

RESEARCH PAPER

Post-operative functional outcome for anorectal malformations in children

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Abstract

Background: The outcomes of anorectal malformations (ARM) have greatly improved during the last decades, but many children still experience effects in the form of urinary or fecal incontinence despite optimal surgical management. So, the aim of study was to use different surgical procedure for correction of these anomalies including traditional and recent operations and to assess the outcome for different type of anorectal malformation

Methods: An analytical study include 28 cases of anorectal malformation (16 males and 12 females) operated by different technique in Raparen Teaching Hospital during 2010 - 2016. All cases of cloaca and early deaths were excluded from the study.

Results: In male Recto-perineal fistula (25%) and in female Recto-vestibular fistula (25%) were the most common anomalies. the most common procedure were primary anorectoplasty for perineal fistula in both male and female infants in 10 cases (35.71%) followed by trans-fistula anorectoplasty for rectovaginal fistula in 7 cases (25%) and PSARP for rectobladder neck and urethral fistula for male infants in 6 cases. The most common functional complication was constipation in 2 (7.15%) cases and only one case (3.57%) developed fecal incontinence. 89.29 percent of the patients had voluntary bowel movements and were totally continent.

Conclusions: Despite significant developments in the understanding of the pathological anatomy and physiology, and innovation of novel surgical techniques, the results of surgical therapy of ARM remain far from perfect. An optimal operation restores normal anatomy and preserves all potential sphincter structures. Functional complications, especially treatable ones, such as constipation, should be detected and treated early to achieve an optimal outcome.

Keywords: tranexamic Imperforate anus, anorectal malformation, postoperative complication, functional outcome, anorectoplasty

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Introduction

With an ARM, several problems can occur, the anal passage may be narrow, may be covered with a membrane, the rectum may connect to part of the urinary tract or the reproductive system. The pelvic muscles, nerves, spine all often have a similar degree of malformation.⁽¹⁾

Despite optimal surgical management, many children still experience effects in the form of urinary or fecal incontinence, no adequate repair for poorly developed muscles or nerves has been developed. Bowel-management regimens can provide an excellent quality of life for these children when primary continence is not achievable.⁽²⁾ The surgical approach to repairing these defects changed dramatically in 1980 with the introduction of the posterior sagittal approach, which allowed surgeons to view the anatomy of these defects clearly, to repair them under direct vision, and to learn about the

complex anatomic arrangement of the junction of rectum and genitourinary tract, This has become the predominant surgical method for anorectal anomalies. ⁽³⁾

The most common post operative problem is frequent bowel motion and uncontrollable soiling may continue for a long period of time, often for years. This is particularly the case with operations where the terminal rectum is resected.

⁽⁴⁾ Constipation is a major problem with patients who

have had operation for rectovestibular fistula or secondary to untreated anal stenosis, but more commonly is a consequence of disordered colonic motility. ⁽⁴⁾ Severe soiling with low anomalies is rare and is caused by operative sphincter damage or severe sacral defects. ⁽⁵⁾

So the aim of this study was to evaluate the postoperative functional outcome in infants with anorectal malformation for different surgical procedure used for treatment of these anomalies.

Methods

An analytical study include 28 cases (16 (57.15%) males and 12 (42.85%) females) operated for anorectal malformation in Raparen Teaching Hospital, from July 2010 - June 2016. All cases of cloaca, early deaths were excluded from the study. It should be mentioned that for the purpose of our survey the patients were grouped according anatomic classification.

All cases were evaluated by a full history and clinical examination, laboratory assessment, radiological examination, ultrasound study, echocardiogram for evaluation of other associated anomalies.

In male infants, all cases except those with perineal fistula underwent a divided loop high sigmoid colostomy and a colostogram was performed to determine the nature and location of any fistula where present. Prior to repair, all the

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patients had bowel washout via the stoma, their dehydration and electrolyte imbalance was corrected, prophylactic antibiotics were given preoperatively and blood was prepared.

Trans-abdominal approach performed without posterior sagittal incision, the rectum were separated from urogenital tract and pulled down through the levator muscle then sutured to the perineum in its normal position. While PSARP performed after identification of the area of maximal sphincter contraction preoperatively by stimulation with pin prick or digital stimulation. Long incision done from mid-sacrum to the base of scrotum, the muscle fibers were identified and divided by low current diathermy. Identified muscle groups are marked with sutures on either side of the posterior sagittal incision. Rectum were pulled through anterior to the pelvic diaphragm and sutured to the normal position in the perineum.

In female infants, 2 cases of recto-vestibular fistula underwent 3 stage operation (colostomy – anorectoplasty-colostomy closure) while other 5 cases of recto-vestibular fistula operated on primarily without colostomy through an incision around the opening of the rectum in the vestibule and then the rectum which share a common wall with the vagina were separated and brought to normal position were anoplasty done.

Postoperative dilatation was commenced 14-20 days postoperatively in the outpatient basis by the mothers, provided wound healing had occurred and continued daily, until the colostomy is closed. During the clinic, the mothers are asked about the daily bowel habit, including the presence of soiling and straining. The complications of the procedure, as well as the anatomic and functional outcome in term of bowel motion as obtained from the mothers at follow up clinics were noted. For all cases of perineal fistula minimum PSARP was done and

cases of anal stenosis were treated by dilatation alone.

Results

In male infants 2 cases had Rectobladder neck fistula (7.15%), 2 cases had Recto- urethral - prostatic fistula (7.15%) , 4 cases had Recto-urethral- bulbar fistula (14.28 %) ,1 with Imperforate anus without fistula (3.57%) and 7 with Recto-perineal fistula (25%) . In female 7 cases had Recto-vestibular fistula (25%) and 5 had Recto-perineal fistula (17.85) as shown in table 1. Associated anomaly found in 11 cases (39.28 %) and the most common anomalies were cardiac and genitourinary as shown in table 3 .The most common procedure were primary anorectoplasty for perineal fistula in both male and female infants in 10 cases (35.71%) followed by trans-fistula anorectoplasty for rectovaginal fistula in 7 cases (25%) and PSARP for rectobladder neck and urethral fistula for male infants in 6 cases (21.42%) while other procedure include 3 (10.71%) cases of abdomino-perineal pull through for rectobladder neck and urethral fistula in male and 2 (7.14%) cases of dilatation alone for anal stenosis. Ten cases (35.71%) with perineal fistula in both male and female infants underwent minimum PSARP without colostomy and 2(7.14%) cases of anal stenosis were treated by dilatation alone.

The most common early complication was frequent bowel motion found in 3(10.714%) cases, all resolved with in a period of 6 – 11 months and anal stricture which also occurred in 3(10.714%) cases , all responded to anal dilatation program without surgical intervention. Two (7.142 %) with wound dehiscence after repair of vestibular fistula and in both cases colostomy were performed until compete wound healing occurred and then anoplasty done, only 1

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(3.571%) had superficial wound infection which treated by daily dressing. Repeated urinary tract infection found in 1(3.57%) case of recto-bladder neck fistula due to associated vesicoureteric reflux and treated by endoscopic deflux injection. Constipation occurred in 2 (7.15%) cases , one dietary and other were functional , both treated conservatively .Only one case (3.57%) developed fecal incontinence which is still on bowel management program . The remaining 89.29 % of the patients had voluntary bowel movements and were totally continent.

Table (1) Type of Procedure

Type of procedure	No.	%
PA (Primary anoplasty)	10	35.71
PSARP	6	21.42
TAA (Trans-abdominal approach)	3	10.71
TFA (Trans-fistula anorectoplasty)	7	25
DN (Dilatation alone)	2	7.14
Total	28	100

Discussion

The complication rate in our unit is 32.142 %, which is high, though comparable to 26% quoted by (Nakayama *et al* ⁽⁶⁾ and 30.8% by Sowande *et al* ⁽⁷⁾. This excludes superficial wound infections that healed spontaneously. Most complications following the PSARP are said to be preventable, with attention to operative techniques. It is our practice to instruct the mother to continue with l anal dilatation using Hagar's dilator at home. In one case (3.571%) the vas difference was injured and sutured intra operatively .In one study, the incidence of ureteric or vas injury was 0.18%

Table (2) complications and type of procedure used UTI: urinary tract infection

COMPLICATION		TYPE OF PROCEDURE					Total
		PA	PSARP	TAA	TFA	DN	
Early	Frequent motion	0	1	2	0	0	3 (10.71%)
	Wound infection	0	1	0	0	0	1 (3.57%)
	Wound dehiscence	0	0	0	2	0	2 (7.14%)
	stricture	1	1	0	0	1	3 (10.71%)
Late	Repeated UTI	0	0	1	0	0	1 (3.57%)
	Fecal incontinence	0	0	1	0	0	1 (3.57%)
	constipation	1	1	0	0	0	2 (7.14%)

Table (3) Associated anomaly and their percentile

Type	Male	Female	Total (%)
VSD	2	0	7.14
PDA	0	1	3.57
VUR	2	0	7.14
Hypospadias	1	0	3.57
Polydactyly	1	0	3.57
Down syndrom	1	0	3.57
Hemangioma	0	1	3.57
Hernia	1	0	3.57
Hemisacrum	1	0	3.57
Total	9	2	11 (39.28)

(Kiely⁽⁸⁾ and Pena⁽⁴⁾). We recorded no cases of neurovesical dysfunction in our study. In many series, using a variety of continence scoring system, continence following PSARP ranges from 35 - 78% (Mulder *et al*⁽⁹⁾; Bliss *et al*⁽¹⁰⁾; Martins *et al*⁽¹¹⁾; Bukarica *et al*⁽²⁾). Continence is however dependent on a variety of factors, including type of anomaly, absence or presence of the sacrum and the sex of the patient. These studies also have suggested that the functional outcome after the PSARP is better, than in patients with the sacro-perineal or the abdomino-sacro-perineal pull-through, although the outcome is also influence by the presence of associated anomalies, especially sacral agenesis, which adversely affects the outcome. In most

series continence rates are reported between 8% to 75% and improve with time (Pena⁽¹²⁾ and Langemeijer⁽¹³⁾). In our series, the functional outcome was difficult to determine by using manometric and other modalities of assessing sphincteric functions because are not available and we depend only on clinical follow up and based on maternal reports in all of the children who had attained the age of 6 month to 2 years at the time of their surgery and 89.29 % of our patients had voluntary bowel movements and were totally continent. The bowel function of each patient was evaluated independent of any medical treatment, such as the use of suppositories, laxatives, or enemas. voluntary bowel movements are defined as the act of

feeling the urge to use the toilet for a bowel movement and the capacity to verbalize it and to hold it until the patient reaches the bathroom. Soiling is defined as the involuntary leakage of small amounts of stool, which produces smearing of the underwear. Constipation is the incapacity to empty the rectum spontaneously without help everyday. Patients who had voluntary bowel movements and never soiled, were considered totally continent (Pena⁽¹²⁾). In our study the incidence of soiling was zero and constipation was 7.142 % which were lower than the other studies, which have reported values of 57% and 43.1%, respectively in Kiely *et al*⁽⁸⁾ study and 44.9% and 36.6% respectively in Tabari⁽¹⁴⁾. Also fecal incontinence in our study was 3.571% which was lower than other studies 26% and 26.5% in Kiely *et al*⁽⁸⁾ and in Tabari⁽¹⁴⁾ studies respectively

Conclusions:

Despite significant developments in the understanding of the pathological anatomy and physiology, and innovation of novel surgical techniques, the results of surgical therapy of ARM remain far from perfect. An optimal operation restores normal anatomy and preserves all potential sphincter structures. Functional complications, especially treatable ones, such as constipation, should be detected and treated early to achieve an optimal outcome.

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