

Umbilical Hernia in Children at the Paediatric Surgery Department of the Jeanne Ebori Mother and Child University Hospital Centre

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Abstract

Introduction: This is a common condition in paediatric practice, especially in sub-Saharan Africa. Diagnosis is essentially clinical. The aim of the study was to investigate the epidemiological, clinical and therapeutic aspects of umbilical hernia in children. **Methodology:** This was a retrospective and descriptive study conducted paediatric surgery department of the Jeanne Ebori Mother and Child University Hospital Centre over a period of 30 months. The study included the records of patients aged between 0 and 15 years who had undergone surgery for congenital umbilical hernia. Epidemiological, clinical, therapeutic and evolutionary data were studied. **Results:** 137 records were collated. Umbilical hernia accounted for 8% of surgical activity. The average age was 3 years \pm 3.24 [0 - 15 years] with a predominance of males (sex ratio = 1.5). Prematurity was found in 5.1% of cases. Umbilical swelling was the reason for consultation in 54.3% of cases. The mode of admission was elective surgery in 96.4% of cases. Strangulation and hernial incarcerated accounted for 5% of cases. A pathology was associated in 41.6% of cases. Persistence of the peritoneovaginal canal or Nück's canal was found in 89.4% of cases. The average time for treatment for an umbilical hernia was 3 years [17 days to 15 years]. In cases of strangulated umbilical hernia, the delay was less than 24 hours. Paraumbilical block was performed in 23.4% of cases. The surgical technique used was closure of the aponeurosis in all patients, with a subumbilical incision in 55.5% of cases. The average diameter of the hernia neck was 2 cm \pm 1.3 [0.5 - 8 cm]. Umbilical plasty was performed in 5.1% of cases. The average length of hospital stay was 2 days \pm 1. The postoperative course was uneventful in all cases. **Conclusion:** Umbilical hernia is a common condition in male in-

fants. The closure of aponeurosis is the method of choice for effective management. Umbilical plasty is combined with larger hernias.

Keywords

Umbilical Hernia, Child, Closure of the Aponeurosis, Libreville

1. Introduction

Umbilical hernia (UH) is the result of delayed or abnormal closure of the umbilical musculo-aponeurotic orifice. It is a common condition in paediatric practice, especially in sub-Saharan Africa [1]. Diagnosis is essentially clinical. The expectant management of asymptomatic OH until the age of 4 to 5 years is a safe and common practice in many paediatric hospitals [2]. Although its frequency is well known epidemiologically, the lack of studies on the subject in a specialised referral hospital such as the Centre Hospitalier Universitaire Mère Enfant Fondation Jeanne Ebori motivated this study. The aim of the study was to investigate the epidemiological, clinical and therapeutic aspects of umbilical hernia in children.

2. Methods

This was a retrospective observational study with a descriptive purpose covering a period of thirty (30) months from 1 January 2022 to 31 June 2024. All records of patients under the age of 15 who were admitted and operated on for an umbilical hernia, whether associated with another surgical procedure during the same operation, were included. Records of patients with other types of hernias and whose records were unusable were not included in the study. The diagnosis was based on a swelling protruding from the navel and becoming more pronounced when the child cried, screamed or strained. Data was collected from medical records, the hospital admission and discharge register, the surgical report register and the standardised anaesthesia form. Age groups were classified as newborn (0 - 28 days); infant (29 days to 30 months); child (31 months to 9 years) and adolescent (10 to 15 years). Umbilical hernias were classified according to the size of the neck as small (<0.5 cm), medium (0.5 to 1.5 cm), and large (>1.5 cm). Clinical definitions for the hernia classifications used [3] are:

Uncomplicated umbilical hernia refers to the reducible protrusion of abdominal contents (intestinal loop or omentum) through the umbilical ring, without signs of pain, local inflammation or digestive obstruction. The swelling is soft, painless and reduces spontaneously or with gentle pressure.

Strangulated hernia is defined as an irreducible hernia, often tense, secondary to congestion of the hernial contents or a local inflammatory reaction, but without signs of ischaemia or intestinal obstruction. This is an intermediate stage between a simple hernia and an incarcerated hernia.

Incarcerated hernia corresponds to an irreducible hernia associated with signs

of mechanical intestinal obstruction. Strangulation of the hernial contents compromises blood supply, exposing the patient to the risk of necrosis and perforation. It represents a surgical emergency.

Recurrent hernia is defined as the reappearance of a hernia at the same site after previous surgical repair.

The parameters studied were epidemiological, clinical, therapeutic, and evolutionary.

3. Results

During the study period, 138 umbilical hernia operations were recorded, representing a hospital frequency of 8.1%. The mean age was 3 years \pm 3.2, with extremes of 17 days and 15 years. The sex ratio was 1.6. The distribution of patients by age group is summarised in **Figure 1**.

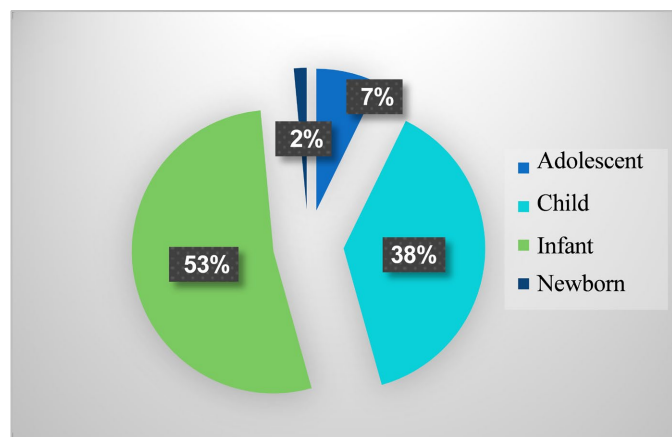


Figure 1. Distribution by age group.

Scheduled patients accounted for 96.4% of cases and emergency surgery patients accounted for 3.6%. Patients with no history of surgery accounted for 97.1%. Three patients had a medical history including asthma ($n = 2$) and sickle cell disease ($n = 1$). Prematurity was found in 7 cases. Unsightly umbilical swelling accounted for 81.9% of the reasons for consultation. Patients were in good general health in 99.3% of cases. The diagnosis was uncomplicated umbilical hernia in 92.8% of cases, incarcerated in 4%, recurrent in 2% and strangulated in 1%. An associated pathology was found in 41.6% of cases with persistence of the peritoneovaginal canal or Nück's canal was found in 89.4% of cases (**Table 1**).

The approach was 55.5% via a subumbilical incision and 44.5% via a supraumbilical incision. Paraumbilical block was performed in 23.4% of cases. The exploration revealed a large umbilical hernia in 58.7% of cases, a medium hernia in 37.7% cases and a small hernia in 3.6% of cases. The average diameter of the hernia neck was 2 cm (\pm 1.3), with extremes of 0.25 and 8 cm. The surgical technique used was X-shaped closure of the aponeurosis in all patients. Umbilical plasty was performed in 5.1% of cases.

Table 1. Distribution according to associated surgical conditions.

	N	%
Persistence of the peritoneovaginal canal or Nüick's canal	50	84.7
Coalescence of the labia minora	1	1.7
Cryptorchidism	4	6.8
Amyand's hernia	1	1.7
Hernia of the linea alba	2	3.4
Hydrocephalus	1	1.7
Total	59	100

The hernial scale was empty in 79.7% of cases. It contained omentum of 14.5% and a loop of intestine in 5.8% of cases.

The postoperative course was uneventful in 99.3% of cases. One patient (0.7%) presented with a complication in the form of parietal suppuration. The average length of hospitalization was 2.1 days (\pm 0.9), with extremes of 1 and 5 days.

4. Discussion

The frequency of patients undergoing surgery was 8.1% and the average age was 3 years, with extremes of 17 days and 15 years. It is common to find that most cases occur in the infant group. According to a study conducted in Madagascar, the prevalence of umbilical hernias in children was 11.5%, with the majority observed in infants [4]. Kouadio [5] in Côte d'Ivoire also found similar frequencies. This prevalence is consistent with data in the literature, which reports that umbilical hernia is one of the most common congenital anomalies in infants and young children [6]. The data from our study show that most children were under five years of age (83%), highlighting that umbilical hernia is more common in this age group, especially in infants and young children [7]. Males predominated at 60.9%. This result is reported by many authors in the literature [8] [9]. There is no scientific justification for this, although it is reported by many authors. The only risk factor found in our study was prematurity (5.1%). Prematurity is recognised in the literature as a risk factor, being associated with an increased likelihood of OH in premature newborns [10]. Sharma [11] revealed that the factors frequently associated with the development of an umbilical hernia were premature delivery, low birth weight and malnutrition. Unnoticed umbilical swelling was the main reason for consultation in 81.9% of cases. Other authors describe pain as the main complaint [8] [12]. This difference is due to the timing of the patient's first consultation. In our population, 99.3% of patients were in good general health. This result can be explained by the fact that OHs are often asymptomatic and discovered during routine examinations. Uncomplicated HO accounted for 92.8% of cases. In contrast, complicated HO predominated in other series [8] [12]. These differences could be attributed to several factors, including the level of education within the population, access to healthcare and health practices.

Most authors agree that most umbilical hernias in infants close spontaneously during the first few years of life. Therefore, a conservative approach is recommended in most cases. According to Holcomb [13] and Grosfeld [14], surgery is usually indicated after the age of 3 to 5 years, in the absence of spontaneous closure or in cases where the collar remains larger than 1.5 cm.

Subumbilical incision was predominant (56.5%). Traditional repair involves an infraumbilical incision that produces a visible scar. Pallister [15] reports a new technique for repairing umbilical hernias using a transumbilical incision that eliminates the scar by hiding it in the umbilicus. X-shaped closure of the aponeurosis is the most used technique and has been reported to be effective in minimising the risk of recurrence [16].

However, recent years have seen the emergence of more modern techniques aimed at reducing recurrence and improving aesthetics. The use of laparoscopy, particularly for recurrent or large hernias, allows for bilateral exploration, better parietal assessment, and internal closure under visual control [17]. In recurrent or wide-neck hernias, some authors recommend the use of resorbable prosthetic materials (biosynthetic meshes) to reinforce the wall, even in children [18]. Umbilical closure using concentric or purse-string techniques promotes a natural umbilical appearance and a discreet scar [19].

Although most of the hernial sacs were empty, the anatomical structures visualised were the omentum and loops of intestine. Data from the literature show that small bowel loops and the omentum are the most frequently found contents in the hernial sac [8]. This predominance can be explained by their anatomical proximity to the umbilicus, which facilitates their migration to the hernial sac in the event of abdominal wall weakness. In our series, we observed a low incidence of post-operative complications, with only one case of parietal suppuration (0.7%). Such complications are also rare in literature, which favours the surgical approach for the repair of umbilical hernias when symptoms or aesthetic concerns are present [20]. The literature emphasises that complications after umbilical hernia repair in children are rare, with many reports showing complication rates below 3% [21].

In the Gabonese context, a better understanding of the factors influencing spontaneous closure and complications of umbilical hernias could guide the choice of timing for surgery, strengthen advice to families and streamline the planning of interventions, giving priority to cases at risk of complications or recurrence.

5. Conclusion

Umbilical hernia in children is a common condition in Africa. It accounted for 8.1% of surgical procedures in our facility, with a predominance of males and an average age of 3 years. The diagnosis is essentially clinical. Although it is a benign condition, it is nevertheless fraught with potential complications that can be life-threatening for the child, such as hernia enlargement and strangulation. Treat-

ment is surgical, preferably under general anaesthesia. Closure of the aponeurosis in an X shape is the only technique used, which may be combined with plasty in cases of large hernias. The postoperative outcome is generally favourable.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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