

# Spontaneous retraction of the ligated hernial sac during herniotomy: an accurate guide to successful herniotomy for young surgeons

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Inguinal herniotomy is one of the most common surgical procedures in paediatric surgery practice. To most experienced surgeons, herniotomy is supposed to be one of the easiest surgical procedures and one of the many procedures a trainee should be able to perform proficiently. However, this is not usually the experience of young trainees. This communication aims to highlight an intraoperative observation to reassure the 'uninitiated' trainee surgeon on the accuracy of the hernial sac ligation. *Ann Pediatr Surg* 7:155–156 © 2011 Annals of Pediatric Surgery

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## Introduction

Inguinal hernias constitute one of the most common surgical conditions for which a child presents to a surgeon [1,2]. The treatment for this procedure in children is through an inguinal herniotomy with a high ligation of the hernial sac at the deep inguinal ring or at the level of the preperitoneal fat [3]. In boys, it is important to preserve important spermatic cord structures while dissecting and isolating the hernial sac. These vital structures include the vas deferens and the vessels of the testes, testicular artery and pampiniform plexus of veins. Damage to these structures could result in fertility problems later in life, especially if bilateral [3].

To most experienced surgeons, herniotomy is supposed to be one of the easiest surgical procedures. In many surgical training centres in the West African subregion, it is one of the many procedures a trainee should be able to perform proficiently before part I examinations. However, this is not usually the experience of young trainees as it is not uncommon to see tremulous movements during early exposure to this procedure. The authors appreciate this challenge in their experience of teaching several generations of resident doctors and wish to highlight an intraoperative observation to reassure the 'uninitiated' trainee surgeon on the accuracy of hernial sac ligation.

## Herniotomy procedure

In a well-prepared patient, with consent gained from the parents/guardians and under general anaesthesia, the patient is positioned supine on the operation table with intravenous fluid administered to the patient. A groin crease incision is made (usually at the lowermost crease in the groin) and deepened through the subcutaneous layer (Camper's and Scarpa's fascia). The aponeurosis of the external oblique muscle is easily identified by the direction of its fibres, which is anteroinferior. This is incised with a sharp surgical blade and divided along the same direction up to the superficial ring to gain access to the inguinal canal. In children younger than 2 years, some investigators

advocate that it is unnecessary to open the inguinal canal as the deep inguinal ring lies just beneath the superficial inguinal ring in this age group [4]. However, whenever the canal is opened, the ilioinguinal nerve, which usually lies on the spermatic cord, should be preserved by lifting it up from the cord and retracted away from the operating field.

The hernial sac is opalescent and lies posteromedial to the other cord structures. After identifying the sac, the cord structures are carefully separated from it by blunt dissection using tips of nontoothed forceps and a gauze pledget. Dissection is continued until the preperitoneal fat is seen, marking the actual position of the internal ring. Often, the vas deferens is adherent to the wall of the sac, especially if the hernia is longstanding. This should not be grasped with dissecting forceps as this has been shown to damage the vas deferens [3]. Instead, it should be teased with one lip of the fine nontoothed forceps.

The sac can then be opened to ascertain the contents, although the investigators do not advocate this to be performed routinely. It may, however, be necessary to open the sac in boys if it is difficult to reduce the contents, if the hernial sac is very large or the hernia is sliding. In girls, the authors routinely open the sac because of the relatively high frequency of intra-abdominal content in the sac, especially the fallopian tubes or ovaries [5]. After reduction of the contents, the sac is usually transfixed with the sutures held in haemostat while the sac distal to the point of transfixion is excised. On removal of the haemostat, the sac usually spontaneously 'disappears' (retracts) through the deep inguinal ring. This observation, in the authors opinion, is a constant and occurs always as long as the hernial sac is correctly ligated. The only exception is in sliding hernias in which the retraction may be hampered by the wall of the tissue sliding into the hernia.

After the sac has been excised, the ilioinguinal nerve is returned and the inguinal canal is reconstituted by

reapposing the edges of the external oblique aponeurosis. The subcutaneous layer is closed and the skin is apposed by a subcuticular suturing technique or by using tissue glue [6].

## Discussion

### Anaesthesia

Unlike in adults, hernia surgery in children is usually performed under general anaesthesia. The choice of method of general anaesthesia is usually the decision of the anaesthetist. The investigators have operated on children with hernias using a facemask, a laryngeal mask and sometimes with an endotracheal intubation with no untoward effects. Sometimes, the anaesthesia is combined with spinal injection of a local anaesthetic agent such as bupivacaine. This reduces the dose of postoperative analgesics.

### Inguinal canal exposure

This is not invariable. Some surgeons advocate that the inguinal canal should not be opened because it is not well formed in neonates and infants. Therefore, the superficial and deep inguinal rings almost approximate each other, thus making the canal nonexistent [4]. However, in children older than 2 years, it is necessary to open into the inguinal canal. This gives very good exposure and a conducive ambience to operate in, qualities that are important to a successful surgery, especially for young surgeons. For orchiopexy in undescended testis, opening of the inguinal canal is advisable.

### Division of the cremasteric muscles

This is an important step in herniotomy. This step is often missed by many trainee surgeons and could embarrass the inexperienced surgeon if missed as the sac will then not be easily accessible for dissection. In some cases, the cremasteric muscles could be flimsy and assumed for the sac and tied. This makes the next observation very important.

### Spontaneous retraction of the ligated sac

This intraoperative observation is the core of this communication. This sign, if observed, should reassure the young surgeon of having transfixed the right structure, the hernial sac. The reason for the spontaneous retraction is that the hernial sac is a direct extension of the peritoneum, and when it is released it retracts into the peritoneum. Between the investigators' experience of several hundred herniotomies, this sign has been observed without fail and it is being recommended as a reliable sign for 'would be' surgeons.

## Conclusion

Although herniotomy is a common procedure performed by general surgeons, paediatric surgeons and urologists, it may be daunting for trainees to accurately dissect out the hernial sac. The spontaneous retraction of the sac after ligation is an assurance that the sac has been ligated. Another important step in the procedure is division of the cremasteric muscle, whereas opening into the inguinal canal depends on the surgeons' preference and age of the patient.

## Acknowledgements

### Conflicts of interest

There are no conflicts of interest.

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