Scholars Journal of Medical Case Reports
Abbreviated Key Title: Sch J Med Case Rep
ISSN 2347-9507 (Print) | ISSN 2347-6559 (Online)
Journal homepage: https://saspublishers.com

OPEN ACCESS

Urology

Testicular cancer in undescended testicle: A Review of Literature and Case Report

Mehedra Anass[1*], Babty Mouftah[1], Fouimtizi Jaafar[1], Slaoui Amine[1], Karmouni Tarik[1], El Khader Khalid[1], Koutani Abdellatif Iben Attya[1], Andaloussi Ahmed[1]

[1]Urology Department B, CHU Ibn Sina, Rabat, Morocco

DOI: 10.36347/sjmcr.2024.v12i04.002 | **Received:** 21.02.2023 | **Accepted:** 25.03.2024 | **Published:** 01.04.2024

***Corresponding author:** Mehedra Anass
Urology Department B, CHU Ibn Sina, Rabat, Morocco

Abstract **Case Report**

This clinical case involves a 52-year-old married patient with two children who presented initially with left-sided pelvic pain, leading to the discovery of a tumor on a cryptorchid testicle. Further evaluation revealed a suspicious lesion, indicating degeneration of a testicle in an aberrant position. Surgical intervention via laparoscopic orchidectomy confirmed a seminoma, emphasizing the association between cryptorchidism and testicular germ cell tumors. This case underscores the importance of early diagnosis and management of cryptorchidism to mitigate the risk of testicular malignancies, highlighting the necessity for timely surgical intervention and careful monitoring of patients with undescended testicles.

Keywords: Cancer, Testicle, Cryptorchidism.

INTRODUCTION

The usual position of a testicle is intra-scrotal, attached to the body by the spermatic cord, which traverses the abdomen through the inguinal canal. In embryos, the testicles are initially in the retroperitoneal space, descending into the scrotum around the perinatal period. During this migration, aberrant testicular locations can occur, clinically manifested by the absence of a palpable testicle in the scrotal sac, we define two main types:

Cryptorchidism, resulting from a cessation of migration of one or both testicles at a specific point along their normal trajectory.

Ectopia, which corresponds to a testicle in an abnormal position outside of its physiological pathway. These pathological conditions constitute risk factors for testicular cancer [1, 2], indeed, 5% of testicular germ cell tumors have a pathological location [3]. The aim of this clinical study is to present the case of a patient managed in our institution for a tumor on an undescended testicle.

CASE REPORT

This is a 52-year-old patient, married and father of two children, who initially consulted his general practitioner for left-sided pelvic pain, without any associated symptoms. An abdominal ultrasound revealed the presence of a hypoechoic and homogeneous mass measuring seven centimeters in the left iliac fossa, with signs of vascularity on Doppler, suggesting a tumor on a cryptorchid testicle.

Subsequently, upon referral to our urology department for further evaluation, a comprehensive clinical examination was conducted. The examination revealed an empty left testicular sac, indicating the absence of the left testicle in its normal scrotal position. In contrast, the right testicle was palpable and appeared to be in its anatomically expected location within the scrotum, as illustrated in Figure 1. However, abdominal examination did not reveal any significant abnormalities or palpable masses.

To further assess the nature and extent of the pelvic mass identified on ultrasound, a thoraco-abdomino-pelvic CT scan was performed. The imaging results delineated a well-defined pelvic mass situated superior to the bladder, measuring 77x70x69mm. The mass exhibited enhanced tissue density promptly following the administration of contrast medium. Notably, vascularization of the mass was observed, originating from an arterial branch directly arising from

the abdominal aorta. This vascular pattern, along with the mass characteristics, raised suspicion of testicular degeneration in an aberrant position, as depicted in Figure 2.

The tumor markers showed no significant abnormalities except for a lactate dehydrogenase level of 514 U/L (units per liter). Surgical management was deemed necessary, and a trans-peritoneal laparoscopic approach was chosen for a high orchidectomy, as depicted in Figure 3. The histopathological examination favored a seminoma classified as pT2N0M0 according to the TNM classification system [1].

This pathological diagnosis provided crucial information regarding the extent and characteristics of the testicular tumor, guiding subsequent treatment decisions and prognostic considerations for the patient.

DISCUSSION

Cryptorchidism has historically been identified as the primary risk factor for testicular germ cell tumors, an observation firmly established in the medical literature. This association was initially reported by the British surgeon T.B. Curling in 1856 [4], and has since been the subject of extensive study. According to K.-P. Dieckmann, in a meta-analysis incorporating 20 case-control studies, the relative risk of occurrence is estimated at 4.8 [5]. This significant risk underscores the importance of recognizing and addressing cryptorchidism early in life to lighten the potential development of testicular malignancies later on.

Furthermore, the incidence of undescended testicles in children at the age of one year in the general population is estimated to be between 1.1% and 1.6% [4]. This reality enhances the importance of carefully monitoring these patients. Moreover, the benefit of orchidopexy before puberty in reducing the risk of testicular cancer is firmly supported [4].

A study conducted in 2007 demonstrated this correlation. It involved 17,000 patients treated for undescended testicles and concluded that the relative risk increased with age, rising from 2.35 before puberty to 6.24 after puberty [6]. These findings highlight the critical role of early intervention in decreasing the long-term risks associated with cryptorchidism, emphasizing the importance of timely surgical management to reduce the incidence of testicular malignancies later in life.

Therefore, orchidopexy is justified after the age of one year and before the age of 10 to 11 years. Beyond this timeframe, testicular preservation becomes problematic as it may lead to testicular atrophy with reduced fertility, in addition to the increased risk of cancer. Early intervention within this window of opportunity is crucial to optimize outcomes, including preserving fertility and minimizing the risk of developing testicular malignancies.

A particular situation involves bilateral cryptorchidism, for which surgical intervention should be performed before the age of 12 months [4]. In this case, the risk of degeneration and infertility is significantly increased, warranting early management. Timely intervention is essential to address bilateral cryptorchidism effectively, as it helps reducing the risks associated with testicular degeneration and infertility, to optimise long-term outcomes for patients with this condition.

From a clinical standpoint, the case we present is characterized by a late diagnosis at an advanced stage. This delay can be attributed to the lack of diagnosis of undescended testicles at a young age, which may be considered normal in certain populations due to insufficient awareness.

The intra-abdominal aberrant localization provides ample space for a slow and silent evolution of the testicular tumor, contributing to a delay in diagnosis and misleading symptomatology before seeking specialized consultation. This underlines the importance of heightened awareness among healthcare providers and the general public regarding the significance of early detection and intervention for cryptorchidism and associated complications.

From a biological standpoint, seminomas exhibit distinctive marker profiles that aid in their diagnosis and monitoring. Unlike some other types of testicular tumors, seminomas typically do not produce alpha-fetoprotein, a key tumor marker commonly elevated in non-seminomatous germ cell tumors. However, approximately 10% of seminomas may express total human chorionic gonadotropin (hCG), but at lower levels compared to non-seminomatous tumors. Additionally, lactate dehydrogenase (LDH) levels, while not specific to seminomas, are often elevated and correlate with the cellular turnover and tumor burden [1]. In our case, the significant LDH elevation correlates with a sizable tumor volume of 7 centimetres, indicating active tumor growth.

Histologically, the tumor is a high-risk, stage I seminoma, classified as pT2N0M0 due to its increased tumor volume exceeding 4 centimeters [1, 2]. This situation exposes the tumor's aggressive potential, indicating close monitoring and aggressive treatment approaches to decrease the risk of progression and recurrence.

In a case series published in 1980 by Batata *et al*., [7], comparing histological types of testicular germ cell tumors in two groups of patients with cryptorchidism, the first group comprised untreated patients, while the second group included patients who underwent orchiopexy between the ages of 4 to 42 years.

Despite a similar age at discovery, the histological findings differed:

- In the first group, 71% of patients had seminomas.
- In the second group, the distribution of histological types was as follows: 35% of cases were teratomas, 33% were embryonal carcinomas, and 29% were seminomas.

These results prove the impact of orchiopexy on the histological composition of testicular germ cell tumors in patients with cryptorchidism [6]. Indeed, they are in perfect agreement with the data from our case report. However, they raise the question of whether the treatment of cryptorchidism represents a compromise between the risk of seminoma and that of non-seminomatous germ cell tumors. Nevertheless, recommendations and studies suggest that orchiopexy performed at an appropriate age reduces the risk of testicular cancer.

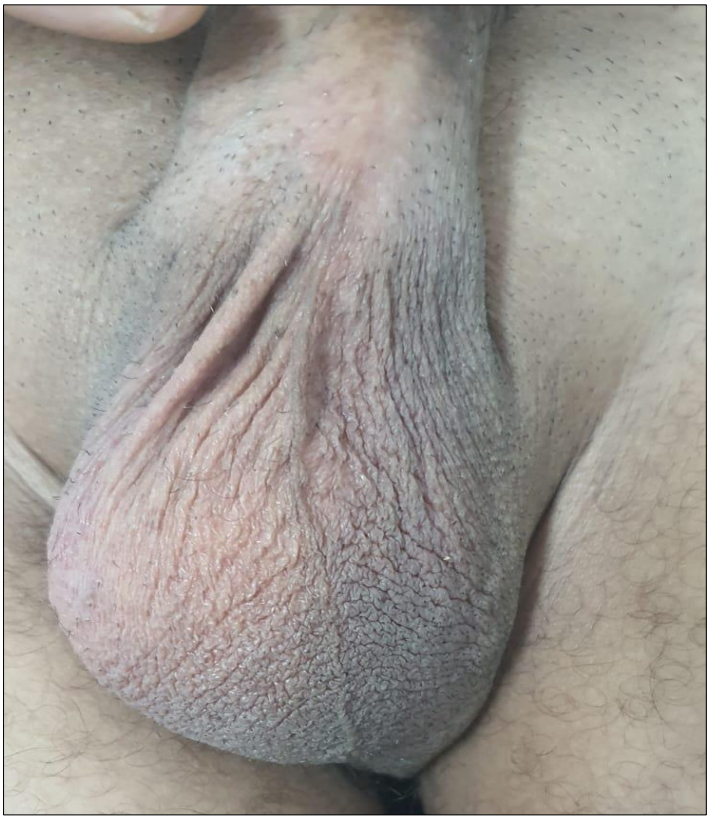

Figure 1: The scrotal examination reveals emptiness in the left testicular scrotum, while the right testicle present.

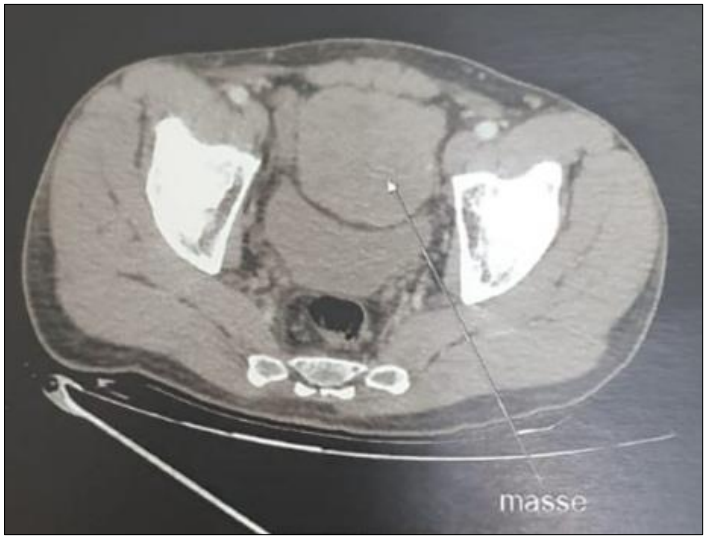

Figure 2: A suspicious mass above the bladder suggestive of degeneration on testicular cryptorchidism

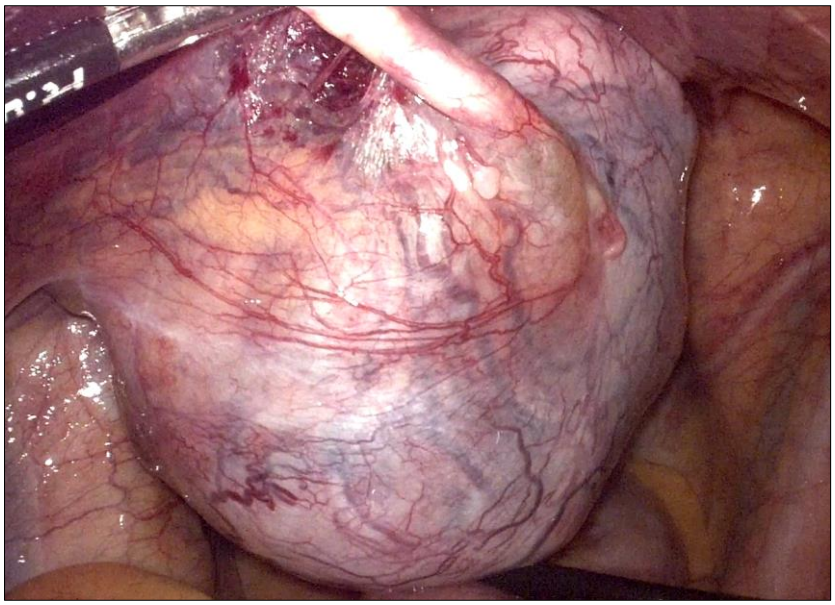

Figure 3: Laparascopic exploration of the mass

CONCLUSION

Cryptorchidism represents an undeniable risk factor for testicular cancer, and diagnosis should be made early, primarily relying on clinical examination at birth followed by surgical or hormonal correction between the ages of one and eleven years. Beyond this period, prevention becomes uncertain due to the increased relative risk of cancer. However, studies indicate that in the absence of orchiopexy, if degeneration occurs, three-quarters of cases involve seminomas, whereas with correction, it tends to be a teratoma in one-third of cases. These findings bring out the importance of early correction of undescended testes to prevent progression to cancer.

Conflict of Interest: None.

REFERENCES

1. Murez, T., Fléchon, A., Branger, N., Savoie, P. H., Rocher, L., Camparo, P., ... & Roupret, M. (2022). French AFU Cancer Committee Guidelines-Update 2022-2024: testicular germ cell cancer. *Progrès en Urologie*, *32*(15), 1066-1101. https://doi.org/10.1016/j.purol.2022.09.009.
2. Patrikidou, A., Cazzaniga, W., Berney, D., Boormans, J., de Angst, I., Di Nardo, D., ... & Nicol, D. (2023). European Association of Urology guidelines on testicular cancer: 2023 update. *European Urology*. doi: 10.1016/j.eururo.2023.04.010.
3. Oosterhuis, J. W., & Looijenga, L. H. (2005). Testicular germ-cell tumours in a broader perspective. *Nature Reviews Cancer*, *5*(3), 210-222. doi: 10.1038/nrc1568.
4. Wood, H. M., & Elder, J. S. (2009). Cryptorchidism and testicular cancer: separating fact from fiction. *The Journal of urology*, *181*(2), 452-461. doi: 10.1016/j.juro.2008.10.074.
5. Dieckmann, K. P., & Pichlmeier, U. (2004). Clinical epidemiology of testicular germ cell tumors. *World journal of urology*, *22*, 2-14.
6. Pettersson, A., Richiardi, L., Nordenskjold, A., Kaijser, M., & Akre, O. (2007). Age at surgery for undescended testis and risk of testicular cancer. *New England Journal of Medicine*, *356*(18), 1835-1841.
7. Batata, M. A., Whitmore Jr, W. F., Chu, F. C. H., Hilaris, B. S., Loh, J., Grabstald, H., & Golbey, R. (1980). Cryptorchidism and testicular cancer. *The Journal of urology*, *124*(3), 382-387.