The Functional Outcomes in Anorectal Malformations after Posterior Sagittal Anorectoplasty

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Background: *The objectives were to study the functional outcomes and find the predictive factors of functional outcomes in Anorectal Malformations (ARMs) after Posterior Sagittal Anorectoplasty (PSARP).*

Material and Method: *Retrospective review of 58 ARMs who underwent PSARP procedure in Siriraj Hospital, Mahidol University from 1996 to 2010 was conducted. The medical data and sacral ratio measured from radiographic database were reviewed. Patients and parents were interviewed about the current functional outcomes according to the International classification (Krickenbeck) for postoperative results. The analyzed functional outcomes included voluntary bowel movement, total continence constipation, and soiling.*

Results: *Diagnostic ARM type was classified into 25 (43.1%) rectourethral fistula, 19 (32.8%) no fistula, 10 (17.2%) rectovesical fistula, 2 (3.4%) rectovaginal fistula and 2 (3.4%) vestibular fistula. The average age at the time of PSARP was 1.1 years old (range 0.2 to 7.6). Thirty-seven (63.8%) patients had voluntary bowel movement including 18 (31.0%) patients with total continence. Thirty-one (53.4%) patients had constipation including 13 (22.4%) grade 1 constipation and 17 (29.3%) grade 2 constipation. Thirty-six (62.1%) patients had soiling including 21 (36.2%) grade 1, 11 (19.0%) grade 2 and 3 (5.2%) grade 3 soiling. Analysis of multiple clinical variables found that patients who underwent PSARP at ages younger than 6 months are more likely to have voluntary bowel movement (odds ratio = 4.1, 95% CI 1.02 to 16.4, p = 0.047), and patients with Down syndrome more likely to develop constipation than patients without Down syndrome (odds ratio = 4.4, 95% CI 1.1 to 18.0, p = 0.04).*

Conclusion: *Several different functional outcomes may occur in ARMs after PSARP. Early PSARP may result in voluntary bowel movement. Constipation is the most common poor functional outcome. Patients with associated Down syndrome are more likely to develop constipation. Regardless, most patients with constipation and soiling after PSARP responded well to symptomatic treatment, redo operations were seldom required.*

Keywords: *Anorectal malformations, Posterior sagittal anorectoplasty, Voluntary bowel movement, Incontinence, Constipation, Soiling*

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Constipation is a major functional problem after anorectal reconstruction[1-4]. The symptom may be present with or without overflow soiling symptom[1,2]. Fecal incontinence may be caused from overflow incontinence or true incontinence[1,2]. Poor functional outcomes relate with poor quality of life[5-8].

Variant surgical procedures for Anorectal Malformations (ARMs) have been developed to improve the outcomes. However constipation and fecal incontinence are still common postoperative complications. Since 1982, Pena and de Vries proposed Posterior Sagittal Anorectoplasty (PSARP) for anorectal reconstruction, which the procedure has been widely accepted and became one of the standard treatments for many types of ARMs[1-5,9-15]. Many studies showed better functional outcomes after PSARP[2,3,9,15].

Several studies found High type anomalies or severe types of ARM[1,2,4,6,9,10,13,16,17], sacral anomalies[1,2,4,8,14] and spine anomalies[1,2,4] were predictors of poor functional outcomes in ARMs after anorectoplasty. In 1995, Pena proposed sacral ratio (SR) from plain film pelvis as a predictor for fecal incontinence. The average normal SR was 0.74 in anteroposterior view and 0.77 in lateral view. SRs of below normal were demonstrated as a predictor of poor fecal incontinence[1,4]. However, some studies did not found difference in fecal incontinence between ARMs

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with normal and below normal SR[18].

In postoperative period, wound dehiscence would lead to incontinence or anal stricture[1]. Some strategies such as toilet training[1,2,4,8], dilatation program[1,2], laxative regimens[1,2,4,5,14,16], Malone antegrade continence enema or continent appendicostomy[1,2,4,7,10,13], and reoperation[1,9,15] are different modalities used for relieving constipation and/or fecal incontinence.

The authors aimed to study the functional outcomes and find the predictive factors of functional outcomes in ARM patients after treatment with PSARP. The results may improve future management and long-term follow-up.

Material and Method

There were 116 ARMs who underwent PSARP in Siriraj Hospital, Mahidol University from 1996 to 2010. Medical data including medical records, operative notes, radiological data and computerized database of Siriraj Hospital were retrospectively reviewed. Two patients were excluded due to death (one patient died from congenital heart disease and the other died from hematological malignancy). Thirteen patients were excluded because they did not undergo the first definitive operation from Siriraj Hospital; instead they underwent re-do PSARP. Four patients were excluded due to discordance of pre-operative diagnosis, estimating the rectal pouch at levator ani muscle (intermediate type) and postoperative findings, which found the rectal pouch below the levator ani muscle (low type). Thirty-nine patients could not be interviewed because they were lost to follow-up or there was no information of their current contact phone number and address. Therefore, only 58 patients were included.

Sacral ratio is the proportion of the distance between the assuming lines of the pelvis (Fig. 1)[1]. The lines were measured from the radiograph of pelvic plain film in anteroposterior view. Only 39 patients had retrievable radiographic imaging in the database.

All patients were over 3 years of age, most could understand the questionnaire and cooperated well in toilet training program. The patients or their parents were interviewed. Functional outcomes such as voluntary bowel movement, soiling and constipation were classified by the International classification (Krickenbeck) for postoperative results (Table 1)[11]. Total continence was determined in patients with voluntary bowel movement and no soiling[1,2].

The statistics methods used were Chi-square test, Fisher's exact test, Two-sample t-test and Binary logistic regression. The statistical analysis program used was SPSS for windows 18.0. The present study was approved by The Siriraj Institutional Review Board (SIRB). Informed consent and assent of appropriated patients were obtained from the patients and their parents.

Results

Fifty-eight ARMs were 49 (84.5%) male and 9 (15.5%) female. The average age of patients was 8.5 years old at the time of interview (range 3.1 to 20.0, SD 3.9). Diagnostic ARMs type was classified into 25

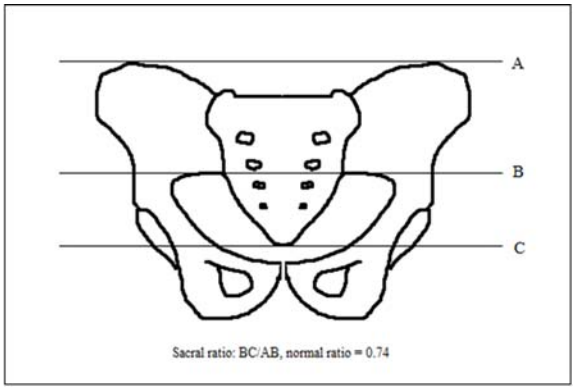

Fig. 1 Sacral ratio[1] Modification from: Levitt MA, Pena A. Anorectal Malformations. In: Pediatric surgery. 7th ed. Vol. 2. 2012: 1290.

Table 1. International classification (Krickenbeck) for post-operative result[11]

International classification (Krickenbeck) for postoperative results	
1) Voluntary bowel movements	Yes/no
Feeling of urge, capacity to verbalize, hold the bowel movement	
2) Soiling	Yes/no
Grade 1 Occasionally (once or twice per week)	
Grade 2 Every day, no social problem	
Grade 3 Constant, social problem	
3) Constipation	Yes/no
Grade 1 Manageable by changes in diet	
Grade 2 Requires laxative	
Grade 3 Resistant to laxatives and diet	

Modification from: Holschneider A, Hutson J, Pena A, et al Preliminary report on the International Conference for the Development of Standards for the Treatment of Anorectal Malformations. J Pediatr Surg. 2005: 1525.

(43.1%) rectourethral fistula, 19 (32.8%) no fistula, 10 (17.2%) rectovesical fistula, 2 (3.4%) rectovaginal fistula and 2 (3.4%) vestibular fistula. Level of the rectum pouch was divided, according to the Wingspread Classification, into 36 (62.1%) patients with rectal pouch at levator ani muscle (intermediate type), 17 (29.3%) patients with rectal pouch above levator ani muscle (high type) and the remaining 5 (8.6%) patients did not have any recorded level of rectal pouch. Forty four (75.9%) patients had associated anomalies including 24 (41.4%) patients with urological anomalies, 20 (34.5%) patients with cardiac anomalies, 7 (12.1%) patients with vertebral anomalies, 6 (10.3%) patients with other gastrointestinal anomalies, 5 (8.6%) patients with respiratory anomalies, 2 (3.4%) patients with spinal cord anomalies and 2 (3.4%) patients with neurological anomalies. Out of 58 patients in the study group, 14 (24.1%) patients were diagnosed as Down syndrome. There were only 39 patients with recorded radiograph of pelvic plain film, which sacral ratio could be measured. Sixteen patients had normal sacral ratio (equal or over 0.74), and 23 patients had below normal sacral ratio (less than 0.74).

All patients (100%) received colostomy from either Siriraj Hospital or other outside hospitals prior to PSARP. The average age at the time of PSARP was 1.1 years old (range 0.2 to 7.6, SD 1.2). Complications after PSARP were found in 17 (29.3%) patients including 8 (13.8%) patients with wound infection, 6 (10.3%) patients with wound dehiscence, 2 (3.4%) patients with anastomosis retraction, 3 (5.2%) patients with anastomosis stricture and 5 (8.6%) patients with mucosal prolapsed.

Two patients who had surgical wound infection and anastomosis retraction required redo-PSARP, which 1 patient, after redo PSARP, had anastomosis stricture and underwent anoplasty before closure colostomy. The 2 patients who had anastomosis stricture underwent anoplasty before closure colostomy, whereas the 5 patients who had mucosal prolapsed were resolved by mucosectomy.

Prior to the study period, all patients (100%) underwent dilation program after PSARP. Thirty-nine (67.2%) patients attended toilet training program at the inpatient unit or self-care at home program. Forty-two (72.4%) patients were treated with laxative drug, 22 (37.9%) patients were treated with rectal irrigation, and 5 (8.6%) patients required fecal evacuation. One (1.7%) patient received abdominoperineal pull through after PSARP because of refractory constipation with megarectum. His symptoms improved at the time of interview but he required laxative treatment (grade 2 constipation).

At the time of interview, 37 (63.8%) patients had voluntary bowel movement, these included 18 (31.0%) patients with total continence and 19 (51.4%) with soiling (11 patients with grade 1 soiling, 7 patients with grade 2 soiling and 1 patient missing grade of soiling data). There were 9 (47.4%), out of the 19 patients with voluntary bowel movement and soiling, who also had constipation. Of the total of 58 patients, 31 (53.4%) had constipation; including 13 (22.4%) grade 1 constipation, 17 (29.3%) grade 2 constipation and 1 missing grade of constipation data. Thirty-six (62.1%) patients had soiling including 21 (36.2%) grade 1 soiling, 11 (19.0%) grade 2 soiling and 3 (5.2%) grade 3 soiling and 1 missing grade of soiling data. Twenty (34.5%) patients had both constipation and soiling.

Tables 2 to 5 demonstrate the characteristic differences between the patients with and without voluntary bowel movement, total continence, constipation and soiling, respectively. Moreover, the tables also demonstrate the relation of the variables to each functional outcome. The analysis found a significant difference in the average age at the time of PSARP between patients with and without voluntary bowel movement. The patients with voluntary bowel movement have less average age at the time of PSARP than the patients without voluntary bowel movement (0.8 year and 1.6 year, $p = 0.02$). When the patients were grouped according to age at the time of PSARP, to the younger than 6 months group and older than 6 months group, it was found that patients who received PSARP at age younger than 6 months, were more likely to have voluntary bowel movement than those older than 6 months (odds ratio = 4.1, 95% CI 1.02 to 16.4, $p = 0.047$). In addition, the patients with associated Down syndrome were more likely to have constipation than patients without Down syndrome (odds ratio = 4.4, 95% CI 1.1 to 18.0, $p = 0.04$). There was no significant difference between patients with normal and below normal SR, ARMs type, level of rectal pouch (intermediate and high type), and associated anomalies in all functional outcome aspects.

Discussion

The ARMs are complex congenital anomalies with variety in presentations. Surgical approach and treatment decisions should be carefully made according to anatomical variations of the level of rectal pouch and fistula. PSARP procedure is the one standard treatment for many types of ARMs. The procedure uses

Table 2. The characteristic difference between the patients with and without voluntary bowel movement, and the relation of each variable to voluntary bowel movement outcome

	Voluntary bowel movement	No voluntary bowel movement	Odds ratio (95% CI)	*p*-value
Sex				
Female	7 (77.8%)	2 (22.2%)	2.2 (0.4 to 11.8)	0.35
Male	30 (61.2%)	19 (38.8%)		
ARMs type				
Rectourethral fistula	15 (60.0%)	10 (40.0%)		0.79**
No fistula	13 (68.4%)	6 (31.6%)		
Rectovesical fistula	6 (60.0%)	4 (40.0%)		
Rectovaginal fistula	1 (50.0%)	1 (50.0%)		
Vestibular fistula	2 (100%)	0		
Level of rectal pouch*				
Intermediate	23 (63.9%)	13 (36.1%)	0.7 (0.2 to 2.6)	0.63
High	12 (70.6%)	5 (29.4%)		
Average age of PSARP	0.8 year (SD 0.5)	1.6 year (SD 1.8)		0.02***
Age of PSARP				
≤6 months	15 (83.3%)	3 (16.7%)	4.1 (1.02 to 16.4)	0.047
>6 month	22 (55.0%)	18 (45.0%)		
Vertebral anomalies				
Yes	2 (28.6%)	5 (71.4%)	0.2 (0.03 to 1.0)	0.06
No	35 (68.6%)	16 (31.4%)		
Spinal anomalies				
Yes	0	2 (100%)		0.06**
No	37 (66.1%)	19 (33.9%)		
Down syndrome				
Yes	8 (57.1%)	6 (42.9%)	0.7 (0.2 to 2.4)	0.55
No	29 (65.9%)	15 (34.1%)		
Sacral ratio*				
<0.74	14 (60.9%)	9 (56.3%)	0.8 (0.2 to 3.0)	0.77
≥0.74	9 (39.1%)	7 (43.8%)		
Post operative complication*				
Yes	11 (64.7%)	6 (35.3%)	1.1 (0.3 to 3.6)	0.88
No	25 (62.5%)	15 (37.5%)		
Redo PSARP or Abdominoperineal pullthrough				
Yes	2 (66.7%)	1 (33.3%)	1.1 (0.1 to 13.4)	0.92
No	35 (63.6%)	20 (36.4%)		

* This variable has missing data; ** Data analysis using Binary logistic regression, Chi-square test and Fisher's and exact test; *** Continuous data using two-sample t-test. The *p*-value <0.05

a posterior sagittal approach by dividing the sphincter mechanism in midline and mobilizes rectal pouch to pull through and placed within the limits of the sphincter mechanism[1,4], therefore, PSARP is appropriate for anatomical and functional reconstruction. In Siriraj Hospital, PSARP is the definitive treatment of choice for ARMs with intermediate and high type and also reoperative cases.

The functional outcomes are subjective symptoms that are difficult to interpret. The authors have applied the International classification (Krickenbeck) for postoperative results for standard assessment classification[11]. This classification is widely used to classify voluntary bowel movement, severity of constipation and soiling[8,10].

Pena and Hong reported a retrospective review of 1,192 ARMs, that found 75% of the patients had voluntary bowel movement, half of which had soiling and 37.5% of the patients had total continence[4]. In comparison, the present study found 63.8% of the patients had voluntary bowel movement, in which 51.4% of the patients with voluntary bowel movement

Table 3. The characteristic difference between the patients with and without total continence, and the relation of each variable to total continence outcome

	Total continence	No total continence	Odds ratio (95% CI)	*p*-value
Sex				
Female	5 (55.6%)	4 (44.4%)	3.5 (0.8 to 14.9)	0.10
Male	13 (26.5%)	36 (73.5%)		
ARMs type				
Rectourethral fistula	7 (28.0%)	18 (72.0%)		0.42**
No fistula	8 (42.1%)	11 (57.9%)		
Rectovesical fistula	1 (10.0%)	9 (90.0%)		
Rectovaginal fistula	1 (50.0%)	1 (50.0%)		
Vestibular fistula	1 (50.0%)	1 (50.0%)		
Level of rectal pouch*				
Intermediate	13 (36.1%)	23 (63.9%)	1.8 (0.5 to 6.8)	0.36
High	4 (23.5%)	13 (76.5%)		
Average age of PSARP	0.8 (SD 0.5)	1.3 (SD 1.4)		0.15***
Age of PSARP				
≤6 months	8 (44.4%)	10 (55.6%)	2.4 (0.7 to 7.8)	0.14
>6 month	10 (25.0%)	30 (75.0%)		
Vertebral anomalies				
Yes	1 (14.3%)	6 (85.7%)	0.3 (0.04 to 3.0)	0.33
No	17 (33.3%)	34 (66.7%)		
Spinal anomalies				
Yes	0	2 (100%)		0.33**
No	18 (32.1%)	38 (67.9%)		
Down syndrome				
Yes	4 (28.6%)	10 (71.4%)	0.9 (0.2 to 3.2)	0.82
No	14 (31.8%)	30 (68.2%)		
Sacral ratio*				
<0.74	6 (26.1%)	17 (73.9%)	1.3 (0.3 to 5.3)	0.73
≥0.74	5 (31.3%)	11 (68.8%)		
Post operative complication*				
Yes	6 (35.3%)	11 (64.7%)	1.3 (0.4 to 4.2)	0.69
No	12 (30.0%)	28 (70.0%)		
Redo PSARP or Abdominoperineal pullthrough				
Yes	0	3 (100%)		0.23**
No	18 (32.7%)	37 (67.3%)		

* This variable has missing data; ** Data analysis using Binary logistic regression, Chi-square test and Fisher's and exact test; *** Continuous data using two-sample t-test. The *p*-value <0.05

had soiling, and 31.0% of the patients had total continence. There were 47.4% of the patients with voluntary bowel movement and soiling who also had constipation. It could be speculated that the soiling of this group could be overflow effect caused by constipation. The results is comparable to recent studies, however further analysis of multiple clinical variables in association with functional outcomes showed very few significant factors.

Analysis of the relation of different clinical variables to voluntary bowel movement found the patients with voluntary bowel movement have less average age at the time of PSARP than the patients without voluntary bowel movement (0.8 year and 1.6 year, $p = 0.02$). When the patients were grouped according to age at the time of PSARP, it was found that the patients who underwent PSARP at ages younger than 6 months were more likely to have voluntary bowel movement (odds ratio = 4.1, 95% CI 1.02 to 16.4, $p = 0.047$). The finding is consistent with a

Table 4. The characteristic difference between the patients with and without constipation, and the relation of each variable to constipation outcome

	Constipation	No constipation	Odds ratio (95% CI)	*p*-value
Sex				
Female	6 (66.7%)	3 (33.3%)	1.9 (0.4 to 8.6)	0.39
Male	25 (51.0%)	24 (49.0%)		
ARMs type				
Rectourethral fistula	12 (48.0%)	13 (52.0%)		0.15**
No fistula	13 (68.4%)	6 (31.6%)		
Rectovesical fistula	4 (40.0%)	6 (60.0%)		
Rectovaginal fistula	2 (100%)	0		
Vestibular fistula	0	2 (100%)		
Level of rectal pouch*				
Intermediate	20 (55.6%)	16 (44.4%)	1.4 (0.4 to 4.5)	0.56
High	8 (47.1%)	9 (52.9%)		
Average age of PSARP	1.3 (SD 1.48)	0.9 (SD 0.87)		0.26***
Age of PSARP				
≤6 months	7 (38.9%)	11 (61.1%)	0.4 (0.1 to 1.3)	0.14
>6 month	24 (60.0%)	16 (40.0%)		
Vertebral anomalies				
Yes	3 (42.9%)	4 (57.1%)	0.6 (0.1 to 3.0)	0.55
No	28 (54.9%)	23 (45.1%)		
Spinal anomalies				
Yes	2 (100%)	0		0.18**
No	29 (51.8%)	27 (48.2%)		
Down syndrome				
Yes	11 (78.6%)	3 (21.4%)	4.4 (1.1 to 18.0)	0.04
No	20 (45.5%)	24 (54.5%)		
Sacral ratio*				
<0.74	11 (47.8%)	12 (52.2%)	2.4 (0.6 to 9.1)	0.20
≥0.74	11 (68.8%)	5 (31.3%)		
Post operative complication*				
Yes	7 (41.2%)	10 (58.8%)	0.5 (0.2 to 1.6)	0.26
No	23 (42.5%)	17 (42.5%)		
Redo PSARP or Abdominoperineal pullthrough				
Yes	1 (33.3%)	2 (66.7%)	0.4 (0.04 to 4.9)	0.49
No	30 (54.5%)	25 (45.5%)		

* This variable has missing data; ** Data analysis using Binary logistic regression, Chi-square test and Fisher's and exact test; *** Continuous data using two-sample t-test. The *p*-value <0.05

previous study by Rintala RJ, which suggested the definitive repair to be as early as possible for the benefit in augmenting the development of neurocircuitry between the anal canal and the brain[13].

At the time of interview, 53.4% of the patients had constipation, all of which were improved by diet modification and/or laxative regimens (grade 1 and 2 constipation). In this group, 20 (34.5%) patients had constipation with soiling. Differently, according to the medical records in the early stages of follow-up care after PSARP, more patients had constipation. They were also treated with toilet training program, laxative drug administration, rectal irrigation and fecal evacuation. This included one patient who received re-operative abdominoperineal pull through after PSARP because of refractory constipation with megarectum, by which his clinical symptoms improved with laxative treatment at the time of interview (grade 2 constipation). Some previous studies showed an improvement in stooling behavior with increased age or temporary of

Table 5. The characteristic difference between the patients with and without soiling, and the relation of each variable to soiling outcome

	Soiling	No soiling	Odds ratio (95% CI)	*p*-value
Sex				
Female	3 (33.3%)	6 (66.7%)	0.2 (0.1 to 1.1)	0.07
Male	33 (67.3%)	16 (32.7%)		
ARMs type				
Rectourethral fistula	17 (68.0%)	8 (32.0%)		0.13**
No fistula	8 (42.1%)	11 (57.9%)		
Rectovesical fistula	9 (90.0%)	1 (10.0%)		
Rectovaginal fistula	1 (50.0%)	1 (50.0%)		
Vestibular fistula	1 (50.0%)	1 (50.0%)		
Level of rectal pouch*				
Intermediate	19 (52.8%)	17 (47.2%)	0.3 (0.1 to 1.3)	0.11
High	13 (76.5%)	4 (23.5%)		
Average age of PSARP	1.2 (SD 1.4)	1.0 (SD 0.9)		0.48***
Age of PSARP				
≤6 months	10 (55.6%)	8 (44.4%)	0.7 (0.2 to 2.1)	0.49
>6 month	26 (65.0%)	14 (35.0%)		
Vertebral anomalies				
Yes	6 (85.7%)	1 (14.3%)	4.2 (0.5 to 37.5)	0.20
No	30 (58.8%)	21 (41.2%)		
Spinal anomalies				
Yes	2 (100%)	0		0.26**
No	34 (60.7%)	22 (39.2%)		
Down syndrome				
Yes	7 (50.0%)	7 (50.0%)	0.5 (0.2 to 1.8)	0.29
No	29 (65.9%)	15 (34.1%)		
Sacral ratio*				
<0.74	15 (65.2%)	8 (34.8%)	0.7 (0.2 to 2.5)	0.57
≥0.74	9 (56.3%)	7 (43.8%)		
Post operative complication*				
Yes	11 (64.7%)	6 (35.3%)	1.2 (0.4 to 4.0)	0.74
No	24 (60.0%)	16 (40.0%)		
Redo PSARP or Abdominoperineal pullthrough				
Yes	3 (100%)	0		0.16**
No	33 (60.0%)	22 (40.0%)		

* This variable has missing data; ** Data analysis using Binary logistic regression, Chi-square test and Fisher's and exact test; *** Continuous data using Two-sample t-test. The *p*-value <0.05

constipation symptom [9,14]. Consequently, constipated patients might get better as they aged and this was consistent with information obtained from the patients' parents. The findings support the hypothesis that postoperative treatments and increased age might lead to the decrease in number of patients with constipation. In contrast, a study by Hashish et al showed stooling patterns were perceived to worsen with age[6]. Therefore, the wide range of respondent ages from 3.1 to 20.0 years old, could have an impact on the results.

Analysis of the relation of different clinical variables to constipation after PSARP found ARMs with associated Down syndrome were more likely to have constipation than ARMs without Down syndrome (odds ratio = 4.4, 95% CI 1.1 to 18.0, $p = 0.04$). However, Down syndrome patients may have abnormal enteric nervous system and functional gastrointestinal disturbances that may affect the outcome of corrective surgical procedure[19].

There were no differences of functional

outcomes between each ARM type, level of rectal pouch (intermediate and high type), and associated anomalies. Moreover there was no significant difference in functional outcomes between ARMs with normal and below normal SR. Although these analyzed results could not be concluded owing to the low number of sample size.

Conclusion

Several different functional outcomes may occur in ARMs after PSARP. Early PSARP may increase the probability for voluntary bowel movement. Constipation is the most common poor functional outcome. Patients with associated Down syndrome are more likely to develop constipation. Regardless, most patients with constipation and soiling after PSARP responded well to symptomatic treatment, redo operations were seldom required.

What is already known on this topic?

Constipation and fecal incontinence are functional problems after anorectal reconstruction. Constipation is a major functional problem. High type anomalies or severe types of ARM, sacral anomalies, spine anomalies, below normal value of SRs and postoperative wound dehiscence were predictors of poor functional outcomes.

What this study adds?

ARMs undergo early PSARP may result in voluntary bowel movement. ARMs with associated Down syndrome are more likely to develop constipation.

Potential conflicts of interest

None.

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การควบคุมการขับถ่ายในผู้ป่วย anorectal malformations ภายหลังจากได้รับการผ่าตัด posterior sagittal anorectoplasty

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ภูมิหลัง: เพื่อศึกษาการควบคุมการขับถ่ายและหาปัจจัยที่มีผลต่อการขับถ่ายในผู้ป่วย anorectal malformations ภายหลังจากได้รับการผ่าตัด Posterior Sagittal Anorectoplasty (PSARP)

วัสดุและวิธีการ: การศึกษาในรูปแบบ Retrospective ในผู้ป่วย anorectal malformations 58 คน ที่ได้รับการผ่าตัด PSARP จากโรงพยาบาลศิริราช มหาวิทยาลัยมหิดลตั้งแต่ พ.ศ. 2539 ถึง 2553 โดยจะมีการทบทวนข้อมูลทางการแพทย์และวัดสัดส่วนของกระดูกเชิงกรานจากภาพถ่ายรังสี ผู้ป่วยจะได้รับการสัมภาษณ์เกี่ยวกับการขับถ่ายในปัจจุบันโดยใช้ the international classification (Krickenbeck) for postoperative results จำแนกผลของการขับถ่าย

ผลการศึกษา: การวินิจฉัยชนิดของ anorectal malformations แบ่งเป็น rectourethral fistula 25 คน (43.1%) ไม่มี fistula 19 คน (32.8%) rectovesical fistula 10 คน (17.2%) rectovaginal fistula 2 คน (3.4%) และ vestibular fistula 2 คน (3.4%) อายุเฉลี่ยของผู้ป่วยขณะที่ได้รับการผ่าตัด PSARP คือ 1.1 ปี (0.2 ถึง 7.6 ปี) พบผู้ป่วยที่สามารถควบคุมการขับถ่ายได้ 37 คน คิดเป็นร้อยละ 63.8 ซึ่งรวมถึงผู้ป่วยที่ควบคุมการขับถ่ายได้และไม่มีอุจจาระเล็ด 18 คน คิดเป็นร้อยละ 31.0 พบผู้ป่วยที่มีอาการท้องผูก 31 คนคิดเป็นร้อยละ 53.4 โดยแบ่งเป็นผู้ป่วยที่มีอาการท้องผูกระดับที่หนึ่ง 13 คนคิดเป็นร้อยละ 22.4 ผู้ป่วยที่มีอาการท้องผูกระดับที่สองอีก 17 คนคิดเป็นร้อยละ 29.3 พบผู้ป่วยมีอาการอุจจาระเล็ด 36 คน คิดเป็นร้อยละ 62.1 โดยแบ่งเป็นผู้ป่วยที่มีอาการอุจจาระเล็ดระดับที่หนึ่ง 21 คน คิดเป็นร้อยละ 36.2 ผู้ป่วยที่มีอาการอุจจาระเล็ดระดับที่สอง 11 คนคิดเป็นร้อยละ 19.0 และผู้ป่วยที่มีอาการอุจจาระ เล็ดระดับที่สาม 3 คนคิดเป็นร้อยละ 5.2 จากการวิเคราะห์ทางสถิติของปัจจัยต่าง ๆ ที่เกี่ยวข้องพบว่าผู้ป่วยที่ได้รับการผ่าตัด PSARP ขณะที่มีอายุน้อยกว่า 6 เดือน มีแนวโน้มที่จะสามารถควบคุมการขับถ่ายได้มากกว่าผู้ป่วยที่ผ่าตัดเมื่ออายุสูงกว่า 6 เดือน (odds ratio = 4.1, 95% CI 1.02 ถึง 16.4, p = 0.047) และพบว่าผู้ป่วยที่เป็น down syndrome มีโอกาสที่จะมีอาการท้องผูกมากกว่าผู้ป่วยที่ไม่เป็น down syndrome (odds ratio = 4.4, 95% CI 1.1 ถึง 18.0, p = 0.04)

สรุป: ผู้ป่วย anorectal malformations ภายหลังการผ่าตัด PSARP อาจเกิดผลการขับถ่ายที่หลากหลาย การผ่าตัด PSARP ในขณะที่ผู้ป่วยอายุน้อยอาจช่วยเพิ่มความสามารถในการควบคุมการขับถ่ายได้ดีกว่าการผ่าตัดเมื่ออายุมาก อาการท้องผูกเป็นผลการขับถ่ายที่ไม่ดีที่พบได้มากที่สุด อย่างไรก็ตามผู้ป่วยจำนวนมากอาการท้องผูกจะดีขึ้น ด้วยการรักษาตามอาการมีน้อยรายที่ต้องผ่าตัดซ้ำเพื่อรักษาอาการท้องผูกผู้ป่วย anorectal malformations ที่เป็น down syndrome มีโอกาสเกิดภาวะท้องผูกได้สูงกว่าควรต้องเฝ้าระวังและให้การรักษา