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Undescended Testis in Benghazi Children Hospital: A Retrospective Study of Correlation Between Age at Presentation, Laterality, Presence of Hernial Sac, and Testicular Size from 2020 to 2024 .

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Original Research Article

ABSTRACT

Background: The inability of the testis to descend into its typical scrotal position at birth is known as undescended testis (UDT) or cryptorchidism. It is estimated that one to four percent of full-term and up to forty-five percent of preterm newborn male neonates are affected by UDT.

Objective: To determine the mean age of patients at the time of presentation with palpable undescended testis, to analyze the distribution of cases by laterality (right, left, or bilateral), to assess the association between undescended testis and the presence of a hernial sac, to evaluate the size of the affected testis in comparison with the contralateral normal testis, and to examine the correlations among these variables in order to provide evidence-based clinical recommendations

Method: A hospital-based retrospective study was conducted in the Pediatric Surgery Department at Benghazi Children Hospital, encompassing all male patients who underwent surgery for a confirmed diagnosis of undescended testis, aged between five months and 12 years, from 2020 to 2024. All patient records were reviewed to extract the required data.

Results and Conclusion: A total Results and conclusion: This is a retrospective review of 140 children (UDT) presenting to Benghazi Children's Hospital to evaluate the age of presentation, laterality, size of the testis, the presence of hernial sac, and the associated surgical findings. The majority of the patients (67.9%) presented between 0 and 2 years, which is very much in accordance with international guidelines of early surgical intervention and presentation. However, a notable proportion (32.1%) presented after the age of 3, suggesting a delay in referral and time of operation. Increased risk of testicular atrophy with increasing age was noted, particularly in the 6–8year-old group. The presence of hernial sac was observed in 35.7% of the instances, more in the younger age group of children. Laterality was evenly split between the right and left sides, with bilateral cases constituting only 5%, Nearly every patient who had a history of empty scrotum was admitted for orchidopexy. Two patients who had previously undescended testes (UDT) and a history of recurrent irreducible hernias were admitted for herniotomy. Three cases of testicular torsion and one case of irreducible inguinal hernia were among the four patients who were brought as emergencies and had a history of inguinal swelling. No statistically significant correlations were noted between testicular size and age, laterality, or the presence of a hernia.

KEYWORDS: Undescended Testis, laterality, Hernial sac, and Testicular Size.

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INTRODUCTION

Cryptorchidism, commonly referred to as undescended testis (UDT), represents the most frequent congenital anomaly affecting the male genitalia. [1] It is characterized by the failure of one or both testes to descend into the scrotal sac along their normal path during fetal development. Normally, testicular descent is completed by the third trimester of gestation and, in most cases, any delay corrects spontaneously within the first few months of life. [2] However, if the testis fails to descend by the age of six months, the condition is unlikely to resolve on its own and is considered pathological. The prevalence of UDT ranges between 2– 4% in full-term neonates and up to 30% in preterm infants, reflecting the role of gestational maturity in testicular descent. By the age of one year, the prevalence drops to around 1%, due to spontaneous descent occurring during early infancy.[3]

Clinically, undescended testis is of paramount importance because of its potential short- and long-term consequences. These include infertility, impaired spermatogenesis, increased risk of testicular malignancy (particularly seminoma), susceptibility to trauma, risk of torsion, inguinal hernia association, and psychological effects related to genital appearance. Early diagnosis and timely management are therefore crucial to optimizing outcomes. [4] UDT can be classified as: Palpable testes – most commonly located in the inguinal canal. And non-palpable testes – either intra-abdominal, absent, or atrophic. [5]

Laterality is another important clinical parameter. Unilateral undescended testis is more common than bilateral involvement, with the right testis affected more frequently. However, bilateral cryptorchidism raises higher concerns about endocrine abnormalities and infertility potential. [5]

A significant proportion of children with UDT present with an associated patent processus vaginalis, which manifests as an inguinal hernia sac. This is explained by the embryological link between testicular descent and closure of the processus vaginalis. Thus, assessing the presence of a hernial sac at surgery provides important clinical information about the pathogenesis of the condition. [6]

The age of presentation remains one of the most clinically significant variables in the management of UDT. International guidelines, including those from the American Urological Association (AUA) and the European Association of Urology (EAU), recommend that orchiopexy should be performed ideally between 6–18 months of age. Surgery within this window offers the best chance to preserve fertility potential and reduce the risk of testicular malignancy. Delayed presentation, particularly beyond two years, is associated with progressive germ cell loss, impaired Sertoli cell function, and smaller testicular size, all of which compromise long-term reproductive capacity. [7]

In many developing countries, including Libya, delayed presentation is still common due to lack of awareness, limited access to specialized pediatric urology services, and sociocultural factors. Studying the age distribution of children presenting with UDT in Benghazi Children Hospital can highlight the current gaps in early detection and referral. [7]

It is essential to clarify that the scope of this study is focused on surgical interventions for UDT conducted at Benghazi Children Hospital, where management is primarily limited to open surgical procedures, as laparoscopic techniques are currently not performed at this facility.

Testicular size serves as an important clinical and surgical marker of gonadal function. A smaller testis suggests impaired development, reduced spermatogenic potential, or longstanding undescended status. Testicular growth is known to be adversely affected the longer the testis remains outside the scrotum, as the higher intra-abdominal or inguinal temperatures impair germ cell maturation. [8]

Several studies have demonstrated that early orchiopexy correlates with improved testicular volume and histological outcomes, while delayed surgery often leads to irreversible atrophy. Therefore, evaluating testicular size in relation to age at presentation provides insight into the functional prognosis of these patients. [8,9]

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Clinically, a significant proportion of boys presenting with inguinal hernia are also found to have undescended testes, and vice versa. Understanding the correlation between UDT and hernia sac in the Benghazi pediatric population will provide valuable epidemiological and surgical data for the region.

While undescended testis has been extensively studied worldwide, local data from North Africa, and particularly Libya, remain scarce. Benghazi Children Hospital serves as a referral center for a large pediatric population, making it an ideal setting to evaluate the clinical spectrum of UDT in the region. A retrospective analysis spanning 2020 to 2024 offers an opportunity to assess patterns of presentation, laterality, presence of hernia sac, and testicular size over a recent five-year period.

From a public health perspective, identifying trends in delayed presentation can inform awareness campaigns, improve referral systems, and promote adherence to international guidelines for early intervention.

Rationale of the Study:

Despite being a common pediatric condition, there is a lack of systematic data on UDT in Benghazi and across Libya. The absence of local research makes it difficult to evaluate whether current practices align with international recommendations, and whether regional factors influence presentation and outcomes. By conducting a retrospective study, this thesis aims to bridge that gap and provide evidence-based insights relevant to both clinicians and policymakers.

Statement of problem:

Undescended testis (UDT), or cryptorchidism, is among the most common congenital anomalies in male children. If left untreated, it carries significant long-term consequences, including impaired fertility, and increased risk of testicular malignancy.

Despite clear international guidelines recommending early detection and timely surgical correction, delayed presentation remains a persistent problem in many resource-limited healthcare settings, including Benghazi, Libya. The scarcity of local data on the clinical and demographic characteristics of UDT—particularly regarding the interplay between testicular size, presence of an associated hernial sac, laterality, and age at presentation—represents a major barrier to improving care. Bridging this gap is crucial not only for optimizing pediatric surgical outcomes but also for shaping future health policies and public health initiatives aimed at enhancing early recognition and intervention.

Significance of the study:

There are various reasons why this study is important.

1. Local Relevance: It is the first thorough retrospective investigation of Benghazi Children Hospital's UDT cases, providing insightful information about regional trends and clinical practice difficulties.
2. Clinical Implications: The study may assist in identifying trends indicative of delayed intervention or associated complications by examining the relationship between age at presentation and key variables, including laterality, presence of a hernial sac, and testicular size.
3. Public Health Insight: To promote early detection and referral, the results can guide focused awareness campaigns for parents and primary healthcare providers.
4. Policy Development: In accordance with international recommendations, the findings of this study may inform national pediatric surgical guidelines and institutional protocols, directing practice toward earlier surgical intervention, preferably before the age of 18 months.

Furthermore, this study establishes a foundational framework for future prospective research and contributes to the development of a database for pediatric urological anomalies in Libya.

Objectives:

The present study aimed:

1. To determine the average age of patients at the time of presentation of undescended testis.
2. To analyze the distribution of cases based on the side (right, left, or bilateral).
3. To assess the association between undescended testis and the presence of hernial sac.
4. To evaluate the size of the affected testis and com-

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pare it with the contralateral normal testis.

5. To examine the correlations among these factors in order to provide evidence-based clinical recommendation

METHODS AND MATERIALS

Research Setting and Period:

This study was conducted between January 2020 and August 2024 at the Pediatric Surgery Department, Benghazi Children Hospital, Benghazi, Libya.

Study Design:

A hospital-based retrospective study was conducted in the Pediatric Surgery Department at Benghazi Children Hospital.

Study Population and Data Collection:

The study included all male patients who underwent open surgical intervention for a confirmed diagnosis of palpable undescended testis at the Pediatric Surgery Clinic of Benghazi Children Hospital, with ages ranging from 41 days to 12 years. The inclusion criteria were, all the patients who have files and regularly follow up the surgery clinic were available in hospital archives at the time of data collection between the 1st of January 2020 to the end of August 2024. A convenient sample (n=140) was obtained from the total number of admissions to the surgical department during the study period 7111 patients. All patients' files were revised to the following: Demographic characteristics, age at presentation. Full history, clinical general examination (side of the undescended testis (right, left, or bilateral), the presence of an associated hernial sac, and the size of the testis measured during surgery).

Procedures:

Data were collected using a pre-designed structured data collection form encompassing sociodemographic characteristics, clinical history, and examination findings.

The data collection form was completed by the principal researcher to extract the required information from patient records.

Data Analysis:

Data were analyzed using statistical package for social science SPSS program, version 23. A range of statistical methods was employed to analyze the study data. Descriptive statistics, including frequencies and percentages, were used to summarize the characteristics of the sample and the distribution of key variables. In addition, appropriate inferential statistical tests were applied to examine relationships between variables and assess their statistical significance, in order to draw meaningful conclusions that support the objectives of the study and enhance the reliability of the findings. Data were presented in form of tables and figures, where the figures done by Microsoft Excel 2010.

Ethical Considerations and Approvals:

This research was conducted in accordance with the highest ethical standards and adhered to all relevant guidelines and regulations governing medical research involving human subjects. The study was submitted for review and approval by the Institutional Review Board (IRB) or equivalent ethics committee at the institution, as well as other relevant regulatory authorities. Patient privacy and confidentiality were protected through the de-identification of all collected data. The study was conducted in a manner designed to minimize any potential risks or discomfort to the study population. All necessary permissions and approvals were obtained from the hospital administration and relevant governmental agencies prior to accessing and utilizing the medical records required for this study.

RESULTS

The majority of patients (67.9%) presented between 0 and 2 years of age, which reflects improved awareness compared to historic norms. The majority of patients (96.4%) had a hospital stay of three days, while only a small proportion (3.6%) stayed for 2 days. The uniformity suggests that the average length of hospitalization in this cohort is standardized to 3 days, likely reflecting a consistent post-operative or clinical care protocol. The low variation may also indicate effective management with minimal complications requiring extended stays. However, nearly one-third of cases (32.1%) presented beyond the age of 3 Years, which is considered delayed according to pediatric urological guidelines

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recommending orchidopexy before 12 months of age. Delayed intervention may contribute to long-term risks such as infertility, malignancy, and susceptibility to trauma. (Table.1) (Figure.1)

Table (1): Distribution of age group at presentation among patients with undescended testis (N=140)

Age Group	Frequency	Percent
0 - 2	47	33.6
3 – 5	48	34.3
6 – 8	26	18.6
9 - 12	19	13.6
Total	140	100.0

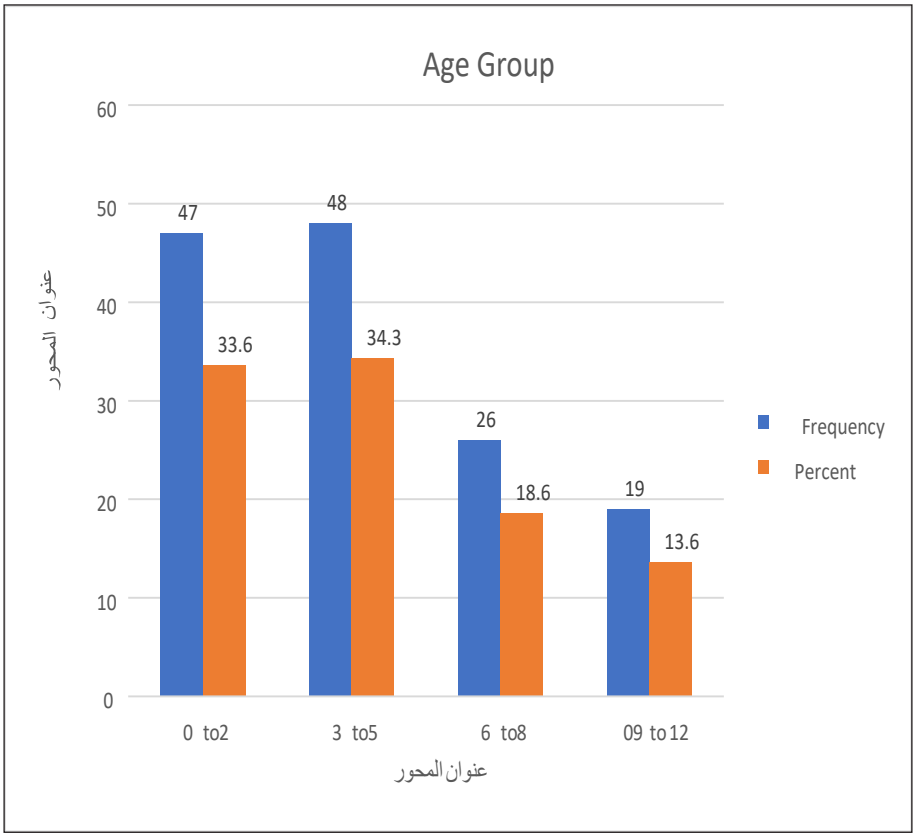


Figure (1): Age Distribution of Study Participants

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The condition affected the left and right sides almost equally, with a slight predominance on the left. Bilateral undescended testis was relatively uncommon (5.0%), consistent with literature that unilateral cases are more frequent than bilateral ones. (Table.2)

Table (2): Distribution of Laterality of Undescended Testis (N=140)

	Frequency	Percent
Right	66	47.1
Left	67	47.9
Bilateral	7	5.0
Total	140	100.0

A hernial sac was observed in 35.7% of the patients. This suggests a significant association between undescended testis and patent processus vaginalis, which can lead to an indirect inguinal hernia. The data emphasizes the importance of examining for hernias in patients with UDT, especially during surgical exploration. (Figure.2)

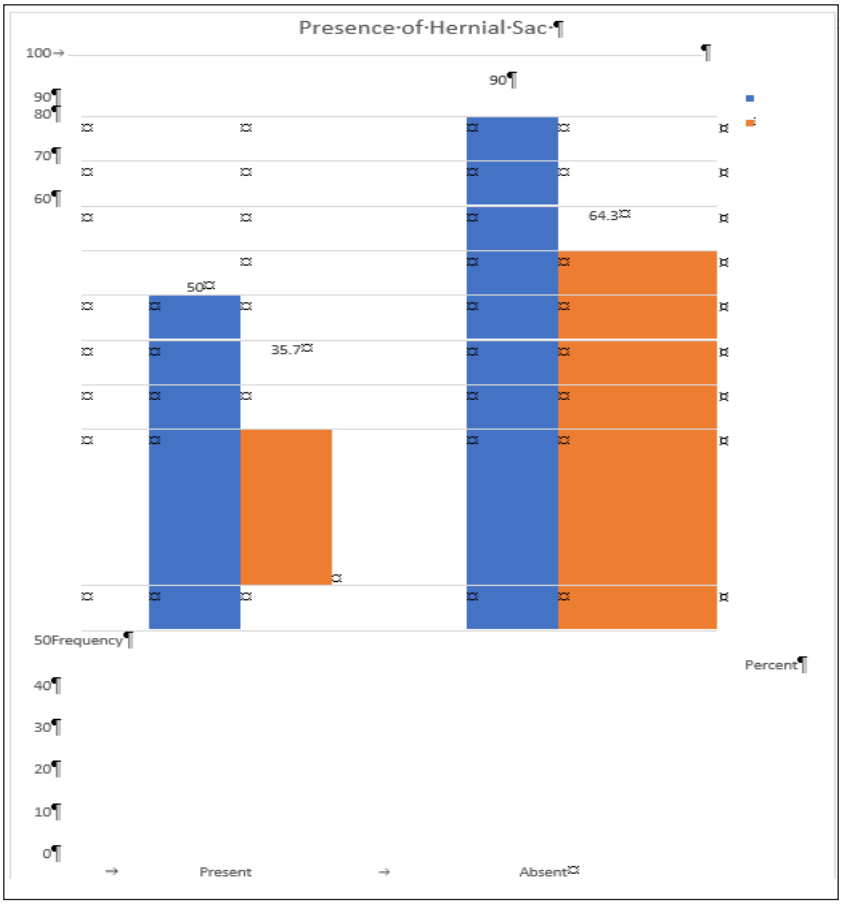


Figure (2): Presence of Hernial Sac Among Patients with Undescended Testis (N=140)

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Most of the undescended testes were of small size (64.3%), suggesting potential testicular atrophy due to delayed descent. It is It should be noted that in this study, no standardized instrument was employed to measure testicular size; rather, the operating surgeon's intraoperative estimation was used. This highlights the importance of early diagnosis and intervention to prevent testicular damage. (Table.3)

Table (3): Distribution of Testicular Size in Patients with Undescended Testis (N=140)

	Frequency	Percent
Small size	90	64.3
Good size	50	35.7
Total	140	100.0

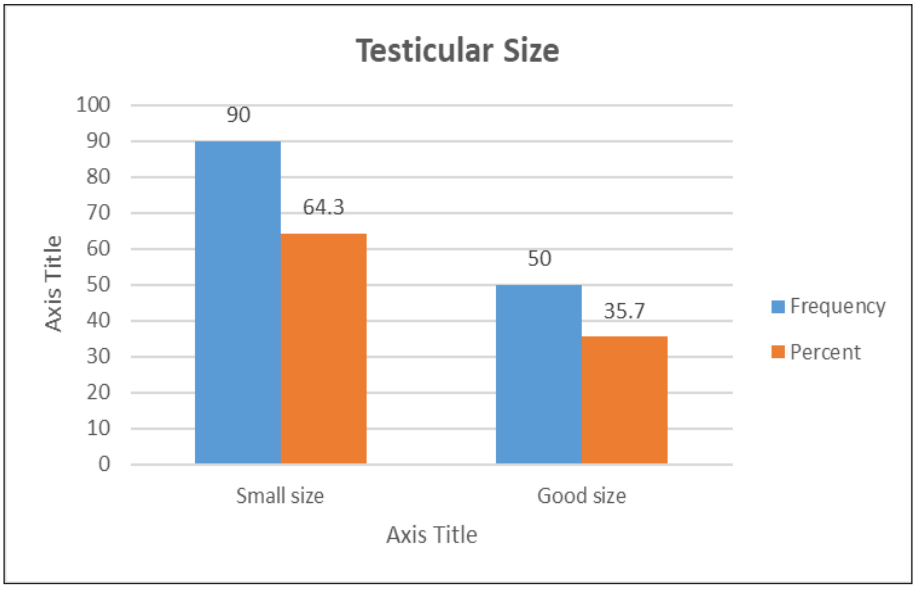


Figure (3): Distribution of Testicular Size in Patients with Undescended Testis (N=140)

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There is a notable trend toward smaller testicular size in older age groups. Specifically, 84.2% of patients aged 6–8 years had small testes compared to 65.3% in the 0–2 year group. While the result did not reach statistical significance (p = 0.070), this suggests a potential age-dependent atrophic effect, likely due to prolonged maldescent. This reinforces the urgency of early intervention to preserve testicular function. (Table.4)

Table (4): Correlation between Age Group and Testicular Size

Age Group	Small size	Good size	Total
0 - 2	31 (22.1%)	16 (11.4%)	47
3 – 5	31 (22.1%)	17 (12.1%)	48
6 – 8	12 (8.6%)	14 (10.0%)	26
9 - 12	16 (11.4%)	3 (2.1%)	19
Total	90 (64.3%)	50 (35.7%)	140

P. Value 0.07

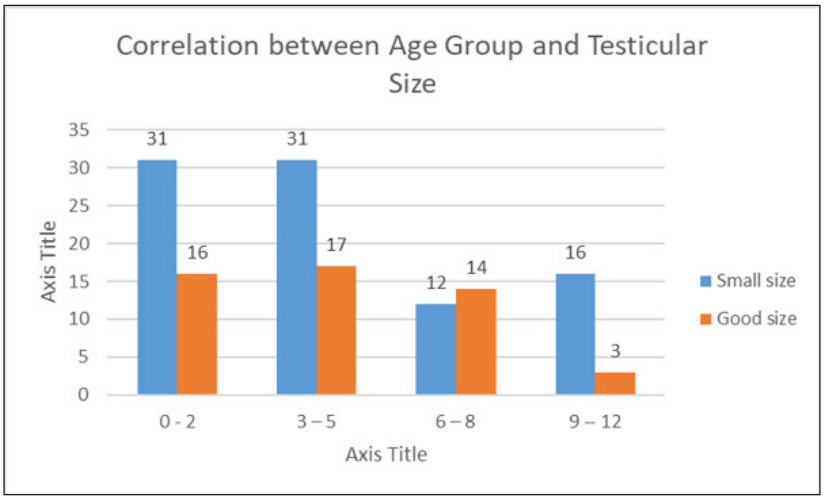


Figure (4): Correlation Between Age Group and Testicular Size

The presence of a hernial sac is most common in the youngest age group (0–2 years), which may reflect early anatomical defects such as a patent processus vaginalis. However, there is no statistically significant association between age and hernial sac presence (p = 0.598), suggesting that this feature may develop or persist independently of the timing of presentation. (Table.5)

Table (5): Correlation Between Age Group and Presence of Hernial Sac

Age Group	Present	Absent	Total
0 - 2	20 (14.3%)	27 (19.3%)	47
3 – 5	14 (10.0%)	34 (24.3%)	48
6 – 8	9 (6.4%)	17 (12.1%)	26
9 - 12	7 (5.0%)	12 (8.6%)	19
Total	50 (35.7%)	90 (64.3%)	140

P. Value 0.598

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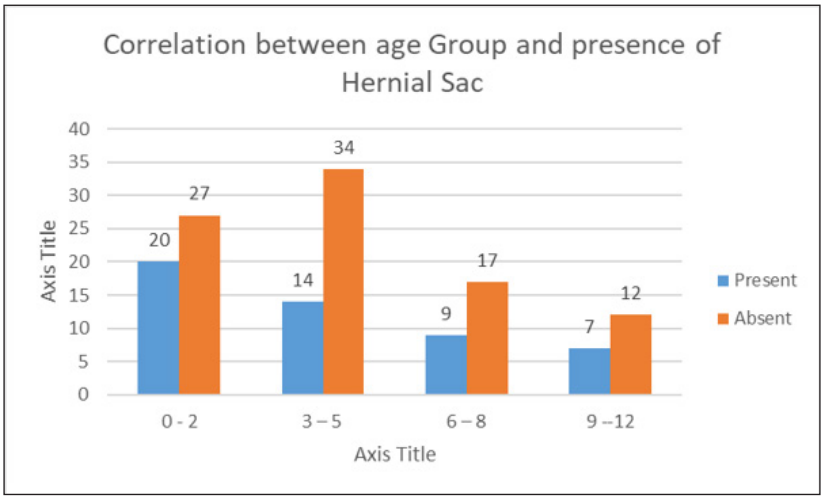


Figure (5): Correlation Between Age Group and Presence of Hernial Sac

No statistically significant association was identified between testicular size and clinical presentation. (Table.6)

Table (6): Association between clinical presentation and testicular size

Testicular Size	Right empty scrotum	Left empty scrotum	Left inguinal swelling	Bilateral empty scrotum	Total
Small	42 (30.0%)	42 (30.0%)	4 (2.9%)	2 (1.4%)	90 (64.3%)
Adequate	27 (19.3%)	21 (15.0%)	0 (0.0%)	2 (1.4%)	50 (35.7%)
Total	69 (49.3%)	63 (45.0%)	4 (2.9%)	4 (2.9%)	140 (100%)

p-value: 0.223 (not significant)

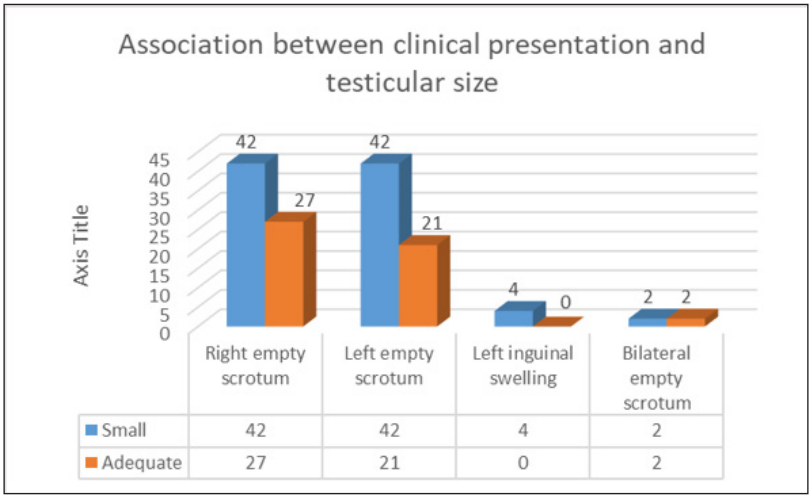


Figure (6): Association Between Clinical Presentation and Testicular Size

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DISCUSSION

Undescended testis (UDT) is a prevalent condition among the male pediatric population worldwide. Nevertheless, published data on the prevalence and management of UDT within Libya remain scarce. For both clinicians and researchers, the timing of orchidopexy has remained a subject of ongoing discussion. Growing awareness of the progressive histological changes occurring in the cryptorchid testis during infancy—including a decline in Leydig cell number, reduced germ cell development, and an elevated risk of future malignant transformation—has led to increasing advocacy for early orchidopexy, with these changes becoming more pronounced in undescended testes beyond 12 months of age. [10] [11]

The literature has shown that testicular maldescent is linked to an increased risk of testicular germ cell cancers. Multiple studies have demonstrated that orchiopexy performed prior to puberty is protective against malignant transformation, with the lowest reported risk observed in children who underwent surgery between the ages of zero and six years. [12] [13]

Over the past few decades, the suggested time window for orchidopexy has undergone a significant change due to these and other reasons. In 1996, the American Academy of Pediatrics suggested that surgery be performed at 12 months of age, arguing that early intervention could increase future fertility and avoid testicular atrophy. [14] This recommendation was further supported by the EAU/ESPU, which states that surgery should be done before the age of 12 months, and no later than 18 months, if testicular descent has not been completed by the age of six months. Even with these and other international guidelines, orchidopexy is still not always carried out in the allotted amount of time. [13]

This retrospective analysis of 140 pediatric patients with undescended testis (UDT) at Benghazi Children Hospital provides valuable insights into the age of presentation, testicular size, laterality, and the presence of associated hernial sacs.

The majority of cases (67.9%) presented between 0 and 2 years of age, which aligns more closely with global recommendations for early detection. However, over one-third (32.1%) of patients presented after 3 years, suggesting a persistent delay in timely diagnosis and referral. This delay is concerning, given that international guidelines advocate for orchidopexy before 12 months of age to reduce the risks of infertility, testicular atrophy, and malignancy.

A strong trend toward testicular atrophy with increasing age was observed, particularly in the 6–8-year age group, where 84.2% of testes were classified as small. Although this trend did not reach statistical significance ($p = 0.070$), the clinical implication is clear: the longer a testis remains undescended, the greater the likelihood of irreversible damage due to thermal injury, impaired blood supply, and disrupted development. These findings reinforce the need for early intervention to preserve long-term testicular function.

K. F. Neel conducted a retrospective assessment of 345 boys who had been diagnosed with UDT in two centers in Riyadh, Saudi Arabia, in 2008. The average age of orchidopexy was 54.8 months. However, he did not address the cause of the management's delay. [10]

This pattern of delayed intervention has been noted in several settings. For instance, Barthold and Gonzalez (2003) have reported that only 25% of the patients in the U.S. had timely surgery before age one, even though guidelines were established. [15]

Correspondingly, a study conducted in India by Raghavendran et al. noted that over 60% of the boys had surgery after 2 years of age. On the other hand, a Swedish study by Thorup et al. revealed enhanced adherence to guidelines following national health policy reforms, with median age at orchidopexy being 13.7 months, demonstrating the effect of public health initiatives. [11]

Regarding laterality, the distribution was nearly equal between right (47.1%) and left (47.9%) sides, with bilateral involvement accounting for only 5%. This symmetry is consistent with global epidemiological data and indicates that anatomical side does not significantly influence testicular size or the timing of presentation.

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Hutson et al. reported no marked predilection for either side, although a mild right-sided predominance attributable to delayed right testicular descent has been noted in the literature. This is consistent with the global literature, which reports bilateral involvement in approximately 10% or fewer of UDT cases. [5]

For bilateral undescended testes orchidopexy is usually performed on both sides during the same surgery, a staged approach is indicated in the following cases:

Vascular risk.

Anesthetic limitations.

To confirm the viability and successful outcome of the first orchidopexy before proceeding with the contralateral side.

A hernial sac was present in 35.7% of patients, most commonly in the 0–2-year group. While this suggests a developmental association with a patent processus vaginalis, no significant relationship was found between the presence of a hernia and age, testicular size, or laterality.

This emphasizes the importance of always assessing for hernias intraoperatively, regardless of clinical presentation.

The identification of a hernial sac in 35.7% of patients—most commonly in the age group 0– 2 years—is consistent with literature showing a highly significant correlation between UDT and a patent processus vaginalis associated with it. Over 90% of patients with UDT possess an associated patent processus vaginalis. [1]

Almost all cases were admitted for orchidopexy with history of empty scrotum. Two cases were admitted for herniotomy with a history of recurrent irreducible hernia and already undescended testes (UDT). Four cases were admitted as emergencies with a history of inguinal swelling, including three cases of testicular torsion and one case of irreducible inguinal hernia.

In this study, cases of testicular torsion were managed solely as complications arising from failure to perform timely orchidopexy for UDT; consequently, the contralateral side was not evaluated.

Furthermore, a comprehensive assessment of torsion within this population was limited by the challenges of long-term follow-up inherent to retrospective case review.

Statistical testing revealed no significant correlations between age, laterality, hernial sac presence, and testicular size. However, the clinical trends observed are compelling and highlight the potential impact of delayed presentation on testicular health. The findings also underscore the importance of public health initiatives aimed at promoting early screening during infancy and timely surgical referral.

No statistically significant relationships were observed between testicular size and factors such as age, laterality, or the presence of a hernial sac. Nevertheless, clinical trends suggest a meaningful association between delayed presentation and poor testicular outcomes. These observations emphasize the need for enhanced neonatal and infant screening programs, parental education, and improved referral systems to ensure that affected children receive timely and effective management.

This study demonstrates that a substantial proportion of children with undescended testis in Benghazi present after the recommended age for corrective surgery, increasing the risk of long-term complications such as testicular atrophy. While the majority of patients were seen between 0 and 2 years, a significant number still presented beyond this window, with older children showing higher rates of testicular hypoplasia.

CONCLUSION

This is a retrospective review of 140 children with undescended testis (UDT) presenting to Benghazi Children's Hospital to evaluate the age of presentation, laterality, size of the testis, the presence of hernial sac, and the associated surgical findings. The majority of the patients presented between 0 and 2 years, which is very much in accordance with international guidelines of early surgical intervention and presentation. However, a notable proportion presented after the age of 3, suggesting persistent delays in referral and diagnosis.

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A clinical trend toward increased testicular atrophy with increasing age was noted, particularly in the 6–8-year-old group, where most of the testes were small, but not statistically significant. The presence of hernial sac was observed in 35.7% of the instances, more in the younger age group of children, but without any correlation with either age, laterality, or testicular size.

Laterality was evenly split between the right and left sides, with bilateral cases in line with international epidemiological data. No statistically significant correlations were noted between testicular size and age, laterality, or the presence of a hernia, but clinical significance demonstrates that late treatment can have a negative impact on testicular growth and subsequent function. Nearly every patient who had a history of empty scrotum was admitted for orchidopexy. Two patients who had previously UDT and a history of recurrent irreducible hernias were admitted for herniotomy. Among the four patients admitted as surgical emergencies with a history of inguinal swelling, three were diagnosed with testicular torsion and one with an irreducible inguinal hernia.

Overall, the findings emphasize ongoing challenges in adherence to global surgical timing guidelines for UDT. Delayed orchidopexy remains an issue and indicates a need for system wide improvement in screening and referral pathways within the Libyan healthcare system.

RECOMMENDATION

Based on the findings of this study, the following recommendations are proposed:

1. Public Education: Awareness campaigns should be directed toward parents and caregivers to promote early detection and timely surgical correction of UDT, thereby reducing the long-term risks of infertility and malignancy.

2. Enhancement of Referral Pathways: Effective and streamlined referral mechanisms from primary care physicians and pediatricians to pediatric surgeons should be established to minimize delays in surgical intervention.

3. Adherence to International Guidelines: All hospitals should enforce compliance with established international recommendations, which advocate for orchidopexy before 12 months of age and no later than 18 months.

4. Further Research: Larger, multi-center prospective studies with extended follow-up periods should be conducted to evaluate fertility outcomes, malignancy risk, and quality of life in UDT patients.

5. Health Policy and System Reforms: A nationwide health policy mandating systematic reporting and timely surgical intervention for UDT should be developed, drawing on successful models implemented in other countries.

REFERENCES

1.Sijstermans K, Hack WWM, Meijer RW, Voort-Doedens LM. The frequency of undescended testis from birth to adulthood: a review. Int J Androl.2008;31(1):111.doi:10.1111/j.13652605.2007.00770.x.

2. Hutson JM, Balic A, Nation T, Southwell B. Cryptorchidism.Semin Pediatr Surg. 2010;19(3):215–224. doi: 10.1053/j.sempedsurg.2010.04.001.

3. Abaci A, Catli G, Anik A, Bober E. Epidemiology, Classification and Management of Undescended Testes: Does Medication Have Value in its Treatment? J Clin Res Pediatr Endocrinol. 2013;5(2):65–72. doi: 10.4274/Jcrpe.883.

4. Wenzler DL, Bloom DA, Park JM. What is the rate of Spontaneous Testicular Descent in Infants with Cryptorchidism? J Urol. 2004;171(2 Pt 1):849–51. doi: 10.1097/01.ju.0000106100.21225.d7.

5. Hutson JM, Li R, Southwell BR, Newgreen D, Cousinery M. Regulation of testicular descent. Pediatr Surg Int. 2015;31(4):317–25. doi: 10.1007/s00383-015-3673-4.

6. Husmann DA. Testicular Descent: A Hypothesis and Review of Current Controversies. Pediatr Endocrinol Rev. 2009;6(4):491–5.

7. Tasian GE, Hittelman AB, Kim GE, DiSandro MJ, Baskin LS. Age at Orchiopexy and

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https://journals.uob.edu.ly/index.php/BUMEJ/index DOI: https://doi.org/10.37376/benuivmedj.v3i1

Testis Palpability Predict Germ and Leydig Cell Loss: Clinical Predictors of Adverse Histological Features of Cryptorchidism. J Urol. 2009;182(2):704–9. doi: 10.1016/j.juro.2009.04.032.86

8. Hutson JM, Southwell BR, Li R, Lie G, Ismail K, Harisis G. The regulation of testicular descent and the effects of cryptorchidism. Endocr Rev. 2013;34(5):725–52. doi: 10.1210/er.2012-1089.

9. Park KH, Lee JH, Han JJ, Lee SD, Song SY. Histological Evidences Suggest Recommending Orchiopexy Within the First Year of Life for Children with Unilateral Inguinal Cryptorchid Testis. Int J Urol. 2007;14(7):616–21. doi: 10.1111/j.1442-2042.2007.01788.x.

10. Neel KF. Orchidopexy for undescended testis among Saudi children: is it conducted at the optimal age?. Curr Pediatr Res. 2010;14. 39-41.

11. Raghavendran M, Manikandan R, Sriram R, Kumaresan N, Srinivas BH. Evaluation of age at orchidopexy and factors delaying surgery for undescended testis: a prospective observational study. J Indian Assoc Pediatr Surg. 2017;22(3):144–147.

12. Thorup J, Cortes D, Petersen BL. Timing of orchiopexy: what has changed in the last two decades? World J Clin Pediatr. 2016;5(3):172–178.

13. Elder JS. Cryptorchidism: management of the undescended testis. Pediatr Clin North Am. 1997;44(5):1211–1227

14. American Academy of Pediatrics, “13. Timing of elective surgery on the genitalia of male children with particular reference to the risks, benefits, and psychological effects of surgery and anesthesia.,” Pediatrics., vol. 97, no. 4, pp. 590-4, 1996.

15.Barthold JS, Gonzalez R. The epidemiology of congenital cryptorchidism, testicular ascent and orchiopexy. J Urol. 2003;170:2396–401. Doi: 10.1097/01.ju.0000095 .793.04232d8

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