

Different management of ileal atresia

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Abstract

AIM : To study different methods of management of ileal atresia , relating to operative time, bowel length, establishment of feeds and duration of parenteral nutrition.

METHODS: From January 2013 to January 2014 all neonates presenting with ileal atresia were included. Cases with duodenal, jejunal atresia, type IV ileal atresia, other causes of delayed passage meconium were excluded.

RESULTS: 22 cases of types I, II, IIIa atresia were included over 1 year. 10 cases of ileal atresia had resection of the ectatic segment, 7 cases of them ileostomy was done either bishop koop or mickulicks, 5 cases excision of the web only without resection of dilated part

In this cohort we have one case that had an anastomotic leak in bishopkoop group. & one case stenosis in cases of excision of the web only. In 2 patients the Bishop Koop chimney closed spontaneously, and closure was done in the other cases of stoma at the age of 6months to 1 year.

CONCLUSION: excision of dilated part in cases of ileal atresia or stoma is more beneficial and is a safe technique, and despite being a lengthier

operation, feeds could be established earlier, and short hospital stay thus helps in improving the survival.

Keywords: ileal atresia, stoma, TPN.

Introduction

ileal atresia are one of the most common cause of neonatal intestinal obstruction. (1,2,7) Its incidence is 3 cases per 10,000 live births in Africa but not reported exclusively in Egypt. (4)

Enterostomy for intestinal atresia has been done since 1800. (5) Historically surgeons did side to side anastomosis, causing functional obstruction, and blind loop syndrome (1). Bishop and Koop in 1957 described an end to side anastomosis of the small intestine, where the atretic small distal portion is directed out (1, 6). Santulli did this in a reversed way in 1968 (1, 6). The enterostomy has the advantage that it allows deflation of dilated proximal bowel and also it allows the intestinal contents to pass through the distal bowel through a low pressure anastomosis (1,5) The disadvantages of enterostomies are that further surgery is required to close the stoma, skin excoriation may occur and that leakage from the stoma may also occur which may aggravate the nutritional status (1).

Resection of the dilated bowel up to ligament of treitz followed by end to oblique anastomosis was done by Nixon in 1955, which was performed if an adequate length of intestine is present (2-3).

The aim of this work is to study the effect of resection of dilated part in ileal atresia or stoma to overcome postoperative disturbed intestinal transit. We

have difficulty to obtain and manage parenteral nutrition in our countries, moreover to avoid a higher incidence of neonatal sepsis with it, and the high case load covered by NICU beds with pediatric surgical access.

Patients and methods

This study included 22 patients with ileal atresia. During the period from January 2013 to January 2014, 22 neonates with ileal atresia were admitted to neonatal surgical intensive care unit at Cairo University Hospital. Parents of patients to be enrolled in this study were informed and consented for the usage of the clinical data collected from their children and were informed of the possible benefits of the work up and extended follow up planned for the targeted subjected .

Full detailed history and clinical examination were done to identify any risk factors and to detect any associated anomalies. All neonates presented with bilious vomiting and failure of passage of meconium. 10 neonates had moderate to marked abdominal distension. X- Ray films were done and showed distended intestinal loops with multiple air fluid levels & gasless pelvis .

All cases received the initial medical resuscitation in the form of IV fluids, nasogastric suction and vitamin K injection... IV antibiotics in the form of third generation cephalosporin (100 mg/Kg/day) with metronidazole (7.5 mg/Kg/8 hours) were given to all cases.

There were 22 cases of ileal atresia, in 10 cases of them resection of dilated part was done , for 7 cases of them stoma was done (4 cases bishopkoop was performed & 3 cases mickulicks was done) , in 5 cases out of the 22 cases excision of web only without resection of dilated part was done .

Intraoperative Details

The abdomen was entered through a transverse skin incision begun 2 cm above the umbilicus from the midline and extending 5 cm into the right upper quadrant, the abdominal musculature was divided transversely using cautery. In 10 cases of ileal atresia, resection of dilated part was done. Prior to repair, other associated atresia was excluded by instillation of normal sodium chloride solution into a clamped distal pouch, the proximal intestine was divided at a right angle to maximize its vascularity, while the distal bowel was transected obliquely and the incision was continued along the antimesenteric border to equalize the size of the openings on both sides for the anastomosis, the blind bulbous end of the proximal intestine prior to the anastomosis was resected.

A one layer, end-to-back (end-to-oblique) anastomosis was done. The mesenteric gap was approximated with 5/0 vicryl absorbable sutures. Patency of the anastomosis was tested by milking intestinal air through it.

The abdominal wound was closed in layers. The peritoneum and posterior fascia separately from the anterior fascia was sutured, using 4.0 Vicryl suture. The skin was sutured with a running subcuticular suture of 5.0 Vicryl.

In 7 cases stoma was done, 4 cases bishopkoop procedure was performed, **an end to side anastomosis of the small intestine, the atretic small distal portion was directed out** . The enterostomy has the advantage that it allows deflation of **dilated proximal bowel and also it allows the intestinal contents to pass through the distal bowel through a low pressure anastomosis** & 3 cases mickulicks procedure was done, where **the proximal & the atretic small distal portion was directed out** .

In 5 cases excision of web only without resection of dilated part was done , where the site of obstruction was determined at the junction between dilated and collapsed intestinal segment , transverse incision was done in proximal ileum just above the obstruction , then excision of the web , incision was closed transversely in one layer by vicryl 5/0 .

Postoperative Details

Parenteral Nutrition was started & continued until stool was passed and drainage from the OG was less than 1 mL/kg/h and was clear. Feeding was advanced slowly by mouth .TPN was started over 3-5 days according caloric goals. As intestinal function returns, the patient was progressively weaned from parenteral to enteral nutrition until the full nutritional requirements were enterally obtained. Graduated enteric feedings, and modified diets have been used to successfully to diminish TPN requirements. Daily laboratory workup included a basic metabolic panel and assessment of calcium, phosphorus, and magnesium levels. Triglyceride levels were monitored while IV fat formulations were advanced until the goal was reached.

Follow-up :

Infants were followed up 2 weeks following discharge from the neonatal intensive care unit to assess wound healing and ensure adequacy of nutrition and gastrointestinal function.

Results:

22 neonates with ileal atresia were admitted to neonatal surgical intensive care unit at Cairo University Hospital, from January 2013 to January 2014 . There were 10 males & 12 females . There were 9 cases of ileal atresia type III , 7 cases type I , 6 cases type II . 18 were full term newborn with mean gestational age of 38 weeks and mean birth weight of 3.06 Kg. The remaining 4 were preterm newborn with mean gestational age of 34 ± 1.8 weeks and mean birth weight of 2.6 Kg. 15 neonates presented in 1st 3 days after birth , 7 presented at the age of 4-7 days.

Table 1: mean & median of birth weight , age of presentation & age at surgery among studied groups .

	Birth Weight	Age of Presentation	Age of Surgery
Mean	2.98kg	3.5 days	4.9days
median	3kg	3days	4days

Table 2 : procedure done , complications , mean & median of duration needed until full feeding , duration of admission among studied groups .

<i>ileal atresia</i>	<i>Resection of dilated part</i>	<i>stoma</i>	Excision of web only
Duration needed until full feeding (days)	Mean = 11 Median = 10	Mean = 7.4 Median = 5	Mean = 13.2 Median = 12
Duration of admission	Mean= 12.5 Median= 12	Mean= 8.8 Median= 7	Mean= 14.4 Median = 13
Stenosis	0	0	One case
Leakage	0	One case bishopkoop	0

Discussion :

we have difficulty to obtain and manage parenteral nutrition in our countries, moreover to avoid a higher incidence of neonatal sepsis with it, and the high case load covered by NICU beds with pediatric surgical access , so resection of dilated part in ileal atresia or stoma was done to overcome postoperative disturbed intestinal transit .

In this study , we had 22 cases of ileal atresia , 7 cases of type I , 9 cases of types III ,6 cases of type II ,*whereas* Shakya et al **(9)***reported 11 cases of jejunal atresia , 17 cases of ileal atresia , 2 cases type I , 2 cases type II , 14 cases type III a, 5 type IIIb, 5 type IV .*

In the current study, small bowel atresia had associated anomalies: one case of them was associated with Meckel-diverticulum, 4 cases were associated with congenital heart disease , *while Choudhry MS et al (8)* had 71% of all treated infants with small bowel atresia in their study with associated congenital anomalies. Congenital heart disease was found at 24%, trisomy 21 at 19%, malrotation at 12%, gastroschisis at 9%, esophageal atresia at 8%, anal atresia at 6%, volvulus at 5%, colon atresia at 3%, mucoviscidosis at 3% and finally Meckel-diverticulum at 2% .

In this study , There were 22 cases of ileal atresia, in 10 cases of them resection of dilated part was done , in 7 cases of them stoma was done (4 cases bishopkoop was performed & 3 cases mickulicks was done) , and in 5 cases of them excision of web only without resection of dilated part was done .

While , *Almoutaz A. Eltayeb et al (10)* reported 32 cases of jejunoileal atresia were classified according to the surgical technique into three groups: Group A

included 12 patients who were treated with primary resection/ anastomosis or enterotomy with excision of the membrane (in type I atresia). Group B included 10 patients, who undergone Bishop-koop technique, and Group C included 10 patients who were treated with Santulli technique.

In this study , Parenteral Nutrition was started & continued until stool was passed and drainage from the OG was less than 1 mL/kg/h and was clear. Feeding was advanced slowly by mouth , we have 2 cases complicated , stenosis in one case of excision of the web with failed oral intake , which was started at one week . Vomiting occurred at 15 cc/ kg at 10 th day , gastrograffin follow through was done revealed stenosis at site of previous web excision , reexploration was done on 12th day , excision of stenotic part & anastomosis was performed , Parenteral Nutrition was continued 5 days then oral feeding was started until full feeding was reached & was discharged at 21 days . The other complicated case was leakage in case of bishopkoop ileostomy , the abdomen was distended , no passage of stool occurred until 4 days after stoma was done , reexploration was done which revealed leakage at anastomotic site, excision of it and stoma was done, Parenteral Nutrition was continued 7 days then oral feeding was started until full feeding was reached , the case was discharged at 22 days .

Imran (6), reported 19 neonates (10 with jejunal atresia and 9 with ileal atresia) who underwent Bishop Koop procedure. Postoperative hospital stay was 5-9 days (mean 5.78 days). Two patients (10.5%) died of postoperative leak from anastomotic site with septicemia while 17 (89.5%) patients survived. In 10 (52.6%) patients Bishop Koop chimney closed spontaneously, and in seven (36.8%) patients closure was done at the age of 1 year. Only one (5.3%) patient developed

wound infection and one (5.3%) had adhesive intestinal obstruction; both were treated conservatively .

Conclusion: Excision of dilated part in cases of ileal atresia or stoma is more beneficial and despite being a lengthier operation, feeds could be established earlier, and short hospital stay thus helps in improving the survival.

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الملخص العربي

اثنا عشر وعشرون حالة من حديثي الولادة تعاني من انسداد في الدقاق , عشر حالات منهم تم استئصال الجزء المتمدد , وسبع حالات منهم تم عمل فتحة معوية علي الجلد , وخمس حالات منهم تم استئصال النسيج المتسبب في الإنسداد المعوي دون استئصال الجزء المتمدد , لوحظ ان استئصال الجزء المتمدد او عمل فتحة علي الجلد يساعد علي التغذية المبكرة موفراً استخدام التغذية الوريدية .

