

## PRE-OPERATIVE HAIR REMOVAL BY DEPILATORY CREAM TO REDUCE SURGICAL SITE INFECTION IN PATIENTS

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### Abstract

A substantial contributor to morbidity, mortality, extended hospital stays, and increased healthcare expenses following surgery is surgical site infection (SSI). The purpose of this paper was to analyse studies that looked at the possible efficacy of using depilatory cream to reduce the rate of surgical site infections as advance preparation of sanitizing region of postoperative surgical wound incision. The databases of PubMed and Google Scholar were used in an electronic search. The results of this study indicated that there is only limited evidence supporting the use of chemical hair removal with patients having elective procedures to reduce the risk of postoperative site infections. Hair from having to interact with the healing wound region has been avoided by depilating before surgery. In hospitals, shaving, hair clipping, and chemical depilation are done to remove hair from the surgical site prior to surgery. When using chemical depilation to remove hair, which involves applying a hair removal cream to the skin, it is

hypothesised that there will be fewer wound infections and related injuries. It is strongly advised that additional research be done to fully explore this area of interest.

**Keywords:** Skin Preparation, Surgical Site Infection, Hair Removal, Depilation cream

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### Introduction

In the past, preparing patients for surgery has included routinely shaving body hair away from the location of the intended surgical wound. Hair removal is meant to reduce risk of the Surgical Site Infections (SSIs), which are thought to be related to unclean circumstances.<sup>1</sup> pre-operative depilation, on the other hand, is reportedly detrimental to patients and shouldn't be done because it may result in surgery site infections. In the United Kingdom (UK), 10% of patients experience surgery site infections each year, which can delay wound healing, extend hospital stays, cause

excruciating pain, and in the worst cases, result in patient death.<sup>2</sup>

Preoperative depilation is one of the antiseptic procedures used by surgeons to avoid surgical wound infection. The most common methods of hair removal are shaving with a razor, clipping, and applying depilatory lotions.<sup>3</sup> The oldest method of hair removal is still used in underdeveloped nations; the most popular method is shaving with a razor, which commonly results in varied degrees of skin damage and eventually contaminates the surgical site. While many of these nations do not use the more modern techniques like trimming or depilatory cream. This is a result of the razor blade's low cost, ease of use, and the incapacity of medical facilities to adopt contemporary hair removal methods.<sup>4</sup>

The CDC (Centres for the Disease Control and Prevention) emphasize that one of the key components of preventing surgical site infections is teaching and training healthcare professionals how to adopt best practises.<sup>5</sup> There is a dearth of information in the literature about the various methods of hair removal and how they affect surgical site infections.<sup>6</sup> Few research about healthcare workers' adherence to

preventative practises guidelines have been conducted in Jordan.<sup>7-12</sup>

The purpose of this study was to investigate the possible efficacy of depilatory cream in reducing the rate of surgical site infections as early preparedness of cleansing area of the postoperative wound incision, which is a key element of the safe recovery process without infections.

## Method

**Search Methods:** Google Scholar and PubMed were used for the online search. Key search terms included: hair removal, skin preparation, chemical depilation, and surgery site infection. The investigation included all English-language publications published between 2015 and 2020 that addressed the topic of the impact of preoperative depilation type on surgical site infections among adult patients needing clean procedures through a hair-bearing area. Studies released prior to December 2014 were not included.

**Search outcome:** Roughly 30 papers were found through literature research, of which about 20 were eliminated after reading and 10 satisfied the inclusion requirements.

*Table 1. Southampton Wound Scoring System<sup>13</sup>*

Grade	Appearance		
0	Healing normally		

1	Healing normally having mild erythema or bruising	a.	Have Several bruising
		b.	Have Significant bruising
		c.	Have Mild erythema
2	Other signs of inflammation and Erythema	a.	At point one
		b.	Around the sutures
		c.	Along along wound
		d.	Around the wound
3	Hemo-serous or clear discharge	a.	At point one only (upto 2cm)
		b.	Along with wound (> 2cm)
		c.	Having Large volume
		d.	The Prolonged (> 3-days)
4	Pus	a.	At point one only (< 2cm)
		b.	Along with wound (> 2cm)
5	Bleeding from a hematoma that needs suction; severe or deep wound infection without or with breakdown of tissue		

## Discussion

Any surgeon's goal following a successful operation is a smooth recovery and an early return to preoperative status. Even with all the hygienic precautions that doctors have taken to prevent surgical site infections, this is one of the most common surgical consequences and a significant burden on patients and the healthcare system.<sup>14</sup> The cost to hospitals is high due to the surgical site infections, which are a major source of morbidity and prolonged postoperative hospitalisation.<sup>15</sup> Preoperative hair removal is done in the majority of hospitals to prevent surgical site infection or hair from growing into the incision site.<sup>2</sup> Shaving, clipping, and chemical depilation have all

been widely utilised for surgery site hair removal. Shaving involves using a razor to cut the hair close to the skin's surface. With electric clippers, clipping entails removing the hair to leave about 1 mm of hair. Chemical depilation involves using a hair removal cream on the skin to destroy the hair.<sup>16,17</sup>

As hair is a source of bacteria, shaving the surgical site can make it easier to do the procedure, dress it, and reduce the risk of infection. However, shaving can also cause primary infection because it causes microscopic lesions to the skin.<sup>2</sup> While shaving, skin might sustain small abrasions and cuts. This is believed that the micro-

organisms can enter these wounds and colonise them, contaminating the surgical incision site and resulting in surgical site infections. Abrasions may also discharge bodily fluids, which act as a growing medium for microorganisms. Because chemical depilatory creams do not make direct touch with the patient's skin, there is less chance of cuts and abrasions.<sup>2</sup> In numerous investigations, the depilation before to surgery has been examined. To compare different depilation methods, a meta-analysis of randomised or quasi-randomized studies was carried out. The available data suggested that, when hair removal was necessary, clipping resulted in the fewer surgical site infections than the shaving.

However, there were few studies that contrasted chemical hair removal with shaving or trimming.<sup>2</sup> An investigation of the connection between two preoperative depilation methods and surgical site infection was conducted in a developing country where razor shaving is widely popular. According to the study, preoperative depilation with a razor increases the risk of skin disorders, which in turn has a big impact on how often postoperative wounds become infected. These wounds and the ensuing wound infection would be less common with the usage of hair removal treatment.<sup>18</sup>

100 patients who had undergone surgery participated in a randomised prospective trial that evaluated two methods of preoperative skin preparation: 49 patients had hair removal treatment, whereas 51 patients had their hair shaved. They

discovered that depilation using a chemical agent is frequently a good method of pre-operative skin preparation. It is less difficult than shaving, it may be applied to locations that razors cannot easily reach, and patients themselves can perform it.

Additionally, a reduction in surgical site infection rates has been shown when hair removal cream is used in place of preoperative blade shaving. In hospital settings, anaesthetic rooms, clinics, or people's homes, hospital staff, ward staff, or patients themselves can do shaving and clipping. Because it takes more time, chemical hair removal is often done later or at home.<sup>19</sup>

According to studies, depilation shouldn't be done in the operating room since loose hair could contaminate the sterile operating room. Instead, depilation should be done by trained professionals to prevent abrasion wounds. There aren't many pertinent facts for Jordan in the literature.<sup>20</sup> Only 29.8% of surgeons remove patient hair in the operating theatre, according to research done in five hospitals in Jordan; 57.1 percent prefer to cut the patient's hair prior to the procedure. The study concluded that additional training was necessary to prevent surgical site infections. Another Jordanian study assessed the knowledge of evidence-based strategies for preventing surgical site infections among Jordanian nurses.<sup>8</sup> According to the findings, 36% of nurses said preoperative hair removal should really be done right before surgery, and 49% of nurses said electrical clippers are preferred for shaving a patient's hair at or close to the incision site.<sup>21</sup>

Different depilation methods are promoted all around the world. For instance, the CDC strongly recommends against shaving off hair prior to surgery unless it is preventing the surgeon from doing the procedure at or close to the incision region.<sup>22</sup> Although it is not strongly advised to avoid hair removal before surgery, the Norwegian Centre for Health Technology Evaluation reported that it is not discouraged either. Preoperative hair removal is neither clearly supported by research nor disproven, according to the Norwegian Center. Shaving should never be done if at all possible, according to the British Hospital Infection Society Working Group, and must be done on the area that will be incised.<sup>2,19</sup>

## Conclusion

In order to reduce danger of the surgical site infections, there is little research on the usefulness of chemical hair removal on individuals having elective procedures. Everyone agrees that shaving has the greatest incidence rate of infection when comparing chemical depilation with shaving and clipping. It is strongly advised that additional research be done to fully explore this area of interest.

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