Transanal End-to-End Recto-anal Anastomosis for Rectal Atresia at Birth

Ibrahim Ali Ibrahim

Pediatric Surgery Unit, Department of General Surgery, Assiut Faculty of Medicine, Egypt

Background/ Purpose: Rectal atresia is a rare defect occurring in less than 1% of all patients with anorectal malformations. Many operative procedures have been described for the treatment of rectal atresia. The aim of this study was to present our early results of transanal end-to-end rectoanal anastomosis for rectal atresia in neonates.

Materials & Methods: Four neonates aged from one day to 5 days with rectal atresia were diagnosed by clinical examination, introducing catheter or Hegar dilator and invertogram. These patients were treated by transanal end-to-end rectoanal anastomosis at birth. Each patient was evaluated as regards to age at diagnosis, clinical data, presence or absence of associated anomalies, length of the gap between anal canal and the blind rectal pouch, operative details, and postoperative outcome.

Results: The mean operative time was 25 minutes and hospital stay was 4 days. Three of the four patients are alive with normal defecation and without stricture. One patient died due to respiratory distress.

Conclusion: Transanal end-to-end rectoanal anastomosis at birth is feasible, easy to perform with expected good results.

Index Word: anorectal anomalies, rectal atresia, rectoanal anastomosis.

INTRODUCTION

Rectal atresia is a rare defect occurring in 1% of all patients with anorectal malformations. The anal-canal is normal and the anus appears normal however, blockage exists 1-2cm from the anal skin. The separation of the rectum and anal canal can vary from a thin membrane to a dense Fibrous Tissue.1

Most authors believe that rectal atresia is an acquired lesion rather than a developmental error as proved by experimental work that supports a vascular genesis and also the lack of associated congenital anomalies.2 Transanal recto-rectal anastomosis (TERA) was described by Upadhyaya in 1990 as the 2nd stage of treatment of rectal atresia.3 On the same basis we used this approach as a single rather than 3 stages operation at birth.

CASE REPORTS

Case (1):

A one day full term male presented by no pass meconium and abdominal distension. On examination, the anus was looking normal but a catheter and Hegar dilator could not be introduced beyond 2cm from the anal verge. There were no other associated congenital anomalies. The diagnosis of rectal atresia was made.
An invertogram with a metal Hegar dilator in the anal canal was done which revealed high anorectal anomaly (Fig.1). Transanal end to end recto-anal anastamosis was done as flow: The patient was put in the lithotomy position and an urethral catheter is inserted. The dome of the anus was grasped by a mosquito forceps (Fig.2) and two stay sutures are taken at its sides. A transverse incision was done between the stay sutures. The rectal pouch is identified, dissected for a few millimeters, opened and evacuated completely aided by gentle pressure on the lower abdomen. The rectal pouch was intussuscepted through the anus and an end to end recto-anal anastomosis performed using interrupted 4/0 absorbable sutures (Fig.3, 4)

Fig 1. Invertogram with metal sound in the anal canal.

Fig 2. The dome of the anus is visualized and grasped by a mosquito forceps.

Fig 3. Rectal pouch is dissected and mobilized.

Fig 4. The final appearance after end- to-end rectoanal anastomosis.
The patient was tolerating oral feeding after one day and discharged after 2 days. Regular anal dilatation was started 15 days after the operation until the line of anastomosis becomes as soft as the neighboring rectal wall. The patient is now doing well with normal defecation, without stricture.

Case (2):

A one day full term male was referred from another hospital due to failure to pass meconium and abdominal distension. Examination revealed a well formed anus with visible anorectal membrane. The membrane was bulging through the anus during straining. Transanal needle aspiration revealed meconium.

Transverse incision of the membrane was done. After evacuation of the meconium, the membrane was excised circumferentially and the rectal and anal mucosa were sutured using interrupted 4/0 absorbable suture. The patient started oral feeding after 24 hours, discharged after 2 days and regular anal dilatation started after 15 days. On follow up, the patient is doing well with normal defecation without straining or soiling.

Case (3):

A full term 5 days old female was presented by failure to pass meconium. Clinical examination and passage of Hegar dilator revealed rectal atresia. An invertogram with a metal sound in the anus revealed that the distance between gas in the rectal pouch and the anus was about 2 cm. This finding was proved by needle aspiration.

The dome of the anus was grasped by two mosquito forceps. A transverse incision was done in the dome of the anal canal and blunt dissection deeper to anus was done in a plane perpendicular to that of the incision till the rectal pouch appeared.

The rectal pouch was dissected to a sufficient length and incised transversely. After meconium evacuation, the rectal pouch was intussuscepted through the anus and end to end anastomosis was done using 4/0 absorbable interrupted sutures. The patient started oral feeding after 24 hs and discharged after 3 days. Regular anal dilatation started after 2 weeks the patient had normal bowel habits without stricture.

Case (4):

A 4 days old male patient was referred to our hospital because of failure to pass meconium since birth. Clinical examination and invertogram with a metal sound in the anus revealed that the distance from the air column in the rectum and the metal sound was less than 1 cm. The patient was dehydrated, shocked and severely distressed because of abdominal distension. Laboratory investigations revealed impaired renal functions.

After correction of dehydration and shock, the patient was taken to the operative theatre where transanal end to end recto-anal anastomosis was done as usual. The patient was treated postoperatively in the neonatal intensive care unit. Abdominal distension disappeared, and oral feeding was started after 24 hours. Unfortunately, the medical condition started to deteriorate 5 days post operatively and the patient died 8 days after the operation due to respiratory complication.

DISCUSSION

Rectal atresia was first classified as a type IV anorectal anomaly by Ladd and Gross. However, there is growing consensus that isolated rectal atresia results from an intrauterine vascular event etiologically similar to bowel atresia rather than a first trimester developmental problem. This has raised suggestions that it is more appropriate to classify rectal atresia with colonic atresia than with anorectal anomalies. In most cases of rectal atresia, the anal canal and the sphincters are normally formed and ends blindly at 1.5-3 cm. from the anus, the rectal pouch usually terminates at or within the pelvic diaphragm and therefore, continence should be normal after reconstruction of the atresia. There is no fistulous communication with the urinary tract in most of these cases.

Only one case of rectal atresia associated with urinary fistula has been reported by Pena and DeVries in 1982 and another case by Kobayashi in 2005. In most cases of rectal atresia, the anal canal and the sphincters are normally formed and ends blindly at 1.5-3 cm. from the anus, the rectal pouch usually terminates at or within the pelvic diaphragm and therefore, continence should be normal after reconstruction of the atresia. There is no fistulous communication with the urinary tract in most of these cases.

Normal appearance of the anus and perineum frequently delays the diagnosis until abdominal distension occurs. The role of rectal examination in the diagnosis of rectal atresia is primordial. In our series, the diagnosis was made between the second and fifth day of birth. The diagnosis was made by introducing a catheter or Hegar dilator into the anus.
Invertogram revealed a high anomaly. We assessed the length of the atretic segment by measuring the distance between the gas in the rectal pouch and a metal dilator in the anus which revealed the distance to be less than 2cm. in 3 cases and in the third case, the dilator appears as if it is in the gas clinically this case was diagnosed as membranous atresia with the membrane bulging in the anal canal during straining.

Many operative procedures for rectal atresia have been described; Swenson’s pull through in the neonatal period or at the age of 6 months; abdominoperineal pull through after stripping the mucosa of the distal pouch, Duhamel pull through and sacroperineal and abdominoperineal pull through. Pena recommended a posterior sagittal approach, in which the bowel ends can be easily visualized, the atretic segments excised and an end to end anastomosis performed without cutting of the external muscle complex. The functional results are excellent. Transanal end-to-end recto-rectal anastomosis (TERA) was described by Upadhyaya in 1990. The rationale of TERA is based on: The concept that anorectal canal and the sphincteric muscles distal to the atresia are normally developed. The anorectum can be dilated preoperatively to allow a transanal anastamosis of a good size. The atretic segment can be intussuscepted effectively into the anal canal, on the same basis, we performed this operation.

The operation has the following advantages: it relieves the GIT obstruction, establishes anorectal continence and maximum potential for normal continence and defecation reflexes in one rather than three operations. With regular dilatation, no stricture occurred. Although our patients are too young to assess their continence, they are defecating normally without constipation or soiling.

CONCLUSION

Based on the early results of this study, we may conclude that: transanal end-to-end rectoanal anastomosis approach for treatment of rectal atresia at birth is feasible. The rectal pouch can be identified, mobilized from the surrounding structures intussuscepted through anus. The anastomosis can be performed easily. The procedure is simple and effective. Our early results are promising however further cases and longer follow up periods are needed for more accurate evaluation and firmer conclusion.

REFERENCES