Original Research Article

A study of primary PSARP in vestibular fistula in females

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Abstract

Background: Anorectal malformations (ARMs) are birth defects in which the anus is absent or malformed. Its incidence occurs in 1 in 5000 births and affects boys and girls equally. ARMs are a spectrum of different congenital anomalies that vary from fairly minor lesions to a complex anomaly. Posterior Sagittal Anorectoplasty (PSARP) is a definitive repair that can be carried out in neonates without prior colostomy creation. The virtually sterile meconium during the 1st week of life reduces the risk of infection from faecal contamination. Many centres in developed countries have recorded multiple successes with primary PSARP in neonates. **Material and methods**: It was a Hospital based prospective study. It was approved by GMCH and Medical Research and Ethics committee. However, for interview with parents regarding assessment of bowel function of their children, all parents gave their written consent before recruitment and inclusion in this study. Data were obtained from patients parents interview via phone calls and records and follow- up sheets kept in the Medical Records Section. **Results**: All the patients were seen in OPD hours in our hospital and most common feature in babies that parents bring them to the hospital is that babies were passing stool from vagina since birth, some other features were abdominal distension, skin excoriation , malnutrition, some babies were required regular rectal washes to pass the stool and remaining were required anal dilatation. **Conclusions:** In our study cardiovascular and Genitourinary anomalies were most common anomalies associated with Vestibular Fistula. Surgical site wound infection was the most common Early Postoperative complication. Constipation and Incontinence were the most common Late postoperative complication.

Keywords: Anorectal malformations, Posterior Sagittal Anorectoplasty, Repair, complications,

Introduction

Anorectal malformations (ARMs) are birth defects in which the anus is absent or malformed. Its incidence occurs in 1 in 5000 births and affects boys and girls equally. ARMs are a spectrum of different congenital anomalies that vary from fairly minor lesions to a complex anomaly[1]. Different surgeons use different terminologies when referring to types of ARMs. The clearest fact is that there is a spectrum of defects, so every attempt to classify them is arbitrary and somewhat inaccurate. Consequently, the traditional classification of 'high', 'intermediate' and 'low' defects renders the results ambiguous or uncertain[2]. Results have however shown that it appears to be present as a low version 90% of the time in females and 50% of the time in males. ARM usually requires immediate surgery to open a passage for faeces, unless a fistula can be relied on, or until corrective surgery takes place.

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Depending on the severity of the anomaly, it is treated either with perineal anoplasty alone or with colostomy in the first stage and a definite repair later[3].

The most common anomaly in new born girls is a recto vestibular fistula. Perineal inspection reveals a typical urethra, typical vagina, and another orifice, which is the rectal fistula in the vestibule. In new born with clinical evidence of a recto vestibular fistula, a diverting colostomy is the safest option for surgeons who do not have extensive experience in anorectal anomalies. Although colostomy prior to the main repair avoids infection complications and dehiscence[4], colostomy creation in neonates is an invasive procedure. Apart from the challenges of post-operative care, a colostomy is associated with many complications, such as skin excoriations, wound infection, bleeding, sepsis, prolapse, stricture, fluid and electrolytes loses, which are poorly tolerated by young children. These challenges contribute to the poor acceptance by parents/caregivers, especially in developing countries. One- stage Posterior Sagittal Anorectoplasty (PSARP) is a definitive repair that can be carried out in neonates without prior colostomy creation. The virtually sterile meconium during the 1st week of life reduces the risk of infection from faecal contamination. Many centres in developed countries have recorded multiple successes with primary PSARP in neonates[5]. Another option reported is two- stage repair, PSARP plus colostomy that is performed simultaneously as the first stage and a colostomy closure as the second stage that protects the wound from contamination and omits one additional stage. This method not only has the advantage of faecal diversion and decreases the risk of infection but also has the

disadvantage of a 2-step operation and risk of colostomy-related complications.The purpose of this study is to evaluate the feasibility and efficacy of the one-stage repair in the treatment of female neonates with a vestibular fistula.

Material and methods

It was a Hospital based prospective study. It was approved by GMCH and Medical Research and Ethics committee. However, for interview with parents regarding assessment of bowel function of their children, all parents gave their written consent before recruitment and inclusion in this study. Data were obtained from patients parents interview via phone calls and records and follow- up sheets kept in the Medical Records Section. The present study was conducted at General Surgery Department, Tertiary health centre and medical college in a district place, during the study period of June 2016 to November 2018.

Sample Size Estimation

Sample size was calculated based on results of pilot study since no previous study was conducted in respect to outcome of study.

Assumptions

1. Mean operating time = 94.89 min
2. SD of mean operating time= 10.68
3. Relative precision (%) $\alpha = 5$ %
4. Desired confidence level (1-α) % = 95 %
5. Required sample size, n= 20

Hence 36 cases were studied during study period

Inclusion Criteria

1. All female babies less than 5yr old with ARM presenting with vestibular fistula and passing stool through vestibular fistula and decompressing rectum well who require primary repair (single stage repair) .
2. Patients with no faecal impaction on x ray abdomen erect

Exclusion Criteria

1. Patients with dilated rectum and faecal impaction on X- ray abdomen
2. Associated pouch colon.
3. Other ARM like rectovaginal fistula, cloaca.
4. Babies with severe Protein Energy Malnutrition (PEM).

Routine Investigations

All baseline blood investigations including complete blood count (CBC)- to rule out anaemia sos correction. KFT- to rule out any renal derrangements. Sr. Electrolyte- to rule out electrolyte imbalance. urine analysis- to rule out Urinary Tract Infections .

Radiological Investigations

USG- KUB – to rule out renal agenesis, hydronephrosis and cystitis.
X- ray abdomen- to rule out faecal impaction in rectum.
X -ray LS spine – to rule out vertebral anomalies.
2 D ECHO- to rule out cardiac anomalies like ASD, VSD and TOF.

Methods

This study was performed between June 2016 to November 2018 in General surgery department, Tertiary Health Care Centre. 36 female patients with vestibular fistula were included in study and were treated by single stage PSARP after obtaining an informed consent from their parents, females with another type of malformation were excluded from study.

In all patients, the diagnosis was made initially by careful clinical examination at birth to rule out rectovaginal fistulas, cloaca and presence of other anomalies. The examination was repeated on the operative table to be sure for diagnosis.

USG KUB was also used to assess renal anomalies, 2 D ECHO for cardiac anomalies, x-ray abdomen for any faecal impaction and x-ray LS spine to rule out vertebral anomalies. An 8 Fr nasogastric tube was inserted to exclude esophageal atresia.

In the study group (single stage repair), all neonates were permitted to receive oral feeding and could defecate via vestibular fistula. After 6-8 week, when the infants weight reached about 5-6 kg, then it was better positioned to undergo PSARP. We performed the operation in single stage repair, which took place 1.5-

2 months after birth in order to make time for the infant's weight gain and growth, greater ease of operation regarding technical issues and reducing the risk of trauma to the vagina. All females neonates with vestibular fistula which are passing stool through vestibular fistula were looked for rectal decompression, oral feeding started in all neonates sos regular rectal washes given with normal saline. Perineal skin examined i/v/o any excoriation.

All cases were permitted to receive oral feeding after 12 hours post-operation. Local wound cleaning with betadine and normal saline every 3 hours and after passing stools and keeping wound dry after passing stool recommended. Wound examination regularly done to see infection /dehiscence and retraction of rectum if present then early colostomy will be required. IV antibiotics were given for 5 days then started on oral antibiotics.

In patients with a very narrow fistula and the inability to pass stools via a vestibular fistula obstructive symptoms can occur. First, the fistula dilatation by Hegar dilator is performed. Patients in whom obstructive symptoms persist, and if the obstruction did not improved, then the neonate immediately undergone a colostomy and were excluded from the one-stage group.

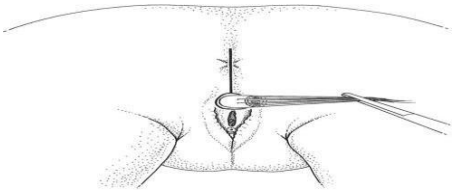
All patients underwent PSARP. Postoperatively, the “neo-anus” was gently dilated with Hegar dilator after two weeks using a standard protocol. Parents were instructed in gentle Hegar dilatation to be done once a day beginning on 12 Hegar caliber and gradually increasing by 1 mm until desired size is reached based on biweekly examinations. For patients in whom dilatation program is not used the anus is calibrated 2 weeks aftersurgery.

Patients requiring more than office dilatation were considered to have stricture formation. All patients were observed for bowel function notably the presence or absence of constipation, faecal incontinence, or both. Patients > 3 years of age were clinically assessed for continence and considered incontinent if they had faecal soling at least twice a day. Patients were considered constipated if they required a medical regimen to have daily bowel movements.

All cases were kept under close observation during the surgery and in the post-operative period in the hospital, as well as during intermittent outpatient visits in the hospital and personal telephonic communication when appropriate. The participants in the study were followed up post operatively for several months (3 and 6 months for constipation and after 3 years for incontinence). Then the final results and complications were noted. The complications, including SSI and anorectoplasty site dehiscence, anal stenosis, rectal prolapse, rectovaginal fistula were also collected.

Surgical procedure

After obtaining proper consent from parents. Patient taken for operative procedure. Procedure was performed under general anaesthesia. Patient kept in jack knife position. Multiple 4/0 silk sutures are placed at the edge of the fistula in order to exert uniform traction on the rectum to

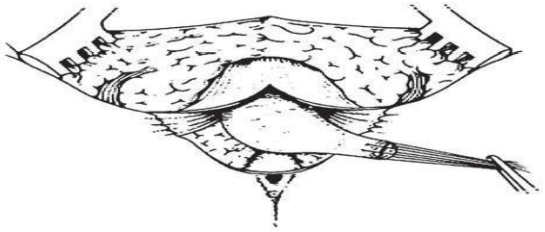


facilitate its dissection. The incision continued around the fistula into the vestibule. The sphincteric mechanism is divided in the midline until the rectal wall was located. A characteristic whitish fascia covering the rectum posteriorly was divided. That helped to locate the plane of dissection during mobilization of the rectum. Once the rectal wall has been identified, a lateral dissection is performed from the posterior midline, while placing traction on the fistula to make the plane of dissection more obvious. It is vital to be adjacent to the rectal wall, and clean away the thin white fascia that envelops it.

A. The most delicate part of this dissection is the anterior rectal wall. The rectum and the vagina share a common wall, which is often very thin. This thin wall has no plane of separation and the surgeon has to make two walls out of one. This dissection was performed using a fine needle cautery. It was continued up to the point where rectum and vagina separate and have full- thickness walls. A characteristic areolar tissue between the two full-thickness walls identifies this point in the dissection. The most common error in performing this operation is incomplete separation of the vagina and rectum. This may create a tense anastomosis between the rectum and the skin, which may provoke dehiscence and recurrence of the fistula.

B. Once the dissection has been completed, the electrical stimulator was used to determine the limits of the sphincteric mechanism. The anterior limit of the external sphincter and the anterior edge of the muscle complex are reapproximated as previously described, creating the perineal body. The levator muscle is usually not exposed and therefore does not have to be reconstructed. The muscle complex is reconstructed posterior to the rectum. The anoplasty was performed.

Blood loss in the procedure was counted in the form of blood soaked mops. 1 blood soaked mop = 50 ml blood loss



Early post operative complications

Patients were called for follow up after 7 days of operation and observed for any surgical site infection, wound dehiscence, rectovaginal fistula, bowel retraction. Patients parents were counselled about it and management done accordingly.

For SSI local application of antibiotic ointment was recommended and advised to avoid faecal Soiling of surgical wound. In case of bowel retraction parents informed regarding need of diversion colostomy.

Late post operative complications

In view of late post operative complications patients called up for follow up after 3 and 6 months for constipation and after 3 years for incontinence. In case of constipation patients were tried to manage by medical means such as enemas, suppositories or laxatives, in case of incontinence parents were asked regarding faecal soiling and counselled them that it may be improved by passage of time or may be persists for few years.

Results

The present prospective study was carried out in our institute. The study included total 36 patients with vestibular fistula who presented in first 5 years of life. Patients who were passing stools from vestibular fistula and decompressing rectum well and having no faecal impaction on x- ray abdomen were included in the study. Of 36 patients, 13 were below 1 year of age, 13 were between 1-2 years and 10 patients were between 2-5 years. As per our study maximum percentage of patients were belong to the age group between less than 1 year and 1-2 years. Minimum age was 4 months and maximum age was 60 months . (Figure 1)

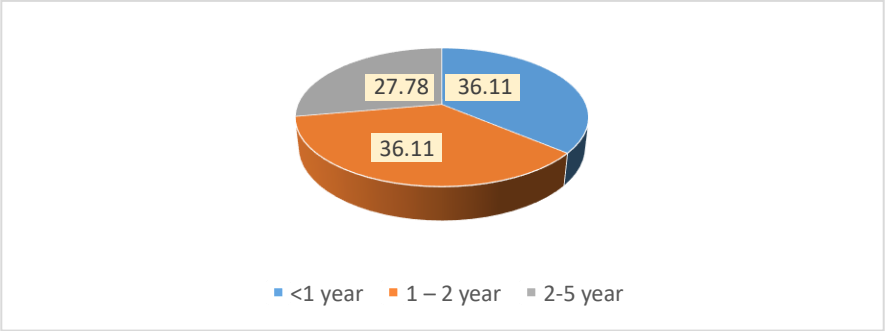


Fig 1: Age distribution

Clinical presentation

All the patients were seen in OPD hours in our hospital and most common feature in babies that parents bring them to the hospital is that babies were passing stool from vagina since birth, some other features were abdominal distension, skin excoriation , malnutrition, some babies were

required regular rectal washes to pass the stool and remaining were required anal dilatation.In our study most common presenting complaint was passing stool from vagina 36 (100%), other features were skin excoriation 5(13.86%) and abdominal distension 2 (5.56%) (Figure 2)

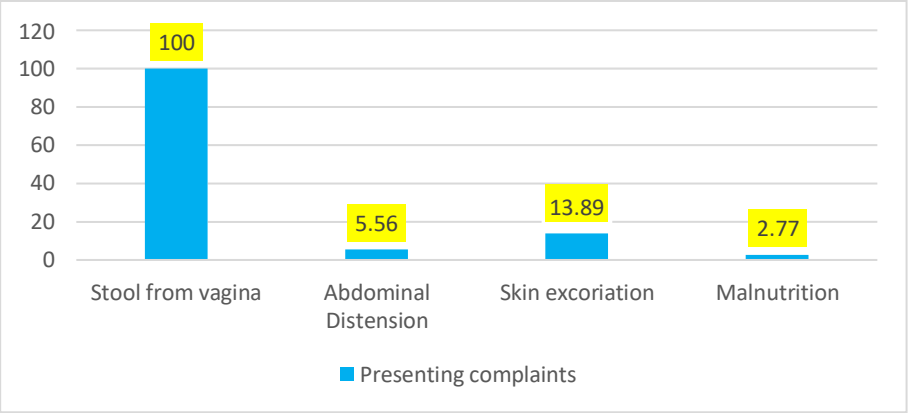


Figure 2: Presenting complaints

Findings on physical examination

In all patients seen in opd all patients were examined clinically for any skin changes whether there is redness or normal skin, vestibular opening was examined for any narrowing of vaginal orifice or stenosis by inserting 6 Fr or 8 Fr feeding tube in vaginal opening. Abdominal examination was done in supine position for any palpable mass which is suggestive of fecolith.

In our study out of all patients 5 babies were having skin redness (13.89%), 3 babies were having vaginal stenosis (8.33%), and no any patient was having palpable fecolith.

In our study USG KUB and X ray abdomen was done in all patients, 2 D ECHO was done in 27 (75%) patients and x-ray spine done in 31(86.11%) patients. (Table 1)

Table 1: Examination and Radiological Investigation findings

Parameters		Number of Cases	Percentage
Physical Finding	Skin Redness	5	13.89
	Vaginal Stenosis	3	8.33
	Palpable Fecolith	0	-
Radiological Investigation	USG KUB	36	100
	X-ray abdomen	36	100
	2D ECHO	27	75
	X-Ray Spine	31	86.11

Routine investigations

Before taking patient for operative intervention all routine investigations of babies were done and corrections were done accordingly.

In our study out of all patients 6 patients were having Hb less than 10 mg%, one patient was having leucocytosis, 2 patients were having deranged renal function, organisms were seen in urine sample of 2 patients. (Table 2)

Table 2: Laboratory Investigation findings

Parameters		Number of Cases	Percentage
Haemoglobin	≥ 10.0	30	83.33
	<10.0	6	16.67
TLC	<11000	35	97.22
	≥11000	1	2.77
Serum creatinine	<1.5	34	84.44
	≥1.5	2	5.56
Urine R/M	RBC	2	5.56
	Epithelial cell	1	2.77
	Pus cell	1	2.77
	Organism	2	5.56

In our study out of all babies, Two(5.56%) babies were having ventricular septal defect (VSD),one baby(2.77%) with ASD and one baby(2.77%) with PDA among Cardiovascular Anomalies. One baby (2.77%) with Right renal agenesis, two babies(5.56%) with Hydronephrosis, one baby (2.77%) with VUR among Genitourinary Anomalies. Three babies (8.33%) were having limb anomalies. (Figure 3)

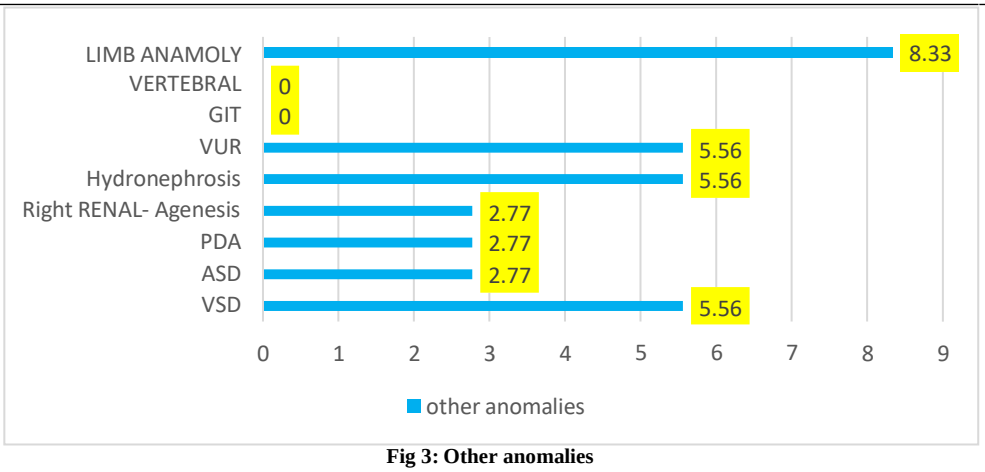


Fig 3: Other anomalies

Operating time

Of 36 all babies were undergone primary PSARP electively, all babies were positioned in jack knife position and operated under general anaesthesia. As the age advances the operating time for those babies was more and for babies less than 1 year operating time was less. The mean operating time for all babies and mean operating time according to age subgroups was as followsIn our study Mean operating time in all babies was 98.88 min, babies <1 year was 91.53 min, babies between 1-2 year was 98.84 min, babies 2-5 year was 108.5 min. (Table 3)

Table 3: Mean values of various quantitative parameters

Parameters		Age group			p-value
		<1 year	1 – 2 year	2-5 year	
Mean Operative time	98.88±9.79	91.53±6.25	98.84± 6.81	108.5±8.83	F=16.51 P<0.001,HS
Mean Blood loss	26.80 ± 9.64	3.46 ± 11.61	26.53 ± 5.54	31.5 ± 10.01	Kwallis statistic=5.113 P=0.1394,NS
Mean hospital stay	8.36 ± 3.96	6.46 ± 2.06	9.84 ± 4.81	8.9 ± 3.98	F=2.74 0.0790,NS
Mean stool passed	15.63±2.35	11.76±7.30	18.92±15.18	16.4±13.29	Kwallis statistic=1.098 0.3369, NS

Blood loss

Out of all patients who were undergone primary PSARP, as the age advances blood loss was more and in the age group less than 1 year blood loss was less. 7 patients were received blood transfusion intraoperatively. Blood loss was counted in the form of blood soaked mops, 1 fully soaked mop with blood was considered as blood loss of 50 ml. In our study mean blood loss for all patients was 26.80 ml. for babies <1 year was 23.46 ml, for babies 1-2 year was 26.53 ml and for 2-5 year was 31.5 ml.(Table 3)

Intraoperative rectal injury

In one of patient during operative procedure dissection of soft tissues is continued in the midline until the white fascia of rectum was encountered. Traction sutures were placed into inferior aspect of rectum and rectum opened to visualize fistula, while freeing rectum circumferentially there was accidental injury to the posterior wall of rectum due to electrocautery, the injured part of rectum was resected out circumferentially and mucocutaneous anastomosis done. In our study intra op rectal injury was occured in 1 patient of age group >2 years out of 36 patients. (Table 4)

Table 4: Various complications among the study subjects

Parameters		Age group			Significance
		<1 year	1 – 2 year	2-5 year	
Rectal injury	PRESENT	0	0	1 (10)	Chi2=2.6743 P=0.278,NS
	ABSENT	13 (100)	13 (100)	9 (90)	
Vaginal injury	PRESENT	0	0	1 (10)	Chi2=2.6743 P=0.278,NS
	ABSENT	13 (100)	13 (100)	9 (90)	
Complications	Perineal Excoriation	1 (2.77)	2 (2.77)	0	Chi2=1.7622,P= 0.763, NS
	Wound infection	1 (2.77)	3 (8.33)	1 (2.77)	Chi2=1.4614, P=0.597, NS
	Dehiscence	0	2 (5.55)	0	Chi2=3.7466, P=0.319, NS
	Bowel retraction	0	0	0	--
	Postop colostomy	0	1 (2.77)	0	Chi2=1.8198, P=1.000, NS
	Constipation	0	2 (5.55)	1 (10)	Chi2=2.0643,P=0.479, NS
	Incontinence	2 (5.55)	2 (5.55)	0	Chi2=1.7308,P=0.527, NS
Anal dilatation compliance	Yes	13 (100)	13(100)	10 (100)	--
	No	0	0	0	

Intraoperative vaginal injury

In another baby during operative procedure while dissecting rectum anteriorly there was a thin wall that was separating rectum from vagina. While separating rectum from vagina there was accidental rent of about 0.5 cm in vaginal wall due to electrocautery. The rent was sutured with the help of vicryl 5-0 R/B. In our study intra op vaginal injury was occured in 1 patient of age group 2-5 years out of 36 patients. (Table 4)

Early postoperative complications

All the babies were undergone primary PSARP under GA, there were no any post anaesthesia complications during postoperative periods. Most of the babies except few exceptions were started oral feeds within few hours and passed stool subsequently, intravenous antibiotics were continued for 5 days. Parents were instructed to keep operative wound dry and application of antibiotic ointment over suture line for 7 days. They were asked to clean wound every three hourly and after passing stool with betadine solution and normal saline. When wound was observed during followup days and in

hospital after few days there was evidence of perineal excoriation , surgical site infection and wound dehiscence in some patients.

One of the baby had severe SSI with wound dehiscence and was in severe sepsis after few postoperative days in that case we had taken that patient for diversion colostomy to avoid more soiling of wound due to faecal matter and to avoid further infection. With the help of intravenous antibiotics and iv fluids we managed to get that patient out of sepsis. In our study maximum [5] patients were suffered from surgical site wound infection, [3] patients were suffered from perineal excoriation, [2] patients were suffered from wound dehiscence and [1] patient had been taken for diversion colostomy due to severe sepsis during early postop days.(Table 4)

Late postoperative complications

All the patients who undergone single stage repair were followed up after several months for late postop complications. Patients parents were asked to follow up after several months in view of constipation. Patients were considered constipated if they required a medical regimen like enema, suppository or laxatives to have daily bowel movements, for incontinence, patients more than 3 years of age were clinically assessed for continence and considered incontinent if they had faecal soiling at least twice a day.In our study maximum patients [4] were suffered from incontinence, [3] patients were suffered from constipation during late postoperative days.(Table 4)

Mean hospital stay in days

In the absence of any postoperative complication with exception of 1-2 cases we were able to discharge all the patients within 1 week ,after completion of complete course of IV antibiotics, and after allowing babies full orally. In our study mean hospital stay after procedure for all patients was 8.36 days. For patients <1 year was 6.46 days, for 1-2 year was 9.84 days , 2-5 year was 8.9 days.(Table 3)

Mean time required to pass stool postoperatively

Out of all babies who underwent primary repair except few exceptions most of babies passed stool after few hours of postoperative period. Babies parents were instructed to clean the wound with betadine and saline as soon as baby passed stool and every 3 hours. Mean time required to pass the stool post operatively in all patients was 15.63 hours, in patients <1 year was 11.76 years, in patients between 1-2 year was 18.92 hours and in patients 2-5 year was 16.4 hours. (Table 3)

Anal dilatation compliance

In all babies who underwent primary repair, anal dilatation was started in all babies after 2 weeks of surgery, parents were taught about how dilatation is done and about the dilatation programme. Anus was calibrated and the dilator that fits most snuggly was initially used to dilate the anus twice a day. Every week, the size of dilator was increased by 1 mm until the desired size was reached. Once the dilator was inserted easily, they were asked to reduce the schedule upto once a day for 1 month, twice a week for 1 month, once a week for 1 month, and then once a week for 3 months. In our study all the cases of different age groups studied were followed scheduled anal dilatation programme. (Table 4)

Discussion

The present prospective study was carried out in our institute during June 2016 to November 2018. Patients included in study were female babies below 5 years of their life. Total 36 patients were studied. ARMs disease is one of the congenital anomalies with an incidence of about 1 in 5000 in neonates. The most common form of this anomaly in female patients is recto vestibular fistula. Rectovestibular fistula is the most common defect in females and has an excellent functional prognosis. The diagnosis is based on clinical examination.

A meticulous inspection of the newborn's genitalia allows the clinician to observe a normal urethral meatus and a normal vagina, with a third hole in the vestibule, which is the rectovestibular fistula. This defect can be repaired without a protective colostomy by experienced surgeons. The advantage of this approach is that it avoids the potential morbidity of a colostomy and reduces the number of operations to one from as many as three (colostomy, main repair, and colostomy closure). Many patients do very well with a primary neonatal operation without a protective colostomy. However, a perineal infection followed by dehiscence of the anal anastomosis or perineal body, or recurrence of the fistula provokes severe fibrosis that may interfere with the sphincter function. If these complications occur, the patient may have lost the best opportunity for an optimal functional result because secondary operations do not render the same prognosis as a successful primary operation. Thus, a protective colostomy is still the best way to avoid these complications for most surgeons. The decision to perform a colostomy or primary repair in these cases must be made individually by the surgeon based on experience and the clinical condition of the patient.The reasons for choosing one-stage repair is multiple, for example, avoidance of multistage operations and saving time and costs, less stress and insult for children and their parents, less psychosomatic trauma for children, avoidance of a colostomy related complications and risk of an adhesion band in the future because of an abdominal opening.Omid Amanollahi, Saman Ketabchain et al carried out study named 'One stage vs three stage repair in anorectal malformation with rectovestibular fistula' between march 2011 and march 2013. They studied total 40 female patients with ARM and rectovestibular fistula. They equally divided 40 patients in two groups of which 20 underwent three stage repair and 20 underwent single stage repair. They found that the mean age of babies who undergone single stage repair was 3.15 ± 2.11 months[6].Mirshemirani A. et al studied total 30 newborns between January 1993 to September 2003. There were 17 males and 13 females (3 with low rectovaginal fistula and 10 with rectovestibular fistula) all females were operated at the mean age of 8 days. Ibrahim Ali Ibrahim studied 16 patients between September 2004 to December 2007 and all patients were undergone single stage PSARP between the age of 1-3 days[7].

Mean age of female babies who undergone primary PSARP in our study was 20.16 ± 15.57 months, with range between 4 months to 60 months. Maximum number of cases were reported in between less than 1 year and 1-2 years. The difference in age group of patients who undergone primary repair is due to delay in presentation of babies in the hospitals. In the developing country like india most of the peoples still live in villages, they are far away from cities and tertiary health centres. So long distance is one of the factor that delays presentation of patients to the hospitals. Other factors are Poverty and illiteracy, due to lack of money and lack of knowledge about the condition patients presented late to the hospitals.

Clinical presentation & examination findings

In our study out of 36 patients who were presented in opd at very first time the most common clinical presentation was baby passing stool from vaginal orifice. All the babies were came with same complaint (100%). Other presenting features were excoriation of surrounding skin 5 patients (13.89%), 2 patients (5.56%) were presented at the opd as the abdominal distension as main complaint. One patient was presented as malnourished along with passing stool from vagina.

Out of all 36 babies who were studied required regular rectal washes and rectal dilatation to decompress the rectum and to relieve abdominal distension in such babies. 33 (91.66%) babies were managed by rectal washes only, and the babies who were unable to manage by rectal washes were managed by rectal dilatation 3 (13.88%) to relieve the symptoms of distension.In our study, all 36 patients seen in opd patients were examined clinically for any skin changes in the perineal region whether there is redness or normal skin 5 babies (13.89%) were found to have skin redness. Vestibular opening was examined for any narrowing of vaginal orifice or stenosis by inserting 6 Fr or 8 Fr feeding tube in vaginal opening 3 patients (8.33%) were found to have vaginal stenosis. Abdominal examination was done in supine position for any palpable mass which is suggestive of fecolith. No baby was found to have palpable fecolith. In our study routine investigations like haemoglobin, TLC, sr. creatinine, Urine R/M were done in all patients, babies having haemoglobin less than 10 gm% were 6 (16.67%), and those having more than or equal to 10 gm % were 30 (83.33%). One baby (2.77%) was having leucocytosis. 2 babies (5.56%) were having deranged renal function and 2 babies (5.56%) were suffered from UTI.

In our study most of the babies were having haemoglobin 10 or less than 10 because, In our country most of babies are born with nutritional anaemia due to malnutrition, due to poverty mothers does not get proper nutrition and also due to colon loaded with stools it causes malabsorption which results in anaemia.

Other associated anomalies

Mohammed J. Aboud in his 'prospective study of 60 cases repaired by PSARP in the maternity and child teaching hospital/ Al-Qadisiya' that carried out between July 2004 to the end of June 2008. All children had the PSARP for high and intermediate anorectal malformation during study period, there were 49 males and 11 females. Associated malformations were seen in 27 patients out of 60 patients. 12 (20%) patients had GUT anomalies, 6 (10%) patients had CVS anomalies , 2 (3.3%) patients had GIT anomalies [8].Abdul Aziz DA et al carried out retrospective historical comparison study. Nine neonates with RVF underwent primary ASARP without postoperative dilatation and were compared to 25 patients with RVF who underwent three stage PSARP with postoperative dilatation. In the ASARP group 2 patients (22.22%) had associated cardiac anomalies. One had PDA and one had ASD[9].A Mirshemirani et al in their study from January 1993 to September 2003 totally 30 newborns with high imperforate anus underwent primary PSARP. Out of all babies one baby is with significant bilateral renal dysplasia and one baby with VUR (6.66%)[7].In our study out of all babies 4 babies (11.11%) had CVS anomalies (2 VSD, 1 ASD, 1 PDA) ,4 Babies (11.11%) had GUT anomalies (1 Single Renal Agenesis,1 VUR,2HN), 3 babies with limb anomalies (8.33%).Ibrahim Ali Ibrahim[10] studied 16 patients between September 2004 to December 2007 and all patients were undergone single stage PSARP. The operative time was 90 minutes. Louah MA et al in their study conducted on 24 female patients with recto vestibular fistula from January 2013 to July 2014 they divided patients in two groups' 1) primary repair and 2) multistage repair'. In their study the operative time was ranged from 60 to 95 minutes, with mean time of 73.572 minutes. In the study by Upadhyaya et at[11]. mean operative time was 110 minutes.In our study mean operative time taken for all babies who were undergone PSARP was 98.88 minutes. In our study Out of all patients who were undergone primary PSARP, mean blood loss for all patients was 26.80 ml. 7 patients were received blood transfusion intraoperatively. Blood loss was counted in the form of blood soaked mops, 1 fully soaked mop with blood was considered as blood loss of 50 ml. Man mohan harjai[12] et al in their study from January 2010 to February 2012 included 27 patients. Out of them 15 female babies were undergone ASARP and 12 babies were undergone PSARP. Out of 12 babies who undergone PSARP, 2 babies (16.66%) were developed intraop rectal injury, and 2 babies (16.66%) were developed vaginal injury intraoperatively. O A Sowande et al studies (May 1994-december 2003) total 39 children were undergone PSARP for high and intermediate anorectal malformation, out of all operated children, 2 children (5.12%) developed intraoperative vaginal perforation. In our study out of 36 patients one patient (2.77%) had intraoperative rectal injury and one patient (2.77%) had intraoperative vaginal injury[13].

Table 5:Early postoperative complications

Study	Perineal excoriation	Wound infection	Dehiscence	Bowel retraction	Postop colostomy
irshemirani et al[7]	-	3 (10%)	0	-	0
N. Nagdeve et al[14]	2 (16.7%)	2 (16.7%)	-	0	-
Omid Amanollahi[6]	-	4 (10 %)	1 (2%)	-	1 (2%)
Elhalaby[13]	-	6 (15.38)	2 (5.12%)	-	1 (2.56%)
Present Study	3(8.33%)	5(13.88%)	2 (5.56%)	0	1 (2.77%)

A Mirshemirani et al in their study from January 1993 to September 2003 totally 30 newborns with high imperforate anus underwent Primary PSARP.They found that there were 3 cases (10%) of postoperative wound infections(SSI),No any anastomotic dehiscence, no patient has required subsequent colostomy[7].Nilesh G. Nagdeve et al[14] in their study from May 2006 to October 2007, a total 12 male neonates were underwent Primary PSARP. Out of all operated patients they found that 2 patients (16.7 %) had superficial wound infection of anoplasty site that was managed conservatively. No any patient had disruption of anoplasty or bowel retraction. 2 patients (16.7 %) had severe perineal excoriation.Omid Amanollahi et al in their study 'One stage vs three stage repair in anorectal malformation with rectovestibular fistula' performed between march 2011 and march 2013 , 40 female babies with rectovestibular fistula were included. They found that in single stage PSARP group 4 cases(10%) had superficial SSI, One case(2%) had severe dehiscence with complete opening of wound that result in deformity and scar formation and finally resulted in anal displacement(bowel retraction). In one case(2%) secondary colostomy was done to reduce infection[6].Elhalaby in his series of 39 cases in 2006 reported 9 cases with wound infection. 6 babies (15.38%) with superficial SSI, one baby (2.56%) required colostomy and 2 (5.12%) babies required secondary sutures[15].In our study out of all operated patients 3 babies (8.33%) developed perineal excoriation. 5 babies (13.88%) developed surgical wound infection(SSI) which were managed conservatively by topical antibiotic ointments , 2 babies (5.56%) developed wound dehiscence which were earlier managed conservatively then taken for resuturing. No babies were developed bowel retraction. And one baby(2.77%) was undergone postop colostomy because he had severe SSI with wound dehiscence.

Table 6:Late postoperative complications

Late postoperative complications		
Study	**Constipation**	**Incontinence**
A Mirshemirani et al[7]	1 (7.69%)	1 (7.69%)
Ibrahim Ali Ibrahim[10]	4 (25%)	2 (12.5%)
Mohammed J. Aboud[8]	9 (15%)	4 (6.6%)
Omid Amanollahi et al[6]	4 (20%)	-
Present Study	3 (8.33%)	4 (11.11%)

A Mirshemirani et al in their study from January 1993 to September 2003 totally 30 newborns with high imperforate anus underwent Primary PSARP. Out of 30 patients 13 patients were females. And out of 13 female babies who were underwent primary PSARP ,one baby (7.69%) developed constipation and one baby(7.69%) was developed incontinence as late complication[7].Ibrahim Ali Ibrahim studied 16 patients between September 2004 to December 2007 and all patients were undergone single stage PSARP. They found that out of all operated patients 6 patients were older than 3 years and out of 6 patients 2 patients (12.5%) were incontinent but improved on enema program and biofeedback therapy[10].And variable degree of constipation occurred in 4 patients(25%) and improved on laxatives.

Mohammed J. Aboud in his 'prospective study of 60 cases repaired by PSARP in the maternity and child teaching hospital/ Al-Qadisiya' that carried out between July 2004 to the end of June 2008. All children had the PSARP for high and intermediate anorectal malformation during study period. In the late postoperative period constipation was developed in 9 patients (15%) and fecal incontinence developed in 4 patients (6.6%)[8].Omid Amanollahi et al in their study 'One stage vs three stage repair in anorectal malformation with rectovestibular fistula' performed between march 2011 and march 2013 , 40 female babies with rectovestibular fistula were included. Out of 20 cases included in study group (single stage repair), 4 cases (20%) developed constipation[6].In our study out of 36 cases 3 cases

(8.33%) were developed constipation they were managed by medical regimens such as enema, suppository or laxatives. and 4 cases (11.11%) were found to be incontinent.Nilesh G. Nagdeve et al in their study from may 2006 to October 2007, a total 12 male neonates were underwent Primary PSARP. They found that out of all operated patients most of the neonates were discharged by 9th day, except one neonate operated on second day developed septicaemia in postoperative period and he was discharged on twentieth day[14]. Louah MA et al in their study conducted on 24 female patients with rectovestibular fistula from January 2013 to July 2014 they divided patients in two groups' 1)primary repair and 2) multistage repair'. Hospital stay ranged from 3 to 5 days with mean of 5.143 days. In their study the duration of Three patients in group 1 stayed for 10 days postoperatively because of wound disruption, whereas in group 2 all patients were discharged after 3 days, except for one patient who was discharged after 10 days because of wound care[16].In the study by Upadhyaya et al[11] the average duration of hospital stay was 5-6 days. In the study by Javid et al[17]. The average duration of hospital stay was 3.7 days. In our study the mean hospital stay for all babies who were undergone primary PSARP was 8.36 days.Ibrahim Ali Ibrahim studied 16 patients between September 2004 to December 2007 and all patients were undergone single stage PSARP. They found that out of all operated patients all patients passed stool within 12 hours. Essam A. Elhalaby[54] in their prospective study included 38 full term infants, all were undergone Primary repair, he found that all patients except one passed stool within 24 hours after surgery. In our study out of all female babies average time required to pass stool post operatively was 15.63 hours[10].

Table 7:Anal dilatation compliance

Study	Anal dilatation compliance (%)
Ibrahim Ali Ibrahim[10]	100
Abdul Aziz DA et al[9]	84
Nilesh G. Nagdeve et al[14]	100
Present study	100

Ibrahim Ali Ibrahim studied 16 patients between September 2004 to December 2007 and all patients were undergone single stage PSARP. Gradual anal dilatation started 2 weeks after the operation and continued for variable periods according to the results[10].

Abdul Aziz DA et al carried out retrospective historical comparison study. Nine neonates with RVF underwent primary ASARP without postoperative dilatation and were compared to 25 patients with RVF who underwent three stage PSARP with postoperative dilatation. They found that majority of PSARP patients(84%) had to undergo anal dilatation between 1 and 6 months before closure of colostomy[9].Nilesh G. Nagdeve et al in their study from may 2006 to October 2007, a total 12 male neonates were underwent Primary PSARP. They found that all parents strictly followed anal dilatation program as informed. In our study all patients who undergone primary PSARP were followed scheduled anal dilatation program as informed[14].

Conclusion

Passing stool from vaginal orifice is the most common presenting complaint. Most common finding on physical examination is redness of skin around perineal region. USG KUB, X ray abdomen and 2 D ECHO helps in diagnosis of any other associated anomalies.In our study cardiovascular and Genitourinary anomalies were most common anomalies associated with Vestibular Fistula. Surgical site wound infection was the most common Early Postoperative complication. Constipation and Incontinence were the most common Late postoperative complication.According to our study we conclude that apart from some postoperative and intraoperative complications Primary PSARP (Single Stage Repair) is the better management for Vestibular Fistulas regarding less hospital stay, less cost, no co morbidity of colostomy, less number of operations.

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