ORIGINAL ARTICLE

Jejuno-ileal atresia: A 2-year preliminary study on presentation and outcome

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Abstract

Background/Aim: Intestinal atresia is a common cause of neonatal intestinal obstruction. Jejuno-ileum is the commonest site of intestinal atresia. Reports on Jejunoileal atresia in developing countries are still few. The purpose of this study is to determine the presentation and management outcomes of neonates with Jejunoileal atresia treated in our hospital.
Materials and Methods: Detailed data on all babies that presented and were treated within the study period (November2008-November, 2010) were kept and analyzed. A management protocol was put up and maintained.
Result:A total of 9 babies (7males and 2 females) were treated. They were aged 2hours to 13days. Their weight ranged from 1.7kg to 3.3kg. Apart from one baby which presented within 2hrs with prenatal ultrasound diagnosis, others had bilious vomiting from the first day of birth, abdominal distension and delayed or absent passage of meconium. Even though symptoms developed on the first day of birth, presentation to the surgical unit was delayed 72hours and beyond in most patients.Type I atresia is commonest (no=4).There is associated gut malrotation in 2 babies. Five babies had complications which included surgical site infection, sepsis, prolonged vomiting post operatively, aspiration, rupture of dilated proximal segment after membrane excision, entero-cutaneous fistula and malnutrition. Three babies died giving a mortality of 33.3%. Mortality is commoner in types IIIb and IV.
Conclusion: Mortality is higher in complex atresia which most times will require neonatal intensive care and parenteral nutrition facilities. These are still lacking in our institution. Providing these facilities will further improve outcome.

Key words: Atresia, congenital, l jejunoileal, intestinal obstruction

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Introduction

Intestinal atresia is a common cause of neonatal intestinal obstruction.[1-3] Its incidence ranges from one in 1500[4] to 1 in 330[5] newborns. Jejuno-ileum is the most common location of congenital intestinal atresia in our environment followed by the duodenal and colonic atresia.[2,3,6] Luow and Barnard in 1955 demonstrated the vascular accident theory of its causation.[5,7]

Fockens[5] in 1911 performed the first successful surgery for atresia, and since then survival has progressively improved to greater than 90% in developed nations. [3,8-10] This has largely been contributed to by advances in anesthesia, neonatal intensive care and availability of total parenteral nutrition. Unavailability of these has made management of Jejunoileal atresia very challenging in developing countries, with mortality rate still rather high. [4] Recent reports have however shown a gradual increase in survival.[2,11] This report describes the study of nine consecutive cases treated over a 2 year period at Nnamdi Azikiwe University Teaching Hospital, Nnewi Nigeria.

Materials and Methods

Detailed and updated reports of all children with Jejunoileal atresias who presented and were operated on from November

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2008 to November, 2010 were analyzed. Two babies who were discharged against medical advice and one who died before any intervention can be given were excluded. All the babies were admitted and managed in the Special Care Baby Unit of the hospital. Diagnosis was essentially clinical supported by plain abdominal X-ray. Initial correction of fluid deficit was achieved using 20 ml/kg of Lactated Ringers solution. Ten percent glucose in 0.18 saline was used for fluid maintenance. Electrolyte derangements were corrected as indicated by serum electrolyte assays.

Due to lack of theatre warming system, hot water bottles kept at a safe distance from the baby and overhead electric bulb were used to keep the babies warm during surgery. Due to nonavailability of trained pediatric anesthesiologists, the challenge of neonatal anesthesia was minimized by the use of intravenous anesthetic agent (ketamine) in all the babies. Oxygen was administered by a face mask. A size 10 or 8G nasogastric tube was left in situ and intermittently aspirated to regularly decompress the stomach. Local infiltration with 0.125% bupivacaine given before making the incision was also used to decrease the requirement of the general anesthetic agent as well as to provide a good postoperative analgesia. Intraoperatively the guiding principle is to resect the dilated dysfunctional proximal gut, do tapering entorostomy and to effect a good one-layer anastomosis. The length of the proximal intestine resected varies and depends on the site of the atresia and extent of the dilatation. About 2-5 cm of the distal intestine is also resected and slit on the antimesenteric border to widen the lumen of the anastomosis.

Results

Nine babies comprising seven males and two females were treated. Their weight ranged from 1700 g to 3300 g with a median weight of 2300 g. Three babies were born between 32- and 36-week gestation, others were term. Age at presentation ranged from 2 hours to 13 days. The median age was 3 days. The result of prenatal ultrasonography indicating maternal poly hydramnios and dilated fetal stomach was presented in four cases. Of the nine babies only one's mother was booked in the hospital and the baby presented at 2 hours of birth. A baby presented on the 13th day of life [Figure 1]

The rest were referred from peripheral centers. Interestingly, 7 (78%) are the fourth child of the parents. Regarding the presenting features, all the babies presented with bilious vomiting from the first day of birth and abdominal distension. Jaundice was noticed in five babies. Four passed small volume stool but it was either greenish or mucoid pellets

Two babies were treated for neonatal jaundice for 6--8 days before being referred. Even when referred, the burden of extra expenditures on a newborn whose parents may not have fully recovered from the delivery bills may further delay presentation.

Type I atresia occurred with most frequency (no=4). Two are of type IIIb, and three are of type IV. One child with type I atresia has three occluding membranes each 1 cm apart with most proximal being 10 cm from the duodenojejunal junction. A child with type IV atresia has a Christmas tree deformity, five multiple atresia on the proximal part of the collapsed ileum separated by fibrous cords and an occluding membranous diaphragm at the mid-ileum. Associated complications are as shown in Table 1

Another child with type IV anomaly has a mucosal diaphragm in the upper ileum. About 10 cm further down is another atresia with a fibrous chord separating the intestines. The dilated proximal ileum is perforated and the gut matted to the right lobe of the liver and gall bladder. The small bowel length is shortened to about 100 cm.

Reoperation was indicated in two cases, one as a result of persistent vomiting and perforation of the dysfunctional dilated proximal jejunum. This child had an excision of type I atresia earlier without resection of the dilated proximal jejunum. The other case were reoperated because of anastomotic failure.

Overall, three of the nine infants died accounting for a mortality of 33%. Causes of death include failed recovery from anesthesia in one and aspiration in another. The third child died from complications of enterocutaneous fistula. The babies died within 12 hours, 8 days, and 3weeks, respectively, postoperatively.

Discussion

Bilious vomiting is often pathologic in a significant number of children.[12] In our study, all the babies vomited on the first

Figure 1: A baby with Type I atresia (late presentation)

Table 1: Patients characteristics

Case	Sex	Wt (kg)	Age at presentation	Position in family	Type of atresia	Associated anomalies	Procedure	Complications	Outcome
1	M	2.8	13 days	1st	I	Nil	Excision	SSI	Alive
2	M	2.0	3 days	4th	IV	Nil	RA	Prolonged vomiting, sepsis, stress gastritis	Alive
3	F	2.3	8 days	4th	IIIb	Nil	RA	Aspiration, malnutrition	Dead
4	M	2.7	3 days	4th	I	Nil	RA	Nil	Alive
5	M	2.3	2 hours	4th	I	Nil	RA	Nil	Alive
6	M	1.7	6 days	1st	IV	Malrotation	RA+Ladd's	Anesthetic	Dead
7	M	2.0	2 days	4th	I	Nil		Sepsis, SSI, malnutrition	Alive
8	M	3.3	3 days	1st	IV	Malrotation with mid-gut volvulus	RA+Ladd's	Nil	Alive
9	F	2.4	4 days	1st	IIIb	Nil	RA	ECF	Dead

RA =Resection and anastomosis; ECF = Entero cutaneous fistula; SSI= Surgical site infection.

day of birth. However presentation to the pediatric surgical unit is most times delayed up to 72 hours and beyond. Most of the babies were presented early to the hospital of birth, usually private hospitals. Unfortunately there was usually several days of delay before referral. Surgeries in newborns are best done early when the reserves are still optimal. Delayed presentation increases the risk of morbidity and mortality.

Availability of neonatal intensive care, total parenteral nutrition facilities, and establishment of neonatal centers has made survival following intestinal l atresia treatment in developed nations greater than 90%.[3,5,7,8] We recorded a survival of 66.7%. Mortality was worse among babies with types III and IV. Unavailability of total parenteral nutrition support to sustain these children until full enteral nutrition is instituted is a critical factor impeding early recovery and survival. This prolonged inanition have a direct relationship to severe malnutrition and sepsis which were the common morbidities encountered in these babies with severe atresia.

The absence of neonatal intensive care also contributed to the mortality and morbidity. Closely related to this is the anesthetic challenge, fraught with dearth of facilities and manpower. A lot of man hours were invested on very frequent manual observation of basic vital signs and the general state of the babies. In neonatal critical care this is often inefficient, with attendant fatigue and observer errors.

More so, other patients in the other wards are denied of adequate due attention due to overstress on the available personnel.

Construction of stoma as a preliminary to final repair was avoided because of the increased high morbidity and mortality associated with the stoma care.[7]

Antenatal diagnosis has been noted to significantly reduce the time before presentation[13]. However, antenatal ultrasound identification of atresia did not translate to an earlier presentation in our study. Neither the pregnant mother nor the baby soon after delivery was referred to the tertiary hospital by the primary physician of first contact after making the diagnosis by ultrasound. Referral which is often parent motivated is only when clinical features are pronounced and the baby has started deteriorating. Creation of awareness and continued medical education on the need for early referral is necessary to reduce the morbidity and mortality associated with late presentation.

Improvement in the neonatal intensive care and parenteral nutrition services will also further improve outcome.[14,15]

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