Original Article

Complications of Anorectal Surgery in Children in Ile Ife, Nigeria

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Abstract

Background: Complications following anorectal surgeries in children are relatively frequent but are preventable. There is lack of information regarding the frequencies and complications of anorectal surgery in our environment. This study determined the occurrence and management of complications associated with anorectal surgery in Ile Ife, Nigeria.

Methods: A retrospective review of anorectal surgery in children at the Obafemi Awolowo University Teaching Hospital, Ile Ife, Nigeria over a 10 year period (January 1993 to December 2002)

Results: One hundred and thirty-seven anorectal surgical procedures were performed on 108 children. There were 74 males and 34 females. The mean age at surgery was 1.9years (range 1day to 15 years). The most common indication for anorectal surgery was Hirschsprung's disease in 51 children (47.2%) followed by anorectal malformations in 49 children (45.4%). Both conditions accounted for over 92% of the surgical indication. The surgical procedures performed included rectal biopsy 38%, posterior sagittal anorectoplasty 35.8%, and Swenson's pullthrough 21.2%, and Thiersch procedure 2.9%, excision of anal wart and suturing of anorectal laceration 0.8%.

There were 50 complications observed in 34(31.5%) patients and all occurred following either Swenson's pullthrough or posterior sagittal anorectoplasty. Most of the complications were treated conservatively with satisfactory outcome but 12 of the 34 (35.3%) patients required further surgical intervention. There were 5 mortalities but in only one patient was the death directly linked to the complication of the main surgery.

Conclusion: Complications following anorectal surgery in our environment is frequent but most can be managed conservatively. A few of the patients will require further surgical intervention. Attention to surgical details could have prevented some of these complications.

Keywords: Anorectal, Complications, Children

Introduction

Anorectal surgeries in children are frequently performed for congenital and acquired conditions. While congenital anorectal conditions constitute a significant cause of neonatal intestinal obstruction in our environment, little is known about the frequency of acquired anorectal conditions.[1,2]. Complications following anorectal surgeries in children are relatively frequent but are preventable.[3] There is paucity of information regarding the frequency of anorectal surgery in Nigerian children as well as the complications arising from such procedures.

This study is to examined our experience with anorectal surgeries in Nigerian Children over a 10 year period at the Obafemi Awolowo University Teaching hospital, Ile Ife, Nigeria and evaluated the occurrence and management of complications associated with anorectal surgeries in this group of

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patients.

Materials and Methods

The medical records, operation notes and discharge summaries of 108 children aged between 1day and 15 years who had surgery on the anorectum at the Obafemi Awolowo University Teaching hospital in Ile Ife, Nigeria) between January 1993 and December 2002 were retrospectively retrieved. Data extracted from the records include the age, sex, diagnosis and indications for surgery, type of Anorectal Surgery, complications, treatment of the complications and outcome.

Table 1:
Complications of Posterior Sagittal Anorectoplasty in 21 Children

Complications	Treatment	Outcome
Minor wound infection (N=12)	Local wound care	Satisfactory
Retraction of neoanus (N=3)	Re-do PSARP (N=2)	Satisfactory
Mucosal Prolapse (N=3)	Excision (N=1)	Satisfactory
Vaginal perforation (N=2)	Primary repair at surgery	Satisfactory
Urethral injury (N=1)	Primary repair at surgery	Died
Malignant Hyperthermia (N=1)	Antipyretic agents	Died
Anal Stenosis (N=1)	Dilatation	Satisfactory
Vaginal Stenosis (N=1)	Dilation under anaesthesia	Satisfactory
Haematemesis (N=1)	Blood transfusion	Died
Impacted faeces (N=1)	Washout/evacuation	Satisfactory
Delayed Colostomy healing (N=1)	Surgical closure	Satisfactory

N = Number of Patients

Results

108 children had anorectal surgery during the study period. There were 74 males and 34 females. The age range at surgery was 1day to 15 years (mean age 1.9years). The indications for the surgery were Hirschsprung's disease in 51 children, anorectal malformations in 49 children, rectal prolapse 4 and perianal warts in 2, prolapsing rectal polyp in 1, and traumatic anorectal laceration in 1.

A total of 137 anorectal procedures were performed on these children. Rectal biopsy was the most common procedure performed in 52(38%) children to rule out Hirschsprung's disease and for a case of suspected prolapsing juvenile polyp. This was followed by the posterior sagittal anorecto-plasty in 49(35.8%). Others were Swenson's pull through in 29(21.2%), Thiersch procedure in 4(2.9%), excision of anal warts in 2(1.5%) and suturing of traumatic anorectal laceration in 1(0.8%).

A covering colostomy at the time of anorectal surgery was done in 35 of the 49 patients who had the posterior sagittal anorectoplasty while 2 patients with Swenson's pullthrough had colostomy cover as part of a three stage procedure although caecostomy tube drainage was done in 24 others

Complications

A total of 50 complications were observed in 34(31.5%) patients. All the complications occurred in children who had either the PSARP or Swenson's pull through.

Posterior Sagittal Anorecto-plasty (PSARP)

There were 27 complications observed in 21(42.8%) patients in this group (Table 1). The most common complication was minor wound dehiscence (with infection) in 12(57%). Others were

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Table 2:
Complications of Swenson's Pullthrough in 13 Patients

Complications		Treatment	Outcome
Wound infection/Breakdown	6	Secondary closure (n=3)	Satisfactory
Anastomotic dehiscence**	4	Laparotomy+colostomy	Satisfactory
Postoperative fever	2	Antipyretic	Died (n=1)
Faecal incontinence	2	Observation/Perineal Exercise	Improving
Rectovaginal fistula	1	Colostomy+Closure (Posterior Sagittal Route)	Satisfactory
Entero-cutaneous Fistula	2	Surgical closure (n=1)	Satisfactory
Anastomotic stricture	2	Dilation only (n=1)	
		Posterior sagittal ERPT* (n=1)	Satisfactory
Peritonitis with abscess	1	Laparotomy+Colostomy	Satisfactory
Perianal fistulae	1	Colostomy+Fistulectomy (Posterior Sagittal route)	Satisfactory
Adhesive intestinal obstruction	1	Laparotomy+Adhesiolysis	Died
Rectourethral fistula	1	Colostomy+ERPT*	Satisfactory

*ERPT – Endorectal pullthrough
** One of the patients had a redo Swenson like pullthrough via the posterior sagittal route

retraction of the neoanus in 3(14.3%), mucosal prolapse 3(14.3%), vaginal perforation 2 (9.5%) while urethral injury, malignant hyperthermia, anal Stenosis, vaginal Stenosis, haematemesis, faecal impaction, and delayed caecostomy healing occurred in 1 (4.8%) patient each.

Swenson's Pullthrough

A total of 23 complications were observed in 13(44.8%) patients (Table 2). The most common complications were wound infections or breakdown in 6(46.1%), followed by anastomotic dehiscence in 4(30.8%). Others were postoperative pyrexia in 2(15.4%), adhesive intestinal obstruction in 2 (15.4%), faecal incontinence 2(15.4%), caeco-cutaneous fistula 2(15.4%), anastomotic stricture 2(15.4%), while rectovaginal fistula, rectourethral fistula, peritonitis with abscess, perianal fistulae occurred in 1(7.7%) patient each.

Treatment of complications

Most of the complications were managed conservatively with satisfactory outcome (Tables 1 and 2). Vaginal perforations and urethral injuries in the patients who had PSARP were recognized at surgery and promptly repaired with no sequelae.

Twelve of the 34 (35.3%) patients with complications required secondary surgery. A redo-PSARP was done in two of 3 patients who had neoanal retraction with good results, while delayed spontaneous closure of a caecos-tomy site required secondary closure in one patient. Another patient required surgical trim-ming of troublesome mucosal prolapse.

More severe complications occurred in the Swenson's group requiring more extensive surgical re-intervention. Three patients required secondary abdominal wound closure, 6 patients required Laparatomy. Of these 5 had colostomy to treat major anastomotic dehiscence (4 patients) and rectovaginal fistula while a 6th patient required adhesiolysis to treat adhesive intestinal obstruction. Three of the 4 patients with anastomotic disruption required further surgery in the form of posterior sagittal trans-anorectal closure of rectourethral fistula in one and repeat pull through in 2 patients and excision of high transphincteric fistula in another through the same posterior sagittal approach. Secondary wound closure was required in 3 patients while another patient required closure of an enterocutaneous fistula.

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Mortality

There were 5 mortalities (4.6%) but only in one patient could the cause of death be attributed to the complications of the primary surgery.

Discussion

Complications following anorectal surgery in children occur relatively frequently. Not only are these complications preventable with attention to surgical techniques, they are associated with unnecessary psychological trauma both in the parents and the child[3]. Reoperations, if necessary, are unsatisfactory in some cases and associated with prolonged hospital stay and cost of treatment.

Anorectal malformations and Hirschsprung's disease accounted for a significant proportion of causes of congenital gastrointestinal malformations in children. Other anorectal conditions requiring surgical intervention in children such as perianal abscesses, fistula in ano, anorectal injuries are infrequent in our environment. The rarity of acquired conditions requiring anorectal surgery in this series does not exclude their occurrence in our environment. The occurrence of fissure in ano, anorectal injuries in Nigerian children has previously been documented in other reports[4,5].

Full thickness rectal biopsy under general anaesthesia for suspected Hirschsprung's disease was the most common anorectal surgical procedure performed in our children. Absence of suction biopsy instrument is responsible for the high number of full thickness rectal biopsy in our children. Complications associated with this procedure are low[6] and in our experience there was no recorded complication associated with this procedure. However severe hemorrhage requiring blood transfusion and bowel perforations with mortality was reported in the review on suction rectal biopsy by Rees et al.[7] It is however possible that there is under reporting as many of the possible complications are minor and self limiting. Also most of our rectal biopsies were done as day cases.

Anorectal malformations in newborns frequently require the creation of a new anatomically normal and functional anorectum for these children. The posterior sagittal anorectoplasty as popularized by Pena and DeVries satisfy these conditions in these infants[8]. The PSARP was the most common major anorectal surgery done on children in our institution. The complication rate in our centre is 42.8 %, which is high compared to 26% quoted by Nakayama et al.[9] The reason for this increase incidence of complications is due the fact that most minor wound infections and wound dehiscence which frequently occur following this operation and which usually resolve with conservative treatment are included in our series. Intraoperative complications like vagina perforations in girls and urethral injuries in boys are infrequent but can occur. Hong et al found 129 of 1003 children had urologic injuries following reconstruction of anorectal malformations, 26 of these children had urethral injuries.10 Early recognition and immediate surgical closure at surgery is all that is needed. Two of our patients with intraoperative vaginal perforation did well postoperatively but the patient with urethral injury died of non associated cause.

A repeat PSARP is indicated in situation where there is a major disruption of the neoanus associated with retraction or for faecal incontinence where the rectum was not placed within the muscle complex[3,9].

We only had to do repeat PSARP in 2 patients as a result of retraction of the neoanus with

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satisfactory outcome. We recorded only one case of anal stenosis which was managed successfully by anal dilatation. Anal stenosis usually followed non-compliance with dilatation regimen post PSARP. It is our practice to instruct the mother to continue with digital anal dilatation at home because it is impossible to give all the patients Hegars dilator to take home.

Swenson's rectosigmoidectomy is the standard operation performed in our unit for biopsy-confirmed Hirschsprung's disease. This procedure was done for 29 children over the study period. Complications associated with this operation are exceptionally high in this series. Abdominal wound infection despite use of prophylactic antibiotics was the commonest complication in our set of children who had this procedure. Availability of efficacious antibiotics has reduced the incidence of septic complications following Swenson's operation[11]. This can, however, be attributable to intraoperative contamination of the wound and the doubtful efficacy of the antibiotics. Wound infection increases the morbidity, cost of treatment and length of hospital stay in these patients. Secondary wound closure was only necessary in half of those who had wound infection with breakdown.

Anastomotic disruption can occur in patients following Swenson's operation. Most disruptions are minor and can be managed conservatively. Major disruption may however be associated with peritonitis, pelvic abscesses, and severe anastomotic stricture. In these instances, colostomy may be required to divert faeces away from the operation site. This was required in the 4 patients with major anastomotic disruption in this series. A 5th patient also required colostomy for unrecognized vaginal injury during surgery that later resulted in rectovaginal fistula.

The incidence of adhesive small bowel obstruction after open pull through operations has ranged from 2 to 20% with most series reporting 5-10%[12-14]. In our series only 1(3.5%) patient developed this complication and required laparatomy with adhesiolysis.

Indications for reoperation following a previous pullthrough for Hirschsprung's disease include anastomotic stricture and residual aganglionosis. Because of previous pelvic dissection redo operations are likely to be difficult and risk injuring adjacent structures[15]. Two of our patients required redo pullthrough because of severe anastomotic stricture associated with rectourethral fistula in one and complete anastomotic disruption in another. This was carried out using a combined abdominal and posterior sagittal approach[15], with endorectal pullthrough technique in one patient and a Swenson-like technique in the second patient. The posterior sagittal approach was also used in the closure of a rectovaginal fistula and to treat a high tran-sphincteric fistula with success.

In conclusion, anorectal surgery is commonly indicated for congenital malformations in our hospital. Complications associated with anorectal surgery occur relatively frequently. Most of the complications can, however, be managed conservatively. A few of the patients may require major surgical intervention for their treatment. Therefore appropriate attention to anatomical details and surgical technique is necessary to prevent some of the complications noted in this series.

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