Umbilical Hernia in Childhood: Indications and Mode of Repair

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Abstract
Umbilical hernia is a common presentation to paediatric surgery. The indications of surgery range from cosmetic appearance to incarceration of umbilical hernia. We reviewed literature to establish risk of incarceration and age and type of surgery. Umbilical hernias are a common presentation in paediatric surgery clinic, with preponderance towards Afro-Caribbean and premature children. In some African cultures it is a hallmark of beauty and thus parents may be concerned when it is not present. Based on South African data congenital umbilical hernias are present in approximately 15% of children with an incidence of incarceration estimated at 1:1,500. The data suggests that defects of any size may incarcerate and defects larger than 1.5cm are unlikely to close. These hernias may incarcerate later in life.

The experience is quite variable in different countries; for example in Nigeria, where the incidence of congenital umbilical hernia is up to 23% and the proportion of acute complications leading to hernia repair is 44% and repair for cosmetic reasons is rare. This is likely to be due to the fact that umbilical hernias are so common that they are culturally accepted and so asymptomatic patients do not feel the need for repair. The incarcerated hernias had defects of average 2cm (0.7-2.5cm) and median age of incarceration was four years.

Similarly, in India, where the proportion of umbilical hernias repaired due to acute complication is 24%, it has been advocated for repair of all hernias persisting beyond the age of two years old. This is said to be due to population in remote areas and lack of quick transport available in many centers leading to late presentation of acute incarceration. This is relatively old data and the situation may have improved but it does highlight the impact of isolation in clinical decision making.

In the USA where acute presentations comprise 7.4% of hernia repairs; there pair of hernias is advocated in defects larger than 1.5cm in diameter in girls over age of two and boys over age of four years old.

Only 10% of adult hernias are congenital in origin. The USA data indicated that medium (0.5cm-1.5cm) hernias are twice as likely to incarcerate as defects of other sizes and that there was no significant sex based preponderance in congenital umbilical hernias.

In South Africa, where acute presentations represent 7.2% of all hernia repairs; repair is indicated in the case of reported or observed incarceration and if the defects was >2cm in children more than five years of age. The average age of hernia repair was six years old and the average age of incarceration was three years.

In a recent study published from Western Australia; only 1% of umbilical hernia repairs are performed due to acute complications and given a baby born with an umbilical hernia the risk of incarceration is 1:1,100. Mean age of operation in study population of 433 was 5 years.

The study was conducted retrospectively and included patient population who underwent umbilical hernia between 1999 and 2012.

Umbilical hernias in children are rarely associated with incarceration (intestine or omentum), strangulation, perforation, evisceration and pain. It is important to explain to parents that observation alone is required in most cases and an operation is not commonly required especially in infancy. The most common indication of operation is persistence and cosmetic appearance.

INTRODUCTION

Treatment

Umbilical hernia is a common presentation to paediatric surgery. The indications of surgery range from cosmetic appearance to incarceration of umbilical hernia. We reviewed literature to establish risk of incarceration and age and type of surgery. Umbilical hernias are a common presentation in paediatric surgery clinic, with preponderance towards Afro-Caribbean and premature children [1,2]. In some African cultures it is a hallmark of beauty and thus parents may be concerned when it is not present [3]. Based on South African data congenital umbilical hernias are present in approximately 15% of children with an incidence of incarceration estimated at 1:1,500 [4]. The data suggests that defects of any size may incarcerate and defects larger than 1.5cm are unlikely to close [5-7]. These hernias may incarcerate later in life.

The experience is quite variable in different countries; for example in Nigeria, where the incidence of congenital umbilical hernia is up to 23% and the proportion of acute complications leading to hernia repair is 44% and repair for cosmetic reasons is rare [3,8]. This is likely to be due to the fact that umbilical hernias are so common that they are culturally accepted and so asymptomatic patients do not feel the need for repair. The incarcerated hernias had defects of average 2cm (0.7-2.5cm) and median age of incarceration was four years.

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Keywords
• Umbilicus
• Incarceration
• Purse string
than 1.5cm in diameter in girls over age of two and boys over age of four years [5].

Only 10% of adult hernias are congenital in origin [6]. The USA data indicated that medium (0.5cm-1.5cm) hernias are twice as likely to incarcerate as defects of other sizes and that there was no significant sex based preponderance in congenital umbilical hernias [5].

In South Africa, where acute presentations represent 7.2% of all hernia repairs; repair is indicated in the case of reported or observed incarceration and if the defects was >2cm in children more than five years of age [10]. The average age of hernia repair was six years old and the average age of incarceration was three years.

In a recent study published from Western Australia [11]; only 1% of umbilical hernia repairs are performed due to acute complications and given a baby born with an umbilical hernia the risk of incarceration is 1:11,000. Mean age of operation in study population of 433 was 5 years.

The study was conducted retrospectively and included patient population who underwent umbilical hernia between 1999 and 2012.

Umbilical hernias in children are rarely associated with incarceration (Intestine or omentum), strangulation, perforation, evisceration and pain. It is important to explain to parents that observation alone is required in most cases and an operation is not commonly required especially in infancy. The most common indication of operation is persistence and cosmetic appearance.

There are many techniques for reconstruction of the umbilicus [5–8]. The operative techniques range from layered closure after opening the peritoneum to inversion of peritoneal sac in closed technique [12,13]. The basic principles of repair are closure of fascia and preservation of appearance of the umbilicus. A normal umbilicus consists of a ring, a tubular wall, a sulcus, and a bottom without any excess skin to preserve the aesthetic aspect of the umbilicus. Many techniques have also been described using local flaps [14–16]. However in some cases the results might be unsatisfactory due to postoperative flattening and disappearance of umbilical depression. A good cosmetic outcome can be achieved in large umbilical hernia by placing double purse string at umbilicus [17]. This technique was shown to be useful in large umbilical hernia. Four patients with large umbilical hernia were operated in a study in a single center. This technique is easy to learn and practice. The technique consisted of three steps:

**Step 1**: An infra umbilical incision along the skin crease was made inside the umbilicus. The hernial sac was dissected and the fascial defect was closed with 3-0 polydioxanone sutures.

**Step 2**: A non absorbable purse-string 4-0 prolene was placed at the >2/3 of depth of the skin defect (depending upon the target peri umbilical skin collar height for respective patients). The suture was kept untied (Figure 1).

**Step 3**: Another purse string with 5-0 polyglactin sutures was placed at the margin of skin with the subcutaneous tissue. This suture was passed through the rectus sheath at the 6 o’clock and 12 o’clock. The suture was tied initially anchoring the skin to the fascia (Figure 2).

**Step 4**: The outer suture (prolene 4-0) was tied loosely subsequently to produce the umbilical ring. The outer prolene suture was removed after 2 weeks.

**REFERENCES**


