A microcurrent dressing reduces *C. acnes* colonization in patients undergoing shoulder arthroplasty or arthroscopy: a prospective case series

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**Synopsis**

When applied preoperatively at the planned surgical incision site, microcurrent dressing may contribute to a reduction in perioperative infections, including prosthetic joint infection (PJI), and may be effective in reducing the incidence of surgical site *Cutibacterium acnes* (*C. acnes*) colonization.

**Background**

- While the rate of PJI after primary shoulder arthroplasty is approximately 1% to 4% in the literature, it can increase to as high as 10% in young, male patients after reverse shoulder arthroplasty.
- *C. acnes* infections of the shoulder are a significant concern in shoulder arthroplasty. *C. acnes* is particularly challenging to diagnose and eradicate and is a substantial cause of morbidity.
- The use of a microcurrent dressing as a prophylactic preoperative dressing to alter skin flora and thereby decrease the risk of PJI has not yet been investigated.

**Study Objective**

Evaluate the efficacy of a microcurrent dressing in reducing *C. acnes* skin colonization and the risk of PJI of the shoulder.

**Study Design and Methods**

<table>
<thead>
<tr>
<th>Design</th>
<th>Patients</th>
<th>Procedure</th>
<th>Treatment</th>
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</table>
| Prospective case study | 20 patients with preoperative *C. acnes* colonization | Elective shoulder arthroplasty or arthroscopic shoulder surgery | 2 days prior to surgery:  
| | | | - Skin culture swab taken, dressing applied over planned surgical site  
| | | | Immediately prior to surgery:  
| | | | - Dressing removed, repeat swab taken  
| | | | Upon initiation of surgery:  
| | | | - Full-thickness biopsy taken for culturing |

**Results**

Preoperative application of a microcurrent dressing resulted in significantly diminished *C. acnes* skin burden at the time of surgery in patients undergoing elective shoulder arthroplasty or arthroscopic shoulder surgery.

<table>
<thead>
<tr>
<th>Subjects Enrolled</th>
<th>Subjects With Pre-op <em>C. acnes</em></th>
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<tbody>
<tr>
<td>(n=31)</td>
<td>(n=20)</td>
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<tr>
<td>Demonstrated no baseline <em>C. acnes</em> (n=11)</td>
<td>No growth in <em>C. acnes</em> at time of surgery (n=12; <em>p</em>=0.001)</td>
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</table>

65% of patients with pre-op *C. acnes*

60% of patients who received pre-op microcurrent dressing showed no growth in *C. acnes* at intra-op biopsy.
Did You Know?

**Impact of C. Acnes**

- **70%** of C. acnes persist in skin despite standard chlorhexidine skin preparation

- **>50%** of C. acnes cultures carry resistance to more than one antibiotic

- **50%-60%** rate of C. acnes infection following revision of shoulder surgery

- **$47,696** maximum average Medicare payment for shoulder joint revision

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**References**


