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Early oral feeding following intestinal anastomoses in children is safe

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ABSTRACT

Background: Oral feeding following intestinal anastomoses is frequently delayed. In settings with limited utilisation of parenteral nutrition, this policy is problematic. This report evaluates the safety of early oral feeding following intestinal anastomoses in children. **Materials and Methods:** A prospective study including 64 children aged ≤12-year-old who had intestinal anastomoses for varying surgical indications over a 6-year period. Oral feeding was started within 72 hours following surgery, if there was no contraindication. **Results:** There were 41 (64.1%) boys and 23 (35.9%) girls aged 6 hours to 12 years (median, 6 years). The indication for surgery was perforated typhoid enteritis (33, 51.6%), intestinal atresia (8, 12.5%), colostomy closure for anorectal anomaly (8, 12.5%), intussusception (3, 4.7%) and ileostomy closure (3, 4.7%). Type anastomoses were 39 (60.9%) ileoileal, 4 (6.3%) colocolic, 8 (12.5%) jejunoileal and 4 (6.3%) ileocolic. Oral feeding was commenced in 17 (26.6%) of the patients within 48 hours, 36 (56.3%) by third day and 45 (70.3%) before fifth day post-operative. Feed-related complication occurred in 5 (7.8%) patients, 3 (8.3%) of which was in patients fed within 72 hours post-operative and 2 (7.1%) in those fed after 72 hours. Full oral feed was achieved by fifth and seventh day post-operative in 42 (65.6%) and 61(95.3%), respectively. Two (6.1%) patients had oral feeding stopped and recommenced at seventh day post-operative due to feed-related complications. **Conclusion:** Early oral feeding following intestinal anastomoses in children is safe, particularly in the setting of limited availability of parenteral nutrition.

Key words: Early, intestinal anastomosis, oral feeding

INTRODUCTION

Traditionally, post-operative oral intake after gastrointestinal surgery has been withheld until after 5 days. However, reports have suggested benefits and safety of early oral intake after intestinal anastomosis.[1-5] The stomach is decompressed with a nasogastric tube and intravenous fluids are given, with oral feeding being introduced as gastric dysmotility resolves.[5] The rationale of nil by mouth is to prevent post-operative nausea and vomiting and to protect the anastomosis, allowing it the time to heal before being stressed by food. The resolution of post-operative ileus usually is within 5 days.[2] Pre-operative starvations with delayed post-operative oral feeding, particularly in children, may affect wound healing adversely.[4] In a setting with limited parenteral nutrition services, it is important that oral feeding after intestinal anastomosis is not unduly delayed.

This study evaluates the safety of early oral feeding, after intestinal anastomoses in children.

MATERIALS AND METHODS

This is a non-randomised prospective study involving 64 children (age ≤12 years) who had intestinal anastomoses for varying surgical indications at Ahmadu Bello University Teaching Hospital, Zaria, Nigeria from March 2004 to March 2010.

On admission, patient details were entered into a structured proforma designed for the study. Details entered are patient's biodata, clinical diagnosis and indication for anastomosis, intra-operative findings, type and nature of anastomosis, time of return of bowel function, time of removal of nasogastric tube, time of commencement and time of full oral feeding, oral feeding and surgery-related complications and outcome of surgery.

All patients were fully resuscitated and relevant investigations done before surgery, which was under general anaesthesia. An end-to-end single-layer anastomoses using polyglactin was done. Peri-operative

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antibiotics were given as a routine to all patients and post-operative gastric decompression by nasogastric tube, inserted intra-operatively. Nasogastric tube was removed when drainage is insignificant. Oral feeding was commenced based on return of bowel function, clinical state of patient and volume of nasogastric drainage.

Early oral feeding was considered as feeding within 72 hours post-operatively.

Post-operative ileus was managed by intravenous hydration, no oral intake, re-insertion of nasogastric tube, clinical and radiological evaluation of the abdomen. Anastomotic leaks were diagnosed on basis of clinical and radiological examination (Ultrasound and plain abdominal radiographs). Data were compared using chi square and analysed using SPSS statistical software version 17.

RESULTS

There were 41 (64.1%) boys and 23 (35.9%) girls aged 6 hours to 12 years (median, 6 years). The majority of the children had typhoid perforation and resection was done as emergency [Table 1]. Three patients (4.7%) had ileostomy closure following ileostomy for typhoid perforation; others had colostomy closure after treatment of anorectal anomaly [Table 2]. Twenty six (40.6%) of them had clean peritoneum [Table 3], of which 6 (9.4%) had surgery-related complications and 2 (3.1%) of these had surgical site infection. Surgery-related complications were seen in 26 (41%) patients, including surgical site infection (16), paralytic ileus (5), intestinal anastomotic leakage (3), pyrexia (3), anaemia (2), short bowel syndrome and cervical anastomotic leakage following colonic oesophageal replacement surgery for corrosive stricture in one patient.

The type of anastomoses was 39 (60.9%) ileoileal, 8 (12.5%) jejunoileal, 4 (6.3%) colocolic and 4 (6.3%) ileocolic. The timing of (mean ± standard deviation) post-operative day when normal bowel sounds were heard was 2.61 ± 1.58 days, nasogastric tube drainage became insignificant after 2.53 ± 1.44 days, flatus was passed after 2.69 ± 1.36 days, commencement of oral feeding was after 3.59 ± 1.71 days and full oral feeding was after 5.06 ± 1.89 days [Table 4].

Oral feeding was commenced in 17 (26.6%) patients within 48 hours, 36 (56.3%) by third day and 45 (70.3%) before fifth day post-operative. Seven patients (10.9%) with clean peritoneum commenced oral feeding after 72 hours, compared to 21 patients (32.8%) with contaminated peritoneum ($P = 0.025$). Two (3.1%) of these children had intestinal anastomotic leakage, both of which had jejunoileal anastomosis. Feed-related complication including vomiting, abdominal distension and diarrhoea occurred in 5 (7.8%) patients, 3 (8.3%) of which was in patients fed within 72 hours post-operative and 2 (7.1%) in those fed after 72 hours. Full oral feed was achieved by fifth and seventh day post-operative in 42 (65.6%) and 61 (95.3%), respectively. Two (6.1%) patients had oral feeding stopped and recommenced at seventh day post-operative due to feed-related complications.

Table 1: Clinical diagnosis in 64 children

Diagnosis	Number of patients	Percentage
Perforated typhoid	33	51.6
Intestinal atresia	8	12.5
Colostomy in ARM	7	10.9
Ileostomy	3	4.7
Post-operative intussusception	3	4.7
Incarcerated umbilical hernia	2	3.1
Mid gut volvulus	1	1.6
Tumour nephroblastoma	1	1.6
Prolapsed patent vitelline duct	1	1.6
Enterocutaneous fistula	1	1.6
Penetrating anorectal injury	1	1.6
Sigmoid volvulus	1	1.6
Hirschsprung's disease	1	1.6
Total	64	100.0

Table 2: Indication for intestinal anastomosis in 64 children

Indication for surgery	Number of patients	Percentage
Perforation	35	54.7
Stoma closure	10	15.6
Others	10	15.6
Gangrene	6	9.4
Colonic oesophageal replacement	1	1.6
Redundant bowel	1	1.6
Tumour adhesion	1	1.6
Total	64	100.0

Table 3: Peritoneal contamination in 64 children

Peritoneum	Number of patients	%
Clean	26	41
Others	13	20
Pus	10	16
Faeces	9	14
Haemoperitoneum	4	6
Pus and faeces	2	3
Total	64	100

Table 4: Age, number of patient, onset of normal bowel sounds, nasogastric extubation, passage of flatus, commencement of oral feed, and full oral feeding (n = 64)

Age (yrs)	Number of patients	Bowel sounds in POD*: Mean (Range)	Extubation (NG tube) in POD: Mean (Range)	Passage of flatus in POD: Mean (Range)	Start oral feeding in POD: Mean (Range)	Full oral feeding in POD: Mean (Range)
<1	11	2.3(0-4)**	1.8(0-4)	2.2(0-6)	3.2(0-9)	4.5(0-10)
1-4	14	2.1(1-4)	2.4(0-5)	2.7(1-5)	3.7(2-6)	4.5(3-7)
5-9	27	2.5(1-6)	2.7(0-6)	2.7(0-5)	3.6(2-10)	5.2(3-13)
10+	12	3.3(0-8)	2.9(0-6)	2.8(0-7)	4.5(3-8)	6.1(4-9)

*POD: post-operative day, **Day 0: day of surgery

DISCUSSION

There are several practices that are passed from generations of surgeon to the next; these includes post-operative nasogastric decompression of the stomach and delaying oral feeds until resolution of post-operative ileus.[1,5,6] However, review of the physiology of post-operative ileus suggests that such an approach is excessively conservative. It has been shown that paralysis of the small bowel is transient; that gastric paralysis lasts 24 hours, and paralysis of the colon lasts for 48 to 72 hours.[2,6-8] The aetiology of ileus is unclear; many factors are believed to contribute to it, including intra-operative bowel manipulation, anaesthetic agent, peri-operative narcotics and post-operative sympathetic hyperactivity. Management is supportive.[7-9]

Patients who had colorectal surgery may not require nasogastric decompression, although most surgeons still use it.[2,6] In this study, patient who had colostomy closure had no nasogastric tube insertion or the tube was removed within 24 hours. Nasogastric tube can cause moderate to severe discomfort in 88%, severe discomfort in 70% of patients and significantly delay the return of normal gastrointestinal function; therefore, selective use of nasogastric tube is advocated.[5,10]

Peritoneal contamination is associated with higher surgery-related complications, 87.5% had surgical site infection and delayed commencement of oral feeding. Schilder *et al*. showed bowel activity before flatus was passed, which illustrates that patients tolerate fluid secretions of 1 to 2 l from the stomach and pancreas immediately after surgery.[11] The present report is comparable to other studies with safe and tolerable early oral feeding;[1-21] however, there was earlier resolution of ileus and commencement of oral feeds.[2,6,7,12] As in other reports,[2,6,7,12] the present report has noted that there was no increase in post-operative complications in those children who had early oral feeding compared to those who had oral feeding after 72 hours.

Full oral feeding was achieved by 7th day post-operative in 95% of the children, which is comparable to previous studies, although in one report,[13] full oral intake was achieved as late as 16th day post-operative. Previous studies have shown that blood loss during the surgery was the only factor contributing to failure of early post-operative oral feeding.[7,12] Impact of blood loss on oral feeding was however not evaluated in the present report.

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