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Chapter 1

CERVICAL INSUFFICIENCY

CEM INCEOGLU[1]

INTRODUCTION

Cervical insufficiency is typically characterized by painless and premature cervical dilatation and shortening during the second or early third trimester of pregnancy. In this condition, the cervix begins to open prematurely in early gestation, often without pain or uterine contractions. Cervical insufficiency is recognized as one of the leading causes of pregnancy loss and preterm birth and represents an important contributor to perinatal morbidity and mortality (1,2). Diagnosis is usually based on a combination of previous obstetric history, transvaginal ultrasound measurement of cervical length, and other clinical findings (3). A shortened cervical length is one of the most prominent markers of this condition. Once diagnosed, treatment options such as cervical cerclage may be performed to provide support to the cervix and prolong pregnancy (4).

INCIDENCE AND ETIOLOGY

Cervical insufficiency occurs in approximately 0.5–2% of the general population. This prevalence applies to low-risk populations and reflects the wider general population. In women with a history of second-trimester pregnancy loss, however, the incidence rises significantly to about 8%, indicating that cervical insufficiency is more common among women with specific risk factors (3,5). The condition is a multifactorial obstetric pathology arising from congenital, acquired, endocrine, genetic, infectious, and mechanical factors that interact to compromise cervical competence. Congenital causes such as Müllerian duct anomalies can disrupt the histo-morphological integrity of the cervical stroma, weakening the ability to sustain functional continence during pregnancy (6). Connective tissue disorders such as Ehlers-Danlos syndrome contribute to insufficient collagen cross-linking,

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Chapter 2

FROZEN EMBRYO TRANSFER: CURRENT STRATEGIES AND CLINICAL OUTCOMES

Tahir ERYILMAZ[1]

1. INTRODUCTION

Frozen embryo transfer (FET) has become an integral component of assisted reproductive technology (ART) over the past decade. The widespread adoption of FET has been driven by advances in vitrification that improved embryo survival after thawing, the increasing use of "freeze-all" strategies, the need for preimplantation genetic testing (PGT), and the promotion of elective single embryo transfer(1, 2). Furthermore, evidence has shown that fresh embryo transfers may be associated with suboptimal outcomes in certain clinical scenarios, including supraphysiologic estradiol levels, premature luteinization, and endometrial asynchrony(3).

FET is currently performed using different endometrial preparation protocols, most commonly natural cycles (NC-FET), modified natural cycles (mNC-FET), and artificial or hormone replacement therapy cycles (HRT-FET). Each protocol offers distinct advantages and limitations, but the efficacy in terms of live birth appears broadly comparable across strategies(4).

Beyond reproductive outcomes, growing evidence suggests that programmed cycles lacking a corpus luteum may be associated with increased risks of hypertensive disorders of pregnancy, including preeclampsia(5). This observation underscores the importance of not only focusing on pregnancy rates but also considering maternal and neonatal safety when selecting FET protocols.

This chapter aims to provide an updated overview of current FET strategies as of 2025, summarizing their efficacy, safety profiles, and implications for clinical decision-making and future research.

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Chapter 3

LIFESTYLE INTERVENTIONS AND PELVIC FLOOR MUSCLE TRAINING IN THE MANAGEMENT OF FEMALE URINARY INCONTINENCE

Tuğba KOLOMUÇ GAYRETLİ[1]

1. INTRODUCTION

Urinary incontinence (UI), according to the International Continence Society (ICS) definition, is the involuntary leakage of urine that causes social or hygienic problems(1). The prevalence of UI in women has been shown to range between 25% and 45% in different community-based studies, and it has been established that the incidence increases significantly with age(2). Urinary incontinence is a complex condition with a multifactorial aetiology, and various anatomical and lifestyle-related risk factors play a role in women. In particular, obstetric factors related to pregnancy and childbirth, obesity, postmenopausal hormonal changes, and previous pelvic floor surgeries are among the most important determinants of incontinence development. The interaction of these factors leads to disruption of the continence mechanism, explaining the high prevalence of UI in women.

Urinary incontinence is not merely a physical health issue, but also a complex condition that profoundly affects women's psychosocial well-being and sexual lives. Social isolation, shame, loss of self-confidence, depression, and anxiety are common accompanying problems due to urinary leakage. Furthermore, urinary leakage during sexual intercourse can lead to sexual aversion, dyspareunia, and problems in partner relationships in women. Therefore, UI impacts not just individual quality of life but also on family relationships and social participation. Current guidelines, particularly the joint NICE and ICS/IUGA reports, strongly recommend conservative treatment, i.e. lifestyle changes and pelvic floor muscle rehabilitation, as the first-line approach to be implemented before surgical or pharmacological methods(3,4). This approach is prioritised in clinical practice

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International guidelines—ICS, IUGA, EAU, NICE, and ACOG—strongly recommend these methods as a first-line approach, emphasising that pharmacological or surgical interventions should only be considered in cases where adequate benefit cannot be achieved with conservative treatments. These approaches are low-cost, low-risk, and highly feasible options compared to invasive methods.

Clinical studies and meta-analyses show that PFMT, either alone or combined with lifestyle interventions, provides a 56–70% improvement in symptoms, and that this effect is sustained in long-term follow-ups(18).

In addition, early diagnosis and timely initiation of conservative strategies are essential to prevent progression of symptoms and reduce the need for invasive procedures. Strengthening patient education and promoting adherence through supervised programs or digital health tools can further enhance treatment outcomes and long-term sustainability of continence.

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Chapter 4

FETAL GROWTH RESTRICTION

R.B.D. KAZĞAN[1]
Orhan AY[2]

PHYSIOLOGY OF FETAL GROWTH

Fetal growth is the increase in fetal weight, length, and organ function from fertilization to birth, driven by cell proliferation, cell enlargement, and extracellular matrix accumulation. Fetal growth can be influenced by a range of maternal and fetal factors, including changes in blood pressure, disturbances of glucose metabolism, and major congenital anomalies (1).

Until 16 weeks' gestation, normal fetal growth is driven approximately predominantly by cellular hyperplasia. From 16 to 32 weeks, growth reflects a combined contribution of hyperplasia and hypertrophy. Beyond 32 weeks, rapid accretion of adipose, muscle, and connective tissues occurs mainly through cellular hypertrophy (2).

Fetal growth and development are orchestrated by a complex hormonal network. Within the intrauterine milieu, these hormones function as cues for both maturation and nutrient supply, enabling context-appropriate adaptation of tissue growth and differentiation. Central to this regulation is the insulin-like growth factor (IGF) axis most notably IGF-I and IGF-II which governs fetal and placental growth across gestation. Pathogenic alterations in IGF1, IGF2, or the IGF1 receptor (IGF1R) are associated with fetal growth restriction, whereas loss of the IGF2 receptor (IGF2R) activity or IGF2 overexpression can result in accelerated, even overgrowth, phenotypes (3).

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Early pregnancy uterine artery Doppler screening facilitates risk stratification and planning of enhanced surveillance. By contrast, bed rest, high-protein diets, and routine oxygen therapy lack evidence for FGR prevention (14).

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Chapter 5

PELVIC FLOOR INTEGRITY AND FEMALE SEXUAL FUNCTION IN THE POSTPARTUM PERIOD

Gamze KARABABA[1]

INTRODUCTION

The pelvic floor is a critical anatomical structure for maintaining continence, organ support, postural stability, and sexual function(1) . The postpartum period is one of the periods during which a woman undergoes the most rapid physiological, hormonal, anatomical, and psychosocial changes. The increased uterine volume during pregnancy, hormonal effects on connective tissue, mechanical stress associated with labour, and perineal trauma create multifaceted stress on the pelvic floor. Therefore, pelvic floor dysfunction and sexual dysfunction are common in the postpartum period(2) .

Approximately 40–60% of women experience sexual dysfunction, dyspareunia, vaginal dryness, or loss of libido within the first 6 months of the postpartum period(3,4) . The mode of delivery, degree of perineal laceration, episiotomy, OASIS injuries, duration of labour, assisted vaginal delivery, hormonal effects of lactation, and the mother's psychosocial status are key factors influencing the development of this condition. Perineal trauma and changes in pelvic floor muscle function, in particular, make it difficult to regain sexual function in both the acute and chronic periods(3,5) .

The tissue tension and disruption of muscle-tendon integrity that the pelvic floor undergoes during pregnancy and childbirth can pave the way for problems such as pelvic organ prolapse, urinary incontinence, faecal incontinence, and chronic pelvic pain(6) . It is known that these anatomical and functional changes also have a direct effect on sexual function(7) . Furthermore, the suppression of oestrogen levels during lactation can cause vaginal atrophy, dryness, and reduced lubrication, thereby increasing dyspareunia(8) .

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approaches for improving sexual function. Local oestrogen treatments, lubricants, tissue mobilisation, and lifestyle adjustments provide meaningful improvement in certain patient groups. Psychosexual support is an indispensable part of treatment, especially for women experiencing a pain–anxiety cycle and those with a history of birth trauma.

In conclusion, postpartum pelvic floor and sexual dysfunction are important but often overlooked areas of women's health. When managed with early diagnosis, accurate assessment, and a holistic approach, both pelvic floor function and sexual quality of life can be significantly improved. Informing and supporting women during this process and offering personalised treatment according to their needs will positively affect long-term health outcomes.

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Chapter 6

ANALYSIS OF RECURRENCE AND DISEASE-FREE SURVIVAL OUTCOMES OF FERTILITY-PRESERVING SURGICAL INTERVENTIONS IN BORDERLINE OVARIAN TUMOURS

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1. INTRODUCTION

Borderline ovarian tumors are defined as an intermediate category among epithelial ovarian tumors because, although they exhibit cellular proliferation and nuclear atypia, they lack an infiltrative growth pattern. These neoplasms, which constitute approximately 10–20% of all ovarian tumors, have an annual incidence of 1.8–4.8 per 100,000 women (1). A clinically important feature is their occurrence in a younger age group compared to other types of ovarian cancer; one-third of cases are under 40 years of age (1–3). This situation places fertility preservation and reduction of postoperative morbidity at the center of clinical management, making treatment decisions more complex. Borderline ovarian tumors are often asymptomatic, and diagnosis is frequently made through pathological examination of samples obtained during surgery. The FIGO staging system is used as the basis for staging the disease, guiding both survival and relapse risk (2). Although radical approaches can be used in surgical treatment, fertility-preserving conservative surgery has become an important option, especially for women with remaining reproductive potential. In the literature, unilateral salpingo-oophorectomy (USO) is more commonly preferred in premenopausal patients, while bilateral salpingo-oophorectomy (BSO) is preferred in postmenopausal patients. However, recurrence rates after oophorectomy or cystectomy performed for fertility preservation can reach up to 75% (3,4).

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Chapter 7

ROBOTIC GYNECOLOGIC SURGERY

İnci ÖZ[1]

INTRODUCTION

Robotic surgery has become one of the most rapidly evolving areas of medical practice over the past two decades, adding a new dimension to the concept of minimally invasive surgery, particularly in gynecology and urogynecology. Technological advantages such as three-dimensional imaging, enhanced instrument articulation, tremor filtration, and improved surgical precision have enabled robotic platforms to increase both clinical success and patient safety. The introduction of robotic systems into surgical practice in the first half of the twenty-first century is regarded as a highly significant and exciting technological advancement. These systems, which are expected to hold substantial potential for the future, continue to develop at a remarkable pace today. These advancements have not only improved surgical outcomes but have also reshaped operating room dynamics, nursing roles, and all perioperative care processes. It is noted that the use of robotic surgical systems in minimally invasive procedures offers numerous potential advantages. Unlike the two-dimensional imaging provided by modern laparoscopic systems, robotic systems offer continuous three-dimensional visualization and a pronounced sense of depth, which is particularly beneficial for surgeons accustomed to open surgery (128).

In gynecologic surgical practice, the increasing use of robotic systems in complex procedures such as hysterectomy, myomectomy, ovarian cyst excision, and endometriosis surgery contributes to conducting operations in a safer, more controlled, and more predictable manner. In the field of urogynecology, robotic approaches have become an increasingly preferred standard in pelvic organ prolapse, sacrocolpopexy, fistula repairs, and complex reconstructive surgeries.

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Given the high-technology structure of robotic surgery, the educational pathway for nurses must also be addressed within a systematic and continuously updated framework. Structured educational algorithms—including foundational theoretical instruction, simulation-based skill development, clinical observation, supervised practice, and competency assessment—enable nurses to integrate into robotic surgery safely and effectively. Additionally, the implementation of quality and safety standards, the use of checklist-based care protocols, the strengthening of intra-team communication, and the support of technological adaptation are of strategic importance for the sustainable success of robotic surgery.

Robotic gynecologic surgery and nursing practice represent a multidisciplinary transformation in contemporary healthcare. The role of robotic systems in enhancing surgical efficiency, strengthening patient safety, and standardizing care quality continues to expand. The sustainable management of this comprehensive transformation requires equipping both surgeons and nursing teams with advanced technological and clinical competencies. This book chapter aims to provide clinicians and nursing professionals with an up-to-date, comprehensive, and interdisciplinary reference by addressing all components of the robotic surgery ecosystem from a holistic perspective. In this regard, advancing robotic surgery practices on a scientific basis, strengthening educational processes, and promoting a quality and safety culture will pave the way for a higher level of clinical excellence in the future.

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