Journal of Cardiovascular Disease Research

ISSN: 0975-3583, 0976-2833 VOL 14, ISSUE 10, 2023

A RETROSPECTIVE STUDY OF COLOSTOMY RELATED MORBIDITY AND MORTALITY IN NEONATES WITH ANORECTAL MALFORMATION

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Abstract

Introduction: A colostomy is a surgical procedure made in the large bowel to divert feces and flatus to an exterior, where it can be collected in an external appliance. As a method of treating intestinal obstruction, colostomies date back to the latter part of the eighteenth century, and some of the first survivors of this procedure were children with imperforate anus. There are numerous and frequent common complications following construction of large bowel stomas, which may lead to significant morbidity and mortality.

Materials and Methods: This study was conducted as retrospective analysis of complications related to colostomy performed for ARM in neonates attending Department of Paediatric Surgery between January 2022 and December 2022. All patients underwent colostomy under general anaesthesia. The patients who underwent colostomy for reason other than ARM were excluded from the study. The parameters which were analysed from clinical records of the operated patients at colostomy include age, weight, type of ARM, colostomy stoma site, type of colostomy, and complications related to colostomy formation.

Results: The total number of neonates with ARM reported at the department during this period was 62. The age was ranged between one day to 4 days; weight was between 1.5 kg to 2.4kg. 36 were males and 26 were females. 32 neonates had low anomaly and were treated with anoplasty. 32 neonates had high/intermediate anomaly and were managed with colostomy. Out of 32 patients, 9 patients underwent transverse loop colostomy while 23 had sigmoid loop colostomy. All patients with anorectal malformation were worked up with invertogram and abdominal ultrasound.

Conclusion: The reason for high incidence deserves to be taken in consideration to evolve a strategy and to implement comprehensive care, the training, and teaching of caregivers and parents, which is needed to improve the survival and to reduce the avoidable morbidity in these patients. Outcome may be significantly improved with multimodal interventions in the perioperative care of patients undergoing this procedure. Also, it is not only the surgical technique, but also the postoperative care and ongoing education regarding stoma care that can make positive impact on long-term quality of life of these patients.

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Key Words: colostomy, Morbidity, Mortality, quality of life, postoperative care.

INTRODUCTION

A colostomy is a surgical procedure made in the large bowel to divert feces and flatus to an exterior, where it can be collected in an external appliance.[1] As a method of treating intestinal obstruction, colostomies date back to the latter part of the eighteenth century, and some of the first survivors of this procedure were children with imperforate anus.[2] There are numerous and frequent common complications following construction of large bowel stomas, which may lead to significant morbidity and mortality.[3]

The overall morbidity from colostomy has been reported to be as high as 15-25%. Complications may occur immediately after surgery or late, many months or years to appear. Early complications include wound infection, abscess, fistula, retraction, bleeding and small bowel obstruction.[4]

Late complications include a para-stomal hernia, prolapse, stricture and perhaps most importantly poor shape and location of the stoma leading to difficulties with fitting the appliance which may result in uncontrolled soiling and severe skin excoriation. Complication included bleeding, necrosis of the distal end, peri-stomal fistula, stomal stenosis, stomal retraction, stomal dysfunction, colostomy diarrhea, para-stomal hernia, stomal prolapse and skin excoriation.[5]

MATERIALS AND METHODS

This study was conducted as retrospective analysis of complications related to colostomy performed for ARM in neonates attending Department of Paediatric Surgery, Kurnool medical College and Govt general hospital, Kurnool between January 2022 and December 2022. All patients underwent colostomy under general anaesthesia. The patients who underwent colostomy for reason other than ARM were excluded from the study.

The parameters which were analysed from clinical records of the operated patients at colostomy include age, weight, type of ARM, colostomy stoma site, type of colostomy, and complications related to colostomy formation.

Anorectal anomalies were classified according to Kiely and Pena as perineal fistula, recto-urethral fistula, rectovesical fistula, imperforate anus without fistula, and rectal atresia in males and perineal fistula, vestibular fistula, persistent cloaca, imperforate anus without fistula, and rectal atresia in female neonates. High/intermediate anomalies include recto-urethral fistula, rectovesical fistula, and rectal atresia/cloaca.

Colostomy was not done in neonates with low anomaly, which includes perineal fistula, anterior ectopic anus and vestibular fistula.

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RESULTS

The total number of neonates with ARM reported at the department during this period was 62. The age was ranged between one day to 4 days; weight was between 1.5 kg to 2.4kg. 36 were males and 26 were females. 32 neonates had low anomaly and were treated with anoplasty.

S.No	Gender	N (%)
1	Male	36 (58%)
2	Female	26 (42%)
3	Total	62 (100%)

Table 1: Gender Distribution

32 neonates had high/intermediate anomaly and were managed with colostomy. Out of 32 patients, 9 patients underwent transverse loop colostomy while 23 had sigmoid loop colostomy. All patients with anorectal malformation were worked up with invertogram and abdominal ultrasound.

Echocardiography could not be done in all the cases. 28 patients developed complications following colostomy procedure. The complications of colostomy formation observed were Distal stoma prolapse (18.75%), Paralytic ileus (12.48%), Stomal bleeding (haemorrhage) (3.12%), Intestinal Obstruction (6.24%), Parastomal herniation (9.36%) and Stomal retraction (6.24%). Followup was up to one year or till closure of colostomy following definitive procedure. Mortality was observed in 2 cases (6.24%) due to delayed presentation with perforation in preterm neonates. The most important cause of mortality was development of neonatal infection, hypothermia and sepsis especially in low birth weight neonates in our institution.

Complication(morbidity)	Number	Percentage
Distal stomal Prolapse	6	18.75%
Paralytic ileus	4	12.48%
Stomal Bleeding	1	3.12%
Intestinal Obstruction	2	6.24%
Parastomal herniation	3	9.36%
Stomal Retraction	2	6.24%

Table 2: Complications (morbidity)

ISSN: 0975-3583, 0976-2833 VOL 14, ISSUE 10, 2023

Figure 1: Before surgery

Figure 2: During Colostomy surgery

DISCUSSION

Presentation is at times delayed especially in developing countries and such patients are at risk of associated abdominal distension, dehydration, paralytic ileus and sepsis. Initial resuscitation with intravenous fluid and broad-spectrum antibiotics holds the key for the final outcome in such

ISSN: 0975-3583, 0976-2833 VOL 14, ISSUE 10, 2023

cases. As the referral to this tertiary centre is usual after one to two days and more by that time patient develops distension and after assessment of associated anomalies.[6]

The child can be taken for a protective colostomy followed by delayed repair later or a single staged definitive procedure can be performed in selected cases. Colostomy is done as staged procedure for management of ARM, which relieves the obstruction and also allows the radiological evaluation (distal colostogram), which facilitates the visualisation of the level of the defect and presence of associated fistulas.[7] The diversion of faecal content by stoma formation is valuable for wound healing at the time of definitive surgery and also improves the continence in these patients with ARM because covering colostomy protects the operative site from faecal contamination and helps healing.[8]

At our resource limited institution, the majority of colostomy formations were of the loop type using the sigmoidcolon.[9]Delayed presentation leading to sepsis and paralytic ileus in our cases. Various investigators have recommended a divided colostomy at the junction of the descending and the sigmoid colon because of many advantages such as manageable small stoma with minimal chances of prolapse, distal loop faecal impaction is eliminated. The subsequent pull-through procedure is also free of tension in this technique as sufficient length of colon distal to the stoma is available. Risk of urinary tract infections is also reduced in divided colostomy as mentioned in literature.[10]

CONCLUSION

This study highlights the potential morbidity associated with colostomy formation in neonates with anorectal malformations. This also indicates high incidence of complications in comparison to the advanced centres at the resource limited centre teaching hospital managing these patients. The reason for high incidence deserves to be taken in consideration to evolve a strategy and to implement comprehensive care, the training, and teaching of caregivers and parents, which is needed to improve the survival and to reduce the avoidable morbidity in these patients. Outcome may be significantly improved with multimodal interventions in the perioperative care of patients undergoing this procedure. Also, it is not only the surgical technique, but also the postoperative care and ongoing education regarding stoma care that can make positive impact on long-term quality of life of these patients.

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