

A one-year prospective cohort study evaluated the factors affecting colostomy closure outcome in children

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ABSTRACT

Pediatric surgical services frequently perform colostomy closure. Typically, it is performed in cases of anorectal malformation, Hirschsprung's illness, and trauma. Significant issues are connected to it to evaluate the impact of perioperative variables on the success of colostomy closure in children. All children who had colostomy closure at Tikur Anbessa Specialized Hospital and Menelik II Referral Hospital between January 2019 and February 2020 are the subjects of this prospective observational study. The following perioperative factors were noted: demographic information, the child's nutritional status, the length of the mechanical bowel

preparation, the prophylactic antibiotic, the type of anastomosis, the specifics of the operation, and other perioperative factors. Patients were then monitored for complications after surgery. Using SPSS 23 for data entry and analysis, perioperative factors were examined for associations with outcome using 2 tests. Statistical significance was defined as a p value 0.05.

Key Words: *Surgical care; Chemotherapy; Cellular molecular; Obesity*

INTRODUCTION

The study involved 71 patients in all, 42 of whom (59%) were female, and their median age was 2.3 years. 13 patients (18.3%) experienced a total of 23 problems, with Surgical Site Infection (SSI) accounting for the majority of these issues with 8 patients (11.3%). Complete wound dehiscence, adhesion intestinal obstruction, and anaemia requiring transfusion occurred in four (5.6%) patients, four (5.6%) patients, and one (1.4%) patient, respectively. There was no correlation between any perioperative characteristics and postoperative requirement for transfusion until the procedure lasted longer than 120 minutes [1]. A guideline for the best and most consistent perioperative care of children undergoing colostomy closure should be prepared because, in this study, none of the other perioperative factors—aside from the length of surgery—were linked to the difficulties of colostomy closure. Colostomy closure is a common technique in the practise of paediatric surgery, and it is carried out in cases of pelvic cancer, anorectal malformation, HSD, perianal injuries, complex intussusceptions, and complicated bowel atresia. The total morbidity rate of stoma closure in paediatrics ranges from 15% to 55%, and it has high morbidity. These morbidities include

anastomotic leaks, haemorrhage, anastomotic strictures, surgical site infections, and even fatalities.

The relationship between preoperative variables and postoperative problems is a matter of debate. The frequency of SSI, which can range from 0.4% to 45%, is a frequent and dangerous complication of colorectal surgery. In order to reduce the frequency of postoperative problems, mechanical bowel preparation has become the primary element of perioperative therapy. Diverging results on the impact of mechanical bowel preparation on SSI were reported in the literature. Only a few studies have been done on the effects of MBP and prophylactic antibiotics on the results of colorectal surgeries in children, compared to the number of studies that have been done on adults. Additionally, there is very little information available on the effects of other perioperative factors, such as child nutritional status, the length of the procedure, the type of anastomosis, and intraoperative wound class on the results of colostomy closure [2]. The purpose of this study was to evaluate how perioperative variables affected children's colostomy closure outcomes. Children who receive colostomy closure at Tikur Anbessa Specialized Hospital (TASH) and Menelik II hospital are the subjects of this prospective cohort

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research (MIH). The sole paediatric surgery speciality (residency) training centre, the two centres are university-affiliated hospitals where the majority of paediatric surgical cases from around the nation are operated on. In the unit, there were seven paediatric surgeons, two paediatric surgery fellows, eight trainees (residents) in paediatric surgery in their fifth year, eight in their fourth year, and six in their third year. We began gathering data after receiving approval from the Department of Surgery Ethical Committee [3]. 71 kids who had colostomy closure between January 2019 and February 2020 in the two hospitals were included in the study because all of the parents agreed to take part and provided written informed consent. Demographic information, stoma features, the length of MBP, prophylactic antibiotic use, dietary state, and Hgb level were all collected for the patients prior to surgery. Operative methods were recorded, including the anastomosis type, suture type, length of the procedure, and wound classification. All surgical problems were documented while we monitored the patients. Data were examined to see if there was any correlation between perioperative variables and colostomy closure difficulties. In addition to SSI, wound dehiscence, intestinal obstruction, hospital-acquired pneumonia, and incisional hernia were also noted as complications. To determine the nutritional state of the patients, weight-based groups were created. According to WHO guidelines, underweight is defined as weighting the age that is below 2SD. A necessity for blood transfusion due to severe blood loss was referred to as postoperative significant anaemia. Anaemia is defined as preoperative Hg below 12 mg/dl and postoperative Hg of less than 9 mg/dl. Every child received MBP, albeit the length of the treatment varied. The operating surgical team's choice and the fact that patients with fecalomas were given greater doses of MBP were the causes of the variance. The unit's MBP regimen calls for a fluid diet and a cleansing enema with 10 mL/kg–20 mL/kg of normal saline administered every day. According to the operating surgeon's assessment, the intraoperative wound was categorised as follows. If the bowel was clean with clear content or little spilling, it is said to be clean yet polluted. If there has been a large spill, it is contaminated. If there is extensive faecal pollution or if fecaloma is present, the area is considered dirty. Following surgery, patients had postoperative care in the hospital and were seen once as an outpatient before being discharged, which typically occurs two weeks following surgery. Patients who missed their follow-up appointments were called via phone. Statistical Package for the Social Sciences was used to enter, clean, and analyse the prospectively collected data from the structured questionnaire. Using a analysis to compare the results, a P-value of 0.05 was deemed significant. All 71 of the children who underwent colostomy closure throughout the study period were included, and 42 of them (or 59%) were female. The patients in this study were 2.3 years old on average (min 6 months and max 14 years). Anorectal malformation 62 (87.3%) was the most frequent reason for colostomy opening. 49 (69%) of the colostomies were done at TASH, with the rest being referred from other facilities. The average interval between the colostomy's insertion and closure was 26.3 months, ranging from 3 years to 14 years. Sigmoid colon 65 (91.5%), where 59 (83.1%) of the colostomies were performed, was the most frequent place for stomas. Three (4.2%) of the colostomies were ended colostomies, and the children who underwent these procedures were treated in hospitals with less paediatric surgical

(17%) developed stoma-related problems, with peristomal excoriation being the majority of these issues. Six children had their colostomies modified due to parastomal evisceration and stoma prolapse [4-6].

Colostomy closure is linked to a lot of morbidities. A complication rate as high as 45%–55% was shown in earlier trials conducted in the 1970s. 21 patients (29.6%) of the 71 patients had one or more morbidities, making up a total of 23 (32.4%) in our study. Compared to prior studies conducted by Chandramouli and Hassan, which found total morbidity to be 39.3% and 46.3%, respectively, this was lower. In a retrospective analysis involving 628 individuals over a 28-year period, Pena reported a significantly decreased rate of morbidity, 1.5%. Incisional hernia, adhesion intestinal obstruction, anaemia, and SSI were the problems that were mentioned in the literature as well as in our study. Although it was not included in other research, hospital-acquired pneumonia was included as a postoperative complication in our analysis. The most frequent stoma closure consequence is wound infection [7]. The SSI rate of colorectal procedures is over 25% according to the literature. In this study, SSI affected 8 (11.3%) of the patients, and one of those patients required wound closure since their wound was completely dehiscence. The wound infection rate of colostomy closure from recent research was 10%–16%. The SSI rate in Chandramouli's Indian study was 9.9%, and in a Nigerian trial of 55 patients, it was 10.9%. Hassan's prospective study on 106 patients revealed a greater prevalence of wound infection of 28.3%. In order to prevent wound infection, MBP and antibiotics were developed in 1970. The value of MBP in colorectal procedures is a matter of debate. The group with bowel preparation had a greater rate of SSI and a longer hospital stay than the group without preparation (5.8% to 14.4%) in a retrospective comparative analysis of 272 children who underwent colostomy closure. Another study comparing SSI in the bowel preparation and no preparation groups revealed SSI rates of (5% to 15%), whereas a study from the USA employing MBP for colostomy closure revealed a wound infection rate of 14%. Even though there were few comparative studies conducted in kids, those that were revealed there were no negative side effects from avoiding MBP during colorectal procedures. However, the majority of paediatric surgeons still used MBP. MBP oral antibiotics were found to reduce SSI in a 2017 analysis of 32,359 adult patients by Sarah Koller at the American College of Surgeons. According to this study, there was a decreased risk of SSI, anastomotic leak, and postoperative ileus when MBP with oral antibiotics were used. MBP was given to all kids because that was the department's policy. As a result, MBP was a need. Based on how long it lasted, we compared its impact. For MBP, Polyethylene Glycol (PEG) is advised, but PEG wasn't offered in this location. As a result, for bowel preparation, we employed Normal Saline (NS). One-day bowel preparation with saline was as efficient as a three-day preparation with no higher risk of SSI, according to research by Emanuel on 55 kids. Our patients' MBP symptoms lasted somewhere between two and seven days. Based on the length of MBP, there was no change in the intraoperative wound cleanliness and SSI rate. Therefore, in our study, continuing MBP beyond 2 days did not lower the risk of SSI rate [8]. An extensive analysis of the literature found that SSI in colorectal procedures was reduced when prophylactic antibiotics were given parenterally. Giving a single agent prophylactic dose of a second-generation cephalosporin is advised by the Surgical Care Improvement Project (SCIP). Cephalosporin

combined with metronidazole is advised by the WHO for colorectal operations. Studies revealed multi-agent prophylactic antibiotics to be superior in SSI prevention. Before the incision in this investigation, parenteral antibiotics were administered to each participant. Of those, 16 (22.5%) received ceftriaxone and metronidazole, while the remaining patients only received ceftriaxone. None of the first groups experienced SSI, even though it was not statistically significant. This finding was consistent with earlier research in that taking antibiotics for longer than three days did not lower the likelihood of SSI.

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