Multidisciplinary Approaches In Gynecological Oncology

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CONTENTS

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Chapter 1

NEW GENERATION GENETIC AND IMMUNOLOGICAL APPROACHES IN GYNECOLOGICAL ONCOLOGY

Oktay Tuğrul DURSUN[1]
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1.INTRODUCTION

Gynecologic malignancies comprising ovarian, endometrial, cervical, vulvar, and vaginal cancers represent a complex group of tumors. Despite advancements in early detection and surgery, advanced and recurrent cases remain major therapeutic challenges, often associated with drug resistance and poor survival outcomes. Over the past decade, the rapid evolution of immunotherapy and genetic therapy has reshaped the treatment paradigm. These approaches leverage the body's immune machinery and exploit molecular aberrations to achieve durable responses. This article reviews and synthesizes recent literature to outline how immunotherapy and genetic therapy are transforming gynecologic oncology, with emphasis on translational mechanisms, clinical outcomes, and future perspectives.

2.IMMUNOTHERAPY IN GYNECOLOGIC CANCERS

The Rationale for Immunotherapy: Gynecologic tumors, particularly endometrial and cervical cancers, exhibit immunogenic properties high tumor mutational burden (TMB), viral antigen expression (e.g., HPV), and immune cell infiltration. Such features render them ideal candidates for immune-targeting therapies. Checkpoint Inhibitors: PD-1/PD-L1 and CTLA-4 Pathways: The PD-1/PD-L1 axis remains the most extensively explored target. Checkpoint inhibitors unleash cytotoxic T cells that were previously suppressed by tumor-induced immune checkpoints.

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deliver equitable precision oncology worldwide. In recent years, gynecologic oncology has undergone a profound transition driven by parallel advances in immunotherapy and genetic engineering. Accumulating evidence from 2023–2025 demonstrates that immune checkpoint inhibition, adoptive cell transfer, neoantigen-based vaccination, and gene-editing platforms such as CRISPR-Cas9 are reshaping therapeutic expectations for ovarian, endometrial, cervical, vulvar, and vaginal cancers. In particular, the integration of PD-1/PD-L1 blockade into the management of mismatch repair–deficient and HPV-associated tumors have resulted in clinically meaningful improvements in survival, while adoptive T-cell strategies including TILs, CAR-T, and CAR-NK therapies—provide durable responses in otherwise refractory disease. Genetic therapies continue to expand the therapeutic armamentarium through precision manipulation of oncogenic pathways, DNA repair defects, and immune-resistance mechanisms. CRISPR-enabled T-cell modification, RNA interference technologies, and next-generation PARP inhibitors illustrate how genomic interventions can synergize with immune-based therapies. Furthermore, advances in artificial intelligence, multi-omics profiling, and computational modeling have accelerated biomarker discovery, patient stratification, and the rational design of combination regimens. Despite these achievements, several challenges remain. Immune escape, limited tumor antigenicity, off-target genetic effects, treatment-related toxicities, and inequitable global access continue to constrain widespread implementation. As gynecologic oncology moves toward an era of immunogenomic convergence, overcoming these barriers will require sustained innovation, rigorous clinical validation, and improved integration of molecular diagnostics in routine care. Overall, the convergence of immunotherapy and genetic engineering heralds a new paradigm in the management of gynecologic malignancies. If current trajectories continue, these transformative strategies have the potential not only to extend survival but also to redefine advanced gynecologic cancers as manageable chronic conditions within the coming decade.

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Chapter 2

SYSTEMIC CHEMOTHERAPY AND HIPEC IN GYNECOLOGIC MALIGNANCIES

Gülüm Ceren BOZLU[1]

1. INTRODUCTION

Gynecologic malignancies represent one of the most significant oncologic challenges affecting women's health worldwide, with mortality rates remaining particularly high in ovarian and cervical cancers. Epithelial ovarian cancer, characterized by a marked propensity for peritoneal dissemination, has seen the development of a comprehensive therapeutic approach through the incorporation of primary cytoreductive surgery, systemic chemotherapy and in selected cases, intraoperative hyperthermic intraperitoneal chemotherapy (HIPEC), which collectively enhance survival and modify recurrence patterns. Similarly, in endometrial cancer, cervical cancer, and rare gynecologic sarcomas, the role of chemotherapy within the broader treatment algorithm has become increasingly well defined, with growing emphasis on optimal sequencing of chemotherapy and radiotherapy, as well as combination strategies incorporating targeted therapies and immunotherapeutic agents (1,2).

This chapter will examine the fundamental principles of chemotherapy in gynecologic cancers, including indications, regimen selection criteria, and pharmacologic dynamics. It will then provide an in-depth analysis of the pharmacologic, physiologic, and clinical foundations of HIPEC, its evidence-based indications, and the practical aspects of its use across gynecologic malignancies.

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CONCLUSION

Chemotherapy constitutes an indispensable component of systemic management in gynecologic malignancies, serving both curative and palliative purposes within treatment plans tailored to tumor biology, molecular subtype, and disease stage. In tumors with a proclivity for peritoneal dissemination, most notably epithelial ovarian cancer, platinum–taxane–based regimens have become central determinants of survival. In contrast, systemic treatment strategies for endometrial, cervical, vulvar, and vaginal cancers are shaped according to their distinct histological and molecular characteristics and are guided by established clinical practice guidelines.

HIPEC has emerged as an intensified regional therapeutic modality that complements cytoreductive surgery in selected gynecologic cancers with peritoneal involvement. Its most evidence-supported application is in FIGO stage III epithelial ovarian cancer undergoing interval cytoreduction after neoadjuvant chemotherapy, where HIPEC has demonstrated meaningful survival benefit and has become a guideline-endorsed option. In other gynecologic tumor types, the role of HIPEC remains more restricted and requires meticulous patient selection and multidisciplinary decision-making.

Overall, the evidence based and judicious integration of chemotherapy and HIPEC together with optimal cytoreductive surgery contributes to improved long term disease control. As treatment algorithms increasingly incorporate molecular classification, targeted therapies, and immunotherapy, this combined approach provides an important strategic framework in modern gynecologic oncology, where precision and individualized care continue to advance.

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Chapter 3

RADIOTHERAPY IN GYNECOLOGICAL ONCOLOGY

Oktay Tuğrul DURSUN[1]

1.INTRODUCTION

Gynecological cancers including cervical, endometrial, vulvar, and vaginal malignancies represent a significant fraction of global cancer incidence and morbidity in women. Despite advances in surgical techniques and systemic therapies, radiotherapy remains a cornerstone in their multidisciplinary management. Historically among the first malignancies to be treated with ionizing radiation, gynecologic tumors continue to demand precise and evolving radiotherapeutic strategies to improve outcomes while minimizing toxicity [1].

Radiotherapy is utilized in various settings: as definitive treatment particularly for locally advanced disease; as an adjuvant modality following surgery; in combination with chemotherapy; and for palliation in advanced or recurrent cases. Recent technological advances such as intensity-modulated radiotherapy (IMRT), image-guided external beam radiation, stereotactic body radiotherapy (SBRT), and modern brachytherapy (including image-guided brachytherapy and MR–guided techniques) have enhanced the ability to deliver high doses to tumors with more conformal dose distribution, better sparing of normal tissues, and improved local control [2].

Moreover, new paradigms are emerging: the integration of systemic therapies with radiotherapy, immunotherapy, and biomarkers to guide personalized treatment; the application of stereotactic ablative radiotherapy (SABR) in oligometastatic or oligoprogressive disease; and intraoperative radiotherapy in selected cases. These innovations offer promise for improving survival, reducing side effects, and maintaining quality of life [3].

Nonetheless, challenges remain. These include defining optimal timing and sequencing, dose constraints for organs at risk, adapting to individual tumor

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Chapter 4

IMAGING IN GYNECOLOGICAL CANCERS

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1.INTRODUCTİON

Gynecological cancers, including malignancies of the cervix, endometrium, ovary, vulva, and vagina, represent a significant global public health concern and substantially impact women's quality of life. Current demographic and epidemiological data suggest that both the incidence and mortality rates of gynecological cancers are projected to rise considerably over the next two decades. These findings highlight the urgent need for timely and effective interventions to combat these malignancies (1).

Accurate diagnosis, staging, treatment planning, and monitoring of therapeutic response in gynecological cancers rely heavily on imaging modalities. Radiological imaging techniques play a critical role not only in assessing anatomical structures but also, in light of recent technological advances, in the functional and cellular-level characterization of tumors, thereby significantly informing clinical decision-making processes (2).

2. CONVENTİONAL IMAGİNG TECHNİQUES İN GYNECOLOGİC MALİGNANCİES

2.1.Ultrasound:

Ultrasound, an imaging technique that generates images using high-frequency sound waves, is generally the first-line diagnostic method in gynecological assessments. The absence of ionizing radiation, ease and widespread availability, and cost-effectiveness are among its major advantages. However, the inability of ultrasonic waves to penetrate bone and air limits its application. In addition, it is an operator-dependent modality, and variations in the level of experience among practitioners may lead to diagnostic discrepancies (3) . Additionally, the patient's

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Chapter 5

THE ROLE OF INTERVENTIONAL RADIOLOGY IN GYNECOLOGIC ONCOLOGY

Gülal KARSENAS[1]

INTRODUCTİON

1. Gynecologic Malignancies and a Multidisciplinary Approach

Gynecologic malignancies represent a complex group of diseases that pose a serious threat to women's health and account for a significant portion of the global cancer burden. This group includes cancers of the ovary, cervix, uterus, vulva, and vagina. Each exhibits unique biological characteristics, and treatment methods depend on many factors such as the stage of the disease, the histopathological features of the tumor, and the patient's general health status. Although traditional treatments like radical surgery, systemic chemotherapy, and radiotherapy are standard options, high morbidity and mortality rates can occur, especially in advanced or recurrent cases. For this reason, oncology practice has necessitated the existence of multidisciplinary oncology boards (tumor boards) to create a personalized and optimal treatment plan for each patient. On these boards, clinicians from different specialties—including gynecologic oncologists, medical oncologists, radiation oncologists, pathologists, and radiologists—collaborate on patient management. This integrated approach is critical for improving patient outcomes and enhancing quality of life (1, 2).

2. DEFİNİTİON AND DEVELOPMENT OF INTERVENTİONAL RADİOLOGY (IR)

Interventional radiology (IR) is a medical specialty that involves minimally invasive diagnostic and therapeutic procedures guided by imaging technologies such as ultrasonography (US), computed tomography (CT), fluoroscopy, and magnetic resonance imaging (MRI). This field began with angiography and

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Chapter 6

ARTIFICIAL INTELLIGENCE IN GYNECOLOGICAL ONCOLOGY

Mulaim SİZER[1]

INTRODUCTION

Globally, cancers of the cervix, endometrium, and ovary are the leading gynecologic tumors and remain important causes of both morbidity and mortality in women. Therefore, early diagnosis and accurate staging are critical for both improving survival and reducing morbidity. From a historical perspective, the role and importance of imaging modalities in gynecologic oncology practice are indisputable. Among imaging modalities, ultrasonography (US), magnetic resonance imaging (MRI), and computed tomography (CT) are widely used for the evaluation of gynecologic cancers, including their diagnosis, staging, and treatment strategy design.

In recent years, artificial intelligence (AI) technologies have facilitated numerous aspects of daily life. Similarly, as in many other fields of medicine, they have also opened new avenues in gynecologic oncology, particularly in diagnostic, prognostic, and treatment planning processes. AI has the potential to derive meaningful insights from large volumes of medical data (including imaging, genomic, and clinical information), enhance diagnostic speed, reduce subjective interpretation, and ensure continuity in patient care (1–4).

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Future AI systems are expected not only to integrate imaging data but also to incorporate clinical, histopathological, genomic, and metabolomic information, thereby enabling the construction of multidimensional decision-making models. This approach offers the possibility of enhancing the precision of treatment response and survival prediction, while also supporting the design of patient-specific therapeutic strategies. In this way, unnecessary treatments may be avoided, adverse effects minimized, and overall patient quality of life enhanced.

In conclusion, AI and ML–based approaches offer groundbreaking advances in gynecologic oncology, both in terms of diagnostic accuracy and treatment planning. In the future, real-time decision support systems, multimodal data integration, and AI-driven mobile health solutions are expected to further strengthen personalized oncology. If implemented within the framework of multidisciplinary collaboration, robust data security infrastructures, and internationally recognized regulatory standards, AI holds the potential to significantly improve both patient survival and overall quality of life among individuals diagnosed with gynecologic malignancies.

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Chapter 7

LYMPHEDEMA IN GYNECOLOGIC ONCOLOGY

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İlyas TURAN[2]

1.INTRODUCTİON

The lymphatic system consists of vessels that carry lymph and the organs belonging to this system(1). It is examined in two main parts: pre-lymphatic and lymphatic. The pre-lymphatic part is made up of small channels located in the spaces between tissues. The main function of lymphatic capillaries is to collect the fluid and macromolecules present in the interstitial space. These capillaries connect with collecting vessels via precollectors, which are responsible for the transport and formation of lymph fluid(2).

The lymphatic system plays a fundamental role in fluid exchange between blood capillaries and the interstitial space. In this process, capillary pressure, the negative pressure of the interstitial space, the colloid osmotic pressure of interstitial fluid, and the colloid osmotic pressure of plasma serve as the main parameters influencing filtration(3).

These pressures create a net pressure gradient that supports filtration. Under normal conditions, this causes fluid to filter from the arterial end of the capillary vessels into the interstitial space(4). Since the pressure in the interstitial space is higher than the pressure in the lymphatic capillaries, one-way valves open, allowing the fluid to enter the lymphatic capillaries. From this point onward, the fluid is referred to as lymph(5).

Under normal circumstances, there is a balance between these pressures. Disruption of this balance can lead to edema formation(6). In lymphedema, the accumulation of protein-rich and stagnant extracellular fluid in the tissues negatively affects the delivery of oxygen and nutrients to normal tissue(7).

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Although a cure can be achieved in some patients, surgical interventions may be considered in cases where conservative treatments are insufficient to reduce the volume of the affected extremity. Various surgical techniques for chronic lymphedema have been investigated in the past. One such technique, **debulking surgery**, involves complete removal of dermal and subdermal lymphatic structures along with adipose tissue and fibrosclerotic connective tissue to reduce volume in the affected area. However, this method is no longer preferred because it requires extensive tissue removal and carries significant risks, including infection, loss of extremity function, skin or flap necrosis, hematoma, chronic wounds, delayed healing, and progression of lymphedema(44).

Due to the high complication risk of debulking surgery, **liposuction** has replaced it as the preferred surgical approach. Postoperatively, patients must use compression stockings for life to maintain surgical success(45).

In certain gynecologic cancer cases, **sentinel lymph node biopsy** has the potential to reduce or completely prevent the risk of lymphedema(46). In a study conducted by Hareyama and colleagues, patients in whom circumflex iliac lymph nodes (CIN) were removed were compared with those in whom these nodes were preserved(47). The results showed that patients with preserved CIN had a significantly lower incidence of lower-extremity lymphedema, and cellulitis was not observed in this group. Therefore, preserving CIN may reduce the risk of lymphedema or contribute to its complete prevention.

For patients undergoing radical surgery, it is important to adopt preventive lifestyle measures and develop appropriate self-care habits to reduce the risk of lower-extremity lymphedema(48). Studies have shown that patients who exercise regularly, are informed about lymphedema before treatment, and continue with preventive personal care practices have a significantly lower risk of developing lymphedema(49).

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Chapter 8

RESPIRATORY PHYSIOTHERAPY IN GYNECOLOGIC ONCOLOGY PATIENTS

Mahmut Dolay YAMAN[1]

INTRODUCTİON

Gynecologic oncology encompasses the diagnosis, treatment, and follow-up of malignancies of the female reproductive system, which remain a major cause of morbidity and mortality worldwide. Despite significant advances in surgical techniques, anesthesia, and perioperative care, patients with gynecologic cancers are at high risk of developing postoperative pulmonary complications. Major abdominal procedures, such as laparotomy and cytoreductive surgery, in particular, are strongly associated with impaired respiratory mechanics, reduced lung volumes, and a higher incidence of atelectasis and pneumonia (1). These complications not only prolong hospital stay but also adversely affect recovery, quality of life, and, in severe cases, survival outcomes (2).

Respiratory physiotherapy has emerged as a cornerstone of perioperative care to address these risks. Its interventions aim to preserve pulmonary function, reduce the likelihood of atelectasis and pneumonia, optimize oxygenation, and promote early mobilization. Several studies across different surgical populations have demonstrated that targeted respiratory interventions significantly decrease complication rates and enhance functional capacity (3). However, systematic reviews emphasize that evidence specific to gynecologic oncology patients is still limited, leaving a gap in the literature regarding standardized protocols and clinical integration (4).

This chapter seeks to provide a comprehensive overview of respiratory physiotherapy in the context of gynecologic oncology. It will outline the pathophysiological challenges faced by this patient population, discuss commonly applied therapeutic techniques, review the available clinical evidence, and propose

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It is apparent that there is a paucity of randomized controlled trials conducted specifically in the gynecologic oncology population. Current evidence suggests that breathing exercises, mobilization, secretion clearance techniques, and device-supported interventions effectively reduce complication risks and improve oxygenation. However, the number of randomized controlled trials specifically focusing on gynecologic oncology remains limited, highlighting the need for further high-quality studies to establish stronger evidence.

Looking ahead, the development of patient-centered and individualized physiotherapy protocols within multidisciplinary teams will be of paramount importance. Moreover, future research should not only investigate physiological outcomes but also assess the impact of respiratory physiotherapy on quality of life, psychological well-being, and patient satisfaction.

In conclusion, the systematic integration of respiratory physiotherapy into the routine care of gynecologic oncology patients has the potential to prevent short-term complications and contribute to the preservation of long-term functional independence.

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Chapter 9

NEUROPATHIC PAIN IN GYNECOLOGICAL ONCOLOGY PATIENTS

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INTRODUCTION

Neuropathic pain was firstly defined in 1994 by International Association for the Study of Pain (IASP) as "pain initiated or caused by a primary lesion, dysfunction, or transitory perturbation of the peripheral or central nervous system." Including the term "dysfunction" in this definition brought up a disagreement between experts, and a new definition for neuropathic pain was necessary. Neuropathic pain was redefined in 2011 by the International Association for the Study of Pain Committee as "pain caused by a lesion or disease of the somatosensory system" [1].

The diseases or lesions affecting the nervous system in human beings may cause loss of function. Also, it may cause increased pain sensitivity and spontaneous pain. This pain is usually decribed as chronic but sometimes may be manifested as attacks of pain. Neuropathic pain can result from various etiological disorders affecting the central or peripheral nervous system. These disorders may be hereditary, metabolic, vascular, neurodegenerative, and autoimmune, as well as tumors, trauma, infections, and toxins. In addition to these factors, there are idiopathic neuropathies whose etiology is unknown. The pattern of pain is consistent with the underlying lesion or disease. Pain may be associated with hyperalgesia (more intense pain than expected) due to abnormal signal transmission, exaggerated response to non-painful stimuli (allodynia), numbness, and paresthesia (tingling sensation) [2, 3].

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time after discontinuation of the drug, but neuropathy of the patients with regimens of cisplatin and oxaliplatin may worsen before improvement. This phenomenon is referred to as the "coasting phenomenon" [19].

There is no proven agent for the prevention of peripheral neuropathy in the guidelines [20]. Current researches has shown that cryotherapy, exercise, and compression therapy can partially prevent neuropathic pain symptoms [20, 21]. In the literature there are studies supporting the use of acupuncture for neuropathic pain but it has been stated that for higher evidence, more data is needed [20, 22].

Regarding the use of glucocorticoids and nonsteroidal anti-inflammatory drugs in the treatment of acute neuropathy, results from researches are inconsistent. While some studies report benefit from glucocorticoid regimens, these practices are not mentioned in the American Society of Clinical Oncology (ASCO) guidelines [23, 24].

Duloxetine use has been shown to be effective in treating chronic neurotoxic pain, particularly that associated with platinum or taxane use. Patients who were treated with duloxetine for 5 weeks reported not only a reduction in pain scores but also a decrease in tingling and numbness in their feet [25, 26]. The efficacy of the tricyclic antidepressants nortriptyline and amitriptyline has not been found to be sufficient [27, 28]. Similarly, randomized trials of gabapentinoids have not shown efficacy in the treatment of neuropathy [29].

CONCLUSION

In conclusion, neuropathic pain significantly impacts the quality of life of gynecological oncology patients. It is crucial to pay attention to neuropathic pain symptom characteristics when evaluating patients. While several types of neuropathic pain have well-established diagnostic and therapeutic methods in the literature, there is no proven treatment for chemotherapy-induced peripheral neuropathy pain. As a result, additional further research is required to establish evidence-based medical practices.

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Chapter 10

WOUND CARE IN GYNECOLOGIC ONCOLOGY

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1.INTRODUCTİON

Gynecologic oncology surgeries frequently involve extensive surgical incisions, pelvic tissue resections, lymphadenectomies, or even pelvic exenterations, all of which carry a substantial risk for impaired wound healing and postoperative morbidity. Patient-related factors such as obesity, diabetes mellitus, malnutrition, advanced age, and prior radiotherapy, along with surgery-related variables including prolonged operative duration, intraoperative blood loss, and bowel contamination, significantly increase susceptibility to surgical site infections (SSIs), fascial dehiscence, and other wound complications.[1, 2]

Globally, SSIs are reported in approximately 10–15% of gynecologic oncology procedures, contributing to increased hospitalization costs, delayed initiation of adjuvant chemotherapy or radiotherapy, higher readmission rates, and, in some cases, worsened oncologic outcomes [3]. Large multicenter observational studies have reported SSI incidences ranging from 2.3–8.1% following hysterectomy and 3–16% after cesarean sections [4]. Such data underscore the necessity for standardized, multidisciplinary, and evidence-based perioperative wound care protocols to improve patient safety, reduce morbidity, and ensure cost-effective oncologic care [5].

2.FUNDAMENTAL PRİNCİPLES OF WOUND HEALİNG

Wound healing is a highly orchestrated biological process consisting of four overlapping yet distinct phases: hemostasis, inflammation, proliferation, and

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8.CONCLUSİON

Wound care in gynecologic oncology represents a critical determinant of postoperative outcomes, patient satisfaction, and oncologic timelines. Most wound complications are potentially preventable through meticulous preoperative risk assessment, adherence to evidence-based prophylactic measures, prompt diagnosis, and multidisciplinary management approaches.

Future directions emphasize the integration of advanced wound care technologies, personalized risk stratification models, and real-time infection surveillance systems to further reduce morbidity and improve quality of life for gynecologic oncology patients.

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Chapter 11

THE ROLE OF BARIATRIC SURGERY IN GYNECOLOGIC ONCOLOGY

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1.INTRODUCTİON

Obesity has emerged as a global health concern and is recognized as a key risk factor for multiple chronic diseases—particularly cancer, metabolic, and cardiovascular disorders [1]. Among gynecologic malignancies, endometrial cancer stands out as the malignancy most strongly associated with obesity; for instance, every 5-unit increase in BMI has been linked to a 50–60% rise in endometrial cancer risk [1].

Excess adipose tissue in obesity triggers several critical mechanisms involved in carcinogenesis, including chronic inflammation, hyperinsulinemia, elevated estrogen production due to increased aromatase activity, and adipokine dysregulation [2]. Furthermore, increased organ volume in obese individuals has been hypothesized to expand the number of target cells susceptible to malignant transformation, thus potentially heightening carcinogenic risk [3].

Bariatric surgery is considered one of the most effective and durable interventions for correcting obesity-related metabolic disturbances. Beyond weight reduction, it has been associated with improved overall survival and decreased all-cause mortality in long-term follow-up studies [4].

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Integration of ERAS protocols, VTE prophylaxis, nutritional optimization, and pharmacologic monitoring into perioperative care is essential.

Future research should focus on long-term oncologic outcomes, fertility preservation, pharmacokinetics, and combined surgical approaches to establish comprehensive, evidence-based clinical pathways.

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Chapter 12

PRINCIPLES OF GENITAL AESTHETIC SURGERY IN GYNECOLOGICAL ONCOLOGY

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INTRODUCTİON

In the contemporary context, aesthetic and reconstructive surgery is a field that is attracting increasing interest in the domain of women's health. Genital aesthetic surgery is a comprehensive approach that aims to address not only cosmetic expectations but also functional and psychological needs (1).

In the domain of gynecologic oncology, these surgical interventions assume a pivotal role in addressing aesthetic, anatomical, and functional deformities that emerge subsequent to cancer treatments, particularly in the vulvar and vaginal regions. Aggressive procedures, including radical surgeries, radiotherapy, and recurrence surgeries, have been observed to result in scarring, tissue loss, and atrophy in genital tissues (2, 3).

These anatomical deficiencies are frequently associated with sexual dysfunction, altered body image, and psychological effects. Problems such as loss of sexual function, dyspareunia, and decreased libido are particularly prevalent among patients treated for gynecologic cancer, significantly impacting their quality of life (4). Consequently, both life expectancy and quality of life are of equal significance for patients suffering from gynecologic oncology.

Whilst the integration of genital aesthetic surgery into oncology practice contributes to physical recovery, psychological integrity, and the preservation of sexual function, the surgical techniques employed should be planned with consideration of both oncologic safety and functional and aesthetic expectations.

The present book chapter will provide a comprehensive overview of the fundamentals of genital aesthetic surgery in gynecologic oncology patients,

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PROM-integrated survivorship. Routine use of validated tools (e.g., FSFI, BIS, HADS) to benchmark recovery and trigger psychosexual care and pelvic-floor rehabilitation within MDT pathways (19).

Training and equity. Standardized training and equitable access should frame reconstruction as core survivorship care rather than elective luxury (21).

CONCLUSİON

The integration of genital aesthetic and reconstructive surgery into gynecologic oncology marks a pivotal advancement in comprehensive cancer care. While the primary goal of oncologic surgery remains disease eradication, the physical and psychological sequelae of radical treatments must no longer be overlooked. Vulvar disfigurement, vaginal shortening or stenosis, and pelvic floor defects can profoundly affect a woman's sexual function, body image, and overall well-being.

By applying principles of reconstructive surgery, aesthetics, and psychosexual rehabilitation, clinicians can support not only survival but also recovery of identity, femininity, and autonomy. These procedures, when guided by ethical standards, multidisciplinary collaboration, and patient-centered communication, enable women to regain a sense of bodily wholeness without compromising oncologic safety.

Looking ahead, advancements in minimally invasive techniques, regenerative medicine, and personalized surgical planning promise to further refine outcomes and expand access to these life-enhancing procedures. As survivorship becomes a cornerstone of modern cancer care, genital aesthetic surgery must be embraced not as an optional luxury, but as a fundamental component of restoring dignity, function, and quality of life for women affected by gynecologic malignancies.

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Chapter 13

PAIN MANAGEMENT, ENHANCED RECOVERY AFTER SURGERY (ERAS) PROTOCOL, AND INTENSIVE CARE IN GYNECOLOGIC CANCER SURGERY

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1. INTRODUCTION

1.1. Scope of Gynaecologic Cancer Surgery

The scope of gynaecologic oncology surgery has expanded and evolved markedly in recent years. This transformation has been driven by technological advancements, a deeper understanding of tumor biology, and the emergence of individualised treatment approaches. Presently, gynecologic oncologists are proficient in a broad spectrum of surgical procedures, ranging from minimally invasive surgery for **early-stage cancers—such as** laparoscopic or robot-assisted hysterectomy and staging procedures—to complex multivisceral resections for advanced-stage disease. (1, 2).

Minimally invasive surgery has become the preferred approach for early stage endometrial and cervical cancers due to its association with reduced postoperative pain, shorter hospital stays, and lower complication rates (1, 3). However, open surgery (laparotomy) remains indispensable in advanced malignancies requiring extensive cytoreductive procedures, including bowel resection, upper abdominal surgery, or pelvic exenteration (2).

In addition, innovative techniques such as sentinel lymph node mapping and fertility-sparing surgery have contributed to the diversification of surgical approaches, particularly aiming to improve quality of life in younger patients (1, 4). In cases requiring extensive resections, multidisciplinary collaboration with

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gynaecologic oncology teams will play a decisive role in optimising both patient satisfaction and oncological outcomes.

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Chapter 14

GYNECOLOGİCAL CANCERS AND EXERCİSE

Sevgi SELEN[1]

INTRODUCTİON

Female cancers encompass malignancies of the endometrium, cervix, ovaries, fallopian tubes, vulva, and vagina, and are collectively referred to as gynecological cancers. Numerous studies have explored the relationship between exercise and cancer, demonstrating that physical activity may have diverse effects on cancer prevention, treatment outcomes, and overall survival across different cancer types. This chapter specifically examines the impact of exercise on gynecological cancers.

CANCER AND EXERCİSE

Exercise is known to induce systemic changes in overall health by modulating glucose metabolism, circulating insulin levels, mitochondrial biogenesis, angiogenic pathways, and cytokine secretion (1). Long-term exercise interventions throughout life have been shown to increase the levels of antioxidant enzymes and non-enzymatic repair mechanisms, thereby reducing oxidative stress and lowering the risk of cancer development (2). The systemic changes triggered by exercise also influence growing tumor tissue, potentially affecting the tumor microenvironment and therapeutic response (1). Exercise impacts tumor progression through modulation of immune function, promoting an anti-tumor macrophage profile and stimulating the mobilization and activation of natural killer cells, thereby priming the immune system for tumor surveillance and inhibition (3).

Numerous studies have demonstrated that, regardless of the exercise modality—whether aerobic, resistance training, or a combination of both—exercise enhances muscle mass and strength, improves mobility, and effectively

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VULVAR AND VAGİNAL CANCERS AND EXERCİSE

Vulvar and vaginal cancers are relatively rare in women. Risk factors include age, prevalence of HPV infection, smoking, HIV infection, and the presence of vulvar or vaginal intraepithelial neoplasia (29, 30). Studies specifically investigating the effects of exercise on vulvar and vaginal cancers are limited. However, considering the mechanisms of cancer development and the systemic effects on the body, long-term exercise interventions are expected to yield beneficial outcomes.

CONCLUSİON

Research indicates that physical activity may help prevent cancer development and contribute to psychosocial recovery during and after cancer treatment. Although studies specifically addressing exercise in gynecological cancers are limited, the existing literature suggests that both aerobic and resistance training can provide support for these patients. Nevertheless, there is a need for comprehensive studies to more thoroughly evaluate the efficacy and safety of different types of exercise interventions.

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Chapter 15

NUTRITION AND DIET IN GYNECOLOGİCAL ONCOLOGY PATIENT

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INTRODUCTION

Gynecological cancers are malignant tumors originating from female reproductive organs such as the endometrium, cervix, ovary, vagina, and vulva. They represent significant causes of morbidity and mortality among women worldwide. According to the 2020 Global Cancer Statistics published by the International Agency for Research on Cancer (IARC) under the World Health Organization (WHO), approximately 604,000 new cases of cervical cancer were reported globally, with about 342,000 deaths [1]. Gynecological cancers account for roughly 15% of all cancers in women worldwide. Among gynecological cancers, endometrial cancer is the most common, followed by ovarian and cervical cancers [1].

FEMALE PHYSİOLOGY AND NUTRİTİONAL REQUİREMENTS ACROSS THE MENSTRUAL CYCLE

Female physiology is metabolically dynamic, characterized by fluctuating hormonal profiles throughout the menstrual cycle. Hormonal fluctuations in estrogen, progesterone, luteinizing hormone (LH), and follicle-stimulating hormone (FSH) directly influence energy balance, nutrient metabolism, and appetite, resulting in phase-specific nutritional needs [2]. Estrogen enhances insulin sensitivity and supports glucose metabolism, while progesterone elevates basal metabolic rate, thereby increasing energy expenditure [3]. These hormonal changes generate distinct metabolic profiles during different phases of the cycle. For instance, carbohydrate metabolism predominates in the follicular phase, whereas in the luteal phase, progesterone causes a 5–10% increase in energy demand [4]. Consequently, tailoring nutritional plans according to menstrual

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Such regimens may improve insulin sensitivity but risk malnutrition and muscle wasting; therefore, routine use is not recommended outside clinical trials.

Micronutrients and Monitoring

Micronutrient assessment is essential. Deficiencies in vitamin D, folate, zinc, and selenium are common in cancer patients [46].

Laboratory-confirmed deficiencies should be corrected under physician supervision; high doses outside clinical indication can be harmful. Routine multivitamin supplementation has no proven survival benefit but may help in deficient populations [47].

Continuous monitoring of weight, body composition, serum albumin/prealbumin, and CRP provides objective indicators for nutritional adjustment. Use of validated tools such as PG-SGA ensures ongoing assessment and timely intervention.

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Chapter 16

SEXUAL LIFE IN GYNECOLOGICAL CANCER PATIENTS

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INTRODUCTİON

Gynecological malignancies are cancers that affect the female reproductive organs, including the vulva, vagina, cervix, endometrium, fallopian tubes, and ovaries (1). Among the top 10 most common cancers in the female population worldwide, three are gynecological cancers: cervical cancer ranks 4th with a frequency of 6.9%, endometrial cancer ranks 6th with 4.8%, and ovarian cancer ranks 8th with 3.6% (2). Every year, 1.3 million women are diagnosed with gynecological cancer, and more than 450,000 women die from it annually (3).

Gynecological cancers can cause mood disorders such as depression, loneliness, and anger, and may also affect sexual desire and function. On the physical side, they can lead to genitourinary symptoms and bodily changes. The combination of these factors can lead to sexual dysfunction. Sexual dysfunction following a cancer diagnosis is characterized by reduced desire or interest, dyspareunia, and difficulties or inability to orgasm. The frequency of sexual dysfunction among these patients ranges from 30% to 100% (4). Additionally, medications commonly used to treat mood disorders can negatively affect sexual function, leading to decreased libido or orgasm inhibition (5).

Treatment for gynecological cancers involves a variety of approaches, including surgery, neoadjuvant or adjuvant chemotherapy, brachytherapy, radiotherapy, and multimodal therapies (5). These treatments, in addition to their effects on the body, can also lead to various physical, psychological, and sexual consequences (6).

These treatments may result in chronic morbidities, such as vulvovaginal atrophy (VVA) and lymphedema, which can negatively affect body image, sexual desire, arousal, orgasm function, dyspareunia, and communication with partners

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Chapter 17

BONE HEALTH IN GYNECOLOGIC ONCOLOGY PATIENTS

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INTRODUCTİON

Osteoporosis is the most common metabolic bone disease, characterized by decreased bone mineral density and deterioration of bone microarchitecture, and is associated with an increased risk of fractures. Fractures resulting from osteoporosis significantly increase morbidity and mortality in the elderly population and impose a substantial economic burden on healthcare systems. Type 1 osteoporosis, which develops due to decreased estrogen levels in the postmenopausal period, and Type 2 osteoporosis, which occurs in the senile period, are considered primary causes of osteoporosis. In contrast, secondary osteoporosis develops as a consequence of underlying metabolic, endocrinologic, or oncologic conditions that affect bone metabolism. Therefore, in cancer patients, who are often in the elderly age group, multiple factors contribute to the deterioration of bone microarchitecture.

In the United States, approximately 750,000 new cases of osteoporosis are diagnosed annually, with an estimated annual economic cost ranging between 10 and 17 billion dollars [1]. One comprehensive study on osteoporosis in Turkey is the FRACTURK study, which included 2,000 participants. It demonstrated that among individuals aged 50 years and older, osteoporosis was present in 7.5% of men and 33.3% of women [2]. The risk of hip fracture due to osteoporosis has been reported by the World Health Organization (WHO) as 46.6 per 1,000 annually. However, in these patients, not only hip fractures but also vertebral compression fractures and wrist fractures are observed, which further increase the overall fracture incidence.

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lumbar spine, or one-third radius. In patients with osteopenia, medical therapy is recommended if FRAX evaluation shows a hip fracture risk above 3% or a significant osteoporotic fracture risk above 20%.

For patients with these risk factors, vitamin D and calcium supplementation and bisphosphonate or denosumab therapy may be considered. In appropriate cases, estrogen replacement therapy may be recommended to prevent postmenopausal bone loss in patients with iatrogenic early menopause. However, in women with a history of hormone receptor–positive gynecological tumors, this approach remains controversial due to concerns regarding an increased risk of disease recurrence.

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