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Experience in the Management of Imperforate Anus in Zaria

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Summary

Momoh JT. Experience in the Management of Imperforate Anus in Zaria. *Nigerian Journal of Paediatrics* **1983; 10: 99**. The outcome of management of 111 children with imperforate anus over an 11-year period (1971–1981) at the Ahmadu Bello University Hospital, Zaria, is reviewed. The overall mortality improved from 46.4% as at June 1978 to 29% as at December 1981, while the mortality for cases who underwent a pull-through procedure improved from 68% in 1978 to 29% in 1981. From the experience based on the present study, it is recommended that: (*a*) abdomino-perineal pull-through procedure for supralevator lesions should be avoided in neonates (*b*) an 'open' technique of colostomy care is ideal in our local setting where the usual colostomy appliances are hard to come by and (*c*) abdomino-perineal pull-through can be safely performed between the ages of 4 and 6 months after an initial preliminary colostomy.

Introduction

In June 1978, a retrospective review was carried out of 56 patients with imperforate anus seen at the Ahmadu Bello University Hospital (ABUH), Zaria, between January 1971 and June 1978, a period of $7\frac{1}{2}$ years. The mortality rate then was 46.4% (unpublished data), a finding similar to that of Ogunbiyi[1] in Lagos, but worse than those of Nwako[2] at Enugu and Adekunle and Johnson at Ibadan.[3]

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Analysis of the causes of death in the 1971–78 series revealed that: (*a*) fluid overload and aspiration of vomitus accounted for 25% of the deaths, (*b*) because mothers were reluctant to accept a preliminary colostomy for their babies, a one-stage abdomino-perineal pull-through was the operation of choice in clinically fit neonates. A 66% operative mortality was then recorded, peritonitis secondary to ischemia of the left colon being the commonest cause, (c) most babies on arrival, having travelled long distances, had developed gross abdominal distension with respiratory distress and variable fluid and electrolyte deficit. The mortality among this group of babies was 67% when operated upon immediately, even after a relatively minor procedure such as colostomy,

(*d*) the contribution of major associated congenital anomalies to overall mortality could not be assessed because of inadequate investigations.

Our conjectures then were that: (*a*) most of the early deaths (within 12–24 hours post-operation), especially after colostomy, were attributable to inadequate resuscitation, (*b*) precarious vascular supply to the neonatal left colon made the pull-through procedure in the neonate very hazardous, (*c*) the mortality resulting from overhydration and aspiration was easily preventable with closer pre- and post-operative monitoring.

The above conjectures were thus kept in perspective during the management of the next group of babies with imperforate anus seen between July 1978 and December 1981, a period of $3\frac{1}{2}$ years. An analysis of these cases forms the basis of the present communication.

Results

Sex Incidence

During the $3\frac{1}{2}$-year period, 55 children with imperforate anus were treated. Twenty-six were males and 29 females compared with 33 males and 23 females seen in the 1971–1978 series. Thus, there were more males in the previous series than in the present one.

Clinical Features

In the 1971–1978 series, 58.9% and in the 1978–1981 series, 52.7% of the patients presented within 3 days (Table I). Most of these presented between 15 and 30 hours post delivery which is considered delayed presentation, especially if the intestinal obstruction is complete. Those presented beyond one week were mainly babies with variants of imperforate anus who had adequately decompressing fistula with minimal or no obstructive symptoms. Table II shows the mode of presentation in both series. The symptoms of abdominal distension, vomiting and no meconium were more characteristic of babies with imperforate anus without fistula, or whose fistula had very narrow caliber. Constipation was more a feature of those with ectopic anus and stenosis or anorectal agenesis with anovestibula or anofourchette fistula of reasonable diameter. In both series, the age at and mode of presentation were comparable; the differences in numbers being accounted for by the higher number of females in the 1978–81 series; females tend to have higher incidence of abnormalities with adequately decompressing fistula.[4]

Table III summarizes the major associated congenital anomalies. It will be noted that there were more associated anomalies in the 1978–81 series than in the earlier series. This may be explained by the fact that the previous series was a retrospective study, while the present study was prospective and therefore, a better documentation of the anomalies. In the latter series, associated tracheoesophageal fistula, ventricular septal defect (VSD) and jejunal atresia adversely affected the eventual outcome of the babies in whom the anomalies occurred.

Investigations

Chest radiograph, invertograms, haemoglobin, packed cell volume, serum urea, electrolytes and urinalysis were performed routinely in all the cases studied prospectively. A number of the patients had intravenous pyelography, loopogram (cologram) after colostomy, and urogenital sinograms. On the basis of the findings on physical examination, investigations and operative findings, the types of anomalies were classified as low in 26 patients, intermediate in four, high in 23 patients and miscellaneous in two patients. The corresponding figures for the 1971–78 series were 25 for the low type, 6, intermediate and 25, high.

TABLE I

Age at Presentation of III Children with Imperforate Anus

Period	*Age*					*Total No of Cases*
	Days		*Weeks*	*Months*	*Over I year*	
	1-3	4-7	1-4	2-12		
January 1971-June 1978	33	2	5	13	3	56
July 1978-Dec. 1981	29	4	4	12	6	55

TABLE II

Presenting Features in III Children with Imperforate Anus

Features	*Period*	
	Jan. 1971-June 1978	*July 1978-Dec. 1981*
No meconium passed	24	26
Meconium or stool via vagina or urethra or perineum	24	27
Abdominal distension	31	27
Vomiting	14	14
Recurrent constipation	8	13

TABLE III

Major Associated Congenital Anomalies in III Children with Imperforate Anus.

Period	*Associated Congenital Anomalies*	*No of Cases*
Jan. 1971-June 1978	VSD	1
	Mongoloid Features of Down's Syndrome	2
	Dextrocardia, lung sequestratosis, hemivertebrae, and talipes equino varus	1
July 1978-Dec. 1981	Jejunal atresia	1
	VSD and Tracheo-esophageal fistula	1
	Myelomeningocele	2
	Microcephaly and cleft palate	1
	Ventricular septal defect	1
	Neurogenic bladder	1
	Congenital adrenal hyperplasia (ambiguous external genitalia)	1

Treatment

The various surgical procedures carried out are shown in Table IV. In the 1971–78 series, cutback operation was often carried out for anorectal agenesis cases with anovestibular, anofourchette fistula or anteriorly located perineal ectopic anus. In the 1978–81 series, anal transplant was performed between the age of 3 and 4 months for similar lesions because it represents an aesthetically better procedure than cutback operation. Prior to the time for the anal transplant, the babies had dilatation of the fistula to prevent progressive constipation. For supra-levator type of lesion, a one stage abdomino-perineal pull-through was carried out on clinically fit babies in the 1971–78 series.

In the 1978–81 series, 10 of the 13 abdomino-perineal pull-through were staged. Of these 10 babies, 7 were neonates who had preliminary colostomy soon after diagnosis and then pull-through at between 4 and 6 months of age. The three who had one stage pull-through had recto-cloacal anomaly with relatively "adequate" decompressing fistula. They were followed closely to ensure that no progressive constipation developed and then they had one-stage pull-through between the age of 4 and 5 months.

In the 1971–78 series, most of the babies who had only colostomy, were judged to be poor risk on admission and most died within 24–48 hours of surgery. Of the 12 patients in the 1978–81 series who had only colostomy, 2 did not return for follow-up and the rest died of various causes, not related to errors in resuscitation.

Morbidity

A total of 23 (21%) out of the 111 patients had significant wound infection after colostomy (8) and pull-through (15) in both series. There was an associated wound dehiscence in 5 patients who had pull-through and mucocutaneous dehiscence with retraction of the stoma in 4 patients with colostomy. These latter 4 patients were all in the 1971–1978 series. Severe pericolostomy skin excoriation also occurred in 6 patients in the 1971–78 series. Only minor degrees of excoriation occurred in 8 of the patients in the 1978–81 series.

Seven of the 12 patients who had pull-through in the 1971–78 series had peritonitis, a complication which did not occur among the patients in the 1978–81 series. Similarly, the 5 patients with fluid overload were seen in the 1971–78 series. Pneumonia was recorded in 8 patients, all occurred after a pull-through procedure. A similar number developed malnutrition, 5 after colostomy (both series) and 3 after pull-through (1978–81 series). Other complications were stress ulcer (2 patients), anal stenosis (22 patients), recurrent rectovaginal fistula (2 patients), retraction of anorectum (2 patients) and post-operative band obstruction (1 patient). Most of these occurred in the 1978–81 series. Faecal incontinence after a pull-through procedure occurred in 6 patients. Of the 4 that occurred in the 1978–81 series, only one has persisted.

Mortality

Table V shows the various causes of death in both series. In the 1971–78 series, fluid overload and aspiration accounted for most of the respiratory deaths, while pneumonia complicating atelectasis, secondary to diaphragmatic splinting which persisted before colostomy became functional, was the major cause of respiratory failure in the 1978–81 series. Four patients died of peritonitis after pull-through, in the 1971–78 series. These were due to gangrene of pull-through colon. Eleven babies died of unknown causes in the 1971–78 series. Three of these were after pull-through; they had abdominal tenderness and distension and died within 72 hours of surgery. It is presumed that death was secondary to vascular compromise of left colon and if they had survived long enough they would have developed more convincing signs of peritonitis. Another five of the 11 babies in whom the cause of death was unknown, died within 15–30 hours after colostomy. Since no autopsy was performed on any of them, it can only be presumed that inadequate resuscitation and respiratory embarrassment from distended abdomen were contributory

TABLE IV

Surgical Procedures Performed in IH cases of Imperforate Anus.

Procedure	*Period*	
	Jan. 1971-June 1978	*July 1978-Dec. 1981*
	No. of Cases	*No. of Cases*
Perineal cutback	18	5
Anoperineal transplant	—	9
Anoplasty	7	9
Perineal pull-through (for low intermediate pouch)	5	2
One stage abdomino-perineal pull-through	12	3
Staged abdomino-perineal pull-through	4	10
Preliminary colostomy	10	12
Died before treatment	—	4
Absconded	—	1
Total	56	55

TABLE V

Causes of Death in III Operated Cases of Imperforate Anus

Causes of death	*Period*	
	Jan. 1971-June 1978	*July 1978-Dec. 1981*
Respiratory failure	7	7
Peritonitis	4	—
Septicaemia	1	2
Convulsion	1	1
Bleeding diathesis	—	1
Hypothermia	—	1
Cardiovascular collapse after gastrografin enema	—	1
Diarrhoea and vomiting	—	1
"Unknown"	11	2

factors to the early death. The two cases whose cause of death was unknown in the 1978–81 series died after pull-through and a thorough review of their medical records revealed no obvious cause. The deaths from septicaemia were secondary to severe omphalitis in one and wound infection plus dehiscence in two. The overall mortality was 43% in the 1971–78 series and 29% in the 1978–81 series. Significantly, the mortality after a pull-through procedure dropped from 68.7% in the 1971–78 series to 29% in the 1978–81 series.

Discussion

With the stated objective of the study in view, three areas where management seemed to have contributed to the improved survival in the 1978–81 series need to be emphasised. In the 1978–81 series, an "open" method of colostomy care was instituted to obviate the complications of severe infection, dehiscence, retraction of the mucocutaneous anastomosis and malnutrition which characterised the colostomies performed in the 1971–78 series. This "open" care involved discontinuation of any colostomy dressing once the latter became functional. Thereafter, after each defaecation, the mother was advised to mop the area with cotton wool soaked in water and then to apply zinc oxide cream to the pericolostomy skin. Since stool did not stagnate in the area for any length of time, the ostomy area remained clean, dry and healed without developing even pockets of stitch abscess. After the anatomic area had healed, the mother was further advised to tie a narrow strip of soft clothing material around the trunk of the child at the colostomy site to prevent soiling of the child's clothing; this was changed immediately after every soilage. With this approach, there were no complications of pericolostomy infection, dehiscence or stenosis in the 1978–81 series. The pericolostomy excoriation that occurred were not serious in nature.

In patients with high type of imperforate anus, the practice of immediate abdominoperineal pull-through procedure as carried out in the 1971–78 series was abandoned. In the 1978–81 series, all such patients had preliminary right transverse colostomy, followed by abdomino-perineal pull-through when the children were older. The standard practice was to perform this second stage of the operation at between 9 and 12 months of age or when the baby weighed between 8 and 10kg.[5] This could be very expensive and inconvenient for many of our patients whose mothers travelled from distant places for follow-up. Because of this, most of the abdomino-perineal pull-through procedures carried out in the 1978–81 series were performed between the age of 4 and 6 months provided the children were well nourished and gaining weight. The procedure at this age was found to be technically feasible and safe.

Generally, the need to take time and carefully resuscitate the patient with appropriate intravenous fluid before any emergency operation was strictly adhered to in the 1978–81 series. Operation was only performed when the pulse rate, temperature, state of fontanelle and urine output were satisfactory. Inadvertent fluid overload was eliminated by using solu-set infusion kit with calibrated middle chamber and only the hourly-fluid requirement of the child was run into the chamber at any one time; thus, it was mandatory for the nursing staff to watch the chamber once every hour at the minimum.

The incidence of the clinical consequences of abdominal distension namely: vomiting and aspiration, atelectasis and pneumonia was reduced in the 1978–81 series. Frequent manual gastric aspirations through a nasogastric tube of at least, 8F gauge and a concerted effort at ensuring immediate proximal bowel decompression at the time of establishing a colostomy have been very rewarding; so also has been the gently executed chest physiotherapy.

Liaison with paediatric medical colleagues in the post-operative management of these patients can be very invaluable. Nutritional supplement through the use of intravenous hyperalimentation,

when this is available and can be safely administered is equally valuable, since this will improve the babies' fighting chances against infection and encourage healing of surgical wound.

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