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## **Acne Cream Reduces The Deep Cutibacterium Acnes Tissue Load Before Elective Open Shoulder Surgery: A Randomized-Controlled Pilot Trial**

Orthopaedics / Shoulder & Upper Arm / Epidemiology, Prevention & Diagnosis

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### **Background**

*Cutibacterium acnes* is the main pathogen in periprosthetic shoulder infections (PSI). In acne vulgaris therapy, the Benzoyl Peroxide and Miconazole Nitrate cream effectively reduces the superficial *C. acnes* burden of the skin. Its additional potential in subcutaneous and capsular layers (e.g. for future PSI prevention) is unknown.

### **Objectives**

The aim of this study is to investigate a topical acne vulgaris cream (Benzoyl Peroxide; Miconazole Nitrate) to reduce subcutaneous and capsular *C. acnes* in open shoulder surgery.

### **Study Design & Methods**

A prospective-randomized pilot trial was performed, allocating 60 adult patients (1:1) between a 7-days-preoperative application of a commercial acne cream (Benzoyl Peroxide; Miconazole Nitrate) on the preoperative skin (intervention group) versus no cream (controls) from November 1, 2018 to May 31, 2020. The superficial skin of the shoulder was sampled at enrolment and before incision, and deep subcutaneous and capsular shoulder samples were taken during surgery.

### **Results**

Sixty patients (mean age 59 years, 55% females) with primary open shoulder surgery (17 Latarjet procedures, 43 arthroplasties) were included in the study. At baseline, both randomized groups revealed the presence of *C. acnes* on the skin to 60% (18/30 in the intervention group; 19/30 in the controls;  $p=0.79$ ). In the patients with *C. acnes* skin colonization, the intervention resulted in a significant reduction of the overall number of positive intraoperative samples compared to the control group (8/18 vs. 16/19;  $p=0.01$ ), especially of the capsular samples (0/18 vs. 4/19;  $p=0.04$ ).

### **Conclusions**

The topical 7 days-preoperative skin application of acne cream (Benzoyl Peroxide; Miconazole Nitrate) significantly reduced the intraoperative *C. acnes*-load in 56% of the patients of the intervention group compared to 16% of the controls.