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ORIGINAL ARTICLE

Complications of Colostomy Reversal in Patients with Imperforate ANUS

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ABSTRACT

Background: Colostomy reversal after definitive procedure in patients of Imperforate Anus (for example; PSARP) can be difficult and challenging for surgeon due to proximal and distal gut lumen discrepancy, short length of distal loop, difficult mobilization of stoma. These factors affect the anastomosis and anastomosis is done under tension due to these factors. Colostomies which are reversed under tension mostly results in anastomosis leakage and increases the morbidity and mortality rate. The objective of this study to assess postoperative outcome in terms of complications following colostomy closure in patients with imperforate anus.

Material and Methods: This is a prospective study done at the Department of Pediatric Surgery, National Institute of Child Health Karachi during the period of 6months from December 2016 to June 2017. A Self- structured performa was used to collect the data of total 84 Patients who Underwent Colostomy Reversal after definitive procedure for imperforate anus . Data analyzed through SPSS version 20. A descriptive statistical analysis of continous and categorical variables were performed. Continuous data (like age) expressed as mean SD. The categorical data like gender, wound infections , anastomosis leakage expressed in frequency and percentages.

Results: Out of total 84 children, majority 51 (60.7%) children were presented with ≤4 years of age (Mean age 4.15±3.12 years). Majority 55 (65.5%) children were presented with >8 kg of weight (Mean weight 13.31±6.00 kg). There were 41 (48.8%) males and 43 (51.2%) females. Intra-operative difficulty was found in 55 (65.5%) children. Postoperative complication showed that wound infections were observed in 10 (11.9%) children while frequency of anastomotic leakage was found in 12 (14.3%) children.

Conclusion: Anastomotic leakage was found to be higher following colostomy closure in children with intra-operative difficulty due to proximal and distal gut lumen discrepancy, short length of distal loop and dense adhesions making difficult the mobilization of stoma.

Keywords: Postoperative outcome, Complications, Colostomy closure, Imperforate anus

INTRODUTION

In addition to the urinary and genital tracts, anorectal malformations affect the distal anus and rectum. Anorectal abnormalities are another name for these conditions. This can happen to anyone, regardless of gender. This condition affects approximately one in every 5,000 children [1]. It is possible to have defects with a positive functional prognosis that are minor and easy to fix, or defects that are complex, difficult to manage, and frequently linked to other problems that have a negative functional prognosis. [2] If you have an imperforate anus, the most effective treatment method is a phased approach. Posterior Sagittal Anorectoplasty (PSARP) and a colostomy removal are the final steps in this procedure, which begins with an immediate colostomy after birth.[3]

Even through in recent years a growing number of pediatric surgeons have begun advocating the repair of imperforate anus in a primary fashion without a colostomy, most pediatric patients with an imperforate anus still receive a protective colostomy before the definitive repair to avoid contamination. Many surgeons pay attention and often reveal the outcome and complications of colostomy formation. There have been only a few studies that have examined the outcome and complications of colostomy closure in patients of Imperforate Anus and the major factors influencing the outcome. [4]Colostomy reversal after definitive procedure (for example; PSARP) can be difficult and challenging for surgeon due to proximal and distal gut lumen discrepancy , short length of distal loop, difficult mobilization of stoma. These factors affect the anastomosis and anastomosis are done under tension due to these factors Colostomies which are reversed under tension mostly results in anastomosis leakage and increases the morbidity and mortality rate.[5] The post reversal complications have been reported to be between 20 to 48%.[6] Postoperative bleeding, intra-peritoneal abscesses known to occur following procedure of colostomy closure, though wound infection and anastomosis leakage are major complications[6] and need to be taken care off. Despite colostomy closure being done in pediatric age group, few studies have been reported in local as well as in international literature on this subject. Keeping in view the importance of colostomy closure in pediatric age group, the technical difficulties faced by surgeon during colostomy reversal and the high incidence of complications associated with it , the prospective study is conducted using standard form of management to determine the frequency of complications occurring with closure of colostomy in children with imperforate anus at our setup.

MATERIAL AND METHODS

This was a prospective case series done at the Department of Pediatric Surgery, National Institute of Child Health Karachi during the period of 6months from December 2016 to June 2017. A total of 84 Patients with Imperforate Anus who Underwent Colostomy Reversal after definitive procedure for imperforate anus were included. Colostomies made in patients for other purpose were excluded. ERC approval has been obtained.

All patients were admitted through OPD. All of them had Divided Sigmoid Colostomy and definitive surgery (i.e PSARP/ASARP) done with contructed anus dilated with Hegar dilator upto 12Fr. Pre-operative bowel preparation, low-residue diet for 2-3 days followed by mechanical bowel washes was done. In addition , they also received perioperative antibiotics.

Surgery was performed by the surgeon having more than 2 years of experience in pediatric surgery. The patients were given routine post operative care and followed as per institutional policy. Patients were examined during in hospital stay upto 7th postoperative day and on follow- up visit (10th day of

discharge) and anastomatic leak and wound infection was labeled as per operational definition.

Data was analyzed through SPSS version 20. A descriptive Statistical analysis of continuous and categorical variables was performed. Continuous data like age and weight of the child was expressed as mean ⁺SD. The categorical data like gender, intra-operative difficulty, wound infections, anastomosis leakage was expressed in frequency and percentages. Effect modifier was controlled through stratification of age, gender, weight and intra-operative difficulty to see the effect of these on outcome. Post stratification applying chi-square test taking p ≤0.05% as significant.

RESULTS

Out of total 84 children, majority 51 (60.7%) children were presented with ≤4 years of age (Mean age 4.15±3.12 years). Majority 55 (65.5%) children were presented with >8 kg of weight (Mean weight 13.31±6.00 kg). There were 41 (48.8%) males and 43 (51.2%) females. Intra-operative difficulty was found in 55 (65.5%) children. (Figure 1). Postoperative complication showed that wound infections were observed in 10 (11.9%) children while frequency of anastomotic leakage was found in 12 (14.3%) children. (Figure 2-3). Comparison was done to see the effect of age, gender, weight, and intra-operative difficulty with the outcome. Results are shown in table 1-6.

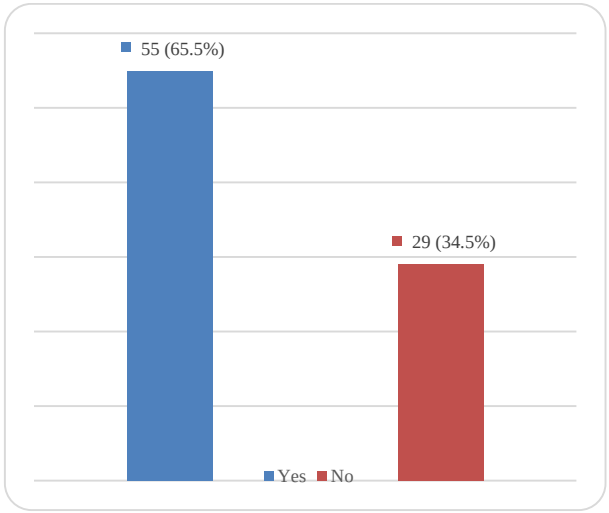

Figure 1: Intra-operative Difficulty In patients

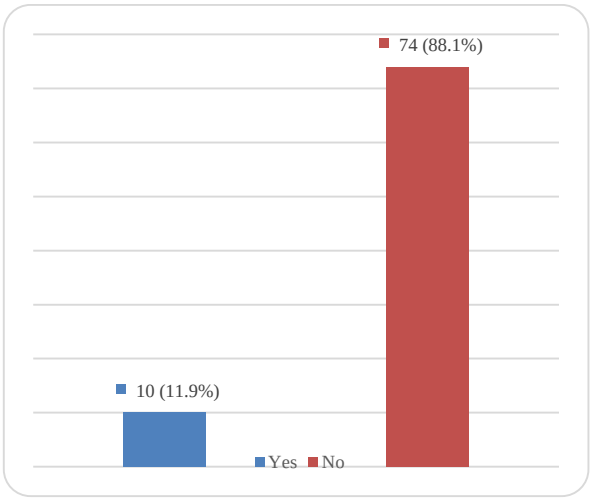

Figure 2: Frequency of postoperative Wound Infection

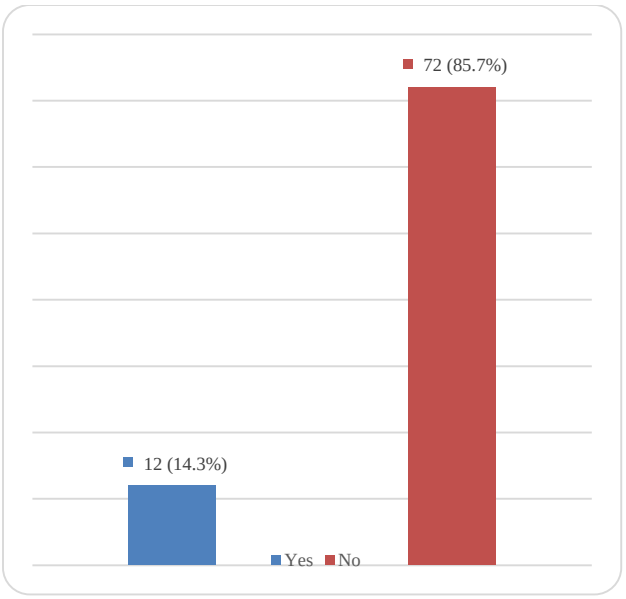

Figure 3: Frequency of Postoperative Anastomosis Leakage

Table 1: Comparison between Wound Infection and Age of the patients (n=84)

		Wound Infection			p-value
		Yes	No		
		N (%)	N (%)	Total	
Age					
	≤4	6 (60)	45 (60.8)	51 (60.7)	0.961
	>4	4 (40)	29 (39.2)	33 (39.3)	
Total		10 (100.0)	74 (100.0)	84 (100.0)	

Table 2: Comparison between Wound Infection and Weight

		Wound Infection			p-value
		Yes	No		
		N (%)	N (%)	Total	
Weight					
	≤8	0 (0)	13 (21.7)	55 (65.5)	0.143
	>8	8 (100)	47 (78.3)	29 (34.5)	
Total		8 (100.0)	60 (100.0)	84 (100.0)	

Table 3: Comparison between Wound Infection and Intra-operative Difficulty

		Wound Infection			p-value
		Yes	No		
		N (%)	N (%)		
Intra-operative Difficulty					
	Yes	10 (100)	45 (60.8)	55 (65.5)	0.014
	No	0 (0)	29 (39.2)	29 (34.5)	
Total		10 (100.0)	74 (100.0)	84 (100.0)	

Table 4: Comparison between Anastomosis Leakage and Age

		Anastomosis Leakage			p-value
		Yes	No		
		N (%)	N (%)	Total	
Age					
	≤4	8 (66.7)	43 (59.7)	51 (60.7	0.653
	>4	4 (33.3)	29 (40.3)	33 (39.3)	
		11 (100.0)	73 (100.0)	84 (100)	

Table 5: Comparison between Anastomosis Leakage and Weight

		Anastomosis Leakage			p-value
		Yes	No		
		N (%)	N (%)	Total	
Weight					
	≤8	2 (16.7)	11 (19.6)	13 (19.1)	.078
	>8	10 (83.3)	45 (80.4)	55 (80.9)	
Total		12 (100)	56 (100)	68 (100)	

Table 6: Comparison between Anastomosis Leakage and Intra-operative Difficulty

		Anastomosis Leakage			p-value
		Yes	No		
		N (%)	N (%)	Total	
Intra-operative Difficulty					
	Yes	12 (100)	43 (59.7)	55 (65.5)	0.014
	No	0 (0)	29 (40 .3)	29 (34.5)	
Total		12 (100)	72 (100)	84 (100)	

DISCUSSION

One in every 5000 live newborns is affected by an anorectal malformation, a type of congenital abnormality. [1] Some defects are simple and have a good functional outlook; others are difficult to treat and are frequently connected to other problems; these disorders have a poor functional prognosis. Defects may be minor and easily remedied, or they may be severe and have a bad functioning outcome.[2]

Even through in recent years a growing number of pediatric surgeons have begun advocating the repair of imperforate anus in a primary fashion without a colostomy, most pediatric patients with an imperforate anus still a protective colostomy before the definitive repair to avoid contamination. Many surgeons pay attention and often reveal the outcome and complications of colostomy formation. There have been only a few studies that have examined the outcome and complications of colostomy closure and the major factors influencing the outcome.[4]

Colostomy reversal after definitive procedure (for example; PSARP) can be difficult and challenging for surgeon due to proximal and distal gut lumen discrepancy, short length of distal loop, difficult mobilization of stoma. These factors affect the anastomosis and anastomosis is done under tension due to these factors. Colostomies which are reversed under tension mostly results in anastomosis leakage and increases the morbidity and mortality rate.[5] The post reversal complications have been reported to be between 20 to 48%.[6] In our study, we consider Wound Infection if presence of any one or more of the following noticed[7.]

- Purulent discharge from surgical site
- Evidence of underlying collection as evident by ultrasound abdomen.
- Wound dehiscence: loosening of sutures was taken as wound dehiscence assessed on clinical examination and
- Anastomotic leak:[8]
- If presence of any one or more of the following noticed
- Fecal discharge from wound
- Purulent discharge from rectum
- Pelvic abscess documented on ultrasound abdomen.
- Peritonitis documented as free gas under diaphragm assessed on chest x- rays PA view

Postoperative bleeding, intra-peritoneal abscesses also known to occur following procedure of colostomy closure, though wound infection and anastomosis leakage are major complications[6] and need to be taken care off. Death following stoma reversal is rare. This rate is comparable to one found in the research that falls somewhere in the region of 0 percent to 1 percent. [9–14] While some researchers [17,18] found a morbidity rate as high as 50–55 percent and another group of researchers9–15 found a morbidity rate of 9–15 percent, the rate of 39.3 percent falls somewhere in between. According to , A 1.8 percent incisional hernia was found in the patient, which is in line with what other people have experienced. [15,16]. Incisional hernia was found in 11.5 percent of those who had a wound infection rate that was extremely high. [10]

In our study, postoperative complications showed that wound infections were found in 10 (11.9%) children while frequency of anastomotic leakage was found in 12 (14.3%) children.

More than one study has found that colostomies closed between six and fifteen months after the final operation did not have a fistula. [9] On the other hand, there was a fistula present in 5 percent of the colostomies that were closed in fewer than three months. [15] When examining the number of wound infections that arise before or after six months, researchers have found that the two time periods create highly different results. Colostomies that were closed after six months were found to be more susceptible to infection by some researchers while others found no difference in the two groups. [9] Rickwood et al.[15] discovered that reducing the occurrence of wound infections was possible by providing antibiotics during surgery and manually prepping the colon. That's the same as our own rate of wound infections. When the preliminary inversion process was used on wounds, the infection rate was shown to be considerably lower. [13] Some 12.6 percent of colostomy closure wound infections have been found in a different study.[5]

Despite colostomy closure being done in pediatric age group, few studies have been reported in local as well as in international literature on this subject. This study is a significant effort in determining the complications occurring with closure of colostomy in children with imperforate anus.

CONCLUSION

Anastomotic leakage was found to be higher following colostomy closure in children with intra-operative difficulty due to proximal and distal gut lumen discrepancy, short length of distal loop and dense adhesions making difficult the mobilization of stoma.

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