Assessment of surgical site infection in cases of intestinal perforation

Dr. Raj Gautam, Dr. Anuradha Panchal, Dr. Shweta Verma, Dr. Adeel Ansari, Dr. Chandan Singh and Dr. Aashay Shah

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Abstract

Aims: The present study was undertaken for assessing surgical site infection cases of intestinal perforation. Materials and methods: A total of 17 patients were enrolled. Complete demographic details of all the patients were obtained. Only those patients were included which were within the age group of 20 to 65 years and had acute intestinal perforation. Surgical site infection was classified according to national research council as Class I (Clean), Class II (Clean-contaminated), Class III (Contaminated) and Class IV (Dirty infected). Incidence of surgical site infection was recorded. All the results were recorded and analysed by SPSS software.

Results: Overall incidence of surgical site infection was 29.42 percent. Class III surgical site infection was the most common found to be present in 17.65 percent of the patients. Mean hospital stay was significantly higher among the patients with surgical site infection.

Conclusion: Surgical site infection is rapidly identified as a degree of the quality of patient care by surgeons, infection control practitioners, health planners and public.

Keywords: Surgical site infection, intestinal perforation

Introduction

Intestinal perforation, defined as a loss of continuity of the bowel wall, is a potentially devastating complication that may result from a variety of disease processes. Common causes of perforation include trauma, instrumentation, inflammation, infection, malignancy, ischemia, and obstruction. Early recognition and prompt treatment are critical to prevent the morbidity and potential mortality of peritonitis and its systemic sequelae that result from the spillage of intestinal contents [1-3]. Surgical site infection occurs in significant proportion in patients undergoing extra-abdominal surgical procedures. This infection rate nearly doubles in patients undergoing intra-abdominal surgeries resulting in increased mortality, morbidity, hospital stay and costs. There are different risk factors for incisional and organ/space SSI after abdominal colorectal surgery [4,6]. The incidence of incisional SSI in patients who undergo emergency abdominal surgery is influenced greatly by the degree of site contamination, and the incidence rate of incisional SSI of dirty abdominal sites is more than 40%. Moreover, colorectal operations are associated with a higher incidence of incisional SSI than are upper gastrointestinal procedures because the target bacteria are gramnegative enteric bacilli, principally Escherichia coli, and anaerobic bacteria, including Bacteroides spp [6, 7]. Hence; under the light of above mentioned data, the present study was undertaken for assessing surgical site infection cases of intestinal perforation.

Materials and Methods

The present study was conducted in the department of general surgery with the aim of assessing the surgical site infection cases of intestinal perforation. A total of 17 patients were enrolled. Complete demographic details of all the patients were obtained. Only those patients were included which were within the age group of 20 to 65 years and had acute intestinal perforation. Surgical site infection was classified according to national research council as Class I (Clean), Class II (Clean-contaminated), Class III (Contaminated) and Class IV (Dirty infected). Pregnant subjects were excluded from the present study. Incidence of surgical site infection was recorded. All the results were recorded and analysed by SPSS software.
Results
A total of 17 patients of acute intestinal perforation were enrolled. 35.29 percent of the patients each belonged to the age group of 36 to 50 years and 51 to 65 years respectively. Mean age of the patients was 43.8 years. 52.94 percent of the patients were males while the remaining were females. Overall incidence of surgical site infection was 29.42 percent. Class III surgical site infection was the most common found to be present in 17.65 percent of the patients. Mean hospital stay was significantly higher among the patients with surgical site infection. Among appendectomy patients, surgical site infection was present in 4 patients. Among patients with stoma formation, resection anastomosis and primary perforation closure, surgical site of infection was present in 3 patients, 2 patients and 1 patient respectively.

Discussion
Bowel perforation results from insult or injury to the mucosa of the bowel wall resulting from a violation of the closed system. This exposes the structures within the peritoneal cavity to gastrointestinal contents. Bowel perforation can be secondary to many factors, most commonly inflammation, infection, obstruction, trauma, or invasive procedure. Patients presenting with abdominal pain and distension, especially in the appropriate historical setting, must be evaluated for this entity as delayed diagnosis can be life-threatening due to the risk of developing infections such as peritonitis. Management includes stabilizing the patient while making surgical consultation. Even appropriately managed, bowel perforation can lead to increased morbidity and mortality from post-repair complications such as adhesions and fistula formation. Despite the various advances made in sterility, antimicrobial drugs and operative techniques, surgical site infections are continue to be a major problem in all surgical departments of a Hospital. Surgical Site Infections leads to increase in cost of treatment, prolonged hospital stay, morbidity and mortality related to surgical operations [10-12].

Table 1: Type of procedures performed

| Procedures performed     | Number of patients | Percentage |
|--------------------------|--------------------|------------|
| Appendectomy             | 7                  | 41.18      |
| Stoma formation          | 4                  | 23.53      |
| Resection anastomoses    | 3                  | 17.65      |
| Primary perforation closure | 3            | 17.65      |
| Total                    | 17                 | 100        |

Table 2: Overall Incidence of surgical site infection

| Variable   | Number of patients | Percentage |
|------------|--------------------|------------|
| Class I    | 0                  | 0          |
| Class II   | 1                  | 5.88       |
| Class III  | 3                  | 17.65      |
| Class IV   | 1                  | 5.88       |
| Overall incidence | 5             | 29.42      |

Table 3: Comparison of hospital stay among patients with and without surgical site infection

| Hospital stay | Surgical site infection | Present | Absent |
|---------------|-------------------------|---------|--------|
| Mean          | 8.6                     |         | 4.8    |
| SD            | 3.1                     |         | 1.7    |
| p-value       | 0.00 (Significant)      |         |        |
of drainage, and intra- or postoperative blood transfusion. In addition to ASA score and surgical wound class, blood transfusion, creation of ostomy, types of operation, use of drainage, sex, and surgeons were important in predicting SSIs after elective colorectal resection [17].

Conclusion
From the above results, the authors concluded that surgical site infection is rapidly identified as a degree of the quality of patient care by surgeons, infection control practitioners, health planners and public. A reduction in the infection rate to a minimal level could have significant benefits; both in terms of mortality and morbidity.

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