

# An Innovative Technology with Vacuum Support in Providing Safe Epilation Before Surgical Cutting

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## ABSTRACT

Surgical intervention continues to be the first choice in many cases, either mandatory or optional, with curative, palliative and prophylactic purposes such as diagnostic, explorative, ablative, reconstructive, constructive. Surgical field infections are the most common healthcare-related infections. Therefore, the importance of innovative approaches to prevent surgical site infections is increasing day by day. In this review, "a vacuum assisted surgical hair clipper" is proposed as an innovative technology to provide safe epilation to prevent health care-related infections.

**Keyword:** Surgery; Hair Removal; Vacuum Clipper

## Subject and Scope

World Health Organization (WHO) data indicate that Surgical Field Infections (SSI) are common health-related infections in low and middle-income countries, affecting one-third of patients who have undergone surgical procedures, increased hospitalization by fivefold, doubled the rate of surgical death show that it increases [1].

Skin antisepsis, skin preparation, operation time, antimicrobial prophylaxis, operating room ventilation, operating room traffic, sterilization of surgical instruments, foreign body, surgical drains, blood transfusion requirement, surgical technique, insufficient hemostasis and tissue trauma such as while defining many risk factors for this infections 60% were reported to be preventable [2]. Epilation of the surgical incision area has traditionally been implement as part of the preoperative preparation process [1]. Current guidelines do not recommend epilation unless it is necessary in the preoperative period [3-6]. A Cochrane review published in 2009 found that there was no statistically significant difference in SSI rates between shaving and not shaving the surgery area before surgery [7].

However, the epilation of the surgical field in clinics is frequently preferred in orthopedics, lower and upper extremity surgery, cardiovascular surgery, surgery involving the gastrointestinal system

and neurosurgery concerning the scalp, the reason of this the hair is a source for the bacteria, the surgical intervention is difficult and the hair removal provides ease of dressing and suturing [7]. For this reason, epilation of the incision area in the preoperative period is an important step in skin preparation, which is a part of the strategy of preventing SSI. It is known that the risk of SSI increases in patients who do not use the right techniques and methods in epilation. In the literature, while electric devices and hair removal creams, which are defined as clippers for hair removal, are recommended, it is emphasized that the razor is an application that should definitely be avoided [3,4]. The razor is not strongly recommended because it causes small cuts in the patient's skin and damages the hair follicles and increases the risk of SSI by providing a good environment for the growth of microorganisms [1]. Although depilatory creams are the least destructive / irritating method, sensitivity test should be performed before use, since some people may cause serious skin reactions. The potential for allergic reactions and the need to wait 15-20 minutes for hair loss reduces clinical use of hair removal [8].

Clipping scissors have proven to be superior to other methods in terms of maintaining skin integrity. Centers for Disease Control and Prevention (CDC) and The Association of Peri Operative Registered Nurses (AORN) recommend that it be performed in a room outside the operating room in the form of clipping with electric scissors just

before the surgery if the hair needs to be removed [9]. Lefebvre et al. [10] found in meta-analysis that shaving for epilation increases the risk of infection and that chemical depilation and trimming are similar in terms of infection. However, Shi et al. [11] found that there was no difference between shaving, clipping and chemical depilation. Electric clippers are safely recommended in almost every guide, due to less irritation [3,4,8]. However, the dispersion (scattering) that occurs during clipping spreads to the objects around the patient, to the floor, to a larger area of the skin and to the air, and the hair and skin particles contaminate the surgical environment. Because these particles contain the same pathogenic bacteria as the skin. Noguchi [12] states that surgical site infections due to intraoperative contamination can be attributed mainly to airborne particles carrying microorganisms. In a limited number of studies, it is reported that vacuum-supported trimming scissors collect more hair, shorten the processing time, reduce the number of particles and microbial load in the environment and skin area, and minimize skin irritation [13]. Thanks to the vacuum assisted shaver, after the hairs are cut, the hair will be filled in the receptacle of vacuum without falling into the surgical area and the sterility of the operating room will be preserved.

## Conclusion

Vacuum-assisted clipper may be recommended instead of standard clippers to prevent the dispersion of the hair and skin particles into the environment to provide safe epilation before surgery.

## References

- (2016) World Health Organization. 'Global Guidelines for the Prevention of Surgical Site Infection'. WHO Document Production Services, Switzerland: 82-86.
- Pamela L Owens, Marguerite L Barrett, Susan Raetzman, Melinda Maggard Gibbons, Claudia A Steiner (2014) Surgical Site Infections Following Ambulatory Surgery Procedures. JAMA 311(7): 709-716.
- (2013) National Institute for Health and Care Excellence. Surgical site infection Evidence Update June 2013. NICE, Manchester: 5-10.
- Ban KA, Minei JP, Laronga C (2017) American College of Surgeons and Surgical Infection Society: Surgical Site Infection Guidelines, 2016 Update. J Am Coll Surg 224(1): 59-74.
- Mangram AJ, Horan TC, Pearson ML, et al. (1999) Guideline for Prevention of Surgical Site Infection, 1999. Centers for Disease Control and Prevention (CDC) Hospital Infection Control Practices Advisory Committee. Am J Infect Control 27(2): 247-278.
- Anderson DJ, Kelly Podgorny, Sandra I Berríos Torres, Dale W Bratzler, E Patchen Dellinger, et al. (2014) Strategies to Prevent Surgical Site Infections in Acute Care Hospitals: 2014 Update. Infection Control & Hospital Epidemiology 35(6): 605-627.
- Tanner J, Norrie P, Melen K (2011) Preoperative hair removal to reduce surgical site infections. Cochrane Database Syst Rev 9(11): CD004122.
- (2016) Global Guidelines for the Prevention of Surgical Site Infection Geneva: World Health Organization, Geneva.
- Al Maqbali (2016) Pre-operative Hair Removal: A Literature Review. Int J Nurs Clin Pract 3: 163.
- Lefebvre A, Saliou P, Lucet JC, Mimoz O, Keita Perse O, et al. (2015) Preoperative hair removal and surgical site infections: network meta-analysis of randomized controlled trials. J Hosp Infect 91(2): 100-108.
- Shi D, Yao Y, Yu W (2017) Comparison of preoperative hair removal methods for the reduction of surgical site infections: a meta-analysis. J Clin Nurs 26(19-20): 2907-2914.
- Noguchi C, Koseki H, Horiuchi H, Yonekura A, Tomita M, et al. (2017) Factors contributing to airborne particle dispersal in the operating room. BMC Surg 17(1): 78.
- Edmiston CE, Griggs RK, Tanner J, Spencer M, Seabrook GR, et al. (2016) Perioperative hair removal in the 21st century: Utilizing an innovative vacuum-assisted technology to safely expedite hair removal before surgery. Am J Infect Control 44(12): 1639-1644.

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