

Management of undescended testes: a comparative study in England and Africa

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Objective The aim of our study was to determine the timing of referrals and the outcome of undescended testes (UDT) over a 4-year period in a tertiary centre in England, and to compare this with a similar centre in Nigeria.

Background data Cryptorchidism is a recognized cause of infertility and a key risk factor for testicular malignancy. Current recommendations are that orchidopexy be performed between 12 and 18 months of age; however, there is no consensus on this.

Materials and methods Data were obtained for orchidopexies performed between 2003 and 2007 from a tertiary referral centre in England. A standardized proforma was used to collect data into an Excel database, which was analysed and compared with data from a similar centre in Nigeria.

Results Eighty-eight patients from a tertiary referral centre in England underwent surgery for UDT. Fifty-six (63.6%) patients were referred and 38 (43.2%) patients were operated on within 2 years of age. Doctors and health visitors accounted for 69 (78.5%) referrals to the tertiary centre. Data from Nigeria demonstrated that of the 61 cases, 13 (21%) patients presented and 11 (18%) patients

were operated on by 24 months. Referral beyond 60 months of age in the English series was due to ascending testis, whereas in the Nigerian study, the delayed presentation was due to delayed referral from lack of knowledge of the condition.

Conclusion In England and Nigeria, there is a lack of definitive guidelines relating to the appropriate age of referral of patients with UDT. A structured care pathway is needed to enable early detection and definitive management. *Ann Pediatr Surg* 10:115–118 © 2014 Annals of Pediatric Surgery.

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Introduction

Undescended testes (UDT) is a common problem in newborn male infants, affecting 2–5% of the infants at birth and 1–2% of them at 3 months of age [1]. It has implications for fertility in later life, as germ cell counts for patients with UDT remain normal during the first 6 months of life, but then reduce along with Leydig cell numbers. It is a risk factor for testicular cancer and is also associated with complications such as testicular torsion and inguinal hernias.

Current guidelines stipulate that routine examination for UDT needs to be undertaken within the first 72 h after birth [2]. Thereafter, they should be examined again for UDT. In England, this is carried out at the 6th–8th-week check. It is not known whether there is a similar screening process in Nigeria. Current surgical guidelines are that early orchidopexy be performed before the age of 12–18 months [3]. Some authors also recommended intervention with an orchidopexy between 6 and 12 months of life to preserve spermatogonia for subsequent spermatogenesis and fertility [4].

Aim

Our study aimed to determine the timing of referrals and the subsequent outcome of patients with UDT in a tertiary centre in England and compare this with a

tertiary referral centre with a paediatric surgical unit in Nigeria, Africa.

Patients and methods

A retrospective study was carried out in a single centre in England during the period between 2003 and 2007, identifying 178 male paediatric patients (1–142 months old), who underwent surgery for UDT. Data were obtained using a standardized proforma from the theatre coding system for operations for UDT. Parameters obtained included patient demographics, age in months at presentation and at the operation, the interval between presentation and the operation, the affected side, the method of referral, reasons for late presentation, size of the testes, the operative procedure performed, complications and whether it was performed as a day case or as an inpatient. A similar dataset was collected from a single tertiary referral centre with a paediatric surgery unit in Nigeria, Africa, in accordance with the standardized proforma. The size of the testis was measured as a subjective scale comparing the contralateral testis. If the patient was first seen by a paediatric surgeon after 18 months of age, then this was considered as a late presentation.

Ethical approval was obtained by each hospital trust and consent filed in notes.

Results

Results from the English study

The results are from a single tertiary-level referral centre for paediatric surgery. Of the 178 cases of UDT identified between 2003 and 2007, complete data were available only in 88 patients. The other notes were not traceable at the time.

The majority ($n = 56$; 63.6%) of the patients were under 24 months old at the time of presentation. Fifty (56.8%) of these patients were less than 18 months old at the time of presentation, whereas six (6.8%) patients presented were between 19 and 24 months old. Fifteen (17.1%) patients were greater than 60 months old. Ten (11.4%) patients were operated at or before 12 months of age, whereas 22 (25%) patients were operated on after 60 months of age. Of the patients diagnosed by 18 months of age, 32 (36.4%) were operated on before 18 months.

Thirty-eight (43.2%) of the patients were presented late to the paediatric surgical department. Of these patients, the main reason for delay ($n = 15$; 17.1%) was retractile testes, which were referred only when noted to be retractile during the annual review in the community. Another reason cited in eight (9.1%) patients was families moving to different regions. Lack of knowledge of the condition was seen in three (3.4%) patients. Other reasons were cited in 10 (11.4%) of the patients, including failure to attend clinic appointments, previous misdiagnosis and multiple redo orchidopexies. Of the patients involved in the study, 15 (17.1%) were detected by the health visitor (personnel employed within primary care whose role is to support patients in the community), 19 (21.6%) were detected by their parents, and 54 (61.3%) patients by the doctor. Eleven (12.5%) patients had an associated anomaly: hernia in three (3.4%) patients, hypospadias in one (1.1%), long loop of vas in one (1.1%), and an ectopic testicle in one (1.1%) patient.

Of the patients operated on, 36 (40.9%) were right sided, 37 (42.0%) were left sided, and 15 (17.1%) were bilateral. Eighty-three (94.3%) patients with UDT were identified clinically, and five (5.7%) were identified by imaging, of which three (3.4%) were detected by ultrasound and two (2.3%) by MRI. Unilateral orchidopexies were performed in a majority of the cases ($n = 70$; 79.5%). Bilateral orchidopexies were performed in 14 (16%) of the cases, and an orchidectomy was performed in four (4.5%) of cases. The majority ($n = 83$; 94.3%) of the patients were operated on as day case procedures, whereas four (4.5%) cases had an overnight stay due to associated comorbidities and one (1.1%) patient stayed in for more than a night. Three (3.4%) patients had postoperative complications, which included redo orchidopexy in two and reduced testicular growth in one.

Results from the Nigerian study

The results of the African study, also from a tertiary referral centre with a paediatric surgical unit from Nigeria, are as given below. This includes the data of 61 patients involved in the study. A majority ($n = 35$; 57.4%) of the patients presented after 60 months (72–426 months) of age.

Eleven (18%) patients were operated on at or under 24 months of age, whereas 35 (57.4%) patients were operated on after 60 months of age. Of the patients diagnosed by 18 months of age, nine (14.7%) were operated before 18 months. Lack of knowledge was noted to be the main reason for late presentation, seen in 49 (80.3%) patients. In a majority ($n = 31$; 50.8%) of the patients, the parents discovered the condition, whereas in 13 (21.3%) patients, it was detected by the health visitor. In the remaining 17 (27.9%) patients, the condition was diagnosed much later in life, as a result of infertility.

Of the patients operated on in the Nigerian study, 24 (39.3%) were right sided, 22 (36.1%) were left sided, and 15 (24.6%) were bilateral. Fifty-two (85.2%) patients with UDT were identified clinically, whereas nine (14.8%) patients were identified through imaging (ultrasound). Thirty-four (55.7%) patients underwent unilateral orchidopexies, 10 (16.4%) underwent bilateral orchidopexies, five (8.2%) underwent unilateral multistage orchidopexies, two (3.3%) underwent bilateral multistage orchidopexies, and two (3.3%) patients underwent a unilateral orchidopexy with contralateral orchidectomy. Eight (13.1%) patients underwent unilateral orchidectomies. Intraoperatively, the size of the testes was noted to be normal in 26 (42.6%) patients, reduced in 24 (39.3%) patients and atrophic in 11 (18%) patients. Six (9.8%) patients developed postoperative complications, including wound infection, failure of growth, atrophy, and testicular retraction.

Table 1 shows a summary of the comparative data obtained from both the Nigerian and the English centres.

Discussion

Delayed management of UDT has significant implications to the patient later in life, namely, malignancy and infertility. Thus, it warrants early surgical intervention; however, the optimal age for an orchidopexy remains debatable. Previous retrospective studies demonstrated that early intervention within the first 24 months of life was beneficial in preserving fertility [5]. Another randomized study from Sweden showed that operating at 9 months led to an improved catch-up of testicular growth by 4 years of age compared with operating at 3 years [6].

The findings from our study suggest that in England, 56.8% of the patients presented with UDT by 18 months, whereas 63.6% of the patients presented by 24 months and 43.2% were operated on before 24 months. This is a significant improvement compared with an initial audit carried out in Northamptonshire between 1992 and 1994, wherein only 19% of the cases had surgery performed by 24 months of age [7]. A similar study performed at our own centre 4 years before this study did not show significant improvement in the referral pattern [8]. Our recommendation on the basis of this study was a referral to the surgeon after the 8-month check. The findings in the African study, however, showed that a majority of the patients presented and were operated on after 60 months of age. This demonstrates the need for a structured referral pathway within the primary healthcare system.

Table 1 Summary of comparative data between the English and the Nigerian centres

Parameters	Comparative data [n (%)]	
	Nigeria	England
Age at presentation (months)		
≤ 18	10 (16.4)	50 (56.8)
19–24	3 (4.9)	6 (6.8)
> 24	48 (78.7)	32 (36.4)
Age at operation (months)		
< 24	11 (18)	38 (43.2)
≥ 60	35 (57.4)	22 (25)
Reason for late referral		
Lack of knowledge	49 (80.3)	3 (3.4)
Moving	–	8 (9.1)
Retractile	–	15 (17.1)
Method of referral		
Health visitor	13 (21.3)	15 (17.1)
Parents	31 (50.8)	19 (21.6)
Other	17 (27.9)	54 (61.3)
Side of UDT		
Unilateral	46 (75.4)	73 (82.9)
Bilateral	15 (24.6)	15 (17.1)
Operation performed		
Orchidopexy	53 (86.9)	84 (95.5)
Orchidectomy	8 (13.1)	4 (4.5)
Size of testes		
Normal	29 (38.1)	62 (60.2)
Reduced	34 (44.7)	28 (27.2)
Atrophic	13 (17.1)	13 (12.6)
Location of UDT		
Intra-abdominal	16 (21.6)	7 (6.8)
Canal	44 (59.4)	63 (61.2)
External ring	6 (8.2)	24 (23.3)
Other	8 (10.8)	9 (8.7)
Complications	6 (9.8)	3 (3.4)
Associated anomaly	7 (11.5)	11 (12.5)

UDT, undescended testes.

Detection of the condition was by a health professional in 78.4% of the cases in the English study. In contrast, 21.3% of the cases were detected by a health professional in the African study. This correlates well with data from an African study in Tanzania, wherein 26.7% of the patients were detected by a healthcare staff [9]. The reason for the improved referral pattern in England could be due to the well-established primary healthcare system and the National Institute for Health and Clinical Excellence (NICE) guidelines on newborn checks.

In the African study, 80.3% of the patients were not detected or operated on before 60 months of age due to a general lack of knowledge of the condition and a lack of primary healthcare facilities. Owing to this delay, only 42.6% of the patients had normal intraoperative appearances of their testes. These data compare well with data analysed from other African centres. In a study from Nigeria, 11% of the patients with UDT had an orchidopexy performed before 2 years, whereas 58% were operated on after 5 years of age [10]. A study from East Africa showed that 50% of the patients were operated on after 5 years of age [11].

In the English study, the main reason for presentation and subsequent operation after 60 months of age was the presence of retractile testes. These patients were followed up annually outside the tertiary centre and were referred when the testes became ascended, and thus, they were operated on at a later time. All the

retractile testes that subsequently ascended had good cord length and a well-developed scrotum. Intraoperative findings for these patients in our study showed that 12.6% were atrophic and 27.2% of the testes had a reduced size. Operative intervention at an earlier stage may have decreased the risk of atrophic testes or small-volume testes. This was shown in a study on UDT in adults in an awareness-poor region in Nigeria, whereby 60.7% of the patients had atrophic testes [12]. There is no clear consensus on the management of retractile testis. Historically, management of retractile testis has been limited to observation as this is felt to be due to increased cremasteric reflex in young boys [13]. There is currently more evidence that testes can ascend in previously descended testes, and 85% of the time, there is a history of retractile testes [14]. Another study looking at the natural history of retractile testes concluded that 32% of the cases become ascending or acquire UDT [15].

Some referring doctors choose to perform an imaging, most often ultrasound, before the diagnosis of an undescended testis is made and a definitive referral to the specialist is carried out. In our study, this occurred in 5.7% of the cases. A recent systematic review and meta-analysis showed that ultrasound has no clinical utility in the evaluation of undescended testis as this does not change the clinical management of these patients [16]. Moreover, it increases the cost of the healthcare system and delays the referral.

Within England, the NICE sets out guidelines on various conditions, none of which pertain to the management of UDT or retractile testis. Individual centres, for example a centre in Scotland, recommend the referral of patients with UDT at the 6-month assessment [17]. The results of a consensus published in the *European Journal of Endocrinology* also suggests referral to the paediatric surgeons at no later than 6 months of age for newborns with congenital UDT [18]. They also recommend that if testicular descent has not been achieved by 6 months, the patient will need an orchidopexy before one year of age [18]. There is no consensus on an agreed structured pathway that has been published as a guideline, either in UK or in Nigeria.

Although such a pathway can be put in place in England due to the existing healthcare system, this may not be feasible in Nigeria. To reduce the long-term implications of UDT in Nigeria, primary healthcare services will require implementation and resourcing. Developing a pathway for trained health workers to assess for UDT during immunization might reduce the delayed presentation for this condition in Nigeria.

Conclusion

In England and Nigeria, there is a lack of definitive guidelines relating to the appropriate age of referral to a specialist for patients presenting with UDT. In this study, the majority of the patients from Africa with UDT presented beyond 5 years of age due to a lack of knowledge, and the absence of a standardized system of regular checks by the health visitor or general practitioner, whereas in England, most of the referrals occurred before 2 years of age. The main reason cited for referral beyond 5 years of age was

the presence of retractile testes, whereby the mainstay of management is adopting the 'watch and wait' approach. Our recommendation is that a structured care pathway and education with regard to the management of UDT and retractile testis should be implemented to enable early detection and definitive management.

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Conflicts of interest

There are no conflicts of interest.

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