

## Case Report

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## Partial Orchiectomy: Towards the Demystification

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### ABSTRACT

Facing any testicular lesion one must practice a total orchiectomy. Or this principle has been the standard dogma for a long time, it is no longer today. However, the advancement of diagnostic and therapeutic means has highlighted conservative surgery over ablative surgery. In this paper, we report 2 clinical cases of 2 young men with testicular lesions in different contexts, and exposing our arguments and the difficulties faced during the course of care. We also share our results and also those reported in the literature.

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**Received:** November 02, 2019; **Accepted:** November 11, 2019; **Published:** November 17, 2019

### Introduction

Total orchiectomy is the standard dogma for any testicular tumor. However, this dogma is questioned by the accumulated experience of the various “necessity” conservative surgeries on single testicle.

Thus, the functional benefit weighed against the oncological risk (linked to the conservative attitude) seems to favor partial orchiectomy. Nevertheless, certain sinequanone rules must be strictly observed in order to maintain the excellent specific survival rates of testicular cancers obtained with conventional orchiectomy.

The interest of this work is to evaluate the role of partial orchiectomy in the treatment of benign and malignant testicular lesions in comparison with the standard dogma of total orchiectomy.

This evaluation will consist of listing the functional, oncologic and psychological results of each surgical technique. This will be done in the light of our own experience, on one hand, and what has been reported in the literature, on the other.

### Case Report

#### Case Report 1:

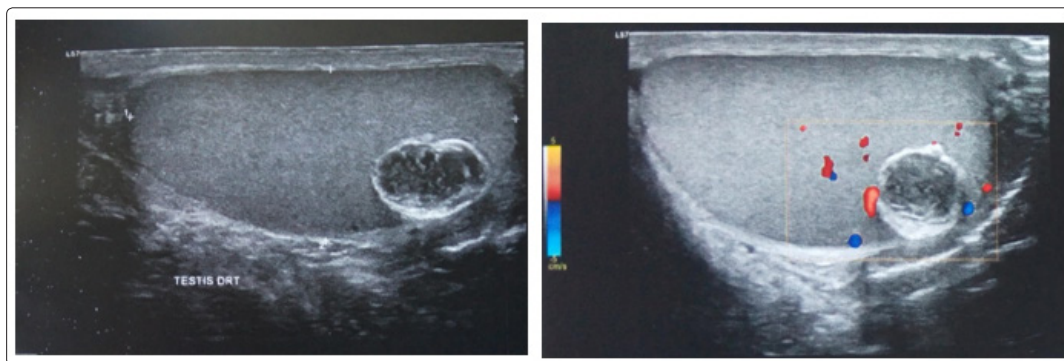
He is a 30-year-old unmarried man with a history of chronic smoking and repeated sexual infections such as urethritis complicated with treated orchids. There was no notion of trauma or lowering of the testicular to childhood. He consulted for bilateral scrotal pains of tingling type, which increase in the standing position and have been evolving for two months. Clinical examination revealed a painless and tough nodule of a one centimeter at the inferior pole of the right testicle.

A scrotal ultrasound with Doppler showed an ovoid cystic formation of 2 cm, calcified wall with heterogeneous center and not taking Doppler (Fig.1). It is intra parenchymatous polar inferior to the contact with the albuginea. Tumor marker levels were normal (Alpha FP, LDH, BHCG). At the end of the ultrasonographic and biological data that favor the benignity, a conservative surgery was considered after discussion and consent of the patient. Cryopreservation of sperm was made on 03 successive samples. The patient has been warned of a possible orchiectomy if the extemporaneous examination is in favor of malignancy.

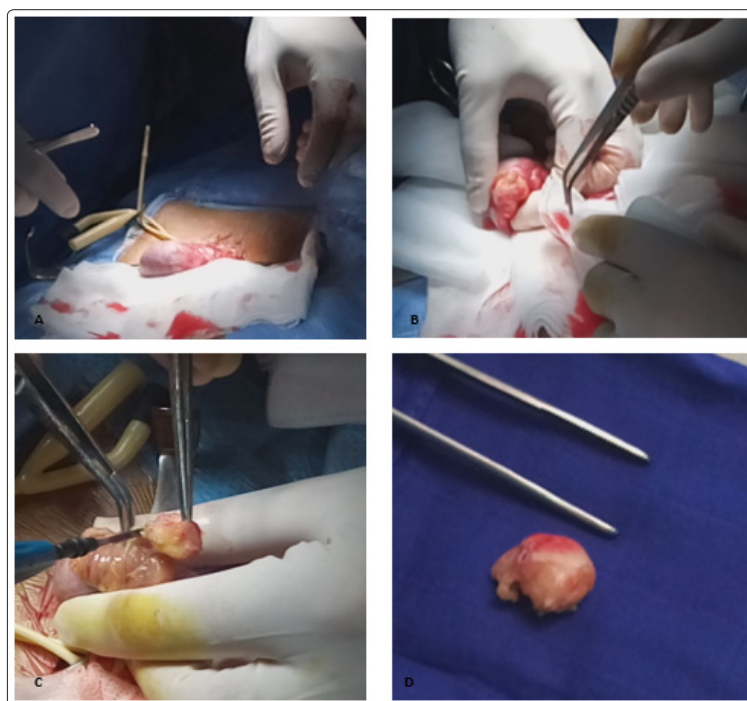
Under spinal anesthesia, a straight inguinal approach with first clamping of the spermatic cord was performed. Per-operatively, a nodule measuring one centimeter beneath the tunica albuginea was found at the lower pole of the testicle. (Fig.2)

Its enucleation is done with the cold blade by passing into the adjacent healthy tissue. The clamping did not last more than 15 min in the conditions of hot ischemia. Macroscopically, it is a whitish nodule perfectly rounded (Fig.2).

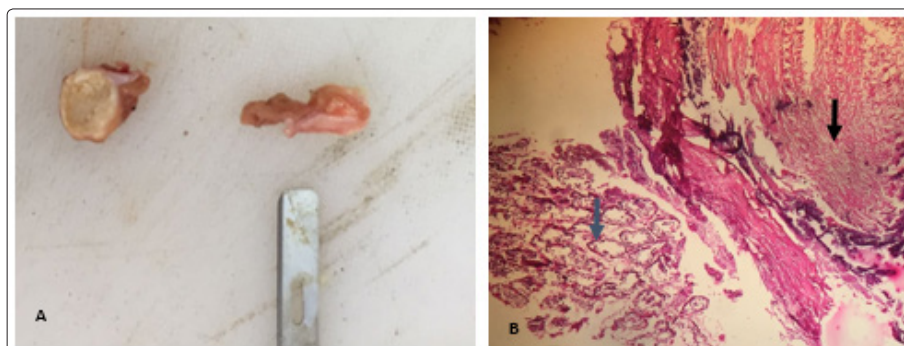
The extemporaneous examination evokes an epidermoid cyst, confirmed subsequently by definitive histological examination (Fig.3). Subsequently it was decided to close the albuginea after verification of hemostasis. The postoperative course was simple. The patient is reviewed one month later with strictly normal clinical and ultrasound examination except for a notch on the enucleation bed.



**Figure 1:** Right testicle in sagittal section with the 11.5 MHz ultrasound probe. Ovoid cystic formation of 2 cm, calcified wall with heterogeneous center and not taking Doppler



**Figure 2:** (A) Prior clamping of the cord. (B) Enucleation of the cyst after the incision of the tunica albuginea. (C, D) Epidermoid cyst dissected in full.



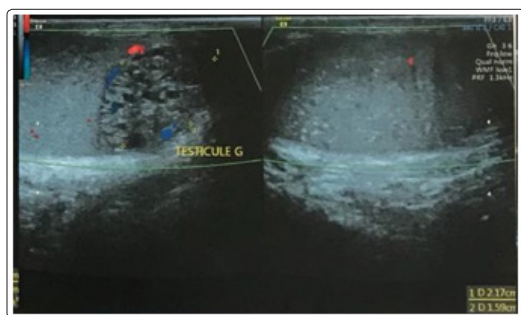
**Figure 3:** (A) Macroscopic appearance. Cystic lesion with thick fibrous wall with lumpy yellowish content. (B) Histological aspect. Testicular parenchyma (blue arrow) seat of a cystic lesion with fibrous wall and calcification with presence of keratin lamella (black arrow).

## Case Report 2

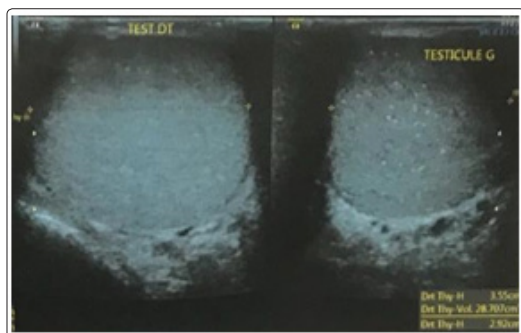
Mr Mohammed. M is a 25-year-old, single, with no notable antecedent. He consulted for left scrotal pain, with a testicular nodule to self-palpation.

On clinical examination a lower left testicular nodule was found, tough and painless on palpation.

Scrotal ultrasound showed an oval mass of  $21 \times 15$  mm, well limited to a double cystic and fleshy component, and taking Doppler at the periphery. It also shows the presence of microscopic testicular calcifications stage III. (Fig.4 and Fig.5).



**Figure 4:** Ultrasonographic section of the left testicle showing an inferior left polar mass of  $21 \times 15$  mm, with a fleshy and cystic double component and peripheral doppler. He also notes the presence of micro calcifications stage III.



**Figure 5:** Bilateral micro calcifications

The level of tumor markers was normal, including total HCG,  $\alpha$ FP and LDH. After extensive discussion with the patient and his family, explaining the advantages and disadvantages of each technique, the patient decided to undergo conservative surgery with the possibility of totalization. Sperm preservation was performed on 3 successive samples (Fig. 6). Under spinal anesthesia an upper inguinal approach, with setting of cord on a lake excluding vas deferens. We performed a nodule enucleation with the cold blade without clamping and a biopsy of the adjacent pulp. (Fig. 7)



**Figure 6:** Cord clamping excluding the vas deferens

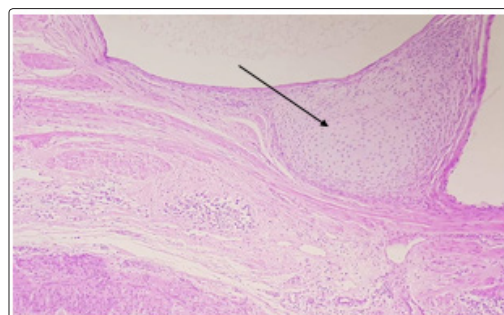


**Figure 7:** Enucleation of the tumor with the electric clamp

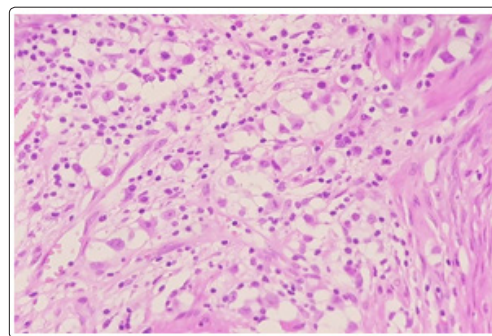
The extemporaneous returned to a mature teratoma with negative margins. The histological study asserts the presence of mixed germinal tumor associating a seminomatous component (10%) and a teratoma with margins negative and in situ germ cell neoplasia (NGIS) in the testicular basement. Moreover, she did not show the presence of vascular emboli. (Fig. 8, Fig. 9, Fig. 10).

The postoperative course was simple. A thoraco-abdominopelvic scan performed a week later did not show secondary locations. 15 days later, an inguinal right testicular biopsy was performed without finding any germinal neoplasia in situ.

After presentation of the file at the multidisciplinary consultation meeting and a discussion with the patient, we opted for active monitoring (testicular palpation, tumor markers and testicular Doppler echoes each 3 months) and the slightest doubt scrotal MRI would be realized.

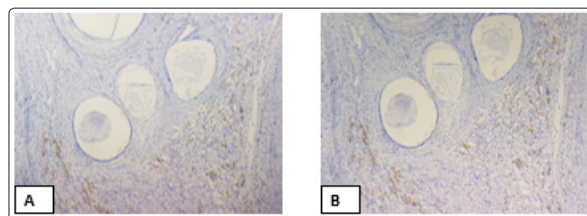


**Figure 8:** Histological section at medium magnification showing the two components: teratomatous with a cartilaginous lobule (black arrow) and seminomatous below. (HEx200).



**Figure 9:** Histological section at high magnification showing the seminomatous component with large cohesive cells with clear cytoplasm (HEx400)





**Figure 10:** Immunohistochemical study: positive labeling of seminomatous tumor cells by anti-CD117 antibody (A) and anti-PLAP antibody (B)

## Discussion

Modern oncology has brought a new weapon into the therapeutic arsenal of various specialties: Conservative surgery. In the center of this new paradigm: breast cancer.

Conservative surgery's main interest is to reduce, in the short, medium and long term, the physical, functional and psychological morbidity associated with conventional treatment of extirpative surgery.

Thereby, the formal requirement of this new therapeutic strategy is to preserve the oncological prognosis of the patient [1].

With accumulated experience, the scientific community has realized the benefits of conservative surgery. Initially, it was exclusively reserved for benign conditions affecting organs with functions that deserve to be maintained, such as kidney and liver.

De facto, the management of testicular tumors has evolved over the past decade in favor of a testicular-preserving approach in some cases. Previously, there was an axiom that any testis mass should undergo a total orchiectomy, based on the reported very low prevalence of benign lesions (about 1%) and the belief that biopsies Preoperative malignancies have always led to the seeding of tumors and the progression of the disease [2].

Extemporaneous examination is widely regarded as a key point in testicular sparing surgery. From a theoretical point of view, testicular sparing surgery would be the ideal treatment for testicular masses, if the extemporaneous examination could provide a diagnosis of their nature with absolute certainty.

However, despite initial concern over potential sampling errors and / or inadequate quality of frozen sample preparation, extemporaneous examination has recently been shown to be an extremely reliable method for characterizing lesions testicular [3, 4].

In our context, the first patient's extemporaneous returned to benign lesion, explaining the logical decision to keep the testicle and wait for the final results. On the other hand, in the second case, the extemporaneous returned in favor of a malignant lesion with negative margins. Thus, the choice of sparing surgery was chosen because of the presence of a testicular cancer risk factor for the contralateral testis (micro calcifications with contralateral testicular cancer). As for totalization, it could have had its place in the case where the margins were positive or if the tumor mass exceeded one third of testicular volume.

From a functional point of view, our first patient kept a normal testosterone level during the follow-up period (18 months). However, its exocrine function showed an oligo-asthenospermia for which it was put on a dietary supplement for 3 months with improvement thereafter.

Given that a significant proportion of patients with testicular tumors have infertility problems, it is clear that sparing of the testicular parenchyma may be of paramount importance from a functional point of view, but also from a psychosocial point of view as it can significantly reduce the consequences of total orchiectomy [5].

Theoretically, after a unilateral orchiectomy, the remaining testicle was considered sufficient to compensate for testicular parenchyma loss and, therefore, maintain normal hormonal and reproductive functions. However, recent studies have shown that loss of a whole testicle is significantly associated with significant changes in fertility, long-term endocrine and exocrine function deficit, and serious sexual and psychosocial consequences [6, 7].

After long-term follow-up of unilateral total orchiectomy, the evidence suggests that serum of testosterone is significantly reduced compared to levels seen in the general population and that this condition may progress to late severe hypogonadism in younger patients [7].

On the other hand, major criticisms of the potential benefits of testicular sparing surgery have been raised because it may be a source of functional testicular insufficiency for many reasons:

- Radiotherapy to eliminate concomitant in-situ germ cell neoplasia in the ipsilateral testicle inevitably leads to arrest of spermatogenesis. However, it can be safely deferred if paternity of a child is planned. [8] In all cases, patients should be advised to preserve sperm before surgery and before any radiotherapy.

- Testicular ischemia when clamping the spermatic cord in case of clamping for more than 30 min [8]. Our cases were not exceed 15 min of hot ischemia clamping. In the second case, that patient had a non seminomatous germ cell tumor associated with germinal neoplasia in situ, scrotal radiotherapy could be proposed (18 to 20 Gy), but with a risk of infertility and hypogonadism [9]. For this reason, we established a particularly close dialogue with the patient and differ the adjuvant treatment of this precancerous lesion.

However, it should not be forgotten that the oncologic risk of developing a cancer of up to 50% in 5 years should be borne in mind if no adjuvant treatment is implemented [9].

- Recent research has shown that testicular sparing surgery does not appear to negatively affect fertility, although the trauma of testicular albuginea may theoretically damage the blood-testis barrier and, therefore, induce the production of anti-sperm antibodies causing autoimmune infertility [9].

These data are not complete, and their applicability in all patients with benign testicular lesions has not yet been established. From a functional point of view, the proportion of patients who would benefit from a conservative approach to curative surgery and the length of time during which this advantage would remain to be determined.

On the cancer scene, until today, our first case, epidermoid cyst, did not present a local recurrence with a follow-up of 18 months. For the second case, non-seminomatous germ tumor, the oncological results remain favorable until today with a follow-up of 10 months. To our knowledge, to date, there have been no randomized controlled trials comparing conservative surgery to total orchiectomy. Only retrospective studies and reported cases that are currently available in the literature. It has been reported that

90% of palpable testicular lesions or tumors larger than 2 cm were malignant, while small testis masses were benign in 80% of cases [10-11]. Thus, partial orchiectomy may be a safe option for some patients and avoid extirpative surgical treatment without compromising oncological outcomes. The local recurrence rate after conservative surgery is quite low, especially in selected cases with well-performed extemporaneous examination. [12]

On the psychological level, no one can deny the deleterious effect of total orchiectomy on body image and self-esteem. However, our conservative attitude had a relieving effect on our two patients, who, moreover, have not experienced a decline in self-esteem. This result is supported by data published in the literature [13].

## Conclusion

A conservative surgical approach for small testicular lesions preserves healthy and functional parenchyma as much as possible, but should not be performed in experienced centers. This surgical approach is safe and achievable, and ensures optimal oncological and functional results in most cases. When planning this surgery, the extemporaneous examination, is of paramount importance in histological analysis and surgical decision. All samples must be sent to an experienced uro-pathologist in order to maximize the accuracy of the histological diagnosis.

Partial orchiectomy should be considered as a promising approach for the management of testicular lesions judged to be benign on the extemporaneous and could constitute an alternative treatment even for small malignant lesions in strict imperative or elective cases.

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