

# Bilateral Testicular Tumors: Challenges in Diagnosis and Management

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## ABSTRACT

Testicular cancer is a prevalent form among males aged 15-49 years, with a high five-year relative survival rate of 95%. Bilateral testicular cancers, which make up 1% to 2% of all cases, can manifest either synchronously or metachronously. Synchronous tumors are identified at the time of diagnosis or within the initial two-month period. Organ-sparing surgery, also known as testis-sparing surgery or partial orchiectomy, may be an alternative for organ-confined tumors, particularly for infertile patients. However, organ-sparing surgery may carry the risk of infertility due to adjuvant radiotherapy. Contralateral testis biopsy is recommended for metachronous tumors, but most centers do not routinely perform it due to low positivity rates. Survival and remission rates for bilateral and unilateral testicular cancers are similar, with chemotherapy or retroperitoneal lymph node dissection considered in advanced cases.

**Keywords:** Testicular neoplasms; Orchiectomy; Testis-sparing surgery

## DESCRIPTION

Testicular cancer represents one of the most prevalent forms of cancer among males between the ages of 15 years and 49 years. Notwithstanding the relatively high five-year relative survival rate for testicular cancer, which is approximately 95%, testicular cancer represents the fourth leading cause of mortality among males aged 20-39 years in the United States. Bilateral testicular cancers are exceedingly uncommon, comprising approximately 1% to 2% of all testicular cancer cases. They may manifest either synchronously or metachronously. Synchronous tumors are identified at the time of diagnosis or within the initial two-month period following the establishment of the diagnosis. The majority of bilateral cases are metachronous, with prevalence nearly two times higher. Approximately half of metachronous tumors exhibit the same pathological characteristics as the initial tumor, with the most prevalent pathological type being seminoma. In cases of synchronous tumors, the presence of different pathological types is uncommon, with the majority of tumors belonging to the seminoma category.

Given the rarity of this condition, there is still no consensus on the optimal treatment approach. It is recommended that the

treatment plan should include the oncologic control, as well as the maintenance of hormonal function and fertility status. The standard approach is radical orchiectomy, which may necessitate lifelong hormone replacement therapy. It is imperative that patients should be informed about infertility and the option of sperm banking. An alternative approach is organ-sparing surgery, also known as testis-sparing surgery or partial orchiectomy. This may be an option for either synchronous or metachronous organ-confined tumors, particularly for infertile patients. Nevertheless, organ-sparing surgery may be an option for organ-confined testicular cancers measuring less than 2 cm and involving less than 30% of the testicular volume, as well as those that are localized away from the testicular vascularity. Moreover, serum testosterone levels should be within the normal range. Frozen section analysis is mandatory, and if Intratubular Germ Cell Neoplasia (ITGCN) is detected, adjuvant radiotherapy must be added. Partial orchiectomy carries the risk of infertility due to adjuvant radiotherapy.

Another issue is the necessity of contralateral testis biopsy for metachronous tumors. ITGCN is a precursor lesion for testicular cancers. Some guidelines recommend biopsy due to the possibility of ITGCN presentation. However, most centers

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do not perform testicular biopsy routinely due to low positivity rates. There is consensus in the literature on its use in high-risk patients with a history of infertility, cryptorchidism, and atrophic testes. The survival and remission rates for bilateral and unilateral testicular cancers are similar. The majority of cases are diagnosed at an early stage, which contributes to a favorable prognosis. In advanced disease, chemotherapy or retroperitoneal lymph node dissection should be considered.

## CONCLUSION

This study shows due to the low incidence rates, there is still no standard approach for bilateral testicular cancers. Most of them have the same pathological structure. Organ-sparing surgery may be an alternative for eligible patients, and they may require treatment for infertility and androgen deficiency. With appropriate treatment, longer survival rates can be achieved.