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Title	**SURGICAL MANAGEMENT OF PERITONEOVAGINAL CANAL PATHOLOGY AT THE BLANCHE GOMES MOTHER AND CHILD SPECIALIZED HOSPITAL (BGMCSH)**
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SUMMARY

Objective: To describe the epidemiological, clinical and therapeutic aspects of pathologies of the peritoneovaginal canal. (PCPV) taken care of at the Blanche Gomes Mother-Child Specialized Hospital.

Patients and method : This was a descriptive study with retrospective and prospective data collection on children aged 0 to 15 years, operated for PCPV in the pediatric surgery department of the HSMEBG from February 1, ^{2019} to February 28, 2023. The following parameters were studied: the age of the children, reasons for consultation, laterality, anatomoclinical type, associated conditions, additional examinations, surgical approach, procedures performed, possible cure of an associated condition and postoperative outcomes.

Results: A total of 115 PCPV files were collected over a period of 4 years. The mean age was 38.5 months (1154.09 days) with extremes of 30 days to 15 years. The PCPV was located on the right in 54 patients (46.96%) and was bilateral in 22 patients (19.13%). The anatomoclinical type was dominated by hernia (84.35%). Hernia was associated with umbilical hernia in 15.65%.

Treatment was surgical in 100% of children. It consisted of sectioning the canal, followed by ligation in cases of hernias (84.35%). and hydroceles (12.26%) or excision in cases of spermatic cord cyst (3.48%).

The average length of hospitalization was 48 hours. The postoperative course was marked by three (3) deaths respectively for peritonitis secondary to intestinal perforation (1 case), pneumothorax and postoperative anaphylactic shock. After an average postoperative follow-up of two years with a minimum of 6 months and a maximum of 3 years, we noted one case of recurrence.

Conclusion. Pathologies of the peritoneovaginal canal represent the majority of urological malformations treated in our department. Its surgical management gives excellent results.

Keywords: **Peritoneovaginal canal - Hernia - Hydrocele - Cyst - Brazzaville.**

INTRODUCTION :

Peritoneovaginal canal pathology (PCPV) is a condition frequently encountered in infants and children [1]. It is due to the persistence of the peritoneal process which should normally regress. This process appears during the 3rd month of fetal life and usually closes during the 8th and 9th months of pregnancy to form the Clocquet ligament [2]. The absence of closure of this canal is the origin of three (3) anatomoclinical entities: hernias, hydroceles (communicating or not) and spermatic cord cysts. Its diagnosis is clinical. It may require the use of imaging in certain situations.

Treatment of PCPV is surgical . It consists of closure of the CPV in boys or of the Nück canal in girls.

Numerous studies have been published in the scientific literature concerning sub-Saharan Africa [3;4;5;6] . These studies highlight that PCPV treatment is one of the most common interventions in pediatric surgery , but also in urology.

A previous study carried out in the pediatric surgery department of the CHU-B in Brazzaville reported that this pathology occupied a frequency of 20% of pediatric surgical activity [4]. Since 2016, Brazzaville, the capital of Congo, has had a hospital with a purely pediatric vocation : HSMEBG with a pediatric surgery department. The activity of this department is very recent . The aim of this work was to report our experience of the management of PCPV in the pediatric surgery department, while describing the epidemiological, anatomoclinical and therapeutic aspects.

PATIENTS AND METHOD

This is a single-center study with retrospective data collection, covering the period from February 1st , 2019 to February 28th, 2023, or 4 years at the Blanches Gomes Mother-Child Specialty Hospital.

All children aged 0 to 15 years admitted for surgical management of peritoneovaginal canal pathology were included in the study . Peritoneovaginal canal pathology included : hernias, hydroceles and spermatic cord cysts.

The following parameters were studied: patient age, reasons for consultation, affected side, associated conditions, surgical approach, procedures performed, possible treatment of an associated condition and postoperative outcomes. Some children were recruited in consultation and were included in an operative program; others, however, were received as emergencies.

The postoperative course was assessed after a mean follow-up of 2 years. We defined as simple postoperative course the absence of anesthetic, hemorrhagic (hematoma) and suppurative (infection) complications one week after surgery . The postoperative course was considered complicated when a hematoma, infection of the surgical site, post-anesthesia respiratory distress, or death were noted.

The children were seen again one week after leaving the hospital, at one month, at three months and then as needed.

Data analysis was recorded and processed in a Microsoft Excel 2016 file.

RESULTS

During our study period, we operated on 366 children, including 115 children, or 31.42%, for PCPV; or 2.4 children operated on per month.

Age ranged from 30 days to 15 years with a mean age of 38.5 months (1154.09 days).

The 29-day to 30-month range was the most representative.

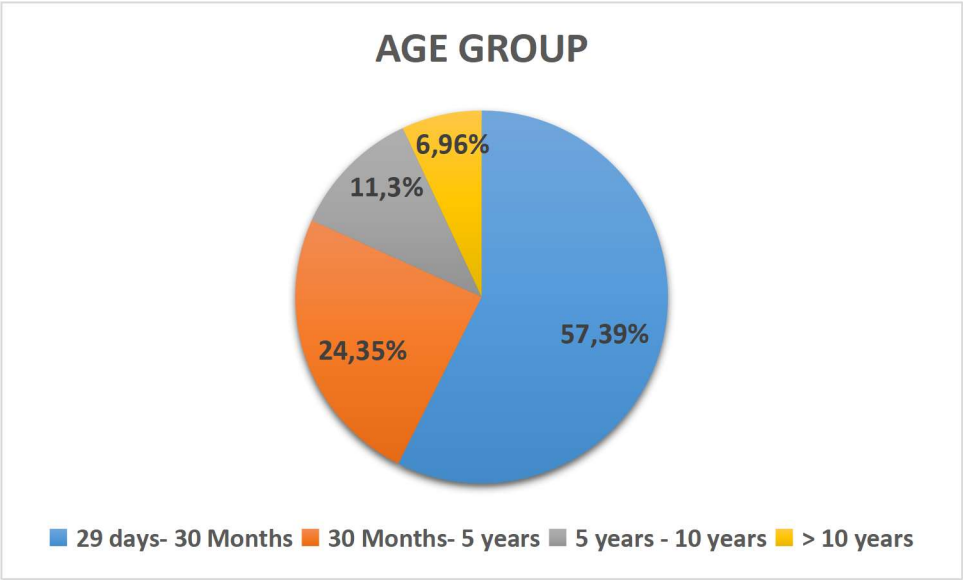

Figure 1: Distribution by age group.

There were 93 boys and 22 girls with a sex ratio of 4.2. The most common reason for consultation was inguinoscrotal swelling, i.e. 56 children representing 48.70%. This was followed by inguinal swelling in 30.43%, scrotal swelling (14.78%) and inguinolabial swelling (6.09%). Hernia was the most common CPV pathology at 84.35% as shown in Figure 2

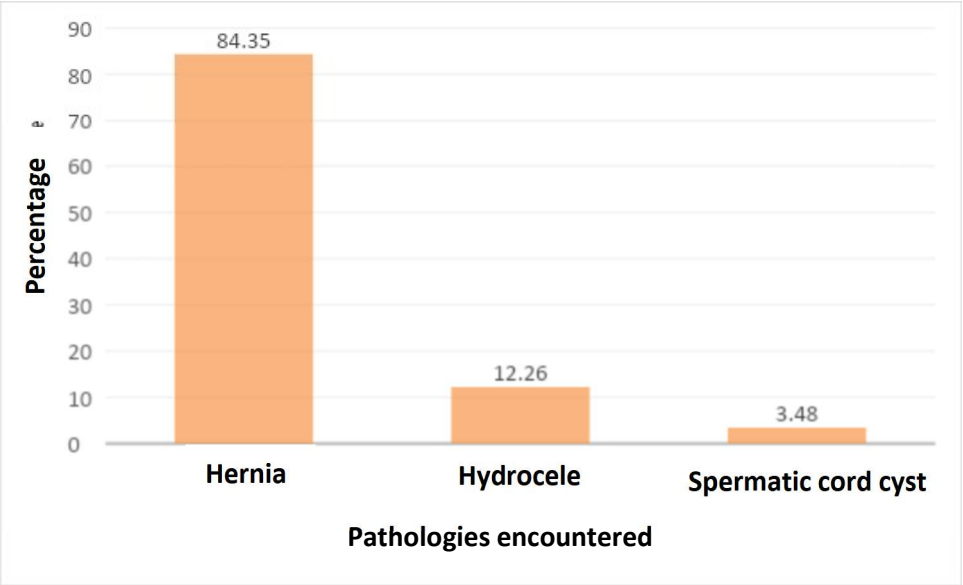

Figure 2: Distribution of CPV pathology according to the anatomoclinical form

Table 1: Location of the pathology

	Staff (%Tage)		
Laterality	**Boy**	**Girl**	**TOTAL**
LEFT	32	7	39
RIGHT	50	4	54
Bilateral	11	11	22
TOTAL	**91**	**22**	**115**

The right side predominated with 46.96%.

Among the cases studied, inguinal hernia was accompanied by an umbilical hernia in 15.65% of situations (18 cases). One case of cryptorchidism was also noted in association with inguinal hernia. In addition, a hydrocele was reported with Hirschsprung's disease in one patient.

Pelvic ultrasound was performed in 7.8% or 9 children. All children underwent inguinal surgery with a 2- to 3-cm transverse incision in the lower abdominal fold. These children all received general anesthesia. The preoperative diagnosis was confirmed intraoperatively in all our patients.

All our patients benefited from closure of the CPV or the Nück canal by a miller stitch secondarily reinforced with absorbable thread.

Prophylactic closure of the contralateral CPV was performed systematically in all girls with a unilateral hernia.

The postoperative course was straightforward in 97.39% of cases. The average hospital stay is 48 hours. We noted three (3) deaths respectively for peritonitis secondary to intestinal perforation, pneumothorax and anaphylactic shock. Medium-term complications

DISCUSSION

Introduction and Prevalence of PCPV

The patent processus vaginalis (PCPV) is a common urological malformation [1]. This surgical condition is primarily diagnosed in infants [1, 4], a trend corroborated by our study, which found a 57% frequency in this age group. The processus vaginalis remains patent in 80% to 95% of newborns, decreasing to 60% by one year, 40% by two years, and between 15% and 37% thereafter [7]. However, as demonstrated by several authors, newborns, especially premature infants, are also susceptible to this condition [8, 9, 10].

Surgical Management and Comparative Analysis

The management of PCPV constituted 31.4% of our surgical practice, a rate comparable to the 32.5% reported by Diabaté et al. [11]. Nevertheless, this proportion is lower than those reported by MBOUTOL et al. in Congo [4], Amadou [5] in Mali, and Sewa [6] in Togo. This discrepancy might be attributed to the more recent establishment of surgical activity in our department and the tendency for patients with severe pathologies to be referred to larger, more established hospital centers.

Patient Demographics and Clinical Presentation

Our study found a mean age of 3.2 years, which aligns with literature data where the average age ranges between 8 months and 3.2 years [5, 12, 13, 14].

In our cohort, 79.13% (91 cases) of PCPV occurred in boys. This male predominance could be explained by the role of testicular migration in the genesis of this pathology, a phenomenon observed across all species where the male gonad descends through an inguinal canal [15].

The most common characteristic of PCPV is swelling, which can be permanent or intermittent, and located in the inguinal, scrotal, inguino-scrotal, or inguino-labial regions, depending on

the case. Consistent with the findings of Mieret [16] and Sarr [17], swelling was the primary reason for consultation in all our patients.

While PCPVs are generally benign, hernia strangulation or incarceration constitutes a diagnostic and therapeutic emergency. We encountered four cases of strangulated hernias, one of which was complicated by intestinal obstruction.

Associated Pathologies and Laterality

The predominance of inguinal hernia followed by hydrocele in our study aligns with the observations of numerous authors [3, 5, 6, 18]. However, other authors such as Diallo, Diabaté, and Sarr [3, 11, 17] report different findings, with hydrocele predominance at 72%, 51%, and 61.41% respectively. This disparity is likely due to varying inclusion criteria across studies: Diallo and Diabaté included all cases of male PCPV, whereas Sarr recruited both pediatric and adult patients in a urology department.

The association of PCPV with other malformations is frequently described in the literature, notably umbilical hernia and cryptorchidism [4, 19]. In our study, hernia was associated with an umbilical hernia in 15.75% of cases. We also observed one case of bilateral hydrocele associated with Hirschsprung's disease.

The predominance of right-sided PCPV is consistently reported in the literature as the most frequent presentation. Our results concur with these findings [5, 14, 19, 20]. The generally delayed closure of the right processus vaginalis is thought to explain its ipsilateral selectivity [15].

Diagnostic Approach

A thorough clinical examination allows for differentiation between the three constituent entities of PCPV. However, ultrasonography is mandatory only in cases of diagnostic doubt or to precisely detect contralateral patencies at higher risk of transforming into hernias, demonstrating a sensitivity of 93% and a specificity of 88% [21]. In our study, ultrasound was necessary for only 9 patients (7.8%)

Timing of Surgical Intervention

The optimal timing for PCPV repair remains controversial. Uncomplicated PCPV does not constitute an emergency; however, the persistent concern is strangulation. Some surgeons advocate for an observation period, particularly in newborns or infants under six months, due to anesthetic and surgical risks. Thus, age and weight are critical factors to consider before any intervention [10].

It is generally accepted that anesthetic risk is lower in children over six months [22]. Nevertheless, pediatric anesthesia, regardless of age, remains a challenge due to the potential for adverse effects.

Surgical Technique and Metachronous Hernia

The classic surgical repair for inguinal hernias involves high ligation of the processus vaginalis or canal of Nück. Galinier et al. [2] recommend that any inguinal hernia diagnosed in an infant should be operated on early to prevent strangulation.

It is not uncommon to observe the appearance of a contralateral hernia after unilateral hernia repair, a phenomenon known as a metachronous hernia [23]. To prevent this, some practitioners advocate for routine exploration and/or closure of the contralateral processus vaginalis [17] to avoid the need for a second operation and, potentially, an emergency anesthesia. Other authors suggest that contralateral inguinal exploration in a child with a unilateral inguinal hernia should only be considered for infants under six months, and after informed consent [24].

The incidence of metachronous hernia is reported to be higher in girls than in boys (premature or not) [25]. This explains the practice of some surgeons to perform prophylactic closure of the PCPV in girls presenting with a unilateral hernia. In our daily practice, we perform prophylactic closure in girls after obtaining informed parental consent.

Regardless of the preventive approach adopted for metachronous hernia in a child with a unilateral hernia, family circumstances, availability of emergency care, parental anxiety levels, and cultural considerations, along with informed consent, must be taken into account to determine whether contralateral PCPV closure should be performed during the primary procedure

Hydrocele and Spermatic Cord Cyst Management

Unlike hernias, where surgery is performed as soon as the diagnosis is made, surgery for hydroceles and spermatic cord cysts is not urgent as they do not typically lead to complications. Hydrocele repair and cystectomy are performed by mass excision. Spontaneous resolution of the effusion can be observed beyond 24 months of age [26, 27]. However, the timing of intervention varies among surgeons: 43% operate on hydroceles between 24 and 36 months, while 19% operate between 12 and 24 months [27].

Scrotal dysmorphia, as well as socio-cultural beliefs and concerns that these pathologies could lead to infertility and sexual impotence, often pressure parents to influence the surgeon's decision, as acknowledged by some authors [17].

Posthectomy (15.65%) and umbilical hernia repair (15.65%) were the surgical procedures most frequently associated with PCPV repair in our study.

Postoperative Outcomes

Postoperative outcomes were simple in 97.39% of cases. We noted three (3) deaths, attributed respectively to peritonitis secondary to intestinal perforation, pneumothorax, and anaphylactic shock. Medium-term complications included one case of recurrent inguinal hernia, observed on the 23rd postoperative day. This recurrence is most often linked to insufficient ligation of the canal, especially when associated with immediate postoperative morbidity (pneumonia, incessant crying, or constipation). The average hospital stay was 48 hours. Children were followed up one week after discharge, at one month, and then as needed.

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