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ORIGINAL ARTICLE

Weekly anal Dilatation after Anoplasty in Low Variety Anorectal Malformations - A Cross Sectional Study

MUHAMMAD AMIR HANIF KHAN[1], MUHAMMAD RIAZ-UL-HAQ[2], IRAM UZMA KHALID[3], SHAHNAB AHMAD[4], MAHREEN ZAHRA AHMAD[5], MUHAMMAD KASHIF[6]

[1]Associate Professor, Department of Paediatric Surgery. The Children Hospital & the Institute of Child Health, Multan.
[2]Associate Professor, Department of Paediatric Surgery. Sahiwal Medical College, Sahiwal.
[3]Associate Professor, Department of Paediatric Surgery. Nishtar Medical University & Hospital, Multan.
[4]Associate Professor, Department of Paediatric Surgery. The Children Hospital & the Institute of Child Health, Multan.
[5]Assistant Professor, Department of Paediatric Surgery. The Children Hospital & the Institute of Child Health, Multan.
[6]Professor, Department of Paediatric Surgery. The Children Hospital & the Institute of Child Health, Multan.
Correspondence to: Dr. Muhammad Amir Hanif Khan, Email: mamirhanif114@gmail.com, Cell: 03006304471

ABSTRACT

Introduction: Low variety anorectal malformations (ARM) include almost one half of all anorectal malformations. Most of them undergo single stage anoplasty in neonatal age as an emergency procedure. Anal Dilatation is started after 10-14 days of surgery as a general protocol. Aim of our study was to measure the outcome of weekly dilatation instead of daily dilatation plan in low variety ARM patients undergoing anoplasty in terms of complications.

Materials and Methods: After Ethical considerations, a prospective cross sectional study was carried out from April 2020 to March 2022 in the Department of Pediatric Surgery, The Children Hospital and the Institute of Child Health, Multan. 34 patients of low variety of ARM were included in the study. Anoplasty was done on Hager dilator no. 10. After two weeks of surgery, the patients were called for weekly follow up and dilatation. The dilatation was performed as an outpatient procedure for three months and then monthly for three months. After data collection on a pre-designed performa, statistical analysis was done using SPSS version 20.

Results: Constipation was seen in 10 (29.4%) patients, followed by anal stenosis in 6 (17.6%) and wound dehiscence in 3 (8.8%) patients. Most of the patients responded to oral laxatives and intravenous antibiotics. 3 (8.8%) patients needed redo anoplasty. Overall, 26 patients (76.5%) did well on weekly dilatation program, while in 8 (23.5%) weekly dilatation program had to be converted to daily dilatation program.

Conclusion: Weekly calibration by surgeons has acceptable outcomes. It is kinder and gentle to patients and lessens excessive physical and psychological trauma and morbidity to patients. The weekly dilatation plan will benefit patients not only financially but it will also lessen the psychological and physical trauma to the patients and their caregivers.

Key words: anorectal malformations, low variety, anal dilatation.

INTRODUCTION

Anorectal malformations (ARMs) comprise of wide spectrum of diseases affecting anus and rectum. Its prevalence is 2 to 6 per 10000 live births[1]. Both genders are affected, with boys being affected slightly more than the girls. There are numerous anomalies associated with these malformations. The prevalence of associated anomalies is about 40-70% with cardiovascular system anomalies being most common, followed by genitourinary and vertebral anomalies[1]. ARM is diagnosed as the absence of an anus or the presence of an ectopic anus. It is usually diagnosed at birth but can present later in life. Pena classification divide ARM in to three categories; high variety ARM, intermediate and Low variety ARM[2]. Low variety ARM includes almost one half of all anorectal malformations. Low varieties include imperforate anus without fistula, anal stenosis, ano-cutaneous or perineal fistulas, bucket handle and membrane covered anus. Most of these undergo single stage anoplasty in the newborn period. Others undergo more complex definitive procedure or colostomy. Those who undergo colostomy will have definitive surgery after certain amount of time. Whatever is the algorithm, Anoplasty is generally followed by anal dilatation which is usually commenced after 10-14 days of surgery[3].

Dilatation is usually performed by metal dilator. However, parent's finger, very thin candles or pipettes are also mentioned in literature as a tool for anal dilatation[4]. Snuggly fit dilator is used for dilatation by parents twice daily. The size is increased weekly till appropriate for age size is reached[5]. At this point, colostomy is reversed and dilatation is continued for another 2-3 months. However, if only anoplasty was performed, the dilatation is gradually tapered until it is completely stopped.

Ideal protocol utilizes adequately calibrated Hager's dilators according to the age which are difficult to arrange for the patients belonging to poor settings as in Pakistan. A recent study in Kenya was done to elaborate the effective use of fingers instead of Hager dilators by the parents to find an economical way of anal dilatation after limited PSARP[6]. The daily dilatation by parents is not without complications. These can be physical, functional or psychological. Stricture, prolapse, bleeding, constipation, pain, anxiety and low self-esteem are among the most common complications encountered during daily dilatation plan[7]. These factors have led to a newer approach of either no dilatation or weekly dilatation after anoplasty or PSARP.

Weekly dilatation looks promising as it may offer same results with fewer problems. The main objective of the study is to measure the risks and benefits of weekly dilatation plan by the treating physician in imperforate anus low variety patients undergoing anoplasty in terms of complications like anal stenosis, constipation, mucosal prolapse and perineal excoriation over a period of six months.

MATERIALS AND METHODS

This study was conducted in the department of Paediatric Surgery, The Children Hospital & Institute of Child Health, Multan. It was a prospective cross sectional study, conducted from April 2020 to March 2022. After getting approval from the Ethical review board of the Institute, patients were enrolled in the study. The parents were explained the procedure and informed consent was taken.

A total of 34 patients were included in the study through purposive sampling. All patients were admitted from pediatric surgical emergency or Outpatient department of Children Hospital Multan. The patients were completely evaluated by detailed clinical examination. Echocardiography, cranial ultrasonography along with ultrasound of urinary system and spine was performed during first 24 hours of life. In patients without fistula, cross table lateral view radiograph was taken after 18-24h to classify these patients as low variety ARM. Ano-cutaneous or perineal fistulas, membrane covered anus or anal stenosis were included in the study. All patients with High variety ARM, patients with spinal or musculoskeletal abnormalities or late presentations with complications like sepsis or perforations were excluded from the study.

Anoplasty was performed in all patients, using 1cc of 2% lidocaine diluted by 50% as local anesthetic agent. Nerve stimulator was used to define the limits of the sphincter. Size of the anus was enough to fit metal Hager dilator number 10. Patients were discharged on 3rd to 5th postoperative day once oral intake was adequate. All the patients were advised to report to out-patient department after 14th postoperative day to start anal dilatation which was followed by weekly dilatation in OPD over a period of three months and then monthly for further three months.

Data was collected on a pre-designed performa after taking consent of parents/guardians. Information regarding biographic data, age in hours, sex, birth weight, associated VACTERAL anomalies, complications like anal stenosis, constipation, mucosal prolapse and wound dehiscence were gathered. The data was analyzed through SPSS version 20.0.

RESULTS

A total of 34 patients of low anorectal malformation, who underwent anoplasty as a single definitive procedure, were included in the study. Majority of them were male 32 (94.1 %) (Table no.1). 23(67.7%) of the patients presented on the first day life. Others 11 (32.4%) presented after 24 hours of life or later than that. On examination, perineal fistula was seen in 19 (55.9%) of the patients. No anomaly was found in 19 (55.9%) patients, while 12 (35.3%) had one anomaly, 3 (8.8%) had two or more systems affected. Cardiovascular system was mostly affected, followed by genitourinary system. VSD was the most common anomaly seen.

Table 1: Demography and Results

Variable		Frequency (n)	Percent (%)
sex of patient	male	32	94.1
	female	2	5.9
age at presentation	less than 24 hours	23	67.6
	more than 24 hours	11	32.4
perineal fistula	present	19	55.9
	absent	15	44.1
associated anomalies	none	19	55.9
	one	12	35.3
	Two or more	3	8.8
shifted to daily dilatation	no	26	76.5
	yes	8	23.5
redo-anoplasty	no	31	91.2
	yes	3	8.8
effectiveness of plan	effective	26	76.5
	Not effective	8	23.5

Table 2: Complications and Outcome

Complication	number	Conservative/ continued weekly plan	Shifted to daily dilatation	Redo-anoplasty
Perineal excoriation	2	2		
Wound dehiscence	3	1		2
Anal stenosis	6	0	5	1
Constipation	10	9	1	
Redo-anoplasty	3	1	2	

During weekly follow up, 21 (61.67%) patients had different complications, constipation being the most common, was seen in 10 (29.4%) patients(Table no.1), followed by anal stenosis in 6 (17.6%) and wound dehiscence in 3 (8.8%) patients. 12 out of 21 patients got better with time but 9 needed intervention. 10 patients with constipation were managed with laxatives(Table no.2). However, one patient had to be converted to daily dilatation program. 06 patients developed anal stenosis. 5 were shifted to daily dilatation and responded well. One needed redo anoplasty. Out of 03 patients with wound dehiscence, one with minor dehiscence was managed non-operatively, however two needed redo anoplasty. So, 3 (8.8%) patients had redo anoplasty. One was continued with weekly dilatation, two were put on daily dilatation. Overall, 26 patients (76.5%) did well on weekly dilatation program, while in 8 (23.5%) weekly dilatation program had to be converted to daily dilatation program(Table no.1). Chi-square test was used to find any association between age at presentation and outcome (p= .22), presence of perineal fistula and outcome (p= .67) and sex of patient and outcome (p= .37), but no significant association was found.

DISCUSSION

Anorectal malformations are one of the most common and challenging diseases being managed by the paediatric surgeons. From diagnosis to investigations, from treatment to follow up, lots of variations occur and it makes ARM interesting as well as challenging[8]. In 2005, The Krickenbeck conference proposed an international classification and guidelines for surgical procedures. In our study, Anoplasty was performed and neo-anus was calibrated on a hegar dilator number 10. Anal dilatation was started about two weeks from the operative day. There are lot of things which can be used for dilatation[9], like metal Hegar dilator, Fingers (digital anal dilatation)[6], plastic dilators, very thin candles or pipettes[4]. We used metal hegar dilator for anal dilatation. There are different variations to Pena's daily dilatation plan[10]. Our patients were put on weekly dilatation plan and it was performed on outpatient basis.

The results showed that in 26 (76.5%) patients the weekly dilatation plan proved effective. 8 (23.5%) patients were shifted to daily plan due to certain complications. Temple et al. compared daily dilatation with weekly dilatation[11]. 54 patients of ARM and Hirschprung's disease were observed after dividing them into two groups of weekly and daily dilatation. They could not find statistically significant difference in results. Mullassery et al. compared 103 patients from two institutions with dilatation and no dilatation regimen. They looked for redo-operations and need for further dilatation, but they could not find statistically significant differences between the two groups[12]. In the study we had good results with weekly dilatations, but we also had certain complications in the patients. In low varieties of ARM constipation is frequently seen. Rintala et al. reported constipation in 40% of patients with low variety[13]. According to them it is the most common functional problem encountered in low anomalies of ARM. Swaleh et al. reported constipation in 6(24%) of their patients[14]. Whyte et al. in their study showed that constipation may be early problem but resolves with the help of laxative and generally did not require alteration in treating strategy[15]. Levit et al. also reported that early recognition and laxatives can resolve problem in most of patients[10]. In our study, out of 34 patients, constipation was seen in 10 patients. It got resolved in 9 patients with the help of laxatives and change of feeding practices. However, one patient was shifted to daily dilatation plan and responded well.

Post-operative stenosis is usually indicative of progressive anal stricture. It is an important reason for redo anoplasty. Ahmad H. et al. compared dilatation and non- dilatation groups of total 49 patients. 21% of dilatation group and 32% of non-dilatation group developed anal stricture[10]. Swaleh et al. found anal stricture in 22% of their 50 patients. They used parent's fingers as a dilatation tool[6]. In a study of 104 patients, Holbrook et al. found that after anoplasty 14% of patients developed anal stenosis[16]. While Tadesse et al. reviewed 99 patients of ARM postoperatively and their 12(12%) patients developed anal stenosis[17]. Routine daily dilatation is considered helpful in avoiding anal stenosis though literature shows conflicting reports about its effects[10]. In our study, 06 (17.6%) patients got progressive anal stenosis during weekly dilatation, eventually 5 were shifted to daily plan and one needed to undergo redo-anoplasty. Wound infection after anoplasty without covering stoma can be seen in 7-24% of patients. Perioperative antibiotics and sitz bath can be critical in avoiding this. Temple et al found 3.5% of their 54 patients with anastomotic disruption[11]. Laurutii Et al. reported 7.5% of patients with wound dehiscence[18]. Dehiscence is a common indication for redo surgery. In our study, Minor wound infections were neglected but three (8.8%) had wound dehiscence. One responded well to intravenous antibiotics

and sitz baths; however two needed redo-anoplasty. Most common reason for redo-surgery after anoplasty are wound dehiscence, anal stricture, stenosis or prolapse[19]. Ahmad H. et al in an RCT found 4% of patients requiring redo-surgery due to strictures. Swaleh et al. had to perform re-operations in 40% of their ARM patients[14]. In our study, three (8.8%) needed redo-anoplasty, one after anal stenosis and two after wound dehiscence. Redo anoplasty can be done by Heineke-Mikulicz type[7]. Few authors have reported promising results with this technique[20]. We revised the anoplasty as it was done in the first instance. Two out them were put to daily dilatation plan while one was continued with weekly dilatation.

Overall, we had good results in 26(76.5%) of patients with weekly dilatation being done by surgeon in OPD. 8(23.5%) had to be converted to the daily dilatation plan; 2 after redo-anoplasty, 1 after constipation and 5 after anal stenosis. However, there are certain limitations of our study. It was a retrospective study with limited number of participants. This study included only patients of low variety of ARM. A prospective trial with all varieties of ARM and comparing all regimen of post-operative dilatation may be more helpful in producing concrete results.

CONCLUSIONS

Weekly anal dilatation regimen can be a good alternate to a daily dilatation plan. It can help in reducing the physical and psychological problems related to anal dilatation. It will also reduce parent's anxiety regarding home dilatations, availability of dilators in low socioeconomic places and child's fear towards adopting normal anal reflexes. It is also cost-effective and can help in reducing hospital burden caused by inadequate or inappropriate dilatations. The regular visits in early postoperative period can also help in detection of complications in the early post-operative period.

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