

Current management of anorectal malformation in Egypt: a survey of members of the Egyptian pediatric surgical association

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Background/aim Anorectal malformation (ARM) represents a wide spectrum of anomalies. Its management includes various strategies. This survey aims at detecting the current preferences of Egyptian pediatric surgeons regarding the management of ARM.

Materials and methods A survey was circulated individually to the members of the Egyptian Pediatric Surgical Association (EPSA) during the general assembly meeting. Another online survey using web-based surveys (Survey Monkey) was also used.

Results Responses were received from 91 surgeons. Nine responses were excluded because of incomplete or duplicate responses, yielding 82 survey charts for analysis. The 82 responses represent 74.5% of the 110 fully-trained pediatric surgeons currently working in Egypt. Sixty-one (74.4 %) of responders used invertogram for preoperative diagnosis of ARM. A further seven (8.5%) combined invertogram with perineal ultrasonography or MRI. The remaining 14 (17.1%) used either perineal ultrasonography or MRI. The age at surgery for high ARM was preferred immediately after birth without colostomy by only five (6.1%) of responders, from 1 to 3 months after initial colostomy by 21 (25.61%), 3-6 months after colostomy by 45 (54.88%), and 6 months after colostomy by 11 (13.41%). The preferable definitive surgical technique for high ARM in male is posterior sagittal anorectoplasty according to 63 (76.82%) surgeons, laparoscopic assisted by 15 (18.3%), and abdominoperineal by four (4.88%) The preferable time for primary repair of rectovestibular fistulas

was neonatal period for only nine (10.98%) surgeons, from 1 to 3 months for 20 (24.39%), after the third month for life by 40 (48.78%), whereas 13 (15.85%) did not perform single-stage repair. As regard to outcome of primary versus staged repair for rectovestibular fistula, 64.7% of participants stated that primary repair has similar outcomes compared with staged repair, 19.5% stated that staged repair has lesser complications and better outcome, and 15.8% of participants did not perform single-stage repair.

Conclusion The current EPSA survey indicates that most surgeons still use the invertogram as the principal preoperative diagnostic study. Posterior sagittal anorectoplasty is the preferable definitive surgical technique for high ARM in males. Most surgeons prefer primary repair for rectovestibular fistulas. Laparoscopic approach for the management of high ARM is currently practiced by only a few surgeons. *Ann Pediatr Surg* 13:203–206 © 2017 Annals of Pediatric Surgery.

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Introduction

Anorectal malformations (ARM) include a wide spectrum of congenital defects with variable clinical presentations ranging from relatively low malformations to very complex cloacal anomalies.

Posterior sagittal anorectoplasty (PSARP) was first described by de Vries and Pena [1,2] for the treatment of ARM, and similar to any other new surgical procedure PSARP has a steep learning curve [3]. Since then, several studies addressing the management of ARM, especially the timing and single-stage or multistage approach, and various perioperative diagnostic studies have been emerging. Nevertheless, many surgeons prefer using the anterior sagittal anorectoplasty approach in dealing with congenital rectovaginal fistulas in females [4–6].

The first survey on the management of ARM was carried out by Morandi *et al.* [7], who proved that the management of ARM in Europe is highly heterogeneous. High-quality clinical studies are still needed to provide scientific evidence for optimal treatment strategies.

This study aimed to identify the current preferences of Egyptian pediatric surgeons regarding the management of ARM.

Materials and methods

After receiving approval from the Ethics committee of Tanta Faculty of Medicine, a 10-question survey was administered to the members of the Egyptian Pediatric Surgical Association (EPSA) during the general assembly meeting held on May 2016 in Cairo (Appendix 1). Another online survey using web-based surveys (Survey Monkey Inc., San Mateo, California, USA) was also used.

Questions were designed to cover key elements of management of patients with ARM in Egypt, such as number of patients managed yearly, preoperative investigations, preferred time of definitive repair for high ARM, preferable definitive surgical technique for high ARM in males, percentage of laparoscopy-assisted cases for high ARM, outcome of primary versus multiple procedures in males, and preferable time of primary

repair for vestibular fistulas. Other questions included outcome of primary versus staged repair of vestibular fistulas, percentage of cases requiring redo surgery, and the most common redo surgery performed. Data were collected and analyzed using descriptive statistics (mean, median, and range) in predefined subgroups according to the options for each question.

Results

Responses were received from 91 surgeons (from a total of 280 members from the EPSA). Nine responses were excluded because of incomplete or duplicate responses, yielding 82 survey charts for analysis. All responders were involved in the routine management of patients with ARM, with 47.5% of responders performing definitive surgery on more than 10 cases per year.

Preoperative investigations

Invertogram was used by 61 (74.4%) responders to diagnose the level of ARM. Combined invertogram with perineal ultrasonography (US) or MRI was used by seven (8.5%) responders. Fourteen (17.1%) responders used either perineal US or MRI.

The preferable time of definitive repair for high anorectal malformations

The age at surgery for high ARM was preferred immediately after birth without colostomy by 13.4% of responders, from 1 to 3 months after initial colostomy by 25.6%, 3 to 6 months after colostomy by 47.6%, and a further 13.4% postponed surgery until the child was older than 6 months after initial colostomy.

Outcome of primary versus multiple procedures in males

In male patients, 71 (86.6%) responders did not perform single-stage repair, whereas seven (8.5%) responders documented that the staged approach has lesser complications and better outcome, and further four (4.9%) believed that the single-stage approach has similar outcome to multiple procedures.

The preferable definitive surgical technique for high anorectal malformations in males

In male patients with high ARM, PSARP was routinely performed by 76.8% of participants. Laparoscopy-assisted techniques were used by 18.3% of participants, whereas 4.9% of participants are still using the abdomino-perineal approach.

The percentage of laparoscopy-assisted cases for high anorectal malformations

The majority of responders (81.7%) did not perform laparoscopy-assisted surgery for high ARM, 8.5% of responders used this approach in less than 25% of cases, and further 9.8% of responders used laparoscopy-assisted methods in more than 25% of cases.

Management of rectovestibular fistula

The preferable time for primary repair of rectovestibular fistulas was less than 1 month for 11% of responders, 1–3 months for 24.4% of responders, more than 3 months for

48.8% of responders, and 15.8% for responders who did not perform single-stage repair.

Regarding the outcome of primary versus staged repair, 64.7% of participants stated that primary repair has similar outcomes compared with staged repair, 19.5% stated that staged repair has lesser complications and better outcome, and 15.8% of participants did not perform single-stage repair.

Redo surgery

Regarding the percentage of redo surgery, 79.3% of participants performed redo surgery in less than 10% of cases, 18.3% of participants performed redo surgery in 10–20% of cases, and 2.4% of participants performed redo surgery in more than 20% of cases.

Regarding the most common redo surgery, trimming of prolapsed mucosa was performed by 64.6%, anoplasty was performed by 23.2%, and redo PSARP was performed by 12.2% (Table 1).

Discussion

There is no consensus regarding the best line of management for ARM. In addition, only one survey on the management of ARM has been carried out [7]. Therefore, the present survey is considered the second national survey on management of ARM.

The present survey indicates that most surgeons (74.4%) still use the invertogram as the principal preoperative diagnostic study, in contrast with the results reported by

Table 1 Summary of key findings

	Number of responders [n (%)]
Preoperative investigations	
Invertogram	61 (74.4)
Invertogram with perineal US or MRI	7 (8.5)
Perineal US or MRI	14 (17.1)
Preferable time of definitive repair for high ARM	
Immediately after birth	11 (13.4)
1–3 months after colostomy	21 (25.6)
3–6 months after colostomy	39 (47.6)
>6 months after colostomy	11 (13.4)
Preferable definitive surgical technique for high ARM in males	
PSARP	63 (76.8)
Abdomino-perineal laparoscopy assisted	4 (4.9)
laparoscopy assisted	15 (18.3)
Preferable time of primary repair for vestibular fistulas	
I do not perform single-stage repair	13 (15.8)
<1 month	9 (11)
1–3 months	20 (24.4)
>3 months	40 (48.8)
Outcome of primary versus staged repair for vestibular fistulas	
I do not perform single-stage repair	13 (15.8)
Staged repair has lesser complications and better outcome	16 (19.5)
Primary repair has similar outcome	53 (64.7)
Cases requiring redo surgery (%)	
<10	65 (79.3)
10–20	15 (18.3)
>20	2 (2.4)
The most common redo surgery	
Trimming of prolapsed mucosa	53 (64.6)
Anoplasty	19 (23.2)
Redo PSARP	10 (12.2)

ARM, anorectal malformation; ASARP, anterior sagittal anorectoplasty; PSARP, posterior sagittal anorectoplasty; US, ultrasonography.

Anna Morandi *et al.* [7], where prone cross-table lateral radiograph is the most used preoperative investigation tool. At present, MRI and perineal US are used for the preoperative diagnosis and evaluation of ARM [8–10]. In our survey, only 17.1% of responders used either perineal US or MRI. We believe that the low cost and high diagnostic value of invertogram explains why it is preferred by most surgeons in this survey.

The treatment of high ARM is challenging. The general agreement is to treat with a three-stage repair. However, in the past few years, some surgeons have argued for a definitive repair without colostomy [11–15].

The present survey confirms the wide preference for the three-stage treatment of high ARM by our respondents (86.6%). Most of the surgeons performing three-stage repair prefer definitive repair 3–6 months after colostomy (47.6%).

The laparoscopic-assisted approach for anorectal pull through (LAARP) was first described by Willital [16] and later popularized by Georgeson [17].

Laparoscopic repairs had little incidence of injuries during pelvic dissection not requiring sphincter complex division and better compliance of the external sphincter. In addition, accurate placement of the rectum within the levator ani and the external anal sphincter muscle complex and improvement in rectal resting pressure and anorectal inhibitory reflex, which result in improved bowel and cosmetic outcomes, fewer adhesive bowel obstructions, decreased pain, and a faster return to function, were found [18–20].

Our survey found limited popularity of laparoscopy in the management of high ARM (18.3%). This limitation is due to shortage of pediatric surgeons with advanced laparoscopy skills as well as the availability of laparoscopic facilities in many hospitals. Another contributing factor is the high cost of laparoscopy-assisted repair. On the basis of the present survey, we recommend additional training of pediatric surgeons with regard to laparoscopic surgery.

Rectovestibular fistula is the most common form of ARM in girls and is associated with the best prognosis. It is estimated that 93% of patients with vestibular fistula will develop voluntary bowel movements by the age of 3 years [21].

At present, primary anorectoplasty without a covering colostomy is feasible in cases with vestibular fistulas with excellent continence rates and manageable minimum complications, regardless of the technique used – anterior sagittal anorectoplasty or PSARP [22–24].

The present study confirms the transition from using a staged approach to wide acceptance of primary repair for vestibular fistulas. The safety and efficacy of primary repair for vestibular fistulas have been shown and have been accepted by our survey respondents: 84.1% performed single-stage repair in routine practice in contrast to 15.9% who are still using staged operations.

Treatment of complications after surgery for high ARM is challenging. Most of our responders (79.3%) confirmed that less than 10% of their patients required reoperation, whereas only 18.3% of our responders performed reoperation in 10–20% of their patients.

Regarding the type of redo surgery, trimming of prolapsed mucosa was the most common surgery in 64.6%, whereas anoplasty represented 23.2%, and redo PSARP represented 12.2%.

Conclusion

The present EPSA survey indicates that most surgeons still use the invertogram as the principal preoperative diagnostic study. PSARP is the preferable definitive surgical technique for high ARM in males. Most surgeons prefer primary repair for rectovestibular fistulas. Laparoscopic approach for the management of high ARM is currently practiced by only a few surgeons.

Conflicts of interest

There are no conflicts of interest.

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Appendix 1

Management of anorectal malformation: current practice of Egyptian Pediatric Surgical Association (EPSA) members.

Name (optional):	
Position:	Hospital:

1. How many patients with ARM do you manage (as the PRINCIPLE surgeon) per year

- A. < 5 B. 5 – 10 C. 10 - 15 D. > 15

2. Preoperative investigations:

- A. Invertogram B. Combined invertogram with perineal US or MRI
D. MRI E. perineal US

3. What is the preferable time of definitive repair for high ARM

- A. Immediately after birth B. 1 – 3 months after colostomy
C. 3 – 6 months after colostomy D. > 6 months after colostomy

4. Outcome of primary versus multiple procedures in male

- A. I don't do one stage repair
B. Staged has less complications rate and better outcome
C. Primary has similar outcome

5. What is your preferable definitive surgical technique for high ARM in male

- A. PSARP B. Abdomino-perineal C. laparoscopic assisted

6. Percentage of laparoscopic assisted cases for high ARM

- A. None B. < 25 % C. 25 – 50 % D. > 50 %

7. What is your preferable time of primary repair for vestibular fistula?

- A. I don't do one stage repair B. < 1 month C. 1:3 months D. > 3 months

8. Outcome of primary versus staged repair of vestibular fistula

- A. I don't do one stage repair
C. Staged has less complications rate and better outcome
D. Primary has similar outcome

9. As regard to percentage of cases need redo surgery

- A. < 10 % B. 10 – 20 % C. > 20 %

10. Commonest redo surgery:

- A. Trimming of prolapsed mucosa B. Anoplasty
C. Redo PSARP