

Emmanuel A. Ameh · Lohfa B. Chirdan  
Paul T. Nmadu · Lazarus M.D. Yusufu

## Complicated umbilical hernias in children

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**Abstract** Umbilical hernia is a common problem in children, particularly in Africans, but complications in these hernias are thought to be rare. In a retrospective study of 47 children presenting for umbilical hernia repair in 14 years, 30 had complications. The complications included acute incarceration 15, recurrent incarceration 10 and spontaneous evisceration 5. Of the 15 with acute incarceration, 2 required bowel resection for gangrene, and an abscess formed in the hernia sac in one. The age of patients with acute incarceration was 2 months–8 years (median 5 years). The 10 with recurrent incarceration were aged 1–3 years (median 3 years). Of the 5 with spontaneous evisceration, one had umbilical sepsis and another intestinal obstruction from intussusception. These patients were aged 3–12 weeks (median 7 weeks). All the complications occurred in hernias that were 1.5 cm or more in diameter. The hernias were repaired using standard methods. Postoperatively, 2 patients developed wound infection. There was no mortality. Though complications of umbilical hernias appear to be rare, there is a need for more active observation of these hernias to identify complications early and treat promptly to avoid morbidity.

**Keywords** Umbilical hernia · Complications · African children · Active observation

### Introduction

Umbilical hernia is a common problem in African children [1, 2, 3, 4]. In Zaria, Nigeria, [5] it constitutes 8.7%

of all pediatric external abdominal hernias presenting for repair for various indications. Complications in these hernias are thought to be rare. Incarceration is the most commonly reported complication but spontaneous evisceration has also been reported [6, 7].

Most of the hernias are known to close spontaneously or become narrow with time. One recent report [8] suggested that spontaneous closure of umbilical hernias occurs until age 14 in Nigerian children. Because of the belief that complications are rare, repair of these hernias is usually undertaken if the hernia has not closed by 4 years of age or if the defect is very large. There have been recent suggestions that complications may be more common than generally believed [9, 10]. This is a report of our experience with complicated umbilical hernias in African children.

### Patients and methods

In the 14-year period 1987–2000, 47 children aged 12 years and under had repair of their umbilical hernias at the Ahmadu Bello University Teaching Hospital, Zaria, Nigeria. Thirty children had repair due to acute incarceration, recurrent incarceration or spontaneous evisceration and are the focus of this report. The case notes, operation notes and discharge summary sheets of the 30 children have been retrospectively reviewed.

### Results

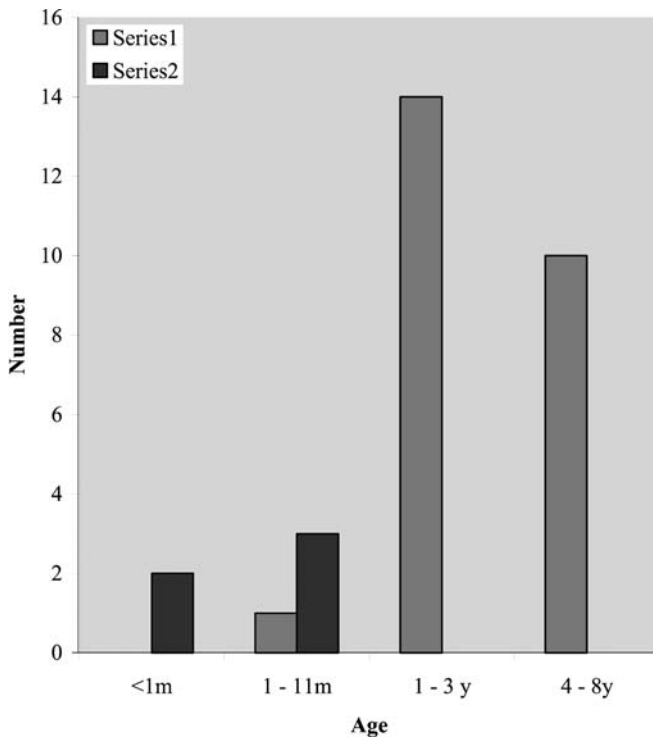
There were 18 boys and 12 girls aged 21 days–8 years. The various complications are summarised in Fig. 1.

#### Incarcerated hernias

Fifteen children presented with acute incarceration of their hernias, 12 of which had clinical evidence of strangulation. In one, the hernia reduced spontaneously shortly before surgery. Of the 15, intestinal gangrene was present in 2, and an abscess had formed in the

E.A. Ameh (✉) · L.B. Chirdan · P.T. Nmadu  
Paediatric Surgery Unit Department of Surgery,  
Ahmadu Bello University Teaching Hospital, Zaria, Nigeria  
E-mail: ssrs.njsr@skannet.com

L.M.D. Yusufu  
General Surgery Unit Department of Surgery,  
Ahmadu Bello University Teaching Hospital, Zaria, Nigeria



**Fig. 1** Age distribution of 30 children with complicated umbilical hernias (*series 1* incarceration, *series 2* evisceration)

hernia sac in one other patient. No foreign body or faecal impaction was found in the trapped bowel in any patient. The age of the 15 patients was 2 months–8 years (median 5 years). In 10 children the parents gave a history of 2 or more episodes of irreducibility of the hernia, associated with pain and spontaneous reduction. These were regarded as recurrent incarceration. The age of these patients was 1–3 years (median 3 years). The overall number of patients presenting for repair of their umbilical hernia was therefore 25, with a median age of 5 years and 15 of them below 4 years.

#### Eviscerated hernias

Five patients presented with spontaneous rupture of their hernia with intestinal evisceration. In one patient, there was umbilical sepsis preceding the rupture and in another there was intestinal obstruction caused by ileocolic intussusception. In 3 patients no obvious precipitating factor was identified. The infants were aged 3–12 weeks (median 7 weeks). Three of these patients have been reported previously [6].

Overall, the above complications occurred in hernias that were 1.5 cm or more in diameter, 67% of the patients were below 4 years and 33% below 2 years.

#### Management

Patients with acute incarceration were resuscitated; fluid and electrolyte imbalances were corrected where

necessary and parenteral broad-spectrum antibiotics were commenced. In patients with evisceration, in addition to correction of fluid and electrolyte deficits, the eviscerated bowel was covered, usually with sterile gauze soaked in normal saline and the gauze was covered by clean polythene to reduce evaporative losses and bowel desiccation. In patients with recurrent incarceration, other causes of recurrent abdominal pain were excluded by stool microscopy, abdominal ultrasonography and upper gastrointestinal series as appropriate.

In patients with acute incarceration the hernia was repaired as an emergency. Gangrenous bowel was resected in 2 patients (aged 10 months and 8 years respectively), and in one other patient a hernia sac abscess was drained. In patients with evisceration, the eviscerated bowel was cleansed, the hernia defect widened and the bowel returned to the peritoneal cavity before repair of the defect. In patients with recurrent incarceration the hernia repair was carried out under elective conditions.

Postoperatively 2 patients (one had bowel resection and one abscess in hernia sac) developed wound infections, which were controlled by local wound care. In patients with recurrent incarceration, hernia repair led to complete relief from recurrent abdominal pain in a median follow up period of 3 years. There was no mortality.

#### Discussion

Umbilical hernia in childhood is a common condition, particularly in African children. It is generally believed that majority of these hernias close spontaneously and that complications are rare [2, 7, 11, 12]. The age at which repair should be performed has therefore remained controversial [1, 7, 13, 14].

In one large series of 377 patients, [2] the incidence of incarceration and strangulation was 8%, and medium sized defects (0.5–1.5 cm) were associated with incarceration twice as often as smaller (less than 0.5 cm) or larger (greater than 1.5 cm) defects. In another report, [15] of 38 children and 2 adults, the incidence of incarceration was 37.5% and 20% had recurrent pain. In a report [8] from western Nigeria only 11 patients had repair for umbilical hernia related problems in 15 years. In the present report, 30 children had surgery for umbilical hernia related problems in 14 years, comprising 64% of all children presenting for umbilical hernia repair, 32% of the patients presented for repair due to acute incarceration, 21% recurrent incarceration characterised by recurrent pain and irreducibility, followed by spontaneous reduction, and 11% had spontaneous evisceration. All the complications occurred in hernias 1.5 cm or larger in size, with 33% of patients below 2 years and 67% below 4 years. In the same period, 4 of 21 adults presenting for umbilical hernia repair had incarceration, with bowel gangrene in one and omental gangrene in another. Incarceration can therefore occur at

any age, with a definite risk of strangulation and bowel gangrene. Evisceration is a particular risk in infants aged 3 months and below. Though foreign body impactions have been known to precipitate incarceration, [12] none of the patients in the present report had such.

Recurrent abdominal pain in children with umbilical hernia has been attributed to the trapping of omentum within a closing hernia, [6] and, spontaneous reduction following incarceration is common, occurring in up to 86% of cases [7]. This means that incarceration may be more common than previously thought. The present report suggests that complications in childhood umbilical hernia appear to be more common in our environment than widely believed with definite morbidity associated with the complications. The total number of umbilical hernia repairs in this report is however small, because in our environment only patients with complications commonly present for repair. Presentation for cosmetic repair is uncommon [8]. There are still many more unrepaired, uncomplicated umbilical hernias in the environment. It is recommended, for environments similar to ours, that umbilical hernias be actively observed for complications, but observation may not be possible due to difficulty with follow up. In this situation the hernia may need to be repaired.

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