

## IDENTIFICATION OF CUTIBACTERIUM ACNES FROM DEEP TISSUE CULTURES IN CLEAN PRIMARY IMPLANT SHOULDER SURGERY

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### RESUMO

**Introduction:** *Cutibacterium acnes* is a commensal Gram-positive bacterium, facultatively anaerobic bacillus related to surgical site infections (SSI) and orthopedic implant-associated infections (OIAI), which can imply on reoperations, prolonged antibiotic treatment and potential loss of the implant. *C. acnes* has been regarded as a silent microorganism that may impose threats on the healthcare system. **Objectives:** We aimed to identify the presence of *C. acnes* on multiple samples of deep shoulder tissues collected aseptically during clean shoulder surgeries among patients that neither had undergone previous invasive procedure on the shoulder nor had a clinical history of infection. Moreover, we investigated the role of thioglycollate broth (TG) and tryptic soy broth (TSB) the recovery rate of *C. acnes*. **Methods:** A total of 84 patients submitted to primary shoulder surgery from 8 different hospitals in the city of São Paulo between June-December 2020, had 3 intraoperative deep tissue samples collected, two of them were randomly placed in TG and one with TSB. For 14 days, the TG samples were placed into anaerobic jar at 37°C, while the TSB samples were incubated in aerobiosis at 37°C. Positive growth medium samples were then inoculated onto sheep blood agar plates and incubated for 14 days at 37°C in the anaerobic jar. Identification was carried out using Matrix Assisted Laser Desorption Ionization Time of Flight Mass Spectrometry (MALDI-TOF MS). **Results:** Patient's mean age was 51 years, and 54% were male (n = 45/84). Overall, bacteria were recovered on 27.3% (n = 23/84) of patients investigated. A total of 255 samples were collected (3 samples per patient), distributed as tendon 36.1% (n = 92/255), bone 31.4% (n = 80/255) and bursa 29.8% (n = 76/255) inoculated on TG. Importantly, on 57% (n = 13/23) and 43% (n = 10/23) of patients only one and more than one tissue sample grew any bacteria, respectively. Moreover, in 21.7% (n = 5/23) of the patients, two or more positive tissue samples with *C. acnes* were identified. Interestingly, identification of *C. acnes* and other species were observed in 11.7% (n = 30/255) and 9.8% (n = 25/255) of tissue samples, respectively. Other species comprehend *Escherichia coli*, *Escherichia hermannii*, *Acinetobacter baumannii*, *Staphylococcus capitis*, *Enterococcus faecalis*, *Staphylococcus epidermidis*, and *Propionibacterium acidifaciens*. Positive growth was slightly higher in TG than in TSB, in which, tendon had 13.3% (n = 4/30), bone 26.7% (n = 8/30) and bursa

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26.7% (n = 8/30) in TG, while in TSB growth was observed in tendon 10% (n = 3/30), bone 13.3% (n = 4/30) and bursa 10% (n = 3/30) **Conclusions:** The literature for the identification of *C. acnes* is scarce and the relevance of this work highlights the higher frequency of isolation of *C. acnes* on apparently sterile deep tissues among patients with no signs and symptoms of shoulder surgical site infection.

**PALAVRAS-CHAVE:** Cutibacterium acnes, MALDI-TOF MS, Shoulder surgery, Thioglycollate broth, Tryptic soy broth.