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Review Article

Multimodal Approach to Reducing Postoperative Infections

P. Savitha Mukhi*, A. Srinivas Rao, AV Kishore Babu

Bhaskar Pharmacy College, Telangana

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ABSTRACT

Hundreds of millions of people go through surgery every year worldwide Surgical site infections, postoperative wound infections are common problems. Wound infection accounts for high morbidity and mortality. This activity describes the aetiology, epidemiology, pathophysiology, and various new techniques such as NPWT as well as the evaluation and management of postoperative wound infections, highlighting the role of the interprofessional team in evaluating and managing patterns with these conditions.

INTRODUCTION

Postoperative infection is defined as any infection that occurs within 30 days of operation and may be related to the operation itself or the postoperative. It is a common healthcare problem. The wound occurrence process is complex and involves an interplay between biological pathways at the molecular level. This post-operative infection causes high mortality and morbidity. Postoperative wound infection is a common healthcare problem that can occur after any type of surgery. It is caused by the introduction of bacteria into the wound during surgery or the healing process.

Objectives:

- To identify types of postoperative wound infections their etiology.
- To evaluate postoperative wound infections
- Different types of management options and preventive measures for postoperative wound infections

Types of Postoperative Wound Infections

There are three main types of postoperative wound infections:

1. Superficial incisional infection: This type of infection only involves the skin and subcutaneous tissues. It is the most common type of postoperative wound infection, accounting for more than 50% of all cases.

2. Deep incisional infection: This type of infection involves deeper tissues, including muscles and fascia. It is less common than

***Corresponding Author:** P. Savitha Mukhi
Address: *Bhaskar Pharmacy College, Telangana*
Email ✉: savi.padala2002@gmail.com

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superficial incisional infection, but it is more serious.

3. Organ infection: This type of infection involves any organ or space in the body that is not directly connected to the incision site. It is the least common type of postoperative wound infection, but it can be the most serious.

Risk Factors for Postoperative Wound Infection

- The risk of postoperative wound infection is increased by several factors, including:
- The patient's underlying medical condition
- The type of surgery
- The duration of surgery
- The presence of foreign bodies
- The use of antibiotics
- The patient's age and nutrition status
- The patient's immune status

Evaluation:

The evaluation of postoperative wound infection includes a thorough history and physical examination, as well as laboratory tests such as a complete blood count and cultures of the wound. The management of postoperative wound infection typically involves the use of antibiotics and may also include surgical debridement of the wound.

Treatment and Management:

Several techniques have been developed to replace surgical site infections, including dressings, prophylaxis antibiotics, and wound debridement, and the latest technology is negative pressure wound therapy. It is applied by using a vacuum pump and a vacuum is created.

It has a beneficial effect on the formation of new tissue by removing secretions and harmful substances from the wound surface.Patient wounds should be initially stimulated by mechanical debridement and normal saline lavage NPWT (a pressure of 125mm hg intermittently) should be performed four times a day for about 1-2 weeks. Bacterial infections in orthopaedic surgeries are common. A retrospective study conducted in the Institute of Orthopaedic Surgery at SLIMS Hospital Pondicherry revealed that unlike previous studies Klebsiella constituted the majority of the cases instead of staphylococcus so prophylactic antibiotics should be used judiciously

Examples:

- **Gastroduodenal surgery**-single dose in cefazolin, overall ciprofloxacin
- **Biliary Tract surgery**-single dose of cefazolin, ciprofloxacin
- **Appendectomy- cephalosporin**
- **Urological surgeries** - ciprofloxacin-500mg cotrimoxazole
- **Caesarean section** - cefazolin 2g I.V drug of choice
- **Neurosurgery** - a single dose of cefazolin and vancomycin
- **Orthopaedic surgery** - cefazolin - drug of choice

Management techniques:

- Preoperative skin preparations using films on the skin, dressings
- Following theatre sterility
- Antibiotics should be given 30 to 60 minutes before knife-to-skin time to allow
- Foreign bodies have to be considered for removal due to biofilm formation
- Antibiotic prophylaxis and skin decontamination are important to prevent SSIs

Patient education:

- Some factors can be identified and modified by adopting some lifestyle changes BMI, diabetic control.
- The patient may be asked to lose weight to antibiotic medication maintain a healthy diet do regular exercise, cessation of smoking, or be addicted

Enchanting health care team outcomes:

Health professionals should work together as a team for a better outcome, they should identify modifiable risk factors and be patient regarding anticipated risks.All theatre staff is responsible for maintaining sterility and ensuring optimal theatre time, temperature, available instruments while designing and building theatres and hospitals, theatre size and airflow or important factors, lost operatively word doctors, nurses, dietitians, physiotherapists, and assistance or all are going to influence recovery and therefore, reduce postoperative wound infection rate

Maintaining aseptic conditions, sterilization of surgical equipment careful supervision and collaboration of healthcare professionals and patient education, and application of new techniques can reduce post-operative wound infections.

CONCLUSION

NPWT is an effective treatment for deep wounds, Nowadays it is considered one of the best wound-healing methods, and NPWT has significant advantages. The NPWT can reduce wound healing by removing excess fluid that prevents wound healing, reducing the risk of wound infections, and reducing wound dressing.

NPWT cannot be used near the joints, cancerous tissue, wounds close to organs or blood vessels, areas with very low blood flow, and thin and fragile skin. NPWT when used in diabetic foot ulcer patients stimulated endothelial progenitor cells due to the high prevalence of orthopedic surgery site infection, differences in pathogens causing infections, and differences in bacterial resistance to antibiotics consequently the need to start different antibiotics is necessary.

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