

Combating wound infection with documentation and antiseptic sutures

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Preventing surgical site infection (SSI) has always been a difficult task. For example, the development of infection in incisional wounds is the most common complication in open and laparoscopic surgery. This short paper provides an overview of developments in the prevention of postoperative wound infections and explains why surgeons should place greater emphasis on the standardisation and documentation of wound care.

INTRODUCTION

Despite the many recent advances in modern surgery, poor wound healing and the development of infections in incisional wounds continue to be the most common complications in open and laparoscopic surgery.

According to the literature, the incidence of infected wounds after midline laparotomy varies from 4-19%[1,2]. These complications are associated with significant secondary morbidity and even mortality, especially in high-risk patient cohorts[3,4]. Furthermore, infected wounds are associated with high costs due to prolonged hospitalisation, extended wound care and the loss of patient earnings[3,5]. Although these factors are well known among clinicians, there has been little improvement in surgical site infection (SSI) rates in recent decades.

At least part of the problem is administrative. The lack of standardised wound care documentation across different healthcare settings and countries means that the number of infected wounds is still underestimated in many centres. In recent years research has focused more on high infection rates, however strategies to prevent wound infection are now rising up the healthcare agenda.

STANDARDISING TREATMENT AND DOCUMENTATION

Various risk factors for the development of poorly healing wounds have been identified[1-3,6] such as impaired microcirculation and immunosuppression. While patient-related factors, such as age, sex, body mass index (BMI), underlying disease, co-morbidities, previous surgery and lifestyle factors (ie smoking) are difficult to control, procedures related to surgery are much easier for clinicians to standardise. Factors controllable by clinicians include:

- The quality and consistency of surgical technique
- Skin antiseptics

- Appropriate antimicrobial prophylaxis
- Identification of strategies for decreasing wound contamination[6]
- Standardised wound documentation to accurately record specific infection rates.

PREVENTING WOUND INFECTIONS

As almost all postoperative wound infections develop along suture lines or in the immediate vicinity, the role of suture material in the development of wound infections has been the subject of speculation among surgeons since the 1960s[7,8]. Bacteria not only contaminate the tissue in the surgical wound, but also the suture material itself[9,10], which can play an important role as a nidus for wound infections.

To prevent contamination, suture materials have been developed that have been coated in triclosan, which has antiseptic properties. An analysis by the authors of more than 2,000 patients demonstrated that the use of antiseptic-coated sutures (Vicryl® Plus, Ethicon) reduced the number of wound infections after midline abdominal wall incision[11].

While these results are not yet supported by large clinical studies, they do suggest that the use of antiseptic sutures, together with persistent skin antisepsis, meticulous operative techniques and appropriate antimicrobial prophylaxis, may help to prevent wound infections.

After stapling the wound, it is covered with a sterile adhesive dressing for two days. When this is removed the wound is cleaned with antiseptic then covered with a new sterile dressing. The dressing is changed daily until the staples are removed on day 12 postoperatively.

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RESEARCH LIMITATIONS AND FUTURE FOCUS

As described above, wound infections and slow healing wounds can be caused by many factors. However, the number of large clinical trials investigating new prevention techniques is small. This dearth of literature may be due to the difficulties of standardising patient cohorts or because large trials are time- and cost-intensive.

However, while prospective randomised trials remain the gold standard for clinical studies, the authors' group demonstrated that the stringent organisation of surgical procedures using IT-based clinical pathways can provide an excellent tool in generating scientific data from large study cohorts with minimal cost[11]. In the future, innovative techniques and devices will be needed to prevent

wound infections even in patients with an increased risk for poorly healing wounds.

CONCLUSION

Preventing SSI remains a challenging task. Clinicians working in the surgical environment as well as those performing postoperative care need to pay attention to the standardisation and documentation of wound care. It is only in this way that trends in infection rates and ideas for improving practice can be identified.

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Expert Commentary

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Postoperative surgical infection is a problem throughout the world and affects clinicians in both developed and developing countries. The author of this piece has correctly identified that consistency in surgical techniques is paramount and is to be commended on carrying out original research into the effect of antiseptic-coated sutures. In Egypt, I have found the following techniques useful in the prevention of postoperative infection:

- Do not use woollen bed linen. We use a cotton/polyester mix which can withstand vigorous washing by machines followed by ironing
- Do not shave the surgical field. Instead use an epilation cream, ensure the patient has a bath, paint the field with betadaine and apply a temporary dressing
- Supply patients with sterile gowns on the day of surgery
- Administer a broad spectrum IV antibiotic with the anaesthesia and continue for two days postoperatively.

I also believe that the majority of wound sepsis is contracted during surgery and therefore recommend the following measures:

- Ensure rigorous scrubbing, gowning and gloving procedures are followed
- Ensure wide sterilisation of the surgical field with povidone-iodine and ethanol followed by comprehensive draping
- Laminar flow is crucial. The operating room at the centre is air-conditioned with a vertical laminar flow. The air is filtered by standard filters and then bacterial filters
- At the end of each week spray each operating theatre with formaldehyde, close for 24 hours and then aerate. Perform air settlement culture plates
- Observe for haemostasis continually during surgery
- Ensure that the surgical field is completely dry
- Use tube drains with suction in the wound itself. Once these are removed (usually after 48 hours), the wound can be exposed.