Undescended testes in a developing country: A study of the management of 71 patients

Osifo Osarumwense David, Evbuomwan Iyekoretin

ABSTRACT

Background: A testis located outside the scrotum is prone to a lot of complications but early detection and correction give good result. The purpose of this study was to determine the pattern of presentation, complications recorded, the surgical treatment offered and outcome in a developing country. **Patients and Methods:** A retrospective study of patients that presented with undescended testes at the University of Benin Teaching Hospital between January, 1997 and December, 2006. **Results:** A total of 76 orchidopexies and 10 orchidectomies were done on 71 patients with undescended testes during the period. They were aged 9 months and 47 years (mean 8.3 ± 7.9 years) at surgery. Only 31 (43.7%) patients presented at age 5 years and below while 40 (56.3%) presented after 5 years. Seventy-two (83.7%) testes were palpable, ultrasound scan was used to locate 10 (11.6%), while 4 (4.7%) could only be located during groin exploration. Intraoperative assessment of the testes were 54 (62.8%) normal testicular volume, 22 (25.6%) reduced volume and 10 (11.6%) atretic. All those aged 5 years and below had normal/reduced testicular volume and all had orchidopexy whereas those above 5 years with normal/reduced testicular volume had orchidopexy and those with atretic testis had orchidectomy. Post operatively, testicular growth was recorded only among the pre/pubertile boys, the testes retracted in two patients, scrotal skin infection in one, and intra scrotal haematoma in two. **Conclusion:** Delayed presentation resulted in morphological changes, increased complications, number of orchidectomy and reduced chance of testicular growth post orchidopexy.

Key words: Developing country, management, outcome, undescended testes.

INTRODUCTION

The testes are specialized paired organs that produce spermatozoa and androgenic hormones. By the 35th to 40th week of gestation they descend into the scrotum where they function optimally at 33ºC; a 3-4ºC less than core body temperature.[1] A testis located in the inguinal canal or abdomen is exposed continuously to 35ºC and 37ºC respectively with consequent progressive alteration in morphology and physiologic functions as well as an increased risk of complication.[1-3] The retractile testis has no pathological consequence while the ascending and truly ectopic testis are rare.[1,4]

At age 2 years, a testis residing outside the scrotum and in the high temperature zones in the abdomen or inguinal canal would start to deteriorate and this become established at age 5 years. Early surgical correction helps to avert this and reduce the risk of complication.[1] In developed countries where the level of awareness is high and patients present early, the rate of complications are low. In developing country, however, patients present either following accidental discovery by health workers, parents/caregivers or after complications have taken place.[5,6] Treatment of undescended testis in our setting, therefore, pose a great challenge as the testicular vessels are already shortened, the testis has reduced in volume, became atretic or may have undergone malignant change or other irreversible complications.[3] The non availability of facilities to do laparoscopic or microsurgical orchidopexy[7-9] in most centres in the developing countries further compound the problems.

The aim of this ten-year retrospective study of patients that presented with undescended testis in our hospital is to determine the pattern of presentation, the location/nature of testis as seen intraoperatively, complications recorded, the surgical treatment offered and outcome, so as to make recommendations that may lead to improved results.

PATIENTS AND METHODS

University of Benin Teaching Hospital is a tertiary hospital located in Benin City, Edo State, in the South-south Geopolitical Zone of Nigeria. Patients

Paediatric Surgery Unit, Department of Surgery, University of Benin, Teaching Hospital, Benin City, Nigeria

Correspondence:
Dr. Osifo Osarumwense David
Paediatric Surgery Unit, Department of Surgery,
University of Benin,Teaching Hospital, Benin City, Nigeria.
E-mail: leadekso@yahoo.com

are referred from the primary, secondary and private health institutions in the state and neighbouring states. There were three consultant paediatric surgeons and one consultant paediatric urologist in the unit during the period. Undescended testes were treated by all the consultants and the patients were admitted via the surgical outpatient clinic and the emergency unit of the hospital. During the period, testicular volume was assessed with orchidometer (Prader's balls). Volume of 1-3 ml was regarded as normal; less than 1 ml reduced; and less than 1ml with non palpable testicular tissue as atretic in pre-pubertile children, 4ml and above as normal; 2-3 ml reduced and less than 2 ml and soft as atretic in pubertile boys, 12-25 ml normal; 5-10 ml reduced and less than 4 ml and soft as atretic in adults.

The case files of patients with undescended testes treated between January, 1997 and December, 2006 were retrieved from the medical records and studied. The data extracted from the case files included patient's age, side affected, how undescended testes was discovered, complications of undescended testes, associated anomaly, socioeconomic status of the patients/place of residence, reasons for late presentation, location and size of testis as measured intraoperatively, surgical treatment given, post operative complications, post operative testicular growth and the age at which orchidopexy improved the growth. Those whose case files (n=12) could not be retrieved for analyses were excluded. The data obtained were analyzed using SPSS and presented as count, frequency and percentage. Categorical data were analyzed using Chi-square test, where necessary P-values less than 0.05 and greater than 0.05 were regarded as significant and non-significant respectively.

RESULTS

A total of 76 orchidopexies and 10 orchidectomies were done on 71 patients with undescended testes during the period. They were aged 9 months and 47 years (mean 8.3 ± 7.9 years) at surgery. Only 31 (43.7%) patients presented at age 5 years and below while 40 (56.3%) presented after 5 years. The left side was more affected with 34 (47.9%) involved in unilateral cases than right side 22 (31.0%), Table 1 while bilateral involvement was recorded in 15 (21.1%) with no significant statistical difference (P=0.4021) in terms of complications recorded. The testes were located in inguinal canal in 55 (64.0%), scrotal neck in 17 (19.7%), deep ring in 9 (10.5%) and abdomen 5 (5.8%). The location did not, however, affect the nature of testes or type of surgical treatment given (P=0.5143). Seventy-two (83.7%) testes were palpable, ultrasound scan was used to locate 10 (11.6%), while 4 (4.7%) could only be located during groin exploration. Undescended testes were mainly isolated lesions with hypospadias coexisting in four patients, prune berry syndrome in two and one each with gastroschisis and club foot.

Table 1: Shows side affected, location/nature of testes, why the patients presented and type of surgical treatment

Side affected	Frequency	Percentage
Right	22	31.0
Left	34	47.9
Bilateral	15	21.1
Total	71	100
Location of testes		
Scrotal neck	17	19.7
Inguinal canal	55	64.0
Deep ring	9	10.5
Abdomen	5	5.8
Total	86	100
Nature of testes		
Normal volume	54	62.8
Reduced volume	22	25.6
Atretic	10	11.6
Total	86	100
Why present to clinic?		
Parent's discovery	49	69.0
Self discovered	15	21.1
Complications	5	7.1
Infertility	2	2.8
Total	71	100
Surgical treatment		
Single-stage orchidopexy	49	57.0
Multistage orchidopexy	27	31.4
Orchidectomy	10	11.6
Total	86	100

Intraoperative assessment of the testes were 54 (62.8%) normal testicular volume, 22 (25.6%) reduced volume and 10 (11.6%) atretic. The mean age of those with normal testicular volume of 5.5 years, reduced volume 8.8 years and atretic 25.0 years was statistically significant (P<0.0001). Of those aged 5 years and below, 90.3% had normal testicular volume and 9.7% had reduced volume whereas of those aged above 5 years, 45.0% had normal volume, 37.5% reduced and 17.5% atretic. There was a significant statistical difference when complications recorded among those that presented at age 5 years and below was compared with those above 5 years (P=0.0002). Undescended testes were discovered in 49 (69.0%) patients by the parents, 15 (21.1%) self discovered, 5 (7.1%) due to torsion and 2 (2.8%) due to infertility. There was obvious delay in presentation as the mean age of the patients whose undescended testes were discovered by their parents was 4.7 ± 3.9 years, self discovered 13.1 ± 6.4 years,

torsion 16.8 ± 3.6 years and infertility 38.5 ± 12.0 years. Ignorance, none availability of birth attendant that can diagnose undescended testis and financial constraint were the dominant causes of delay in presentation.

Treatment offered were orchidopexy 76 (88.4%), 57.0% single, 31.4% multistage, and orchidectomy 10 (11.6%). Also, all those aged 5 years and below had orchidopexy; the 90.3% with normal testicular volume, were 79.0% single and 11.3% multistage, while the remaining 9.7% that had reduced testicular volume, were 6.5% and 3.2% single and multistage orchidopexy respectively. Among those above 5 years, the main procedure done was multistage orchidopexy for both normal and reduced volume because of shortened spermatic cord, and orchidectomy was done on all the atretic testes. There was no atretic testes and no orchidectomy done on those aged 5 years and below while the 10 atretic testes were among those aged above 5 years and all had orchidectomy with the observed rate of orchidectomy statistically significant (P=0.0037). Fowler-Stephen's and laparoscopic procedures as well as routine testicular biopsy were not done during the period.

Two years post orchidopexy; all the patients were lost to follow-up. Within the two years of follow-up, there was rapid testicular growth in all the prepubertile/pubertile boys whereas no appreciable growth was recorded in the adults. The testes retracted in two, scrotal skin infection in one, and intra scrotal haematoma in two, with no testicular infarction and mortality recorded among the patients.

DISCUSSION

Although undescended testis is a congenital anomaly noticeable at birth, only 43.7% of the patients in this study presented within the first 5 years of life, with a mean age at surgery 8.3±7.9 years. Morphological differences, complications and differences in surgical treatments offered the group that presented within age 5 years and those that presented after 5 years were remarkable in this series. Also, testicular growth could only be achieved among the prepubertile/pubertile boys and none among the adults two years after orchidopexy. These findings are similar to earlier reports[2,3,5,6,10] in this subregion but at variance with reports[1,11] from developed countries. The delay in presentation is partly a reflection of the level of awareness of the people, financial constraint and none availability of trained birth attendants that can diagnose undescended testis at delivery. In a survey conducted among district primary schools in Nigeria, Okeke *et al*,[12] discovered a prevalence of 8 children with undescended testis per 1000 children examined, and this was similar to reports in other parts of the world.[1,11,13] This finding does not, however, tally with the number seeking surgical consultation as only 83 patients were seen with undescended testis over a 10-year period in this study and 36 seen over a similar period by earlier worker[5] in Nigeria compared with 139 seen over 4 years in a more enlightened society.[11] Only a fraction of patients with undescended testis in this subregion, therefore, ever seek medical attention.

Undescended testis was not discovered by the birth attendants in any of our patients, apparently because most of the deliveries were conducted by traditional birth attendants that had no knowledge about the condition. The patients themselves, therefore, made the discovery in 21.1% cases, and those whose parents or relative could not discover it (as discovered by 69.0% parents in this series) only presented when complications such as torsion, malignancy and infection has occurred or when medical consultation was sought due to infertility as also reported by other workers.[2,3,6] The importance of imaging facility such as ultrasound scan, in locating cryptorchid testis cannot not be over emphasized particularly the intraabdominal and intracanalicular testes. A careful digital palpation located 83.7% in our series and 4.7% could not be located even with imaging until groin exploration was done. Ultrasound scan was useful in only 11.6% cases and this is similar to experiences also reported by earlier workers.[5,6,10,13] The usefulness of orchidometer (Prader's ball) in the assessment of testicular size has been well described in the literatures[14,15] and this was a very reliable and cost effective facility in this study.

Previous reports[1,5,10] agreed that undescended testis was more common on the right but the left (47.9%) was more involved in this study compared to 31.0% on the right and bilateral involvement as seen in 21.1%. The side involved and the location of the testis as seen intraoperatively did not affect the rate of complication and morphological changes. This is contrary to what is expected as the intraabdominal and intracanalicular testes are exposed to higher temperatures and hence increased complication rates. Histopathological changes were, however, not studied in this retrospective review because testicular biopsy was not routinely done during the period. This is a limitation in this study as histological changes may have occurred in a testis that appeared morphologically normal.[2,4,11] A prospective study that incorporates histopathological analysis in this subregion is advocated.

The age at presentation was a major determinant

of the morphological changes, complication rates, surgical intervention and post orchidopexy testicular growth as also seen in other reports.[2-5,11] There was a progressive decrease in testicular volume as the patient's age increased, hence there was a significant statistical difference observed between the group that presented within age 5 years and those that presented after ($P<0.0001$). A similar significant statistical difference was observed when complications recorded among the two groups were compared ($P=0.0002$). Single stage orchidopexy was the major surgical procedure for those that presented earlier whereas those that presented late (after 5 years) had mainly multistage orchidopexy.[5,6,10,11,13,14] This was mainly due to shortened testicular vessels which could not permit a single stage orchidopexy without undue tension and subsequent testicular infarction,[1] because neither Fowler-Stephen's, laparoscopic nor microsurgical orchidopexy[7-9,15,16] were feasible during the period. Whereas all those aged 5 years and below had no atretic testis and could be managed successfully by single and or multistage orchidopexies, among those aged above 5 years multistage orchidopexy was done with 10 orchidectomies done for the obviously atretic testes[2,6,11,13] and a significant statistical difference was observed ($P=0.0037$). The conventional subdartos testicular fixing was done in all the cases[5,10] and although the Bianchi single scrotal incision[17-20] is popular, it was not done in this series. The results and complications recorded were similar to earlier reports and that recorded using the Bianchi method[5,10,19-22] during the two years after operation. A follow-up protocol up to marital age was instituted but compliance was very poor because all the patients defaulted after two years.

In conclusion, patients with undescended testis presented late in our hospital because diagnosis by birth attendants were rarely made even though the anomaly was obvious at birth. The parents, patients themselves and development of complications drew attention to undescended testis. The delay in presentation resulted in morphological changes, increase complications, number of orchidectomy and reduced post orchidopexy testicular growth. Health awareness campaign, thorough genital examination after birth and regular screening of toddlers for undescended testis may result in early presentation.

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