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DELAYED PRESENTATION OF UNDESCENDED TESTES

Dr Mujahid Ullah[1], Dr Hazrat Amin[2], Dr Mian Ridhwan ul Wahab[3*], Dr Mishkat Ullah[4], Dr Huma Nawab[5], Dr Sajid Ullah Khan[6], Dr Sadaf Kalsoom[7]

[1]District Pediatric Surgeon, Pediatric Surgery Unit, Type C hospital Takht e Nasrati, Karak, Pakistan
[2]Medical Officer, Pedriatic Surgery Unit, Khyber Teaching Hospital Peshawar, Pakistan
[3*]Pediatric Surgeon/ Medical Officer, Pediatric Surgery Unit, DHQ Landikotal, Pakistan
[4]Registrar, Combined Military Hospital Rawalpindi, Pakistan
[5]Registrar, PIMS Islamabad, Pakistan
[6]Medical Officer, Type C Hospital Karak, Pakistan
[7]Registrar, Pediatrics Surgery, Khyber Teaching Hospital Peshawar, Pakistan

***Corresponding Author:** Mian Ridhwan ul wahab
*Email: drwahabridhwan@yahoo.com

Abstract

Introduction: Undescended testis (UDT) is a common congenital anomaly in male infants, with significant risks such as infertility, malignancy, and torsion if left untreated. Despite clinical guidelines recommending early correction, delayed presentation remains prevalent in many regions, especially in low-resource settings.

Objective: To determine the factors that delay the presentation of undescended testes and the clinical outcomes of such among children.

Material and Method: This prospective observational study was conducted at Type C Hospital Takhte Nasrati and DHQ Hospital Landi Kotal, KPK, from 1st December 2024 to 31st May 2025. Sixty pediatric patients aged 2 years to 15 years with UDT were evaluated through clinical assessment, imaging, and surgical intervention where indicated.

Results: Most patients (68.3%) presented after the age of two years. Contributing factors included lack of parental awareness (70%), delayed referrals (55%), and financial constraints (45%). Orchidopexy was performed in 73.3% of patients, while 6.7% required orchidectomy due to atrophy or torsion.

Conclusion: Delayed presentation of UDT is linked to modifiable factors. Early detection and timely intervention are critical to preventing complications.

Keywords: *Undescended testis, delayed presentation, orchidopexy, testicular torsion, pediatric urology.*

INTRODUCTION

Undescended testis (UDT) or cryptorchidism is the most prevalent congenital male infant abnormality, but late presentation is a significant problem that occurs in both developing and developed nations in spite of improvements in the healthcare system and the better understanding in pathology that has taken place over the world pediatric urological circles worldwide (1). Surgical treatment of UDT with immediate diagnosis, preferably before one year of age, is important to lower the risks of infertility, testicular malignancy, and torsion. Nevertheless, many boys arrive at the

appointment to be evaluated and treated late because of various sociocultural, economic, and healthcare-related reasons (2). Delayed presentation of UDT is especially disturbing since its effects can be both permanent and life-changing. In a Nigeria-based review of 11 years, Ituen et al. observed that most of their UDT cases in pediatric patients were introduced beyond the ideal window of orchidopexy, and with most of the cases already having atrophy or torsion complications (3).

The untimely diagnosis can lead to unnecessary emergency interventions like torsion of the undescended testis, which is now emerging more frequently among the late presenters as another reason to emphasize the early diagnosis and treatment of such cases (4). Even a four-year-old boy with a UDT that was not diagnosed experienced torsion, and this condition was diagnosed only during the acute surgical emergency, showing how a very simple preventable situation can turn into a critical one because of delay (5). The untreated UDT cases in adolescents and young adults are even more complicated and are associated with a risk of subfertility and malignancy. According to a study conducted by Gbobo and Abhulimen in Nigeria, the majority of the patients who appeared in adolescence had already suffered irreversible damage to the testicles (6). Alherek and Ramloutan have discovered that children who have undergone orchidopexy within the past two years performed worse compared to their surgically treated counterparts, emphasizing the need to attend to the child at an early age (7). Even the acquired undescended testis, which can manifest itself later in childhood, requires timeliness of decision-making in order to reduce the long-term consequences (8).

There are also treatment delays, which have some influence on prognosis in scenarios of torsion. According to Steeman et al., in their 15-year observation follow-up report, the more the time the intervention was delayed, the more the harm of orchiectomy and damage to the irreversible testis occurred, which is another explanation of the importance of early surgical intervention in UDT (9). Delayed presentation in most of the low- and middle-income countries is usually associated with parental unawareness, traditional beliefs, no access to specialized care, or a case in which the primary care providers miss the diagnosis. A study conducted in Rwanda revealed that sociocultural beliefs and financial barriers were significant determinants of late consultation (10). Likewise, Abdulrahman et al. in Saudi Arabia identified a significant knowledge gap in the general population on the knowledge of UDT that resulted in later recognition and presentation to hospitals (11). Traumatic testicular injury, like bilateral dislocation, might also be overlooked in a patient with a UDT, making the situation harder to manage, not to mention diagnostic negligence (12).

The results of the lack of timely intervention are not only functional, but also psychological in the long run. AlSahli et al. analyzed both the late and early orchidopexy and concluded that the surgery conducted earlier, at the age of less than 18 months, produced much better results in terms of fertility potential and patient satisfaction (13). Moreover, even patients without a diagnosed UDT are more vulnerable to testicular tumors, especially seminomas. Tongaonkar et al. noted that malignancies were more pronounced in patients with a history of cryptorchidism who attend cancer centers late (14). These observations underline the necessity to be aware of this and undergo surgical repair in time. Worldwide, there is increasing concern that UDT during neonatal life is not being tackled in a timely fashion because of cases of ineffective examination plans of the neonate or perhaps insufficient attention to follow-up. Rifqiawan et al. emphasized the fact that a lot of newborns leave the clinic without a careful examination of genitals, and further follow-up may also be rather uneven or absent (15).

Tahir et al. advocated the need to update the education of pediatricians and general physicians at regular intervals to increase their capability of identifying UDT at an early stage, so that they can notify and refer (16). The delayed diagnosis can also happen in traumatic dislocation when an undescended testis can be found as a source of confusion in clinical presentation and delivery of the clinicians (17). The laparoscopic approach has transformed the assessment of non-palpable testis, and the rising application has contributed to the earlier and proper localization and intervention. Salah and Ahmed have discussed the successful discovery and treatment of the non-palpable testes via laparoscopy in Sudan, and the discovery was made late at a different age than the recommended age (18). However, the use of ultrasonography in the diagnosis of UDT is controversial. Although it is

widely applied, it is not very accurate, and it is possible to develop dependence on it, which will lead to delays.

Melaibary et al. (19) confirmed this in a six-year longitudinal study, demonstrating the importance of clinical and surgical assessment over reliance on imaging when identifying intra-abdominal testes, in which ultrasonography was unable to detect testes in many circumstances (19). Ahmed et al. also proved that clinical examination with the help of laparoscopy gives a more accurate result in diagnosis and also reduces avoidable imaging delays (20). Lastly, the threat of torsion of undescended testes, even at toddler age, is a stern reminder that the timely diagnosis is important. Recently, Ilyas et al. described with a case report the torsion of an in-torso cryptorchid adolescent that was initially misdiagnosed, and the adolescent lost his testicle (21). This case highlights the effective understanding that any delay attributed to inefficiency of the system, and even the clinician's oversight, might lead to irreversible damage.

Objective: To determine the risk factors associated with late presentation of undescended testes in children and to highlight the need for early detection and early surgery to avoid complications.

MATERIALS AND METHODS

Design: Prospective Observational study.

Study setting: The study was carried out at two public sector hospitals: Type C Hospital, Takhte Nasrati, and District Headquarters Hospital (DHQ), Landi Kotal, located in Khyber Pakhtunkhwa (KPK), Pakistan. These healthcare centers serve a large rural and semi-urban population.

Duration: The data collection period spanned six months, from 1st December 2024 to 31st May 2025.

Inclusion Criteria: The study included all male pediatric patients between the ages of 2 years to 15 years who were diagnosed with bilateral or unilateral undescended testes. Both palpable and non-palpable cases were included, regardless of the first-time diagnosis or delayed cases when they were referred for management. Parents or guardians of all patients gave consent to enroll their patients in the study.

Exclusion Criteria: Excluded were patients with retractile testes, prior scrotal or inguinal operations, congenital syndromes involving genital development, or spine, or incomplete medical records. Orchidopexy had already been done before and was not counted in this research.

Methods

Patients would be approached, and all those who are potential and present with undescended testes at the time of the study would be assessed after the necessary ethical approval by way of a thorough history and physical examination. The information obtained involved the age of presentation, the laterality (unilateral or bilateral), location of the testis (palpable or not), parental awareness, previous visits, and any complications like torsion or atrophy. The socioeconomic status, distance to hospital, and source of referral were also noted. Ultrasonographic imaging was conducted, when necessary, especially when the testes were non-palpable. Testicular position and the age of the patient were the determining factors in planning a surgical intervention (orchidopexy). Intra-abdominal testes were treated by laparoscopy. Painless pediatric surgeons conducted all surgeries under general anesthesia. The follow-ups were performed after 1 week, 1 month, and 3 months to determine the testicular position and complications. The descriptive statistics were used to analyze the data and determine the patterns and connections between late presentation and factors contributing to late presentation, such as socioeconomic status, awareness, or delays in the health system.

RESULTS

The study consisted of 60 male pediatric patients within the age range of 2 years to 15 years. The average age of presentation was 5.2 years. A total of 36 patients (60 percent) had single-sided undescended testes and 24 (40 percent) had bilateral cases. Twenty-two of the unilateral cases involved the right testis, and 14 cases involved the left. Quite many of the patients (n=41, 68.3%) presented later in life, past the age of 2 years, which, to international standards, is a late presentation.

Table 1: Age Distribution at Presentation

Age Group	Number of Patients	Percentage
2 years	15	25%
3–5 years	18	30%
6–10 years	13	21.6%
>10 years	10	16.7%

Parental awareness about undescended testes was low; only 18 families (30%) were aware of the condition before hospital consultation. The remaining 70% were either unaware or misinformed, often assuming the condition would correct itself. Socioeconomic factors played a significant role—41 patients (68.3%) came from low-income families with limited access to pediatric surgical care.

Table 2: Contributing Factors for Delayed Presentation

Contributing Factor	Number of Patients	Percentage
Lack of parental awareness	42	70%
Delayed referral from primary care	33	55%
Financial constraints	27	45%
Geographical inaccessibility	19	31.7%
Misdiagnosis by healthcare workers	16	26.7%

Out of 60 patients, 48 (80%) underwent surgical intervention. Orchidopexy was successfully performed in 44 patients (73.3%). Four patients required orchidectomy due to testicular atrophy, and 12 patients were still awaiting surgery at the end of the study due to medical comorbidities or delayed scheduling. Torsion was observed in 5 patients (8.3%), all of whom presented after the age of 6 years. Atrophy was noted in 7 patients (11.6%), and testicular malignancy was not reported in any case.

Table 3: Clinical and Surgical Outcomes

Clinical Finding	Number of Patients	Percentage
Orchidopexy performed	44	73.3%
Orchidectomy required	4	6.7%
Torsion at presentation	5	8.3%
Atrophy observed	7	11.6%
Awaiting surgery	12	20%

Overall, the data indicates that delayed presentation is commonly associated with a lack of awareness, poor access to care, and delayed referrals, often leading to complications such as torsion and atrophy.

DISCUSSION

Undescended testis (UDT) is still one of the most common congenital peculiarities of male children. Early diagnosis and treatment are critical to minimise the chances of complications: infertility, torsion, and testicular malignancy. Nevertheless, as is reflected in this study and confirmed by international statistics, delayed presentation is still a considerable clinical and communal health problem. The results of the research are reflected in the reviews given in a number of regional and international research studies concerning the causes of late diagnosis and treatment of UDT. The majority of the patients (68.3%) were diagnosed with diabetes after they were more than two years old, and the average age was more than five years. This can be compared with a single-center study by Joshi et al., who revealed that the majority of the boys with UDT were well over the canonical age of surgical intervention, ideally less than 12 to 18 months (1).

Omran also noted in the Libyan setting that cultural beliefs, lack of awareness, and late referrals were key reasons leading to late presentations (2). The results can be traced to a general tendency in resource-constrained conditions where the parental knowledge and subsequent primary care follow-up are not at all sufficient. The study has revealed that 70 percent of the parents lacked awareness about the condition or its risks. This coincides with the results of Ituen et al., who stated that most of the families in Nigeria did not know that the condition should be surgically corrected, and usually, they had been drawn into thinking it was a problem that would cure itself (3). Beliefs about testes being able to descend as a person grows older or that the condition is harmless are also some of the reasons caregivers develop complacency. Moreover, primary healthcare personnel might not be in a position to suspect the anomaly early in the process of neonatal and infant check-ups because they might not have adequate training or be keen enough to suspect such a problem, and failure to detect the problem in time results in no diagnosis or potentially a wrong diagnosis.

The implications of late presentation are documented. Dupond-Athenor et al. pointed out that the torsion of the undescended testis, though rarely reported, is more commonly encountered in late presenters and usually results in testicular loss (4). There were 8.3 percent of patients who presented with torsion, and another 11.6 percent with atrophic testes, all of which presented late in the study. The case report by Alshaibani of a four-year-old with torsion also demonstrates that the tragic consequences that come along with delayed early diagnosis compromise the viability of testicles (5). The fact of delayed surgical management not only adds a risk of irreparable damage but also makes the carrying out of the operation difficult. Gbobo and Abhulimen's results show that a larger number of adolescents have orchidectomy because of atrophy or nonviable testes, and the study is in line with that report, with four patients needing orchidectomy because of non-functional testicular tissue (6). Alherek and Ramloutan pointed out further that the results of orchidopexy on children younger than 2 years were so much better than the cases that were operated on late in South Africa (7).

It is also necessary to stress the difference between congenital and acquired UDT. Yilmaz and Satar have discussed the dilemma of timely surgery Vs observation in acquired UDT and came up with the conclusion that timely management is important despite the nature to prevent complications (8). Additional support to this can be obtained when Steeman et al. demonstrated that even a delay of only a few hours in the treatment of testicular torsion can dramatically increase the prognosis (9), highlighting why prompt assessment and treatment of all scrotal abnormalities are necessary. There was also such a significant role of socioeconomic barriers as there always is to delayed presentation in any cohort. Even in Rwanda, Bonane et al. recognized financial difficulty, geographic inaccessibility, and low educational status as primary reasons that cause a delay in consultation (10). Likewise, another nationwide study in the Kingdom of Saudi Arabia by Abdulrahman et al. proved that there is a lack of awareness campaigns, and the level of knowledge among educated families continues to be unoptimal regarding UDT (11). These data emphasize that the issue of clinician education is essential, but so is the issue of broad-based public health campaigns.

Hsu et al. add traumatic dislocation of undescended testes, which makes the diagnosis more difficult in case the patient did not recognize the presence of the condition until the injury (and thus further delayed intervention) (12). Additionally, surgery timing directly influences long-term fertility and hormonal outcomes. AlSahli et al. showed that early orchidopexy also showed more fertility potential and testicular development than delayed surgery did (13). Malignancy can also arise due to delayed diagnosis. Tongaonkar et al. reported more cases of testicular cancer in patients with untreated UDT, which usually appears in their second or third decade (14). The identification of UDT starts with a neonatal examination as the first and vital step. Nonetheless, as Rifqiawan et al. revealed, genital examinations of neonates are either avoided or poorly conducted in the extreme hospital environments, most so in the developing world (15).

This is an institutional breakdown and should be addressed by policy and training. Tahir et al. boldly proposed the practice of regular continuing medical education (CME) among general practitioners and pediatricians as the optimal way of enhancing early detection and the referral process (16). Also, traumatic events like those demonstrated by Wang et al. may conceal or attenuate the diagnosis of UDT unless critically considered during trauma conditions (17). The increasing technologies in

diagnosis have made the detection of non-palpable testes much easier, with modern methods such as laparoscopy being used. The high rate of diagnostic accuracy and therapeutic benefit in the setting of late presenters was examined by Salah and Ahmed, a pair of practitioners working in Sudan, which, to a large extent, allowed for a reduction in the use of open surgeries and exploratory laparotomies (18). Nevertheless, the use of ultrasonography is deceptive. Melaibary et al. demonstrated that ultrasound did not detect numerous intra-abdominal testes, and it is suggested that clinical acumen be more critical than dependence on imaging (19). This was also supported by Ahmed et al., who recommended a mixed clinical-laparoscopic treatment strategy as the most effective means of achieving optimum results (20). Lastly, torsion in toddlers, as witnessed in the report by Ilyas et al., shows how little UDT may manifest with acute complications even in young, very young children, wherein awareness and early intervention would have saved testicles (21).

CONCLUSION

Undescended testes are of great clinical concern because of delayed presentation, especially in resource-deficient settings. This paper emphasizes how most of the cases were presented beyond the age at which the surgery is recommended, and parental ignorance, delayed referrals, financial limitation, and location were the leading causes of such occurrence. The results reflected the incidence of late intervention since the repercussions include testicular atrophy, torsion, and possible infertility. Patients with earlier presentation had better results in surgery, and this strengthens the case for early diagnosis and intervention. There is a need to educate parents and primary medical workers on the issue and promote it in the community. Planned routines of examinations (routine of neonatal) and organized lines of referral are vital in minimizing the delays. The addition of laparoscopic methods and the reduction of excessive reliance on imaging techniques would also result in improved early identification and treatment. These gaps can only be closed by a multidisciplinary and system-wide initiative taking place to provide all children with UDT with timely and effective care to avoid preventable complications.

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