Effectiveness of the Glasscock dressing compared to the mastoid pressure dressing in cochlear implantation

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Abstract

Cochlear implantation (CI) has become a more commonly performed surgical procedure and has gradually evolved to become more minimally invasive. As a result, the necessity for a mastoid pressure dressing (MPD) has been questioned. The main purpose of this study is to look at one institution’s experience with use of the Glasscock dressing (GCD) in CI in the setting of postoperative wound complications. Ninety-five patients received 100 implants. There were 48 patients in the MPD group and 47 patients in the GCD group. In the MPD group, four patients developed a wound infection, which led to explantation in one patient, and one patient developed a postoperative seroma/hematoma. In the GCD group, two patients developed a wound infection that resolved with oral antibiotics, and three patients received a second implant in the GCD group. The GCD has proven to be an acceptable alternative to the MPD in CI patients.

Table 1. Demographic Data

<table>
<thead>
<tr>
<th>Age range</th>
<th>Mean age</th>
<th>MPD</th>
<th>GCD</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 mo-88 yr</td>
<td>35 yr</td>
<td>48 yr</td>
<td>48 yr</td>
</tr>
</tbody>
</table>

Table 2. Wound Complication Results

<table>
<thead>
<tr>
<th>Infection (cellulitis and/or abscess)</th>
<th>p=0.42</th>
<th>N</th>
<th>MPD</th>
<th>GCD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Post-operative seroma/hematoma,</td>
<td>p=0.08</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Right ear</td>
<td>62%</td>
<td></td>
<td>38%</td>
<td></td>
</tr>
<tr>
<td>Left ear</td>
<td>38%</td>
<td></td>
<td>62%</td>
<td></td>
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</table>

Discussion:

Cochlear implantation has proven to be a safe, well-tolerated procedure with more implants being performed as indications have expanded. The surgical technique at our institution has gradually evolved into what is now a more minimally-invasive, outpatient procedure.

The GCD has proven to be an acceptable alternative to the MPD in our experience. Overall wound complication rates were 10.4% in the MPD cohort and 10.6% in the GCD cohort, which compares favorably with complication rates found in prior studies. No statistically significant differences found in wound complication rates between the MPD and GCD groups, and the GCD is now routinely used in all of our adult CI patients.

Introduction

Cochlear implantation (CI) has become a commonly performed surgical procedure that provides auditory rehabilitation to patients with severe to profound sensorineural hearing loss. This procedure has undergone continual refinement since its acceptance by the International Consensus Conference in 1995 and has evolved from being an inpatient to what is now considered a minimally-invasive, outpatient procedure. The postoperative need for mastoid pressure dressings (MPD) has recently been questioned in both the pediatric and adult literature.

Mastoid pressure dressings involve the application of folded kerlex gauze over the preauricular incision with a subsequent circumferential head dressing using kerlex gauze to apply pressure. This dressing is routinely used following a variety of ear procedures and is reported to limit postoperative bleeding and hematoma formation. However, recent reports suggesting a contribution between MPD and wound complications have increased the need for further study of wound complications following cochlear implantation with and without mastoid pressure dressings.

The main purpose of this study is to evaluate one institution’s experience with the Glasscock dressing (GCD) as a postoperative dressing alternative to the MPD in the setting of postoperative wound complication rates.

Methods

This retrospective cohort study was approved by the Ochsner Clinic Institutional Review Board (New Orleans, LA), and all data was handled in accordance with Health Insurance Portability and Accountability Act regulations. All operations were performed by or under the supervision of the senior author (TBM) whose operative approach has gradually evolved to become more minimally invasive. The current method creates a subperiosteal pocket into which the internal receiver/stimulator snugly fits and uses no anchoring sutures. However, some of the CIs performed earlier in this series in the MPD group were secured using the peristomal suture technique, which has been previously described. Incisions were closed with dermal vicryl sutures in an interrupted fashion and steri-strips. All patients received one dose of preoperative antibiotics prior to making the incision.

Patients were all seen on postoperative day one for dressing removal and incision evaluation. They were then examined weekly until the postauricular incision had sufficiently healed, which typically encompassed three follow-up appointments. Glasscock dressings were only placed on patients over the age of five years because in the senior author’s experience, they are not well tolerated in children younger than this age.

Data extracted from patients’ medical records included gender, age at time of surgery, laterality, type of implant, wound infection (cellulitis and/or abscess), explantation, organism cultured, postoperative seroma/hematoma, treatment with antibiotics, and the comorbidities hypertension and diabetes mellitus. All devices implanted were either Cochlear Nucleus 5 (Cochlear Corporation, Lane Cove, NSW, Australia) or Advanced Bionics High Resolution 90K (Advanced Bionics LLC, Valencia, California, United States).

Paired t-testing was used to compare wound infections as well as postoperative seroma/hematoma formation between the MPD and GCD groups. There were no statistically significant differences in wound infection rates (p=0.42) or postoperative seroma/hematoma formation (p=0.08).

Conclusion:

Cochlear implantation is a safe and well-tolerated procedure with relatively low complication rates. The Glasscock dressing is an acceptable alternative to the MPD in CI patients greater than five years of age.

Conflict of Interest: None reported.

REFERENCES:

8. Adunka OF, Buchman CA. Cochlear implant fixation in children using periosteal suture technique, which has been previously described. Incisions were closed with dermal vicryl sutures in an interrupted fashion and steri-strips. All patients received one dose of preoperative antibiotics prior to making the incision.