing processors were loaded.

So far zero (0) patients have had implant loss.

Conclusion

- Implant loss rates appear acceptable in children having BCHI surgery:
  - Aged greater than 5 years
  - With suitable ISQs (>30)
  - With early hearing processor loading (day 30)
- A larger study with more numbers is now required.