

## Evaluation of Surgical Radiotherapy and Chemotherapy in the Treatment of Gynaecological Malignancies

Laura Bennett\*

*Division of Gynecologic Oncology, University Medical Center, London, United Kingdom*

### DESCRIPTION

Gynaecological malignancies encompass a diverse group of cancers affecting the female reproductive system, including cervical, ovarian, endometrial, vulvar and vaginal cancers. The management of these cancers requires a multidisciplinary approach, often combining surgery, radiotherapy and chemotherapy to achieve optimal outcomes. The selection of treatment modalities depends on the type of cancer, stage at diagnosis, patient comorbidities and overall health, making individualized treatment planning essential for both survival and quality of life.

Surgery remains a cornerstone in the management of many gynaecological malignancies, particularly in early stage disease. For cervical and endometrial cancers, radical hysterectomy or total hysterectomy with lymph node assessment is often the preferred approach, aiming to remove the primary tumor and assess regional spread. In ovarian cancer, cytoreductive surgery is critical, as maximal tumor removal has been strongly correlated with improved overall survival. Advances in minimally invasive surgical techniques, including laparoscopic and robotic-assisted procedures, have reduced perioperative morbidity, shortened hospital stays and improved postoperative recovery, while maintaining oncologic effectiveness. In vulvar and vaginal cancers, surgery is similarly central, with techniques modified to preserve anatomical function and reduce treatment-related complications.

Radiotherapy plays an essential role in the treatment of gynaecological cancers, either as a primary modality or in combination with surgery and chemotherapy. External beam radiotherapy and brachytherapy are commonly used to target pelvic tumors while minimizing exposure to surrounding tissues. In cervical cancer, radiotherapy is often combined with chemotherapy, particularly in locally advanced disease, to improve local control and survival. Vaginal and vulvar cancers also respond well to radiotherapy, especially when surgical intervention is limited by tumor location or patient factors. The integration of advanced imaging techniques and three-dimensional treatment planning has enhanced the precision of

radiotherapy, reducing side effects such as bowel, bladder and sexual dysfunction.

Chemotherapy has become an integral component in the management of advanced or high-risk gynaecological malignancies. Platinum-based regimens, often combined with taxanes, are widely used in ovarian and endometrial cancers to reduce recurrence risk and improve survival. In cervical cancer, concurrent chemoradiation with cisplatin has become the standard of care for locally advanced disease, enhancing the radiosensitivity of tumor cells and improving treatment efficacy. For recurrent or metastatic disease, systemic chemotherapy provides palliative benefits, alleviating symptoms and maintaining quality of life. Emerging targeted therapies and immunotherapeutic agents are increasingly incorporated into treatment protocols, offering new avenues for patients with resistant or recurrent disease.

The integration of surgery, radiotherapy and chemotherapy requires careful sequencing and multidisciplinary coordination. In many cases, neoadjuvant chemotherapy may be administered before surgery to shrink tumors and facilitate complete resection. Adjuvant radiotherapy or chemotherapy is often used postoperatively to eliminate microscopic residual disease and reduce recurrence risk. The timing, dosing and combination of these modalities are determined based on tumor biology, stage and patient factors, emphasizing the importance of personalized treatment planning.

Outcomes of gynaecological cancer treatment have improved significantly due to advances in surgical techniques, radiotherapy delivery and chemotherapeutic regimens. Early stage disease generally has favorable prognosis with high survival rates, while advanced or recurrent cancers remain challenging. Factors such as tumor histology, lymph node involvement, molecular markers and patient comorbidities influence prognosis and guide treatment decisions. Long-term follow-up is essential to monitor for recurrence, manage late treatment effects and provide supportive care addressing physical, psychological and sexual health concerns.

**Correspondence to:** Laura Bennett, Division of Gynecologic Oncology, University Medical Center, London, United Kingdom, E-mail: laura.bennett@umc.ac.uk

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## CONCLUSION

In conclusion, the treatment of gynaecological malignancies requires a balanced evaluation of surgical, radiotherapeutic and chemotherapeutic options. Each modality has distinct advantages and limitations and optimal outcomes are achieved through individualized, multidisciplinary approaches that consider tumor characteristics, patient health and quality of life.

Ongoing research, including targeted therapies and precision medicine strategies, continues to refine treatment protocols and improve survival and functional outcomes for women affected by these cancers. Effective integration of these treatment modalities remains central to advancing the standard of care in gynaecological oncology.