EDITORIAL

The Separation of Septic and Aseptic Surgical Areas is Obsolete

Peter Bischoff, Petra Gastmeier

Editorial accompanying the article: „Microbial Load in Septic and Aseptic Procedure Rooms—Results From a Prospective, Comparative Observational Study“ by Julian-Camill Harnoss et al. in this issue of *Deutsches Ärzteblatt International*

The prevention of surgical wound infections is becoming more and more challenging for both individual hospitals and society in general. On the one hand, surgical wound infections are one of the most common types of nosocomial infections; on the other, they can have substantial health-related, financial, and social consequences for individual patients (1, 2).

There are now many evidence-based measures, such as antibiotic prophylaxis and appropriate monitoring of blood sugar level and blood volume, that have been shown to reduce the risk of surgical wound infections (3). Ideally, the effect of such interventions is investigated in randomized controlled trials.

Naturally, randomized controlled trials are not always possible. However, our everyday clinical practice is characterized by many procedures and measures whose benefit in preventing infections has never been properly scientifically analyzed. Moreover, there are even procedures and measures that have become established even though it has been confirmed that they do not contribute to the prevention of surgical wound infections. These include the following, among others:

- Whole-body shaving before surgery
- Fitting operating rooms with laminar airflow ventilation systems
- Separating septic and aseptic surgical areas

Construction to enable separation is unnecessary

The recommendation to construct surgery departments so that septic and aseptic procedures were spatially separated was laid down in the 1980s by the Standing Committee of Germany's Federal Health Office (BGA, *Bundesgesundheitsamt*). The aim of this measure was to provide „the highest level of safety for patients and staff.“

The lack of benefit of this recommendation was finally recognized in part in the 1990s, resulting in the BGA's recommendation to require only a separate surgery unit for septic procedures (operating theater with adjacent rooms) within the department and a separate patient entrance/exit.

Furthermore, during the same period it was determined at a meeting of hospital hygiene specialists and representatives of the Robert Koch Institute, professional associations, and the Ministry for Social Affairs of Lower Saxony that there was no hygiene-related reason for construction to establish the separation of septic and aseptic surgical units, and that the earlier requirement for strict

construction-based separation of septic and aseptic surgical departments could no longer be sustained (4).

The Commission for Hospital Hygiene and Infection Prevention (KRINKO, *Kommission für Krankenhaus-hygiene und Infektionsprävention*) abandoned such a separation in its recommendation published 17 years ago, which is still valid (5). The statement in the recommendation that „It may be useful to provide individual surgical units and departments for specific surgical disciplines or surgical procedures with particular levels of contamination, for reasons of hygiene, equipment, or organization“ is classified, according to the system in use at the time, under level of evidence IB. This category contained consensus resolutions based on well-demonstrated evidence of the efficacy or inefficacy of a particular measure. On the other hand, a recommendation could also be placed in category IB even if no scientific studies on the subject had been conducted.

The literature contains no evidence of circumstances in which surgical procedures need to be performed in separate procedure rooms according to level of contamination (6, 7).

The risk of contact transmission is low

Harnoss et al. have addressed this issue again. Their study provides further confirmation of the lack of benefit of separating septic and aseptic surgical procedures, in the context of current guidelines and technical requirements (8).

The authors began with the requirement that cleaning and disinfection measures be implemented equally consistently after both septic and aseptic procedures, that instruments be provided sterile, and that surgical staff prepare themselves and patients in the same ways for every procedure.

These simple, patient-oriented measures virtually eliminate the risk of contact transmission of disease-causing pathogens via objects or staff from the previous patient who underwent surgery in the procedure room.

What remains? Theoretically, there is still a potential risk of transmission from microbe-laden airborne particles originating from the patient who underwent the previous procedure. This potential risk is close to zero in everyday surgical practice, as the ventilation system exchanges all the air in the procedure room more than 20 times per hour, largely eliminating airborne particles from one procedure before the next one begins.

Institute of Hygiene and Environmental Medicine, Charité—Universitätsmedizin Berlin: Dr. med. Bischoff, Prof. Dr. med. Gastmeier

Though they are rare in real surgical environments, Harnoss et al. conscientiously selected a surgical procedure room with no ventilation system for their study. They investigated the microbial load of procedure room air and microbial sedimentation during septic and aseptic procedures at various times and in various locations in the procedure room. There were no significant differences.

It is also unclear whether the source of the colony-forming units that were detected was patients or, perhaps, staff.

Summary

After almost 40 years of ongoing discussion, it is time to abandon completely the requirement for septic and aseptic surgical areas to be separated and thus make it possible to act more flexibly and cost-efficiently in everyday surgical practice. Those in charge of surgery, infection prevention, and hospital management should acknowledge that routine cleaning and disinfection of surfaces and objects after every surgical procedure and implementation of evidence-based measures minimizes the risk of surgical wound infections in patients who undergo surgery (3).

There remains the 2001 statement by Daschner and Olbricht: „Nowhere else in the world has the separation of septic and aseptic patients ever been recommended for surgery departments, yet the surgical wound infection rate has been found to be no lower in Germany than elsewhere. However, statutory accident insurance providers/professional associations inexplicably continue to demand unnecessary, expensive constructional measures if hospitals want to be involved in the inpatient treatment of patients who have serious injuries or who have been injured in accidents.“ (9, 10).

Conflict of interest statement

The authors declare that no conflict of interest exists.

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Corresponding author:

Dr. med. Peter Bischoff

Institute for Hygiene and Environmental Medicine

Charité – Universitätsmedizin Berlin

Hindenburgdamm 27

12203 Berlin, Germany

peter.bischoff@charite.de

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