



AN OBSERVATIONAL STUDY OF INTRAOPERATIVE PERITONEAL LAVAGE WITH SUPEROXIDIZED SOLUTION AND NORMAL SALINE IN ACUTE PERITONITIS

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ABSTRACT

The role of peritoneal lavage in the treatment of peritonitis has been known to surgeons since time immemorial. In cases of severe intra-abdominal sepsis like peptic perforation, enteric perforation, appendicular perforation & gangrene gut, there is a very high rate of surgical site infection (SSI) in spite of the use of higher antibiotics. Surgeons continue to control systemic infection, but SSI still remains a challenge where incidence may be as high as 60-70%. The history of lavage with antiseptics can be traced back to 1923 when alcohol was used to reduce mortality in peritonitis from 100% to 4%. Superoxidized Solution(SOS) fits within the described comprehensive therapy by contributing to the corrective mode, as a moistening, irrigating, and debriding solution. There are also studies which used large amounts of Normal Saline(NS) as IOPL in peritonitis cases to reduce the risk of infection. But the literature on studies observing the results of the SOS with normal saline in peritonitis cases is limited, and hence, we would like to my study to reveal the effectiveness of SOS in cases of peritonitis.

**KEYWORDS :** peritonitis, Superoxidized Solution (SOS), surgical site infection (SSI), lavage, Normal Saline (NS)

INTRODUCTION

Peritonitis is the inflammation of the peritoneum and peritoneal cavity and is most commonly due to a localized or generalized infection. Primary peritonitis results from bacterial, chlamydial, fungal, or mycobacterial infection in the absence of perforation of the gastrointestinal tract, whereas secondary peritonitis occurs in the setting of gastrointestinal perforation. Frequent causes of secondary bacterial peritonitis include peptic ulcer disease, acute appendicitis, colonic diverticulitis, and pelvic inflammatory disease. (1)

The role of peritoneal lavage in the treatment of peritonitis has been known to surgeons since time immemorial. In cases of severe intra-abdominal sepsis like peptic perforation, enteric perforation, appendicular perforation & gangrene gut, there is a very high rate of surgical site infection (SSI) in spite of the use of higher antibiotics. Surgeons continue to control systemic infection, but SSI still remains a challenge where incidence may be as high as 60-70%. (2) Normal saline is an isotonic fluid, a liquid that has the same concentration of solute as the concentration within the cell. Because there is no difference in gradient between extracellular and intracellular tissue, then there is no movement of molecules across the cell membrane. Superoxidized Solution(SOS) fits within the described comprehensive therapy by contributing to the corrective mode, as a moistening, irrigating, and debriding solution. There are also studies which used large amounts of Normal Saline(NS) as IOPL in peritonitis cases to reduce the risk of infection. (2) But the literature on studies observing the results of the SOS with normal saline in peritonitis cases is limited, and hence, I would like to my study to reveal the effectiveness of SOS in cases of peritonitis.



Figure 1: Lavage With Superoxidized Solution

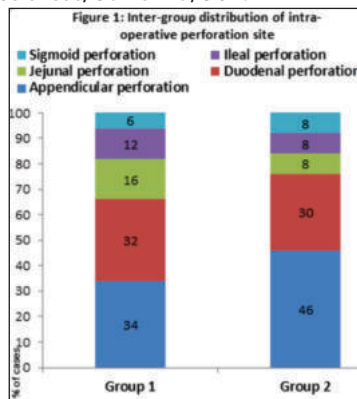
Sources: <https://www.google.co.in/>

AIMS & OBJECTIVES

To study the comparison between superoxidized solution and conventional normal saline in cases of acute peritonitis by comparing post-operative complications, recovery and associated efficacy.

MATERIALS & METHODS

It is a tertiary care hospital based observational study, where 100 cases were studied of which 50 cases of acute peritonitis underwent intra-operative peritoneal lavage with Superoxidized solution and the remaining 50 controls underwent lavage with Normal Saline. All the cases admitted between September 2019- September 2021 were included having signs and symptoms of acute peritonitis. All the patients underwent surgical management in the form of an exploratory laparotomy. Patients with any infectious liver disease, renal disease, history of steroid intake, heart disease or those not willing to be included in the study were excluded from the study. In the study group, after definitive surgery for pathology, the peritoneal cavity was washed with 2l of saline. Then 100 ml of super-oxidized solution was put in the peritoneal cavity and the abdomen was closed after putting drains. The drains were clamped for 1 h so that the super-oxidized solution did not escape. The super-oxidized solution was manufactured and marketed in India by ALKEM Laboratories Ltd. as "OXUM" under the license of Oculus Innovative Sciences, California, USA.



OBSERVATIONS & RESULTS

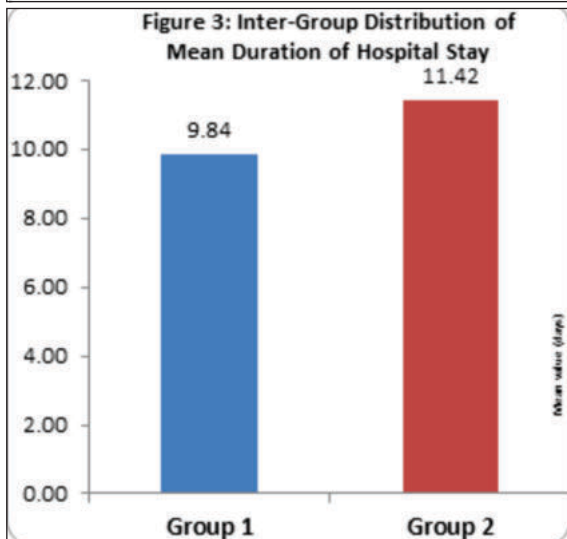
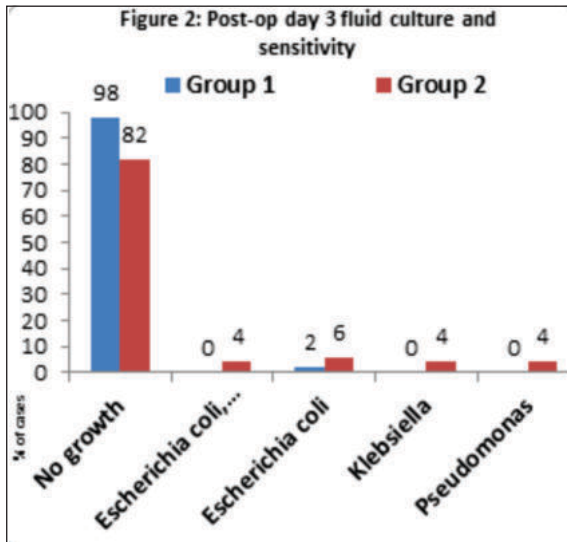
The data on categorical variables is shown as n (% of cases)

and the data on continuous variables is presented as mean and standard deviation (SD). The inter-group statistical comparison of distribution of categorical variables is tested using Chi-Square test or Fisher's exact probability test if more than 20% cells have expected frequency less than 5. (1) In the entire study, the p-values less than 0.05 are considered to be statistically significant. All hypotheses were formulated using two tailed alternatives against each null hypothesis (hypothesis of no difference). (2) Distribution of intra-operative perforation site did not differ significantly between two study groups (P-value>0.05) (Table1). Of 50 cases in Group 1, 49 (98.0%) had no growth, 1 (2.0%) had Escherichia coli microorganism isolated. Of 50 cases in Group 2, 41 (82.0%) had no growth, 2 (4.0%) had Escherichia coli + Acinetobacter, 3 (6.0%) had Escherichia coli, 2 (4.0%) had Klebsiella, 2 (4.0%) had Pseudomonas microorganism isolated. Distribution of outcome of post-op day 3 fluid culture and sensitivity examination among the cases studied did not differ significantly between two study groups (P-value>0.05). (Table 2) The mean ± SD of duration of hospital stay in Group 1 and Group 2 was 9.84 ± 1.71 days and 11.42 ± 2.87 days respectively. The minimum – maximum duration of hospital stay range in Group 1 and Group 2 was 6 – 16 days and 8 – 20 days respectively. Distribution of mean duration of hospital stay is significantly higher in Group 2 compared to Group 1 (P-value<0.05) (Table 3).

results as compared to the use of only Normal Saline. It has a holistic impact on the post-operative course of the patient and aids in speedy recovery.

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**CONCLUSIONS**

We can therefore conclude that the use of Superoxidized solution as intra-operative peritoneal lavage has superior