

Association between Sterile Glove and Instrument Change at the Time of Abdominal Wound Closure to Prevent Surgical Site Infections

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Abstract: *Surgical site infections (SSIs) are a common complication following surgeries, leading to increased patient morbidity, prolonged hospital stays, and higher medical costs. This study evaluates the impact of routine changes of sterile gloves and instruments at the time of abdominal closure in reducing SSIs. A descriptive cross-sectional study was conducted on 105 patients undergoing elective laparotomies, open cholecystectomies, appendectomies, and hysterectomies. Patients were divided into two groups using stratified random sampling: Group 1 (no change of sterile gloves and instruments) and Group 2 (routine change of sterile gloves and instruments). Postoperative follow-ups on days 3, 7, and 14 assessed SSI incidence using the Southampton scoring system. Group 2 showed a significantly lower rate of SSIs, with fewer culture-positive cases compared to Group 1. The findings suggest that routine change of sterile gloves and instruments at abdominal closure is a simple yet effective intervention to reduce SSIs, minimize hospital stays, and lower healthcare costs. Implementing this practice as a standard surgical protocol can significantly improve patient outcomes and reduce the burden on healthcare systems.*

Keywords: Surgical site infection, Sterile gloves, Abdominal closure, Hospital stay, Healthcare costs

1. Introduction

- Surgical site infection is the most common complication of surgery around the world. It is unpleasant and harmful for the patients, increases the care burden on families and communities and is very costly for the patients and providers. As a result surgical site infection was highlighted as the highest research priority in surgery in a global co-prioritisation exercise. [1]
- A collaborative study that the surgical site infection after gastrointestinal surgery in high-income, middle-income and low-income countries and observed increased infections in middle and low income countries compared to the high income countries. [2]
- A study on burden of endemic health care associated infections in developing countries and concluded the incidence of infections in developing countries after surgeries is associated mostly with the surgeries.[3]
- A study of surgical site infections and costs in low and middle income countries and came to a conclusion that the surgical site infections come with huge expenses and the patient cannot afford the expense [4].
- Modern surgical practice have shown very few interventions to reduce the incidence of surgical site infection. Therefore the routine change of sterile gloves and instruments before the abdominal wound closure could prevent as many as one in eight surgical site infections, reducing the global burden of post operative complications.
- Changing sterile gloves and instruments is very low cost in comparison with surgical site infections, which are expensive and a huge burden over the economy and also to reduce the mortality and the morbidity in the post operative patients with surgical site infections.

Objective

- To assess the association of routine change of sterile glove and instrument at the time of abdominal closure to reduce the incidence of the surgical site infection.

- To compare the incidence of surgical site infections between 2 groups, where the sterile gloves and instruments are not changed in group - 1, and changed in group - 2.

2. Materials and Methods

Source - 18 years and above, elective laparotomies, open cholecystectomies, open appendectomies, hysterectomies

Study type- Descriptive cross- sectional study

Study period - 1 year

Sample size - 105 patients

The patients assigned in 2 groups based on stratified randomised sampling, odd numbers where routine change of sterile gloves and instruments done and even numbers where change of sterile gloves and instruments not done.

The patients will be followed up on post operative day - 3, 7 and 14 and the dressing changed on following days and the culture and blood investigations (hb, platelets, wbcs and rbs) sent on post operative day - 3.

Southampton scoring system used to assess the grade of surgical site infections.

3. Results

- The group of odd numbers Group - 2 (47) where the sterile gloves and instrument change was done noted lower surgical site infections where the first dressing was changed on pod -3.
- The group of even numbers group - 1(58) where the sterile gloves and instruments were not changed noted higher number of surgical site infections where the dressing was changed on pod- 3

- Group - 1(sterile gloves not changed) had higher number of culture positive with organisms compared to group - 2 (sterile gloves changed).

4. Conclusion

- Routine change of sterile gloves and instruments hence show a significant lower rate of surgical site infections with over all reduction in the hospital stay and expenditure of the patient.
- Simple practice of routine change of sterile gloves and instruments hence need to be mandatory at the time of abdominal closure as this also ensures the risk of disease burden and lowering the use of antibiotic use and also reduction in the frequency of the dressings and re-admissions and lowering the duration of stay of the patient in the hospital hence lowering the burden of the patient and the attenders.

5. Discussion

Several other studies were also done where done where various other methods were employed for the purpose of reduction of the surgical site infections like use of wound edge protection devices after the laparotomies and saw huge reduction in the SSIs but were found to be an additional expense to the patient.

Several other studies were done where the usage of double gloving was done and a huge reduction of surgical site infection was seen.

References

- [1] In 2018, Globalsurg did a collaborative study that the surgical site infection after gastrointestinal surgery in high-income, middle-income and low-income countries.
- [2] In 2017, Allegranzi, B. Et al did a study on burden of endemic health care associated infections in developing countries
- [3] In 2020, Monahan M, Jowett S. Pinkney et al studied surgical site infections and costs in low and middle income countries.
- [4] In 2015, Pinkney TD et Al tested the impact of wound edge protection devices on surgical site infections after laparotomy.