

Pratheepkumar V, Aysha F.

ASEPTIC TECHNIQUES IN MINIMALLY INVASIVE SURGERY

Tutor: PhD, associate professor Koshevsky P.P.

*Department of General Surgery
Belarusian State Medical University, Minsk*

Minimally invasive surgery (MIS) has revolutionized surgical practices by reducing recovery times, postoperative pain, and complications. However, it also presents challenges in infection control, necessitating the use of aseptic techniques. This research explores best practices, training requirements, and future directions. Aseptic techniques are strict protocols designed to prevent contamination from pathogens during surgical procedures. The World Health Organization (WHO) and the Centers for Disease Control and Prevention (CDC) emphasize the need for aseptic practices to mitigate the risk of surgical site infections (SSIs), which remain a significant cause of morbidity and mortality in surgical patients (Siegel et al., 2007). In MIS, where ports are created in the skin, the risk of introducing pathogens is significant due to the smaller incision size and the complexities involved with instruments and access points. SSIs related to MIS can lead to extended hospitalization, the need for additional surgeries, and increased healthcare costs. A systematic review indicates that adherence to aseptic techniques can result in a reduction of SSIs by as much as 50% (Weiser et al., 2014). Thus, understanding and implementing aseptic techniques is critical not only for patient safety but also for optimizing healthcare resources.

The foundation of aseptic technique begins with thorough preoperative preparation. This includes proper hand hygiene, disinfection of surgical instruments, and the sterilization of the operative field. The surgical team should utilize antiseptic agents, such as chlorhexidine, to scrub the surgical site effectively (Parker et al., 2010). The wearing of sterile gloves, masks, and gowns is essential to reduce the risk of contamination throughout the surgical procedure. The operating room (OR) environment plays a critical role in maintaining asepsis. The use of laminar airflow systems helps minimize airborne contaminants. Furthermore, maintaining a clean and organized surgical field by using sterile drapes and organizing instruments can prevent translocation of organisms to the surgical site (Higgins et al., 2020). Continuous education and adherence to established protocols are vital for the surgical team working in the OR. In MIS, the number of access points is minimized; however, each trocar or port introduced into the body carries the potential risk of infection. Techniques such as the use of single-incision laparoscopic surgery need meticulous adherence to aseptic protocols. It is recommended that instruments are placed in a manner that avoids contamination as they enter the body (Dgeby et al., 2016). The use of prophylactic antibiotics in accordance with the CDC guidelines can further reduce the incidence of SSIs in high-risk surgical patients (Bratzler et al., 2013). Selection of proper antimicrobial agents tailored to the procedure, timing of administration, and dosage are crucial aspects of this preventive strategy. Implementing aseptic techniques extends beyond the surgical procedure into postoperative care. Proper dressing of the surgical site, monitoring for signs of infection, and patient education regarding wound care are all critical in preventing infections post-MIS (Ahn et al., 2017).

Simulation-based training programs have demonstrated improved compliance with aseptic protocols among surgical residents (Mason et al., 2014). Furthermore, regular audits and feedback can reinforce adherence level and identify areas for improvement within the surgical team. Aseptic techniques are crucial in minimizing the risk of surgical site infections in minimally invasive surgery. Through adherence to best practices in preoperative preparation, controlled environment management, minimizing access points, and post-operative care, the surgical team can significantly reduce infection rates.