INTRODUCTION

- Bone anchored hearing implants (BAHI) developed are designed to rehabilitate single sided deafness and mixed/conductive hearing loss.
- Conventional treatment options for post-operative infections include oral antibiotics, topical antibiotics, hydrogen peroxide, and sterile water rinses.
- Honey is the oldest reported materials used in wound care dressings. Applying honey to wounds promotes granulation tissue formation, stimulates dilation of small blood vessels, reduces edema, and lowers wound pH through local osmotic effects stimulating bacteriolysis and inhibiting bacterial proliferation by reducing access to water in the infected wound.
- Medihoney®, produced by bee with access from the Leptospermum scoparium (manuka) plant in New Zealand has been found to have promising therapeutic properties, and has been used in managing wounds infected with antibiotic resident bacteria.
- Medihoney® in otolaryngology has been previously evaluated for chronic rhinosinusitis, allergic fungal sinusitis, wound infections following cancer reconstructions, and radiation mucositis.
- The present work evaluates use of Medihoney® in patients with developed skin reactions at their surgical site following BAHI surgery.

MATERIALS & METHODS

Setting
- The University of Arizona Health Network Hospital
- Population
- Patients who were received BAHI between 2011 and 2014

Data Collection
- A retrospective chart review was performed to identify patients that developed skin reactions of any kind at their implant sites.
- Patient age, known medical co-morbidities, device type and laterality, month and year of surgery, Holger grade for skin reactions when present, treatment type, and time to resolution of skin reactions.

Hearing Implant Devices
- This study included patients receiving various BAHI devices, including Baha® Connect, Baha® Attract, Oticon Medical Ponto®, and Sophono devices.
- Candidacy was based on meeting appropriate audiometric criteria and upon patient preference when several options were deemed appropriate.

Table 1. Skin Reaction Characteristics

<table>
<thead>
<tr>
<th>Patient Age</th>
<th>Known co-morbidities</th>
<th>Device / Side</th>
<th>Skin Reaction Grade</th>
<th>Treatment Type</th>
<th>Time to resolution</th>
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<tr>
<td>70</td>
<td>HLD</td>
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<td>Peroxide/water x 12 weeks Medihoney® x 3 weeks</td>
<td>15 weeks total treatment, 3 weeks following Medihoney® use</td>
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<tr>
<td>61</td>
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<td>Clinic visit debridement, oral antibiotics, mucisporin, Medihoney® (started at 6 weeks)</td>
<td>Total of 10 weeks (2 weeks after Medihoney®)</td>
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<td>61</td>
<td>Tobacco use</td>
<td>Sophono / L</td>
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<td>Augmentin, Double antibiotic ointment</td>
<td>4 weeks</td>
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<tr>
<td>63</td>
<td>HLD</td>
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Holger's Classification
- Grade 0: Reaction free skin around the abutment
- Incidence: 90-95%
- Grade 1: Redness with slight swelling around the abutment
- Incidence: 3-5%
- Grade 2: Redness, moistness and moderate swelling
- Incidence: 1-4%
- Grade 3: Redness, moistness, and moderate swelling with tissue granulation around the abutment
- Incidence: 0.5%-1.5%
- Grade 4: Overt signs of infection resulting in removal of the implant
- Incidence: <0.5%

5-stage classification of increasing severity of infection following BAHI implant developed by Holgers et al.

RESULTS

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HLD- Hyperlipidemia; DM- Diabetes Mellitus; HTN- Hypertension

CONCLUSIONS

- The use of Medihoney® has previously been limited to the conservative management of acute rhinosinusitis, skin infections following large head and neck cancer operations, and more recently to reduce radiation induced mucositis.
- This is the first report of use of medicinal honey for the treatment of skin reactions associated with placement of osseointegrating hearing implants.
- Four patients treated with Medihoney® demonstrated decreased wound healing time compared to traditional treatments and experienced no adverse side effects.
- A clinically significant decrease for healing time in patients using Medihoney® was observed compared to patients using traditional methods.
- Medihoney® effectively resolved postoperative skin reactions at BAHI surgery sites at least as effectively as traditional and systemic treatment modalities.
- With cases of antibiotic-resistant bacteria on the rise at alarming rates, medicinal honey may provide an alternate topical treatment due to its broad-spectrum antibacterial activity as well as its resistance fighting multiple mechanisms of action.

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REFERENCES


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