Management of Incarcerated Inguinal Hernia in Children at the University Hospital of Antananarivo - Joseph Ravoahangy Andrianavalona

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ABSTRACT

Inguinal hernia is one of the most common surgical pathologies in children. The main risk is the evolution towards strangulation especially before the age of one year. Our study reports our experience on the management of strangulated hernias in children at the University Hospital Center of Antananarivo - Joseph Ravoahangy Andrianavalona (CHUA-JRA).

This is a 12-month retrospective study. The parameters studied are the age of onset of strangulation, gender, the side concerned, clinical manifestations, therapeutic methods, outcomes.

Of 74 cases collected, 96% were male. The right side predominated with 71.62% of cases. More than 70% of the cases were less than a year old, of which 50% were less than 3 months old. Besides the signs of strangulation, 10 cases presented an evident occlusive syndrome and 5 cases had come with a deterioration of the general state. Among 56 cases of initial reduction, 49 cases were reduced and their surgical treatment was postponed from 2 to 7 days. Cases with evident signs of complications, reduction failure, and cases of ovarian hernias had emergency surgery. Two cases of immediate post-operative death, 6 cases of testicular necrosis and two cases of recurrence over a three-month follow-up were deployed in patients operated on immediately.

In case of strangulated hernia, delayed surgery after an immediate reduction offers a better prognosis. The main factor limiting this method is the late consultation responsible for advanced visceral complications.

Keywords: Children, complications, incarceration, inguinal hernia.

I. INTRODUCTION

Inguinal hernia is one of the most common surgical pathologies in pediatrics. Despite its frequency, it should not be trivialized because its evolution is unpredictable. Any untreated hernia is at risk of strangulation, especially in toddlers [1], [2]. This complication can be life-threatening due to intestinal lesion and functional prognosis due to gonadal damage [3], [4]. Nevertheless, in case of strangulation, it is important to attempt to reduce the hernia and to postpone surgery until after the inflammatory phase in order to reduce the risk of recurrence and gonadal lesion [5]. This procedure is not valid for late forms with obvious signs of occlusion and peritonitis.

This study aims to report the epidemiological, clinical and therapeutic profiles of strangulated hernias in children at the University Hospital Center of Antananarivo - Joseph Ravoahangy Andrianavalona (CHUA-JRA).

II. OUR STUDY

We carried out a 12-month retrospective study, from January 2019 to January 2020, concerning the management of strangulated hernias in children at the CHU-JRA. The inclusion criteria were patients under 15 years old seen, treated and followed up in our center for strangulated hernia. Patients seen in the emergency unit and treated in other centers were excluded. The age at which the strangulation occurred, the gender, the side concerned, the clinical manifestations, the therapeutic management, the evolution were studied.

III. RESULTS

We retained 74 cases. A large male predominance was observed, with 71 boys (96% of cases) for 3 girls. The right side was the most affected and included 53 patients (71.62% of cases). More than 70% of the cases (52 patients) were aged under one year, including 50% (26 patients) under three months (Table I). Apart from the pain and the irreducibility of the hernia, a frank occlusive syndrome was observed in 10 patients. Five patients were in poor general condition. Concerning management, after a rapid conditioning, 56
patients (75.6% of cases) benefited from an attempt at medically assisted reduction of the hernia. This consisted in combining an analgesic by venous route and a light sedation before doing the maneuver of taxis. Thanks to this technique, 49 cases were reduced. They were operated on 2 to 7 days after the reduction. The 7 cases of reduction failure, the patients with frank occlusion and/or a poor general condition and the 3 cases of ovarian hernias were operated on urgently. The hernial contents were mostly small intestine. Five cases required bowel resection-anastomosis (Table II). There were 6 cases of testicular necrosis. In the postoperative period, we deplored 2 cases of death (11% of emergency operated patients) aged 7 and 16 months respectively, and 3 cases of rapidly resolving parietal abscess. The three-month follow-up revealed 2 cases of recurrence among the patients operated on urgently.

This situation is due to the late consultation, the consultation with traditional healers, the reluctance of parents to operate on young children, the scarcity of a team capable to provide neonatal care and the precarious family economic situation [13, 14].

Faced with a strangulated form, emergency management first aims to reduce the hernia. Indeed, the inflammatory edema caused by the strangulation weakens the sac. Because of this, dissection becomes difficult. The spermatic pedicle is much more vulnerable. Thus, emergency surgery increases the risk of recurrence and testicular atrophy [15]. If necessary, the reduction can be done under light sedation. The reduction failure rate reported in the literature ranges from 0.9% to 3% of cases [9]. Surgery should be planned at a distance from the inflammatory phase, between 2 to 5 days after successful reduction [5], [15]. Emergency surgery is indicated in the event of reduction failure, frank occlusion, peritoneal irritation and/or deterioration of general condition and any strangulated ovarian hernia. In this case, checking the vitality and integrity of the contents must be systematic before reintegrating it into the abdomen [15]. The incision of the superficial inguinal ring and the aponeurosis of the external oblique allows this reduction to be carried outatraumatically [15, [16]. Some teams recommend laparoscopic surgery immediately after the reduction. This technique has the advantages of allowing repair without damaging the edematous elements of the cord, of checking the vitality of the reduced content and of checking the contralateral side [9].

Post-operative complications are much more frequent in cases operated on urgently: testicular atrophy, parietal infection, vital risk in the event of intestinal necrosis [4], [15]. Other rare complications have been reported: postoperative tetanus, stercoral fistula of the scrotum, postoperative peritonitis [5], [11], [12], [17]. The evolution and prognosis of cases operated on at a distance from the inflammatory phase are similar to those of an uncomplicated hernia except for the risk of testicular atrophy. This risk justifies the need for long-term monitoring of the testicle after an episode of hernial strangulation [9]. The recurrence rate can go up to 20% in case of emergency surgery against 0.3% to 3.8% for cases operated on at a distance from the strangulation [8], [15].

### IV. DISCUSSION

Inguinal hernia is a common pathology in pediatric surgery [6]. It mainly affects the male gender with a sex ratio varying between 3.6/1 to 6.7/1 [6]-[8]. The right side is the most affected [9]. Haunting is the unpredictable evolution towards strangulation which can be life-threatening due to intestinal lesion and functional prognosis due to gonadal damage [3], [4]. The age at onset of the hernia is the main factor in this complication [10]. The risk of strangulation is higher in the neonatal period and in early childhood. This risk is 27% in premature babies. Thirty percent of hernia strangulation is seen before the age of 2 months and 85% before the age of one year [5]. The best prevention is surgery as soon as possible, especially when the child is small [2].

In developing countries, some cases are seen at the very advanced stage of strangulation with frank signs of occlusion, peritonitis and deterioration of general condition [11], [12].

### V. CONCLUSION

Hernia strangulation mainly concerned children under one year old with a particularly high rate before the age of 3 months. More than 66% of our patients were operated on at a distance from the strangulation after an initial reduction of the hernia in the emergency room. The late forms were not negligible. They were responsible for intestinal obstruction and deterioration of the general condition contraindicating delayed surgery. They were responsible for all the morbidity, mortality and recurrences reported in this study.

### CONFICT OF INTEREST

Authors certify that they have no affiliation or involvement in any organization or entity with the interests (such as honoraria, scholarships, participation in speakers' offices; and
expert testimony or agreements of patent license), or non-financial interests (such as personal or professional relationships, affiliations, knowledge or beliefs) in the subject or material discussed in this manuscript.

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