

Cryptorchidism in the Adolescent Males: A Five-Year Review in Two Referral Health Facilities in the Niger-Delta Region,

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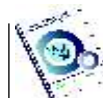
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ABSTRACT

Background: Cryptorchidism is one of the most common developmental anomalies in children. It is an anomaly of testicular descent often detected in the infant age group. Most patients with cryptorchidism have this pathology rectified by surgery before puberty. In sub-Saharan Africa and other developing nations, it is not uncommon for patients with undescended testes to present in adolescence and adulthood. The management of the undescended testis in the adolescent patient is challenging due to multiple factors such as difficulty in locating the impalpable testis, the increased risk of testicular malignancies, and impaired fertility. The purpose of this study was to review the undescended testes in the adolescents over a five-year period in two referral centers in the Niger-Delta region of Nigeria.

Material and Method: This was a retrospective study, conducted from January 1, 2015 to December 31, 2019. The data were retrieved from the patients' hospital records. All the patients aged 11-19 years who were managed and followed up in the urology clinic for undescended testis were included in this study. Consent was also obtained from patients whose clinical photographs were used in this work. Data pertaining to the basic characteristics of the patients, clinical characteristics, intra-operative findings, and postoperative complications were documented. A proforma was used to collect the data. Data analysis was done using simple statistics and statistical programming for social sciences (SPSS, Chicago, IL, USA) version 21.

Results: A total of forty-eight (48) patients with undescended testes were operated upon in this period. Ten patients in the age range of 11-19 years were included in this study. The mean age at the time of surgery was 13.2 years. The majority of the patients were in the 11-12 years age group. The empty scrotal sac was the main presenting complaint. The majority of the patients were delivered either at home or in the Primary Health Centre (n=8, 80%) to mothers with poor educational background. Poor financial standing (n=5, 50%) and

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inappropriate advice (n=4, 40%) were the main causes of delay in presentation. Right undescended testis was predominant (n=7, 70%) with the testis located in the external inguinal ring in most patients (n=6, 60%). Orchidopexy was carried out in nine (90%) patients while orchiectomy was performed in one patient who had atrophic testis. One patient had a postoperative wound infection.

Conclusion: Early presentation and management are paramount to a successful outcome in individuals with undescended testis. There is a need to educate parents, traditional birth attendants, and health workers in sub-Saharan Africa on the benefits of early detection and prompt referral in order to prevent late presentation and its attendant complications.

Keywords: Undescended testis, Cryptorchidism, Adolescent, Orchidopexy, Orchiectomy.

INTRODUCTION

Cryptorchidism is the absence of the testis in the scrotal sac. It is regarded as undescended testis when there is an arrest of migration along its normal path of descent and ectopic testis when it migrates from its usual path of descent to an unusual location. The majority of undescended testes are clinically palpable.²

In general, cryptorchidism may occur due to an interruption in any phase of testicular descent caused by hereditary, hormonal, anatomical, or environmental factors that can lead to cryptorchidism. Undescended testis is diagnosed at birth in about 3% and persists in approximately 1% of boys who reach one year of age and largely remain same. It is one of the most frequent developmental malformations of the male genitalia. In preterm infants, the incidence is as high as 30%. The undescended testis can be found in the abdominal cavity, the internal inguinal ring or peeping, the inguinal canal, and the external inguinal ring usually along its normal track of descent into the scrotum while an ectopic testis deviates from the normal track of descent into abnormal positions such as the perineum, the femoral canal, the root of the penis, the contralateral scrotum and the pre-perineal area. Testicular atrophy, reduced testicular volume, testicular tumours, trauma, infertility, and

psychological problems are reported complications in individuals with undescended testis.^{2,5} Early presentation with prompt surgical intervention at age two years or below has been reported to prevent these complications with preservation of fertility potentials.^{2,7} In the developed countries with high levels of awareness, presentation and corrective surgery before two years are common. On the contrary, late presentation with undescended testis is frequently seen in our environment due to poor awareness about the pathology, poor financial standing, and misinformation from first contact healthcare personnel.^{6,8}

Although there are several reports on the management and outcome of undescended testis in children,^{1,6,8} little attention has been given to adolescents and adults who present with this condition. This is probably because adolescent or adult presentation is believed to be uncommon, particularly in the developed world where it is frequently diagnosed on antenatal ultrasound or at birth.^{2,4,5}

In this study, we explore the mode of presentation, reasons for the delay, management, and outcome of undescended testes in adolescent males in our centres over a five-year period.

MATERIALS METHODS

This was a retrospective study of adolescent patients who presented and were managed for undescended testis in two centres over a five-year period (from January 1, 2015 to December 31, 2019). The medical records of all patients who had undescended testis were retrieved from our Medical Records Departments. Patients between the ages of 11-19 years with a diagnosis of undescended who were managed over this period were analyzed.

A data proforma was used to retrieve information pertaining to the basic characteristics of the patients, reasons for delayed presentation, clinical characteristics, type of surgery done, intra-operative findings, and postoperative outcome. Informed consent was obtained from patients whose clinical photographs were used in this study.

Statistical analysis was performed using statistical package for social sciences, SPSS version 21 software package (SPSS, Chicago, IL, USA) and presented as a chart, frequency, and percentage.

RESULTS

A total of 48 patients with undescended testis underwent surgery at the two referral centres during the period of January 1, 2015 to December 31, 2019. Based on the age inclusion criteria, 10 subjects (20.8%) of 11-19 years were included in the study. The mean age at the time of surgery was 13.2 years, with an age range of 11- 17 years. Figure 1 shows the age distribution of the patients.

The majority of the patients (n=8; 80%) were delivered either at home or in a Primary Health Care centre. The pathology or absent testis was noticed beyond two years of age in half of the patients (n=5,

50%). The highest educational level of the mothers of the patients was generally low with only one

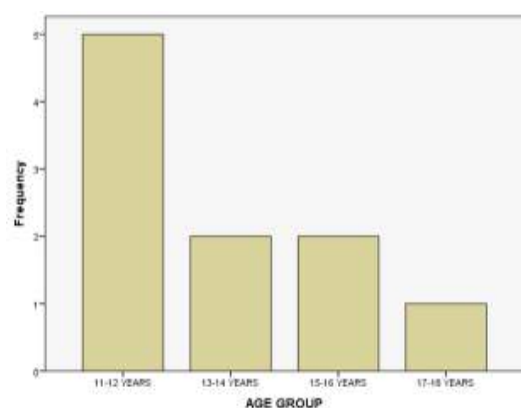


Figure 1: Age distribution of the patients



Figure 2: Right underdeveloped hemiscrotum: a common presenting complaint and examination finding in patients with undescended testis.



Figure 3: Left underdeveloped hemiscrotum with a visible mass in the left groin.



Figure 4: External ring undescended testis delivered into the wound.



Figure 5: Inguinal canal undescended testis.

Table 2: Clinical features and operative outcomes of the patients

Variables	Variable sub-divisions	Frequency (n)	Percentage (%)
Side of undescended testis	Left	3	30
	Right	7	70
Site of undescended testis	External ring	6	60
	Internal ring	2	20
	Inguinal canal	2	20
Characteristics of undescended testis	Normal	2	20
	Reduced	7	70
	Fibrotic	1	10
Surgery performed	Orchidopexy	9	90
	Orchidectomy	1	10

(10%) having tertiary level of education. Other basic characteristics are as displayed in Table 1. Empty scrotum was the main reason for consultation in all the ten (10) patients.

Unilateral right undescended testis was seen in seven out of the ten subjects (70.0%) and unilateral left undescended testis in 3 (30.0%). None had bilateral undescended testes. The testis was located in the external inguinal ring in the majority (60%) of the patients with a reduced testicular volume in 70% of the patients. **Table 2** showed the clinical features and operative outcomes of the patients.

The testis was palpable in the eight patients with the undescended testis located either in the inguinal canal or the external inguinal ring. These were also localized earlier by ultrasound scan. Ultrasonography was not able to localize the undescended testis in those located in the internal inguinal ring. A simple orchidectomy was performed in one (10%) patient due to atrophic testis. One patient had post-operative wound infection which resolved following a five-day antibiotics treatment. The patients were followed up for about six to 12 months.

Table 1: Basic characteristics of the patients

Variables	Variable subdivisions	Frequency (n)	Percentage (%)
Place of birth	Home	5	50
	Health Center	3	30
	Hospital	2	20
Preterm/term	Preterm	2	20
	Term	8	80
Age Noticed	At birth	4	40
	Before 2 years	1	10
	2-5 years	2	20
	6-10 years	2	20
	More than 10 years	1	10
Mother's level of education	None	3	30
	Primary	4	40
	Secondary	2	20
	Tertiary	1	10
Reasons for delayed presentation	Mother was told it will come down on its own	4	40
	Did not know where to seek help	1	10
	Financial standing	5	50

DISCUSSION

The late diagnosis and treatment of undescended testis can lead to permanent damage. In the West African sub-region, most boys with the condition present much later than the age of two years when significant irreversible pathologic changes have taken place in the testes.^{6,9} We undertook this study to evaluate the modes of presentation, reasons for the delay in presentation, and outcome of management of adolescent patients who presented with undescended testis over five years in our hospitals and compare our results with those obtained in other centers.

Cryptorchidism is the most common congenital anomaly of the male external genitalia. Overall, the prevalence rate is approximately 3% in full-term newborn males decreasing to about 1-2% in boys older than one year because of spontaneous descent of the testis.^{1,3,4} The majority of the patients present with complaints of an empty scrotum (Figure 2). The heightened sexual awareness among the adolescence makes them ask several questions about their sexuality and sexual image. The discovery of an empty hemiscrotum, therefore, becomes a source of concern prompting presentation in this age group.

Undescended testis is more common on the right⁶ and in the majority of cases the testis is either visible or palpable in the groin (Figure 3). A similar finding is reported in this study with right undescended testis occurring in 70% of the patients. This finding is however, at variance with the finding of Gama *et al*¹¹ in Ethiopia who reported a higher prevalence on the left. Cryptorchidism generally occurs predominantly on one side than on both sides.^{2,6,8} All patients in this study had unilateral undescended testis in keeping with findings from other climes. The finding of this study however differed slightly from the literature on the incidence of bilateral undescended testis which is in the range of 12% to 55%^{2,6,7}, perhaps due to small size of this study.

The location of the undescended testes most times presents some difficulties with the true location oftentimes correctly determined only during surgery.⁶ The patients in **Figures 4** and **5** had the true location of the undescended testis determined intra-operatively. The external inguinal ring was the most common location of the undescended testis in this study. A similar finding was reported by Ekpemo *et al*⁶ in southeastern Nigeria. However, Gama¹¹ and colleagues reported the inguinal canal as the most common location when they reported 91% of undescended testis in the inguinal canal in their study. In two (20%) patients, the testes were not palpable. This was comparable to the finding of 26% impalpable testis earlier reported in Zaria.⁸ Ultrasound was not helpful in localizing these two impalpable testes which were found in the internal inguinal ring during surgery. Ultrasonography has been reported to give false negative rates in the neighbourhood of 50% and is believed not to be superior to a careful clinical examination by a skilled surgeon. Laparoscopy is the gold standard in the preoperative localization of non-palpable undescended testes.^{4,5} However, it is not readily available in the two centres of this study our environment.

The principal benefits of treatment of undescended testes include improved fertility, reduced risk of testicular torsion, testicular trauma, testicular tumours, and psychological injury.^{2,5,8,13} In infants, appropriate localization of the testis is necessary for surgical intervention as the approach is tailored to the location of the testis. In adolescence and adults, it is still necessary to localize the testes and look out for the complications. Several reports have noted that undescended testes in adolescence are only functional endocrine wise but non-functional in terms of spermatogenic function with no

improvement in the fertility rates.^{7,9,10}

Histologic studies from testicular biopsies at surgery in adolescents and adults with cryptorchidism showed a spectrum of histologic changes ranging from significant germinal hypoplasia, hypospermatogenesis to hyalinization of tubules.^{3,4}

Most individuals with these histological features present with severe oligospermia or azoospermia.⁴

Surgery is the gold standard in the management of undescended testis as it leads to better testicular outcomes.^{5,6,8,11} Although hormonal treatment is a recognized management modality, it is largely ineffective.¹¹ All patients in this study had open groin exploration. Nine had orchidopexy while one had orchidectomy due to severe testicular atrophy.

Current management guidelines recommend orchidopexy at age six to 18 months to optimize the fertility potentials.^{1,4,11} Orchidopexy in adolescents and adults is usually considered a cosmetic operation that ensures a palpable testis for clinical examination instead of inducing spermatogenesis.^{4,11} Orchidopexy, however, plays a role in the preservation of normal testosterone level and hence sexual performance.^{7,9,13}

The main reasons for the late presentation in this study were poor financial standing, misinformation from first contact healthcare providers, and poor knowledge about the pathology and access to centres where it can be managed. In addition, the mothers of the patients are poorly educated and delivered either at home or in the primary health centres where knowledge and information regarding undescended testis is scarcely available. Similar studies in our environment have also implicated these factors in the delayed presentation of patients with undescended testis. The principal limitations in this study were poor patient record keeping and few numbers of patients which may have biased the results. Also, many patients were lost to follow-up with little data on the follow-up findings.

CONCLUSION

The late presentation of undescended testis in our environment is harmful to good outcomes. Routine genital examination of newborns and health awareness campaigns should be encouraged as these will result in early presentation and forestall progression to detrimental complications

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Declaration of conflict of interest

The authors have no conflict of interest to declare

Declaration of patient consent

The authors certify that they obtained consent from the parents of the patients whose images appeared above. They have given their permission for their clinical photographs and information to be reported in the journal. They understand that their names will not be published and due efforts will be made to conceal their identity.

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