International Journal of Surgery 83 (2020) 192–193

Contents lists available at ScienceDirect

International Journal of Surgery

journal homepage: www.elsevier.com/locate/ijsu

Invited Commentary

An invited commentary on: "A randomized controlled trial on irrigation of open appendectomy wound with gentamicin-saline solution versus saline solution for prevention of surgical site infection." (Int J Surg 2020; 81:140–146)

ARTICLE INFO

Keywords
Wound infection
SSI
Open appendectomy
Wound irrigation
Negative pressure

Dear Editor,

The subject of Surgical Site Infection (SSI), that is an infection that occurs in the part of the body where the surgery took place, is still debated in literature.

SSI is a potential complication associated with any type of surgery irrespective of access (minimally invasive or open) or surgical discipline. Although SSI is thought to be preventable, it still represents a major cause of morbidity and substantial economic burden on the health system.

One of the most common superficial (limited to the wound site) SSI prevention method is intraoperative wound irrigation (IOWI) [1,2].

IOWI describes the flow of a solution across the surface of a surgical incision prior to wound closure [1]. It is intended to cleanse the wound physically by removing cellular debris and trapped fluids, reducing the level of bacterial contamination by flushing off bacteria from the wound surface.

Most solutions used for irrigation except saline are not inert. It is thus possible that substances in the irrigation solution might negatively affect wound healing thereby predisposing to SSI.

The use of Povidone-Iodine (PV–I) solution has been first advocated, then rejected, same as antibiotic incisional wound irrigation before closure [3].

Regarding wound irrigation fluid, results are still unconclusive.

Some results suggest that IOWI before skin closure represents a pragmatic and economical approach to reduce postoperative SSI after abdominal surgery and that antibiotic solutions seem to be more effective than PV-I solutions or simple saline, and it might be worth to re-evaluate their use for specific indications, Others find that the addition of antibiotics does not improve patient outcome [2].

Even the WHO global guidelines (2016) for prevention of surgical site infection are unconclusive about wound irrigation, and strongly advise against local antibiotic use, while stressing the importance of other procedures:

Chlorexidine gluconate body wash.

No mechanical bowel preparation alone (without the administration of oral antibiotics) in adult patients undergoing elective colorectal surgery.

In patients undergoing any surgical procedure, hair should either NOT be removed or, if absolutely necessary, should only be removed with a clipper.

Surgical antibiotic prophylaxis (SAP) should be administered before surgical incision, when indicated.

Protocols for intensive perioperative blood glucose control should be used for both diabetic and non-diabetic adult patients undergoing surgical procedures [3,4].

Another useful device is prophylactic negative pressure wound therapy, which may be used on primarily closed surgical incisions in high-risk wounds and, taking resources into account, for the purpose of preventing SSI. The application of negative-pressure wound therapy in preventing SSI can be useful in reducing postoperative wound complications [5,6]. Last but not least, the type of skin suture is regarded as important to prevent soft tissue infection.

Triclosan-coated sutures may be used for the purpose of reducing risk of SSI, independent of the type of surgery.

Subcuticular sutures have been reported to reduce the incidence of incisional SSI by eradicating subcutaneous dead space and optimizing management of postoperative incisions [7].

The use of barbed sutures seem to reduce the incidence of evisceration.

In agreement with the prospective study by Emile et al. [2], and based on our practical experience, we prefer normal saline for wound irrigation. We think that the use of antibiotic not based on an appropriate swab is not appropriate, while other disinfectant could damage deep tissues, worsening the wound healing process. Saline irrigation

DOI of original article: https://doi.org/10.1016/j.ijsu.2020.07.057.

https://doi.org/10.1016/j.ijsu.2020.09.047
Received 5 September 2020; Received in revised form 17 September 2020; Accepted 22 September 2020
Available online 1 October 2020

alone, in our opinion, can "wash away" germs and debris.

Pending a definitive study, wound irrigation with saline is a cheap, easy option that does not prolong operation times. In association with prophylactic negative pressure wound therapy, when needed, is useful in emergencty settings. In our practice we routinely use IOWL in a contaminated environment, with satisfactory results especially in acute appendicitis, where patients are mostly young adults, and therefore SSI prevention and wound aesthetical outcome are of primary importance. What we find interesting in the conclusions by Emile et al. [2] is not that wound irrigation is better than no irrigation (which is widely stated), but that gentamicine irrigation is useless to improve outcome, which is in accord with our experience.

Provenance and peer review

Invited Commentary, internally reviewed.

References

[1] D. Pieper, T. Rombey, J. Doerner, et al., The role of saline irrigation prior to wound closure in the reduction of surgical site infection: protocol for a systematic review and meta-analysis, Syst. Rev. 7 (2018) 152.
[2] S.H. Emile, A.H. Elfallal, M.A. Abdel-Razik, et al., A randomized controlled trial on irrigation of open appendectomy wound with gentamicin- saline solution versus saline solution for prevention of surgical site infection, Int. J. Surg. 81 (2020) 140–146.
[3] S.W. de Jonge, Q.J.J. Boldingh, J.S. Solomkin, et al., Systematic review and meta-analysis of randomized controlled trials evaluating prophylactic intra-operative wound irrigation for the prevention of surgical site infections, Surg. Infect. 18 (2017) 508–519.
[4] M.M. Chiarello, M. Cariati, Perioperative complications of complex abdominal wall reconstruction with biologic mesh: a pooled retrospective cohort analysis of cohort of 220 patients from two academic centers: a commentary, Int. J. Surg. 76 (2020) 14–15.
[5] G. Brisinda, M.M. Chiarello, The impact of negative pressure wound therapy for closed surgical incisions on surgical site infection: a systematic review and meta-analysis, Surgery (01 Sept 2020), https://doi.org/10.1016/j.surg.2020.07.039.
[6] H. Bou, H. Suzuki, K. Maejima, et al., Prevention of incisional surgical site infection using a subcuticular absorbable suture in elective surgery for gastrointestinal cancer, Int. Surg. 100 (2015) 999–1003.

Maria Michela Chiarello*
Department of Surgery, General Surgery Operative Unit, "San Giovanni di Dio" Hospital, Crotone, Italy

Giuseppe Brisinda
Department of Surgery, Catholic School of Medicine, "Agostino Gemelli" Hospital, Rome, Italy
E-mail address: gbrisin@tin.it.

* Corresponding author.
E-mail address: mikikr2001@gmail.com (M.M. Chiarello).