

# CHANGING IN THE POST-SURGERY INFECTIVE COMPLICATIONS FOLLOWING THE SHORTENING OF THE ANTIBIOTIC PROPHYLAXIS IN THE PATIENTS UNDERGOING SKIN DERMAL SUBSTITUTES RECONSTRUCTION

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**Background:** Bioengineered skin dermal substitutes (SDS) represent a novel therapeutic opportunity for restoring damaged tissue, both in massive deep burns, extensive full-thickness wounds, and reconstruction after cancer resection. Antimicrobial prophylaxis duration in such procedures has not been well established yet. The aim of the study was to evaluate the changing of infective complications following shortening of perioperative prophylaxis in patients undergoing surgical reconstruction with SDS.

**Material & Methods:** Infective complications at the site of SDS were compared in two groups of patients: subjects undergoing surgical reconstruction between September 2014 and January 2016 (PERIOD A) who received a >24h-antibiotic prophylaxis, and subjects undergoing surgical reconstruction between May 2016 and June 2017 (PERIOD B) who received a ≤24h-antibiotic prophylaxis. Differences in the incidence of infection and pathogen prevalence were explored. Univariate linear regression analysis was performed to evaluate the risk factors for infection (sex, age, ASA code, perioperative antibiotic prophylaxis, site of SDS intervention, type of SDS, dimensions of surgical area, chronic renal impairment, and diabetes mellitus).

**Results:** Between September 2014 and June 2017, 116 patients underwent a surgical reconstruction with a SDS. The 66.4% (n=77) of the study population was male, and the mean age was 73 years (22-92 years). Seventy-eight patients (67.2%) were positive for hypertension, 20 (17.2%) for diabetes mellitus, 16 (13.8%) for chronic renal impairment, 22 (19%) were former or current smokers, and 45 (38.8%) had an ASA code ≥3. In the 94.8% of the patients (n=110) the reason of surgical intervention was a skin cancer. Surgical SDS reconstruction involved the scalp in 44 cases (37.9%), the face in 28 (24.1%), the chest in 11 (9.5%), the arm or the hand in 9 (7.8%), the leg in 12 (10.3%) and the foot in 12 (10.3%). Among 116 patients undergoing SDS surgical reconstruction, 62 (53.4%) received a >24h-prophylaxis and 54 (46.6%) received a ≤24h-prophylaxis. The average duration of prophylaxis in the 2 groups of patients was 6.6 days and 0.5 day, respectively. Overall incidence rate of infection was 20.7% (24/116). The most frequently

isolated pathogen was *S. aureus* (41.6%), followed by *P. aeruginosa* (29.1%), *P. mirabilis* (8.3%), and *E. faecalis* (4.1%). Patients undergoing SDS reconstruction in limb/foot had higher infection rate in comparison with those undergoing SDS reconstruction in chest/head (33.3% and 15.6%, respectively;  $p=0.034$ ). No differences in the infection rate were observed between the patients who received  $>24$ h or  $\leq 24$ h-antibiotic prophylaxis (22.5% and 18.5%, respectively;  $p=0.590$ ). The two groups resulted similar for gender, age, comorbidities, ASA score, and type of skin cancer. No significant differences in pathogen prevalence were found ( $p=0.692$ ).

**Conclusion:** Antibiotic prophylaxis reduction to 24 hours or less demonstrated to be beneficial to patients undergoing surgical reconstruction with SDS. Shortening of antibiotic prophylaxis did not increase infection rate, and it allowed to reduce of 6 days-per-patient the antibiotic exposure.