

Case Report

Bilateral Undescended Testes in an Old Male Cadaver: A Rare Anatomical Discovery

Amirhossein Mohammadi¹ , Hamidreza Asgari^{2*}

1. Stem Cell and Regenerative Medicine Research Center, Iran University of Medical Sciences, Tehran, Iran.

2. Department of Anatomy, School of Medicine, Iran University of Medical Sciences, Tehran, Iran.



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ABSTRACT

Introduction: Cryptorchidism is a congenital condition characterized by undescended testes, typically observed in infancy. We present an unusual case of bilateral undescended testes during anatomical dissection.

Case Report: The cadaver, preserved using standard techniques, exhibited bilateral undescended testes with no apparent signs of testicular issues or malignancies. The left testis was situated near the superficial ring of the inguinal canal, while the right testis was located deeper within. Both testes displayed normal size and structure, with intact vas deferens and blood vessels.

Clinical Implications: The etiology of adult-onset bilateral cryptorchidism remains unclear, emphasizing the importance of early diagnosis in living patients. Timely intervention is crucial, as undescended testes in adults can lead to infertility, increased cancer risk, and hormonal imbalances. This case underscores the significance of regular medical examinations and early management for cryptorchidism.

Conclusion: This rare case highlights the necessity of considering cryptorchidism in adult patients, even in the absence of apparent symptoms or malignancies. The findings emphasize the importance of prompt diagnosis and intervention to mitigate potential complications. Further research into adult-onset cases is warranted to enhance clinical understanding and improve patient care.

*** Corresponding Author:**

Hamidreza Asgari, PhD.

Address: Department of Anatomy, School of Medicine, Iran University of Medical Sciences, Tehran, Iran.

Tel: +98 (21) 86704553

E-mail: asgari.hr@iums.ac.ir

Introduction

Undescended testes, also known as cryptorchidism, is a congenital condition characterized by the failure of one or both testes to descend into the scrotal sac during fetal development [1]. This condition is rooted in the complex process of testicular descent. In embryological terms, the testes initially form near the kidneys and begin migrating into the scrotum around the 28th week of gestation. This migration is orchestrated by intricate hormonal interactions, with testosterone, luteinizing hormone (LH), and insulin-like factor 3 (INSL3) playing key roles. Testosterone is crucial for the differentiation of the male reproductive tract, while INSL3 promotes the elongation of the gubernaculum, a ligament essential for testicular descent. This migration is essential for the proper development and function of the testes, as the lower scrotal temperature provides an optimal environment for spermatogenesis [2]. Failure in this process can result in various complications, such as impaired fertility and an increased risk of testicular cancer [3]. Understanding the embryological basis of cryptorchidism is vital for appreciating its clinical implications, underscoring the need for early diagnosis and intervention in affected individuals.

Although commonly observed in infants and young children, encountering bilateral undescended testes in a middle-aged male cadaver is a rare phenomenon that warrants careful analysis and documentation [4]. The condition has significant clinical implications, as it is associated with increased risks of infertility [5], testicular malignancies [6], and hormonal imbalances [7]. This case report aims to present the unique finding of bilateral undescended testes in a 65-year-old male cadaver, discussing the anatomical observations, potential etiological factors, and clinical relevance of such a presentation.

While the majority of cases of undescended testes are diagnosed and managed in infancy or childhood, instances of undiagnosed or untreated cryptorchidism in adulthood are less common. The presentation of bilateral undescended testes in a 65-year-old male cadaver prompts a thorough exploration of potential factors contributing to this unusual condition.

Case Report

We present the case of a male cadaver that was subjected to anatomical dissection as part of an educational program at the Iran University of Medical Sciences. The cadaver had been preserved using standard embalming

techniques. During the dissection of the urogenital region, a unique anatomical variation was observed in the form of bilateral undescended testes.

Unfortunately, we could not obtain a comprehensive medical history for the individual due to the nature of cadaveric specimens. However, based on the anatomical context and the presence of other well-preserved anatomical structures, the cadaver appeared to be a middle-aged adult male.

In this unique case, a thorough exploration of the inguinal canals and scrotal sac revealed intriguing positional variations of the undescended testes. The left testis was located near the superficial ring of the inguinal canal, situated nearer to the external body surface. In contrast, the right testis was found at a deeper level within the inguinal canal. Both undescended testes exhibited a relatively normal size and shape, with no observable signs of atrophy or malignancy. Notably, there was no evidence of tumors or pathological abnormalities within either testis. This observation suggests that the cause of death of the individual was unrelated to testicular issues. The vas deferens, blood vessels, and associated structures were meticulously dissected and examined. These structures were found to be present and intact, entering the abdominal cavity through their respective inguinal canals. Furthermore, the testes were encapsulated in their tunica vaginalis and were closely associated with their vasculature and ducts (Figure 1).

This unique anatomical configuration, with the left testis situated near the superficial ring of the inguinal canal and the right testis at a deeper level within the canal, underscores the complexity of undescended testes and their potential variations in adult individuals. Understanding such variations is crucial for comprehending the clinical implications of cryptorchidism and the necessity of timely diagnosis and intervention.

Histologic examinations were conducted on the cadaver testes utilizing Hematoxylin and Eosin (H&E) staining. Upon analysis, it was observed that the typical arrangement of seminiferous tubules, crucial for spermatogenesis, did not present as expected. Figure 2 shows the irregular distribution of germ cells at various developmental stages within the tubules. Furthermore, Sertoli cells, vital for supporting germ cell development, were identified but displayed an uneven distribution throughout the tubules. In the interstitial spaces surrounding the tubules, Leydig cells, responsible for testosterone production, were appropriately positioned. Additionally, the histological examination revealed the



Figure 1. Cadaveric image of undescended testis on both sides

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presence of well-defined blood vessels, nerves, and connective tissue, contributing to the maintenance of the testicular environment.

Discussion

The presence of bilateral undescended testes in a male cadaver raises intriguing questions regarding the underlying factors contributing to this rare anatomical variation. Cryptorchidism is typically diagnosed and managed

during infancy or childhood, as the descent of the testes is a critical process during fetal development. However, this case highlights the potential for undiagnosed or untreated cryptorchidism to persist into adulthood. In this case, the potential etiological factors behind the bilateral undescended testes could include hormonal abnormalities, anatomical abnormalities of the gubernaculum, or genetic predisposition. However, without access to the individual’s medical history or genetic information, it is challenging to ascertain the specific cause definitively.

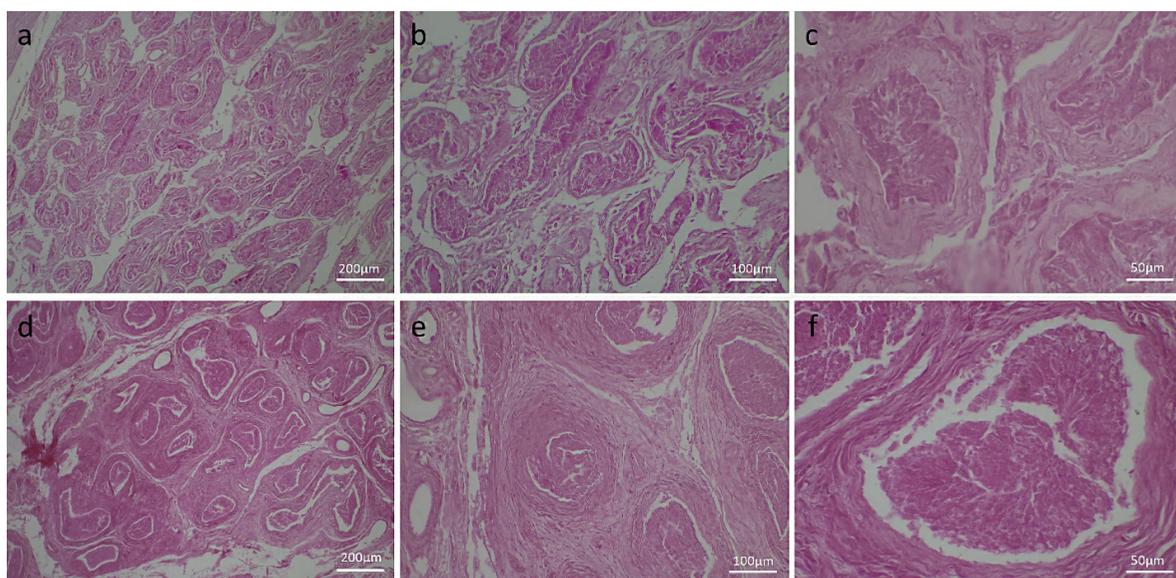


Figure 2. H&E staining of the testicular tissue demonstrating histological architecture of the testes (a, b, and c: Left side; d, e, and f: Right side)

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While the individual in question may not have personally experienced the clinical consequences of untreated cryptorchidism due to their status as a cadaveric specimen, this case highlights the importance of early diagnosis and intervention in living patients. Bilateral undescended testes in adult males can lead to various health issues, including infertility, increased risk of testicular cancer, and hormonal imbalances. Therefore, observing this unique anatomical variation underscores the significance of regular medical examinations and timely management of undescended testes.

Conclusion

While the specific etiology remains unclear due to the lack of detailed medical history, this case underscores the importance of considering cryptorchidism even in adult patients without apparent symptoms or malignancies. The findings emphasize the critical need for prompt diagnosis and intervention to mitigate potential complications such as infertility, increased cancer risk, and hormonal imbalances associated with undescended testes in adults. Further research into adult-onset cases is warranted to enhance clinical understanding and improve patient care, highlighting the ongoing relevance of studying congenital conditions across the lifespan.

This case report contributes to understanding cryptorchidism's broader implications and the need for comprehensive clinical care throughout an individual's lifespan. Further research and study of such cases may provide insights into the underlying mechanisms and potential interventions for adult-onset undescended testes.

Ethical Considerations

Compliance with ethical guidelines

This research was in accordance with the ethical guidelines provided by the Ethic Committee of Iran University of Medical Sciences.

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Authors' contributions

Both authors equally contributed to preparing this article.

Conflict of interest

The authors declared no conflict of interest.

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