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Undescended Testes: Contemporary Factors Accounting for Late Presentation

O.H. Ekwunife*, J.O. Ugwu, C. Onwurah, C.C. Okoli, L.K. Epundu

Department of Surgery, Nnamdi Azikiwe University Teaching Hospital Nnewi, Nigeria

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KEYWORDS

Cryptorchidism;
Late presentation;
Orchiopexy;
Testicular atrophy;
Scrotal examination

Abstract

Introduction: Early detection and treatment of undescended testes by orchiopexy by 6–12 months of age is important to minimize germ cell loss and improve the individuals' fertility index. Decades since after the adverse relationship between the delayed treatment and infertility was established, we are still having young boys presenting very late with undescended testes.

Objective: To understand the current reasons behind the increasing rate of late presentation of boys with undescended testes.

Patients and methods: Clinical records of patients managed for undescended testis from January 2011 to December 2016 were reviewed. In addition, where the needed information was not recorded in the case files, telephone interviews and/or invitation for a clinical examination were employed when necessary to obtain complete data.

Results: There were 39 patients with 50 undescended testes (16 left, 12 right and 11 bilateral). The age range at presentation to the hospital was from 1 day to 11 years. Undescended testes were noticed in 27 (69%) children at the age one year or less. Of this number, 19 (70%) sought medical attention at any hospital within one year of age of the child, 11(41%) were presented to our unit for treatment within the child's first birthday, and 7 (26%) had surgical treatment within 2 years of age. Age at surgery ranges from 16 days to 11 years.

The delay in presentation progressively declined as the parental academic level increases.

Only 7 (18.0%) and 2 (5.1%) children were examined by a doctor after birth and at 6 weeks post natal visits, respectively. A majority of the empty scrotum was first noticed by the parents/grand mother in 25(64%) children as against 12 (31%) by health workers.

Causes of late presentation include: parental ignorance of the abnormal position of the testes, 14 (35.9%); wrong information by clinicians at the hospital of first visit, 9 (23.1%) and erroneous belief that the testes will still descend, 8 (20.5%).

* Corresponding author.

E-mail addresses: hyginusekwunife@yahoo.com, hyginusekwunife@gmail.com (O.H. Ekwunife).

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At surgery, more testes in those aged 2 years and above were of low volume when compared with those aged less than 2 years.

Conclusion: Majority of children with undescended testes are still being presented late for surgical correction, with its attendant adverse consequences on fertility. Non examination of the newborn by clinicians, inadequate parental health education and delayed or neglected referral are the major responsible factors.

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Introduction

Undescended testis is the most common disorder of sexual differentiation in boys; and it is defined as the testis that is not in the scrotum or cannot be brought down into the scrotum during physical examination [1]. It affects about 1.0–4.6% of term neonates, though value is higher in the preterms (1.1–45.3%) [2]. Infertility, sub-fertility, neoplasm, inguinal hernia and testicular torsion are the important sequelae of this abnormal development. Beyond one year of age, the incidence of azoospermia in un-treated undescended testis ranges between 13% and 89% in unilateral and bilateral cases, respectively [3,4]. Early detection and treatment of undescended testes by orchiopexy between 6 and 12 months of age is thus important to minimize this germ cell loss and improve the individual's fertility index, especially in those whose gonocytes has transformed into the Ad (dark) spermatogonia [3].

Decades since after the adverse relationship between the delayed treatment and infertility was established, we are still having young boys presenting very late with undescended testes. Despite the rising cases of male infertility in our clime, it seems that inadequate attention has been paid to undescended testes as a possible contributor. Although published reports on undescended testes in Nigeria are still few, in almost all the reports, late presentation and treatment were also identified as a challenge [5–7].

In our practice, we are also faced with similar challenge of rising rate of late presentation of children with undescended testes. And except we fully understand the reasons behind this delayed seeking of surgical care behaviour, we may not be able to put up measures to reduce it. This forms the basis of this study on the current factors behind continued late presentation of boys with undescended testes to our surgical service.

Patients and methods

The study is a cross sectional one, utilizing data that were both retrospectively and prospectively collected.

Hospital records of patients managed for undescended testes at Nnamdi Azikiwe University Teaching Hospital Nnewi, a tertiary hospital, from January 2012 to December 2016 were reviewed and relevant information on bio-data, clinical features, reasons for late presentation and outcome of treatment were extracted.

Late presentation was defined as those cases that presented to us for the first time or were treated after the 2nd year of life. Delayed

treatment refers to those that accessed surgical correction after the 2nd year of life even though they presented before the second year of life. In patients with staged surgery, the second stage was done 6months after the first.

Where the needed information was not recorded in the case files, telephone interview of the parents were employed when necessary to obtain complete data. Where necessary, patient and parents were invited for a clinical examination.

Telephone interview was conducted by an interviewer trained for the purpose. Oral informed consent was obtained from the responders, and they were at liberty to choose an interview time conducive for them. Assent from older children was also obtained.

All children with undescended testes who were treated over the period, whose parents/guardian gave oral consent and whose data were complete were included in the study.

Four cases were excluded comprising those with incomplete data, those that declined consent or failed to report for clinical assessment when invited.

All patients were placed on continued regular clinic follow-up to monitor testicular development.

Statistical Package for Social Science (SPSS) Statistics for Windows (version 21.0 Armonk, NY: IBM Corp.) was used for data analysis. Comparisons between variables were done using Chi-square tests. Statistical significance was inferred at *P*- level of <0.05.

There is no conflict of interest, and no funding was received for the research.

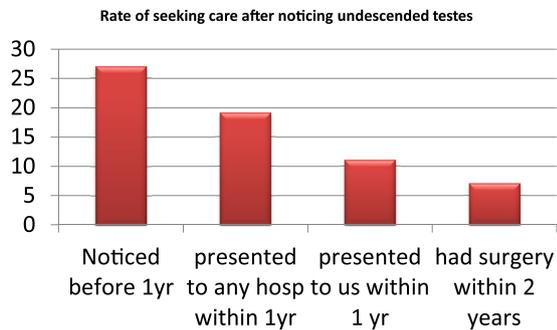
Results

There were 39 patients with 50 undescended testes (16 left, 12 right and 11 bilateral). The age at presentation to the hospital ranges from 1 day to 11 years with a median and mean values of 48.67 and 51.14(42.75) months, respectively.

In 27 patients, undescended testis was first noticed when the child was still within the first year of life. Out of this number, 19(70.4%) sought medical attention after the discovery at any hospital nearby while the child is still a year or less. A lesser number, 11(40.7%) was able to present to our paediatric surgery clinic for treatment before

Table 1 Influence of parental education on the time of presentation [comparison of mean ages (in days) at presentation].

	Primary	Secondary	Tertiary	F	P- value
Mother	2281.25 ± 1005.13	1706.18 ± 1393.15	1206.22 ± 1181.97	1.454	0.247
Father	2555.00 ± 1005.13	1597.54 ± 1374.71	807.33 ± 767.30	2.240	0.101

**Figure 1** Rate of seeking care after noticing undescended testes.**Table 2** Who first noticed absence of the testicle in the scrotum?

Who noticed the empty scrotum?	Frequency	Percent
Delivery nurse	2	5.1
Doctor	10	25.6
Father	1	2.6
Mother	23	59.0
Grandmother	1	2.6
Patient	2	5.1
Total	39	100.0

one year of age. Only 7(25.9%) had surgical treatment within 2 years of age (Fig. 1).

The delay in presentation was worst when the parent's highest level of education was primary level. As the parents highest attained level of education increased, the delay in presentation progressively declined, and is lowest in parents that attained tertiary level of education. Table 1 shows the relationship between the highest education level attained by the parents and the mean age at which the subjects were presented to the hospital; however this is not statistically significant.

A majority of the children, 32(82.1%) was delivered in the privately owned hospitals. The rest were in the tertiary hospital 3(7.7%), maternity home 3(7.7%) and general (secondary) hospital 1(2.6%).

The parental response to the question on whether the child's groin was examined by a doctor after birth (but before discharge) and at 6 weeks post natal visits showed that only 7(18.0%) and 2(5.1%) respectively, were examined.

A majority of the empty scrotum was first noticed by the parents/grand mother in 25(64.1%) cases as against 12(30.8%) by the medical personnel (Table 2).

The responses to what made the parents bring their children late to us for treatment after observing the undescended testis were as tabulated in Table 3.

Table 3 Reasons for late presentation to the Paediatric Surgical Unit.

Reason for delay	Frequency	Percent
Believes that the testis will still descend	4	14.3
Presented to a hospital earlier but was told to wait for descent without time limit	5	17.9
Unaware that the testes were undescended until prior to presentation	14	50.0
Non compliance to advised follow up schedules	3	10.7
Financial constraints	1	3.6
Delayed at previous hospital	1	3.6
Total	28	100

Table 4 Surgical procedures done.

Surgery done	Open		Laparoscopic		Total
	Left	Right	Left	Right	
One stage orchiopexy	16	9	5	5	35
Two stage orchiopexy	3	4	1	1	9
Exploration (absent testis)	–	–	3	2	5
Orchiectomy	0	0	1	0	1
Total	19	13	10	8	50

A majority of the parents or caregivers 38(94%) responded positively that they are aware that undescended testis should be treated and 35(89.7%) knew that it may result in some complication if not treated. Ten parents (25.7%) believed that treatment should be delayed till after one year while 8(20.5%) are unaware of when it should appropriately be treated. There is no statistical difference when awareness is compared with the level of education of the parents.

After presentation, surgery was delayed in 12(30.8%) patients for 3months and above due to the following reasons: parental non compliance to appointment occasioned by family and social issues e.g. travel, bereavement (no. = 4); long surgery wait list (no. = 4); financial constraints (no. = 2); disruption of service due to health workers industrial action(no. = 2)

Age at surgery for all patients ranged from 16 days (in a prune belly neonate that underwent surgeries for an abnormal urinary tract and defective anterior abdominal wall) to 11 years (in neglected cases). Table 4 shows the operative procedures carried out.

Discussion

The ideal timing for the correction of undescended testes has been a debatable topic but most studies currently agree that undescended testes should be corrected between 6 and 12 months of age [8]. This is because after 6 months the testes is increasingly unlikely to have a spontaneous decent, and after one year, the risk of impaired spermatogenesis also increases. Previously (in the period covered

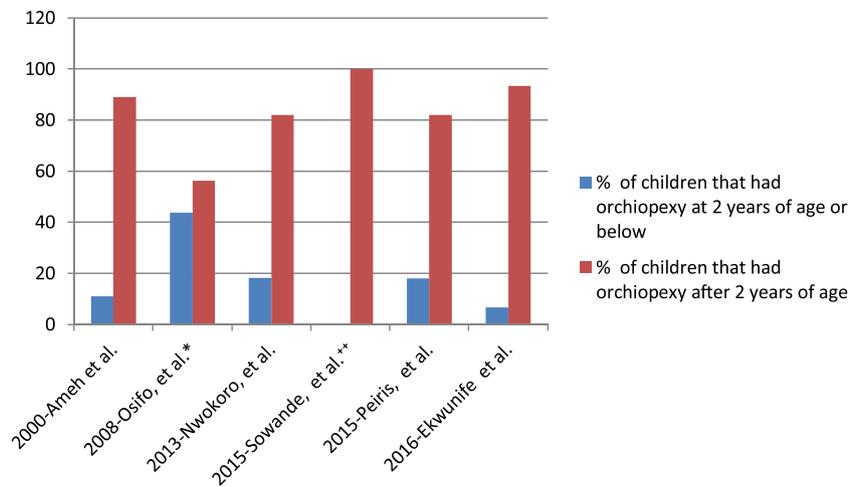


Figure 2 Comparing age at surgery across different institutions.

*Authors categorised their study into those that had surgery at 5 years of age and below, and those that had surgery after 5 years of age.

**Study was only on non palpable testes.

by the present study), the hospital policy was to schedule elective surgeries for undescended testes within 1–2 years of age. This has recently been reviewed down to 6–12 months.

From our study, only 11(28.2%) of the children presented within one year of age. Surgical treatment was completed in infancy in only 2(5.1%) children and within 2 years of life in 9(23.1%). This compares with values from other parts of Nigeria as shown in Fig. 2 [5,6,9–12]. The implication is that, over a course of approximately two decades, most of the children were presented at an age beyond the optimum recommended age required for a successful treatment outcome. On the average, more than two thirds of children received treatment for undescended testes after the 2nd year of life, some even up till after puberty. Though late presentation is still a worldwide issue, comparatively, local figures from Nigeria are still way below the average. It is accepted that after the second year of life an uncorrected undescended testes must have significantly lost its spermatogenic function. Currently, significant loss has been noticed even after one year [8]. The contribution of undescended testes to the rising cause of male infertility cannot thus be underestimated [13].

Understanding the factors influencing the late presentation and treatment is important, so as to improve on the outcome

Ignorance and lack of health education has been attributed to influence health seeking behaviours in many disease conditions in sub Saharan Africa [14]. Our study showed a progressive decline in the delay in presentation as the academic level of the parents increase (Table 1). However, there is no significant statistical difference when the means were compared.

More than four fifth of the children were delivered in the private hospitals. In these privately owned institutions, often times newborn babies are not thoroughly examined and followed up, due to dearth of trained medical personnel. Many of these hospitals are usually manned by one or two medical doctors, very few trained nurses and many nurse assistants. Ideally, the newly born should be examined after birth; in detail within the first 48 hours of birth, and at 6 weeks post partum [15]. Data from our study showed that less

than one fifth of the patients were examined in detail at birth and even lesser still at 6 weeks post partum visit. This non adherence to newborn examination guidelines leading to delayed presentation of undescended testes was also supported by two other findings from the study. Firstly, only in a quarter of cases 10(25%) and 2(0.1%) did either the doctor or the nurse initially discover the absence of the testis in the scrotum. Secondly, almost half of the patient's caregivers (48.7%) reported to our hospital on self referral.

These all suggest that lack of assessment and diagnosis at the hospital of birth is a major contributor to the lateness in presentation for care. It is thus important for awareness campaigns, re orientation of doctors on scheduled and thorough examination of newborn to be carried out to increase the chances of early detection and referral. A good avenue for this awareness is by utilizing the doctors Continuous Professional Development (CPD) activities to promote a program on detailed examination and early referral of cases with undescended testes. Also important is the routine monitoring of practices in the hospitals especially in the privately owned, by relevant supervising agencies to ensure adherence to practice guidelines.

In-hospital delay is another factor leading to delay in accessing care. Normally, registered patients were worked up and would undergo surgery once they are fit and the criteria for surgery met. However delay in surgery sometimes occurs and the most common factors included long surgery wait time and parental non-compliance to appointment schedules; both of which contributed to 60.7% of the delays. Family conflicts, travels and bereavement were also common reasons parents gave for not meeting up with the appointments. The reasons responsible for the long wait time probably may include insufficient operating sessions, insufficient manpower, and ineffective theatre time utilization. Injudicious use of time in the theatre has also been collaborated by other local studies [16].

Financial constraints unlike in many other reports did not very adversely affect the time interval of receiving surgical care once they present to the hospital. Remarkably, close to 95% of the children were not enrolled in the National Health Insurance

Table 5 Comparing the state of the testes with age at surgery.

State of right testis	Less than 2 years (No.)	More than 2 years (No.)	Total	X ²	P value
Low volume/atrophic	9	28	37	8.420	0.004
Normal volume	9	4	13		
Total	18	32	50		

Scheme or any other health insurance scheme. An explanation may be adduced to the cultural priority which the people attach to any issue that may affect procreation. Once they were adequately counselled, parents are often willing to present their children for any advised treatment option.

It then can also be adduced that parental ignorance or misinformation concerning descent of the testes is responsible too for the late presentation. Supporting this is the response rate of 35% parental ignorance of the disease condition of their wards prior to presentation. Also close to a quarter of the parents (23.1%) presented to the initial hospitals and was told that the testes will descend without the doctors emphasizing the duration for observation. No follow up visits or referral were also advised. Most of these parents came on self referral after interacting with relations and friends. A lot of the mothers were thus not appropriately informed. To buttress this is the fact that while almost all mothers knew that undescended testis can be treated, only 10 (%) knew when it should be treated. Again, this is why proper education of the medical personnel on management protocols is very important. They can then be able to properly inform the mothers better during the antenatal visits, and be able to effectively examine the new born at scheduled intervals and refer timely enough for a better outcome.

It is long established that outcome in terms of spermatogenesis worsens significantly when treatment is delayed beyond two years of age. We cannot yet assess this long term consequence in this study. However, in the short term we observed a significant increase in the number of low volume testes in the patients presenting late or with delayed treatment beyond two years (Table 5, $P=0.004$) when compared with those treated before 2 years. Again, 2 years was taken as the benchmark as this was the unit protocol during the time of the review. Currently orchiopexy is being done at between 6 and 12 months of age. Several other reports have also documented that the volume of the undescended testes diminishes gradually if correction is delayed [17].

Conclusion

Majority of children with undescended testes are still being brought late for surgical correction, with its attendant adverse consequences of low testicular volume and future fertility concerns. Non examination of the newborn, inadequate parental education and delayed or absence referral are the major actors responsible for the persistent late presentation.

Conflict of interest

The authors declare that there are no competing interests whatsoever concerning the study, its procedure or outcome.

Recommendations

Appropriate education of both the medical personnel and the parents is the key to reducing late presentation. Promotion of detailed newborn examination within the first 72 h of birth and at 6 weeks of life; and the need to refer undescended testes for correction between 6 and 12 months should be undertaken at both the undergraduate level and in the continued professional development (CPD) sessions of practising doctors. Parents should also be educated on the need for early detection and correction, especially during the antenatal sessions.

Authors' contribution

Okechukwu H. Ekwunife: conceptualization, design, analysis, writeup.

Jideofor O. Ugwu: write up, review.

Chukwuka Onwurah: data collection, review.

Chinedu C. OkOkoli: analysis, review.

Linda K. Epundu: interview, data collection.

Ethical committee approval

Ethical approval was obtained from the Nnamdi Azikiwe University Teaching Hospital Ethics Committee.

Consent from the patients

Informed consent was given by all the parents/caregivers before being enrolled into the study.

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