

Pathologies of the patent processus vaginalis in a secondary hospital: experience of Aného Hospital in Togo

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Purpose: To describe the epidemiological, diagnostic, therapeutic, and progressive aspects of pathologies of the patent processus vaginalis (PPV) at Aného Hospital.

Materials and methods: A retrospective and descriptive study was carried out over five years (2018–2022) including the files of patients aged 15 years at most who were operated on and followed up for PPV pathologies.

Results: A total of 175 cases (160 boys and 15 girls) of PPV pathologies were retained out of 3 020 consultations, with a frequency of 5.8%. The median age was 57.6 months (4.8 years), and infants were the most represented (40.6%, $n = 71$). Inguinoscrotal hernia was the most preponderant (36%, $n = 63$). The right side was the most affected (56.6%, $n = 99$). Hernias were complicated in 2.3% ($n = 04$). All patients had been operated on by inguinal laparotomy, and in 68% of cases ($n = 119$), the operation was performed under sedation and caudal anaesthesia. The main surgical procedures were the treatment of hernia (65.1%, $n = 114$), evacuation of vaginal fluid (28.6%, $n = 50$), and cystectomy (6.3%, $n = 11$). In all cases, a section-ligation of the PPV was performed at the level of the deep inguinal orifice. The postoperative course was good; one case (0.6%) of scrotal haematoma was noted with spontaneous resorption within 15 days.

Conclusion: PPV pathologies are common at Aného Hospital. Their surgical treatment is inguinal laparotomy due to the lack of laparoscopic equipment.

Keywords: pathologies, patent processus vaginalis, laparotomy, Togo

Introduction

The failure of the peritoneal-vaginal process to close before birth results in the formation of the patent processus vaginalis (PPV).¹ These are common anomalies in children.² The presence of the PPV can cause three anatomic pathological entities: hernia, hydrocele, and encysted hydrocele.^{2,3} These are common ailments. In 2000, in Senegal, a study reported a hospital frequency of 3.4% of PPV pathologies.⁴ From a clinical diagnosis, these are benign pathologies apart from hernia, which, in the absence of appropriate care, presents a risk of strangulation in 10–20% of cases, jeopardising the vitality of the intestine, especially the vitality of the testis.⁵ Their care is resolutely surgical and grounded in the section-ligation of the PPV by laparotomy or laparoscopy.

Seven years ago, Aného Hospital, or Prefectural Hospital Centre of Aného (PHCA), was equipped with a paediatric surgery department. Since then, it has become a reference centre in southeast Togo for paediatric surgical pathologies, including those of the PPV. In 2017, these ailments constituted the second reason for consultation (12.68%) after traumas. This work aims to describe the epidemiological, diagnostic, therapeutic, and prognostic aspects of PPV pathologies in the paediatric surgery department of the PHCA.

Materials and methods

A retrospective study with a descriptive aim was carried out in the paediatric surgery department of the PHCA over five years, from January 1, 2018, to December 31, 2022. Our study included the files of patients aged 15 years at most who were operated on and followed up for a PPV pathology during the study period, with a minimum follow-up of one year. The observation notebooks, surgical report registers, and consultation registers were used to fill in a pre-established form of the variables to be studied. These variables were epidemiological (concerning age and sex), clinical (reason for consultation, mode of admission, affected side, diagnosis retained, and associated ailments), and therapeutical (type of anaesthesia, surgical technique, and postoperative evolution).

The data were entered using EpiData 3.1 software. The database was processed using Microsoft Excel 2019 software. Quantitative variables were expressed as averages, and qualitative variables were expressed as numbers and percentages.

We considered the ages of patients as newborns (aged 0–28 days), infants (29 days to 30 months), small children (31 months to 6 years), and big kids (7–15 years).⁶ A paediatric surgeon was responsible for the surgical care of children at the PHCA. The PHCA's operating room does not yet have equipment for the practice of laparoscopy.

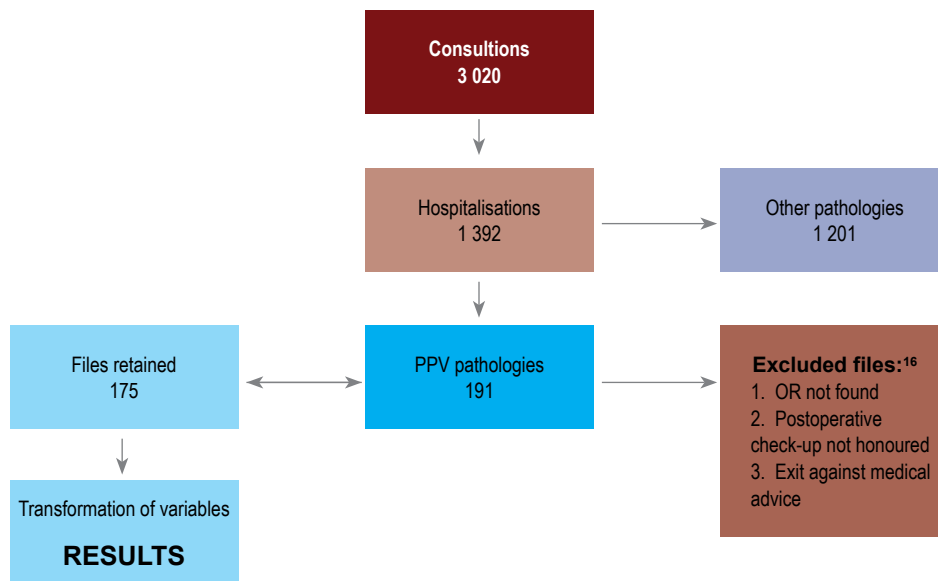


Figure 1: The folder selection scheme
OR – operative report, PPV – patent processus vaginalis

Results

During the study period, PPV pathologies were retained in 175/3 020 consultations, with a frequency of 5.8% of consultations (Figure 1). There were 160 boys and 15 girls, representing 91.4% and 8.6% of PPV pathologies. The sex ratio (boys: girls) was 10.7 in favour of boys. The median age was 57.6 months (4.8 years), with extremes of one month and 180 months (15 years). Infants were the most represented, with 71 patients (40.6%).

According to the mode of admission, 171 children (97.7%) were received in ordinary consultation and four children (2.3%) in an emergency, including one case of strangulation and three cases of hernia engorgement. The reason for consultation was scrotal swelling (61.7%, $n = 108$), followed by inguinal swelling (29.1%, $n = 51$). At the end of the clinical check-up, inguinoscrotal hernia was the most preponderant anatomical pathology form in 36% of cases ($n = 63$). For all anatomical pathology forms combined, the right side was most affected in 56.6% of cases ($n = 99$).

Table I illustrates the distribution of patients according to the diagnoses retained. In 34.9% of cases ($n = 61$), at least one ailment was associated with the pathology of PPV. There were 54 cases (30.8%) of umbilical hernia, three cases (1.7%) of contralateral cryptorchidism, two cases (1.1%) of hernia of the white line, and two cases (1.1%) of phimosis.

Table I: Distribution of patients according to the diagnoses retained

	Number	Percentage
Inguinoscrotal hernia	63	36
Inguinal hernia	51	29.1
Communicating vaginal hydrocele	21	12
Non-communicating vaginal hydrocele	29	16.6
Encysted hydrocele	11	6.3
Total	175	100

All patients received surgical care. Children admitted for hernial engorgement or strangulation ($n = 4$) were hospitalised immediately, received symptomatic management, and were scheduled for surgery in a median period of four days. Surgical procedures were performed under sedation and caudal anaesthesia in 119 children (68%) and general anaesthesia in 56 children (32%). All patients underwent open inguinal surgery.

The main surgical procedures were the treatment of hernia (65.1%, $n = 114$), evacuation of vaginal fluid (28.6%, $n = 50$), and cystectomy (6.3%, $n = 11$). In all cases, a section-ligation of the PPV was performed at the level of the deep inguinal orifice. The associated procedures were 54 umbilical hernia cures, two white line hernia cures, three testicular lowerings followed by orchidopexy, and 73 circumcisions. The average duration of the operation was 42 minutes, with extremes of 25 and 90 minutes.

The postoperative course was simple. The average duration of hospitalisation was 36 hours, with extremes of 20 and 72 hours. As a complication, one of the children (0.5%) had a scrotal haematoma within 48 hours postoperatively, which resulted in spontaneous resorption within 15 days. One year later, no complications were noted. Mortality was zero, and the postoperative scars were aesthetic in all children.

Discussion

This study is limited by its retrospective nature; the absence of specific information in the medical records could be the source of interpretation bias. To minimise bias, incomplete files were excluded from the study (Figure 1).

The frequency of PPV pathologies has been diversely appreciated in the literature: 22.3% according to Simlawo et al.,⁷ 4.7% according to Sarr et al.,² and 52% according to Mieret et al.⁸ These variations can be attributed either to the study population, which included both children and adults, or the age interval of 0–17 years considered as paediatric in these studies. Our study included only children aged

15 or less, and the hospital frequency of 5.8% is superimposable to the 5.7% noted by Amadou et al.⁹ in 2018 in children aged between zero and 15 years.

PPV persisting after birth can close at the end of the first year of life. They are the source of PPV pathologies' symptoms that become evident at this age, more so since children generally acquire walking in an erect position around one year of age, resulting in gravity and abdominal pressure on the volume of the tumefactions. These reasons may explain why this study's infant age group was the most represented. The median age was 4.8 years (57.6 months), with extremes of 1 and 180 months (15 years). As Mieret et al.⁸ noted in their study, the advanced median age often results from a delay in consultation.

PPV pathologies mostly affect male children. The sex ratio (boys:girls) in this study was 10.7, and 14 in Amadou et al.'s⁹ study. Testicular migration explains this male predominance. In boys, the peritoneal-vaginal canal, which follows the route of the gubernaculum testis, accompanies the testicle during its migration from the urogenital ridge, where it forms at the sixth week of gestation, to the scrotum before the end of the eighth month. In the third month, the testicle, which is in a retroperitoneal position, is attracted by the gubernaculum testis in formation; it then begins its descent by pushing the peritoneum in front of it.¹⁰ It is conceivable that anomalies of closure of the PPV are also associated with testicular migration disorders in some cases. Furthermore, the right side is most frequently affected. According to Galinier et al.,³ the persistence of the PPV is often asymmetric and most often sits on the right.

Even though PPV ailments are benign, their development can be scattered with complications when it comes to hernia, requiring emergency admission of children. Four complicated cases (2.3%), including one strangulation and three hernial engorgements, were noted in our work. These statistics are well below the 10–15% of hernial complications highlighted in the literature.⁸

Of the different anatomic clinical forms of PPV pathologies, the inguinoscrotal hernia was the most common in our study in 36% of cases ($n = 63$). Our results meet the authors' data according to which hernia is the most dominant form in PPV pathologies.^{9,11}

In 34.9% of cases ($n = 61$), at least one ailment was associated with PPV pathologies in our series. This association is regular and reported in varied proportions in the literature. In Senegal, Ngom et al.¹² and Ndiaye et al.¹³ reported ailments associated with PPV pathologies in proportions of 14.8% and 7.7%. Both series, as in ours, concerned umbilical hernias, cryptorchidism, and white line hernias.

In our series, the surgical care of PPV pathologies was grounded on ligation and a high section of PPV in accordance with the data in the literature.⁹ This basic surgical procedure was performed by laparotomy due to the lack of laparoscopic equipment. Nowadays, it is increasingly performed by the laparoscopic route.^{14,15} Laparoscopy can detect non-symptomatic forms of PPV by exploring the contralateral side and treating them in the same operation. In doing

so, the laparoscopic route allows children to avoid a subsequent intervention for PPV, protecting them from running the risks inherent in anaesthesia a second time.

For some authors, it would be preferable, even for symptomatic PPV, to not operate before the age of two years, given the anaesthetic complications in young children.¹⁶ These authors also think that PPVs are benign pathologies that are likely to spontaneously decline after two years. Hence, there is the possibility of observation for up to two years before operating on persistent forms. In our practice, all children were operated on, including those under two years old. We did not want to risk complications (hernial strangulations or testicular atrophies) of these benign ailments by monitoring them, given that not all children's parents keep follow-up appointments before or after surgery.

The postoperative course was simple in 99.4% of cases ($n = 174$); one case (0.6%) of postoperative scrotal haematoma was noted. This complication rate was lower than the 7.9% found by Amadou et al.⁹ These excellent results may be linked to the fact that in our series, all children were operated on by a specialist in paediatric surgery.

Conclusion

The PPV pathologies are frequent at Aného Hospital. Their surgical treatment is an inguinal route in open surgery. The postoperative course was good, except for one case of scrotal haematoma. The project of acquiring laparoscopic equipment will soon enable us to reinforce these excellent results and screen asymptomatic forms.

Conflict of interest

The authors declare no conflict of interest.

Founding source

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Ethical approval

Ethical considerations relating to retrospective studies were respected, and the study was carried out under the supervision of professors of magisterial rank.

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