ORIGINAL RESEARCH PAPER

Volume-7 | Issue-6 | June-2018 | PRINT ISSN No 2277 - 8179

INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

ROLE OF NEGATIVE SUCTION DRAIN IN SUBCUTANEOUS SPACE DURING CLOSURE OF WOUND OF PERFORATION PERITONITIS

Medical Science

Dr. Anurag Saraswat Resident , Era's Lucknow Medical College & Hospital, Lucknow

Dr. Mushtaq Ali * MS, FIAGES Assistant Professor Era's Lucknow Medical College & Hospital, Lucknow
*Corresponding author

Dr. Rahul Bhushan Resident, AIIMS, Patna

ABSTRACT

The present study was carried out with an aim to evaluate the role of negative suction drain placed in the subcutaneous space during the closure of the wound of perforation peritonitis in our set up. A randomized controlled trial was planned in which a total of 70 patients aged 18-60 years presenting with diagnosis of perforation peritonitis were enrolled in the study. The patients were randomly divided in two groups, 35 were subjected to drainage by a negative suction were classified as Group A and rest 35 were subjected to conventional closure. The findings of the present study showed that placing negative pressure suction drain had a significant positive impact on outcome of perforation peritonitis in terms of reduction in infection rate and duration of hospital stay. With respect to wound dehiscence too, negative pressure suction drain showed a trend towards reducing the adverse events. Thus negative suction drain showed a positive impact on outcome in patients of perforation peritonitis.

KEYWORDS

INTRODUCTION

Peritonitis is a frequently encountered surgical emergency in tropical countries like India, most commonly affecting young men in their prime of life. Despite advances in surgical techniques, antimicrobial therapy and intensive care support, management of peritonitis continues to be highly demanding, difficult and complex.(1)

The common age for its occurrence has been reported to be 45-60 years, the median age being 40.5 years in Asian community. Majority of the patient's are male, with a male:female preponderance of 3:1. While, in eastern countries such as India and Pakistan, perforation of the proximal part of the gastrointestinal tract (GIT) is more common, distal gut perforation is more common in the western population. Overall, duodenum is the most common site of perforation. (2)

In majority of cases the presentation to the hospital is late with well established generalized peritonitis with purulent/fecal contamination and varying degree of septicemia. The signs and symptoms are typical and it is possible to make a clinical diagnosis of peritonitis in all patients. (3)

The perforations of proximal gastrointestinal tract were six times as common as perforations of distal gastrointestinal tract as has been noted in earlier studies from India, which is in sharp contrast to studies from developed countries like United States, Greece and Japan which revealed that distal gastrointestinal tract perforations were more common. (4,5,6)

Perforation peritonitis falls in the class IV of wound classification, thereby showing an increased risk of infection in these wounds.

Despite the surgical treatment, sophisticated intensive care units, last generation antibiotics and a better understanding of pathophysiology, the rate of poor outcome in perforation peritonitis cases is still very high.(7,8,9)

Wound related complications such as wound dehiscence, infection, sepsis rates are much higher. Perforation wounds are categorized as Class IV/Dirty or infected wounds, thus indicating that the organisms causing postoperative infection are present in the wound before the surgical procedure itself. This high vicinity to infectious organisms places the perforation wounds into a high risk category and hence indicates the need for a prophylactic management in order to reduce the adverse outcome. (10)

Use of drains is one such strategy to reduce the burden of post-operative complications among perforation peritonitis cases.

Although drains within a body cavity have been used for centuries, it was not until the first half of the nineteenth century that their use became routine. Suction drainage has been used since 1947 whenever a postoperative accumulation of blood, bile, or exudate was anticipated.

With the introduction of closed wound suction drainage in 1952, prophylactic drainage appeared to greatly enhance wound healing, minimize postoperative complications, and reduce the duration of hospitalization following surgery. Subsequently, reports in the literature have confirmed the efficacy of wound drainage in such surgical procedures as ventral herniorrhaphy, hydrocele repair, tumor excision, mammoplasty, mastectomy, neck dissection, thyroidectomy, groin dissection, skin flaps and grafts, rhytidoplasty, hand surgery, spinal fusion, hip surgery, open fracture reduction, or in any other procedure in which an accumulation of fluid or cellular debris can be expected. The targeted benefits of drains include: (1) to protect the healing tissue from permanent damage; (2) to minimize the risk of infection; and (3) to free the patient from artificial drainage as quickly as possible.(11,12)

Over the years, different types of wound drainage systems have developed, however, in the recent years, negative suction drainage has emerged as one of the most promising drainage systems with a better wound healing, lower infection rates and lesser complications. Considering these potential benefits of negative pressure drainage, the present study was carried out with an aim to evaluate the role of negative suction drain placed in the subcutaneous space during the closure of the wound of perforation peritonitis in our set up. (13,14,15)

MATERIALS AND METHODS

For this purpose, a randomized controlled trial was planned in which a total of 70 patients aged 18-60 years presenting with diagnosis of perforation peritonitis were enrolled in the study. Patients requiring ileostomy/colostomy and those presenting with comorbid conditions like diabetes and tuberculosis were excluded from the assessment owing to a possibility of increased risk of complications requiring specific management. The patients were randomly divided in two groups, 35 were subjected to drainage by a negative suction were classified as Group A and rest 35 were subjected to conventional closure.

RESULTS

Out of 70 patients 61 (87.14%) were males ad 9 (12.86%) were females. Age, gender and baseline haematological variables of the patients were comparable. Following conclusions were drawn from the study:

1- Maximum number of cases had duodenal perforation (35.71%), followed by Gastric perforation and Ileal perforation (21.43% each) and Appendicular perforation (17.14%) respectively. Colonic

perforation (4.29%) was least common. Statistically, there was no significant difference among group with respect to location of perforation.

2- Pre-operative treatment in all the patients was NPO, IV fluids, Ryles tubes, IV antibiotics. All the patients were subjected to Exploratory laparotomy.

3- Most common post-operative treatment was Dressing (85.71%) while other option was Secondary suturing (14.29%). Though post-operative dressing was used in higher proportion of patients of Group A i.e. negative suction drainage (91.43%) as compared to Group B i.e. conventional (80.0%). Difference in post-operative treatment of patients of above two groups was not significant statistically.

4- Clinical evidence of infection was noted in 24.29% cases. Rate of clinical evidence of infection was significantly higher in conventional (37.14%) as compared to negative suction group (11.43%) (p=0.012).

5- Incidence of wound dehiscence was 14.29%. It was higher in Conventional treatment group (20.0%) as compared to Negative suction group (8.57%) but this difference was not significant statistically.

6- Duration of hospital stay ranged from 7 to 18 days. Mean duration of hospital stay was 9.03±1.95 days in Negative suction therapy group as compared to 11.14±2.81 days in Conventional treatment group. The mean duration of hospital stay was significantly higher in conventional treatment group as compared to negative suction therapy group.

7- Amount of drained out discharge in patients subjected to Negative suction therapy ranged from 5-15 ml/day, mean amount of drained discharge was 7.83+1.18 ml/day.

8- Culture positivity rate was 42.86% in both the groups. In both the groups *E. coli* and *Klebsiella* were the major isolates. *Staph. aureus* was isolated in only 1 case in negative suction therapy group.

CONCLUSION

The findings of the present study showed that placing negative pressure suction drain had a significant positive impact on outcome of perforation peritonitis in terms of reduction in infection rate and duration of hospital stay. With respect to wound dehiscence too, negative pressure suction drain showed a trend towards reducing the adverse events. Thus negative suction drain showed a positive impact on outcome in patients of perforation peritonitis. These findings are in agreement with the contemporary literature and prompt to undertake further studies to corroborate these findings.

References

1. Dorairajan LN, Gupta S, Deo SV, Chumber S, Sharma LK. Perotinitis in India: A decade experience. Tropical Gastroenterol. 1995;16:33–8.
2 Sharma L, Gupta S, Soin AS, Sikora S, Kapoor V. Genaralised peritonitis in India - tropical spectrum. Jpn J Surg. 1991;21:272–7.
3 Jhobta RS, Attri AK, Kaushik R, Sharma R, Jhobta A. Spectrum of perforation peritonitis in India: A review of 504 consecutive cases. World J Emerg Surg. 2006;1:26.
4 Gupta S, Kaushik R. Peritonitis: The eastern experience. World J Emerg Surg. 2006;1:13.
5 Afridi SP, Malik F, Ur-Rahman S, Shamim S, Samo KA. Spectrum of perforation peritonitis in Pakistan: 300 cases. Eastern experience. World J Emerg Surg. 2008;3:31.
6 Melangoni MA, Inui T. Peritonitis: The western experience. World J Emerg Surg. 2006;1:25.
7 Washington BC, Villalba MR, Lauter CB. Cefamendole-erythromycin-heparin peritoneal irrigation. An adjunct to the surgical treatment of diffuse bacterial peritonitis. Surgery.1983;94:576–81.
8 Nomikos IN, Katsouyanni K, Papaioannou AN. Washing with or without chloremphenicol in the treatment of peritonitis. A prospective clinical trial. Surgery.1986;99:20–25.
9 Shinagawa N, Muramoto M, Sakurai S, Fukui T, Hon K, Taniguchi M, Mashita K, Mizuno A, Yura J. A bacteriological study of perforated duodenal ulcer. Jap J Surg.1991;21:17.
10 Chard R. Wound Classifications. AORN Journal 2008; 88(1): 108-109.
11 Wittmann DH, Walker AP, Condon RE. Peritonitis, intra-abdominal infection, and intra-abdominal abscess. In: Schwartz SI, Shires GT, Spencer FC, editors. Principles of surgery. 6th. New York: McGraw-Hill; 1994. pp. 1449–84.
12 Wittmann DH. Intra abdominal infections: pathophysiology and treatment. New York: Marcel Dekker Publisher; 1991. pp. 8–75.
13 Vashist M, Singla A, Malik V, Verma M. Abdominal Wall Closure In The Presence Of Sepsis: Role Of Negative Suction. The Internet Journal of Surgery. 2013 Volume 29 Number 1.
14 Sadoshima J, Izumo S: Mechanical stretch rapidly activates multiple signal transduction pathways in cardiac myocytes: potential involvement of an autocrine/poracrine mechanism. EMBO J; 1993; 12: 1681-92.
15 Vandenburgh HH: Mechanical forces and their second messengers in stimulating cell growth in vitro. Am J Physiol; 1992; 262: R350-55.