

Alcohol-Containing versus Aqueous-Based Solutions for Skin Preparation in Abdominal Surgery: A Systematic Review and Meta-Analysis

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Abstract : Introduction: The use of optimal skin antiseptic agents for the prevention of surgical site infection (SSI) is of critical importance, especially during abdominal surgical procedures. Alcohol-based chlorhexidine gluconate (CHG) and aqueous-based povidone-iodine (PVI) are the two most common skin antiseptics used nowadays. The objective of this article is to evaluate the effectiveness of alcohol-based CHG versus aqueous-based PVI used for skin preparation before abdominal surgery to reduce SSIs. Methods: Standard medical databases such as MEDLINE, Embase, Pubmed, and Cochrane Library were searched to find randomised, controlled trials (RCTs) comparing alcohol-based CHG skin preparation versus aqueous-based PVI in patients undergoing abdominal surgery. The combined outcomes of SSIs were calculated using an odds ratio (OR) with 95% confidence intervals (95% CI). All data were analysed using Review Manager (RevMan) Software 5.4, and the meta-analysis was performed with a random effect model analysis. Results: A total of 11 studies, all RCTs, were included (n= 12072 participants), recruiting adult patients undergoing abdominal surgery. In the random effect model analysis, the use of alcohol-based CHG in patients undergoing abdominal surgery was associated with a reduced risk of SSI compared to aqueous-based PVI (OR: 0.84; 95% CI [0.74, 0.96], z= 2.61, p= 0.009). Conclusion: Alcohol-based CHG may be more effective for preventing the risk of SSI compared to aqueous-based PVI agents in abdominal surgery. The conclusion of this meta-analysis may add a guiding value to reinforce current clinical practice guidelines.

Keywords : skin preparation, surgical site infection, chlorhexidine, skin antiseptics

Conference Title : ICDSSRC 2022 : International Conference on Digestive System Surgery and Related Complications

Conference Location : London, United Kingdom

Conference Dates : November 18-19, 2022