

Age at presentation of undescended testicles: a single-center study in Saudi Arabia

Jumanah H. Basalelah, Abdullah M. Alzahrani, Abdulaziz M. Alshaibani, Nasser S. Alalyani, Turki A. Alsubiani, Maha Khalid AlMadi, Ossamah S. Allsoyayan

From the Department of Urology, Imam Abdulrahman Bin Faisal University, Dammam, Saudi Arabia

Correspondence: Maha Khalid AlMadi · Department of Urology, Imam Abdulrahman Bin Faisal University, Dammam 31311, Saudi Arabia · T: 966567818922 · mmadi@iau.edu.sa · ORCID: <http://orcid.org/0000-0002-7639-6668>

Citation: Basalelah JH, Alzahrani AM, Ramadhan AM, Alalyani NS, Alsubiani TA, AlMadi MK, et al. Age at presentation of undescended testicles: a single-center study in Saudi Arabia. *Ann Saudi Med* 2018; 38(2): 137-139 DOI: 10.5144/0256-4947.2018.137

Received: December 28, 2017

Accepted: February 6, 2018

Published: April 5, 2018

Copyright: Copyright © 2018, Annals of Saudi Medicine, Saudi Arabia. This is an open access article under the Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License (CC BY-NC-ND). The details of which can be accessed at <http://creativecommons.org/licenses/by-nc-nd/4.0/>

Funding: None

BACKGROUND: The undescended testis (UDT) is the most common genital anomaly encountered in pediatrics with an estimated incidence of 1% to 4% in full-term and 1% to 45% in preterm newborn boys. Over the years, studies on progressive histological deterioration and cancer risk has led to a change in recommendations for when orchidopexy should be done.

OBJECTIVES: Determine age at presentation of patients for UDT to a specialist in Saudi Arabia, age of operation and whether the recommended targeted time frame has been met.

DESIGN: Descriptive retrospective medical record review.

SETTINGS: University hospital setting in urban location.

SUBJECTS AND METHODS: The records of patients presenting to our center with UDT between the years 1996-2015 were reviewed for data on the age at presentation and age of operation.

MAIN OUTCOME MEASURES: Age at time of evaluation and at time of surgical intervention compared with the international standard.

SAMPLE SIZE: 331 cases.

RESULTS: Out of the cases included, 195 met the inclusion criteria. The median age of presentation was 13.7 (range: 0–123.2) months. The median age at time of orchiopexy was 25 (range: 7.5–130.2) months. The median waiting time for elective surgery was 4.8 months (<1 day to 49.4 months).

CONCLUSION: Despite the international recommendation of carrying out orchidopexy between the ages of 6-12 months, the targeted recommended time frame is not met in Saudi Arabia. This is mainly related to late referral age and the long waiting time for elective surgery.

LIMITATIONS: Small sample size and retrospective design.

CONFLICT OF INTEREST: None.

Undescended testis (UDT) or cryptorchidism is defined as failure of the testis to descend into its normal scrotal position by the time of birth. The incidence of UDT is estimated to be 1-4% of full-term and 1-45% of preterm newborn boys.¹⁻³ Studies have shown that the undescended testicle has a potential of spontaneous descent during the first 3 months of life and is less likely to do so after 6 months of age.⁴ Despite being one of the most extensively researched conditions of childhood, it is still incompletely understood in terms of the exact etiology and long-term consequences.^{2,5-8}

Variable testicular histological changes in association with UDT have been described in the literature. These are believed to be influenced by testicular position and age at which orchidopexy and biopsy was performed. These have led to an overall progressive reduction in the recommended age in the literature at which orchidopexy should be carried out over the past few decades.⁹⁻¹² This study aimed to determine the age of presentation of UDT to a specialist in a single center in Saudi Arabia, the age of surgical intervention and whether the recommended time frame for orchidopexy has been met.

SUBJECTS AND METHODS

We performed a retrospective chart review to develop a descriptive analysis of patients with UDT managed in King Fahd Hospital of the University, Al Khobar, in the Eastern Province, Saudi Arabia between the years of 1996 and 2015. This was conducted on an anonymous-based data collection, thus ethical approval was not required. Codes used for extracting files were both diagnostic and therapeutic for UDT. Statistical analysis was performed using SPSS version 20.0 software (<https://www.ibm.com/products/spss-statistics>). Only files of patients with UDT born during the study period had available birth, referral as well as surgery dates and were included in the study. Files of patients born before the study period were missing birth, referral or surgery dates and were excluded from the study. Patients referred to us with failed initial orchidopexy that required a revision of the procedure were also excluded.

RESULTS

Of 311 patients with UDT managed in our hospital, 116 (37.3%) patients were excluded; 65/116 (56%) were born before the study timeline and 27/116 (23.3%) had a missing referral date while 24/116 (20.7%) had a missing date of surgery. Of the remaining 195/311 (62.7%) patients included in the study, the median age at presentation to a specialist was 13.7 (range: 0-123.2) months. The median age at time of orchidopexy was 25 (range: 7.5-130.2) months. The median waiting time for surgery was 4.8 (range: 0.01-49.4) months.

DISCUSSION

UDT is a common childhood problem worldwide. Unfortunately, studies on UDT prevalence in Saudi Arabia are lacking. Determining whether orchidopexy was performed within an acceptable time frame was always a matter of debate and concern for both clinicians and researchers. The drive for early orchidopexy is an increasing knowledge of the progressive histological changes to the cryptorchid testis from infancy (reduction in number of Leydig cells, reduction in number and development of germ cells, risk of future tumor formation) which was found to be more prominent after the age of 12 months in the UDT.⁹⁻¹² The increased risk of testicular germ cell tumors associated with testicular maldescent has been demonstrated in the literature.¹³ Evidence that orchidopexy before puberty is protective has been reported with the lowest incidence seen in children undergoing orchidopexy in the 0 to 6-year range of age.^{14,15}

Based on these and other factors, the recommended time frame to do orchidopexy has dramatically changed

over the past few decades. The American Academy of Pediatrics in 1996 recommended 12 months as the age when surgical intervention should be carried out, suggesting that early intervention may prevent testicular degeneration and improve future fertility.¹⁶ This was reinforced by the EAU/ESPU in which they recommend that if a testis has not descended by the age of 6 months, surgery should be performed before the age of 12 months, and by 18 months at the latest. (level of evidence 2b-grade B).¹⁷ Despite these and other international recommendations,¹⁶⁻¹⁸ orchidopexy is still not always performed within this recommended time frame.¹⁹⁻²²

In 2008, K. F. Neel retrospectively reviewed 345 boys diagnosed with UDT in two centers in Riyadh, Saudi Arabia. The mean age of orchidopexy was 54.8 months (SD) in his study, which is consistent with the findings in our study. However, he did not mention the reason of delayed management.²³

On the other hand, in addition to studying the age at which orchidopexy is carried out in our community, we tried to investigate further to find the reason for delayed surgical management. As shown in our results, the median age at which orchidopexy is done was 25 (range: 7.5-130.2) months, which is double the recommended time internationally. This delay was mainly due to late age at referral where the median age of presentation to a specialist was 13.7 (range: 0-123.2) months. Delayed surgical intervention was another factor and we found to be related to the long waiting period for elective surgery (median waiting time for surgery was 4.8 (range 0.01-49.4) months) in our study. However, it is unclear whether the late referral was because of missed diagnosis at birth, delayed follow up by parents or delayed referral from primary care physicians and pediatricians to a specialist for further evaluation and management.

In Saudi Arabia there is no national patient registry or a unified health information system database to use for cases such as UDT. Thus we are yet unable to evaluate the local trend of evaluation and referral of these cases within our country. In Austria, Springer et al evaluated orchidopexy patterns between 1993 and 2002²⁴ and found that the incidence of orchidopexies performed before 24 months of age constantly rose with significant geographic differences which reflects the degree of international guideline dissemination and implementation within a single country.

This study is limited by its retrospective nature, relatively small number of patients and the lack of sub-analysis of other causes for delay of referral.

In conclusion, despite the international recommen-

dition for carrying out orchidopexy between the ages of 6-12 months, we still fail to meet the targeted recommended time frame for performing orchidopexy. This is mainly related to the late referral age and in part to the long waiting time for elective surgery. Further investigation into the factors leading to delay of referral is encouraged. Primary care continuity and thorough well

care visits in addition to public health education programs for the community, primary care physicians and pediatricians while also further improving our referral channels can serve us to implement medically based and culturally tailored strategies to achieve the targeted recommended age during which surgical management should be carried out.

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):1-11.
2. Hutson JM, Balic A, Nation T, Southwell B. Cryptorchidism. *Semin Pediatr Surg.* 2010;19(3):215-224.
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.
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.
5. Hutson JM, Li R, Southwell BR, Newgreen D, Cousinery M. Regulation of testicular descent. *Pediatr Surg Int.* 2015;31(4): 317-25.
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 Testis Palpability Predict Germ and Leydig Cell Loss: Clinical Predictors of Adverse Histological Features of Cryptorchidism. *J Urol.* 2009;182(2):704-9.
8. Hutson JM, Southwell BR, Li R, Lie G, Ismail K, Haris G. The regulation of testicular descent and the effects of cryptorchidism. *Endocr Rev.* 2013;34 (5): 725-52.
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.
10. Virtanen HE, Cortes D, Rajpert-De Meyts E, Ritzen EM, Nordenskjold A, Skakkebaek NE, et al. Development And Descent Of The Testis In Relation To Cryptorchidism. *Acta Paediatr.* 2007;96(5):622-7.
11. Ashley RA, Barthold JS, Kolon TF. Cryptorchidism: Pathogenesis, Diagnosis, Treatment and Prognosis. *Urol Clin North Am.* 2010;37(2):183-93.
12. Niedzielski JK, Oszkowska E, Slowikowska-Hilcz J. Undescended Testis - Current Trends and Guidelines: A Review of The Literature. *Arch Med Sci.* 2016;12(3):667-77.
13. McGlynn, K. A, Cook, M. B. Etiologic factors in testicular germ cell tumors. *Future Oncology Future oncology.* 2009 ;5 (9):1389-1402.
14. Walsh TJ, Walsh TJ, Dall'Era MA, Croughan MS, Carroll PR. Prepubertal Orchiopexy for Cryptorchidism May be Associated With Lower Risk of Testicular Cancer. *J Urol.* 2007;178(4) 1440-1446.
15. Wood HM, Elder JS. Cryptorchidism and Testicular Cancer: Separating Fact From Fiction. *J Urol.* 2009;181(2):452.
16. 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.
17. Radmayr C, Dogan HS, Hoebeke P, Kocvara R, Nijman R, Stein R, et al. Management of Undescended Testes: European Association of Urology/European Society for Paediatric Urology Guidelines. *J Pediatr Urol.* 2016;12(6):335-43.
18. Kolon TF, Herndon CD, Baker LA, Baskin LS, Baxter CG, Cheng EY, et al. Evaluation and Treatment of Cryptorchidism: AUA guideline. *J Urol.* 2014;192(2):337-45.
19. Brown JJ, Wacogne I, Fleckney S, Jones L, Ni Bhrolchain C. Achieving Early Surgery for Undescended Testes: Quality Improvement Through A Multifaceted Approach To Guideline Implementation. *Child Care Health Dev.* 2004;30(2):97-102.
20. Bradshaw CJ, Corbet-Burcher G, Hitchcock R. Age at orchidopexy in the UK: has new evidence changed practice? *J Pediatr Urol.* 2014;10(4):758-62.
21. Dobanovackic D, Vuckovic N, Slavkovic A, Lucic Prostran B, Latic T, Gajic I. Variations in Timing of Elective Orchidopexy. *Med Pregl.* 2016;69(3-4):106-9.
22. Yiee JH, Saigal CS, Lai J, Copp HL, et al. Timing of Orchiopexy in the United States: A Quality-of-Care Indicator. *Urology.* 2012;80 (5):1121 - 1126.
23. Neel K.F. Orchidopexy for undescended testis among Saudi children: is it conducted at the optimal age?. *Curr Pediatr Res.* 2010;14. 39-41.
24. A. Springer, R. Subramaniam, C. Krall, G. Fülöp. Orchidopexy patterns in Austria from 1993 to 2009. *J Pediatric Urol .* 2013; 9(5) 535-541.