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PREFACE

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CHAPTER 1

A NOVEL APPROACH IN ENDOSCOPIC PROSTATE SURGERY: THE REZUM SYSTEM

Mehmet Yılmaz SALMAN[1]

INTRODUCTION

Benign prostate hyperplasia (BPH) is a common morbidity, which affects elderly men and leads to lower urinary tract symptoms (LUTS) that negatively affect quality of life (QoL). Current treatment options in LUTS include lifestyle modification, pharmacological treatment and surgical approaches. Surgical approaches are in general performed when other options fail to treat LUTS. Recently, numerous novel minimally invasive techniques have been developed for the treatment of BPH/LUTS. One of the most recent techniques is the Rezum system, which uses thermal energy properties of water vapor. In this chapter, BPH and prostate surgery is briefly explained. The Rezum system is discussed in details, including the procedure, patient selection, advantages, disadvantages, complications and review of the results from the current literature.

BENIGN PROSTATE HYPERPLASIA

Benign prostate hyperplasia (BPH) is a common urological disorder characterized by progressive increase of the size of the prostate gland. BPH is the nonmalignant enlargement of the prostate gland resulting from an increase in volume of epithelial and stromal cells in the periurethral region (1). Its incidence increases with aging and it is reported in 40% in men ≥50 yo and 90% in men over 90 years (2). Prostate volume is also associated with age. An average prostate volume is 20 mL at age 50, while this increases to 34 mL at age 80 (3). In the majority of BPH patients, enlargement of the prostate gland leads to bladder outflow obstruction resulting in lower urinary tract symptoms (LUTS). LUTS has significant negative effects in quality of life (QoL) and symptom progression is associated with progressive enlargement of prostate (4-6).

The severity of BPH symptoms are evaluated with the International Prostate Symptoms Score (IPSS) and the quality of life (QoL) index Clinical stages of BPH according to severity are given in Table 1.

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7.6%. There was no ejaculatory dysfunction reported in this study (12).

In a study by Johnston et al. in 2020, 210 patients who underwent the Rezum procedure were followed-up for one year. In this prospective cohort study, efficacy of the Rezum system was evaluated for the first time in patients with urinary retention. Twenty-five of the 210 patients were catheterized before the procedure and the Rezum system was demonstrated to be effective (25).

In a retrospective study by Bole et al. in 2020, 182 patients underwent the Rezum prostate with 47 of them having a prostate size larger than 80 gm and 59 having urinary retention. The post-operative values were compared between the patients with small-sized and large sized prostates. IPSS was reduced by 45.2% in the patients with small-sized prostates and 39% in the patients with large-sized prostates. Qmax improved by 28.7% in the patients with small-sized prostates and 39.3% in the patients with large-sized prostates. PVR reduced by 47.8% in the patients with small-sized prostates and 51.1% in those with the large-sized prostates (26).

CONCLUSION

The Rezum water vapor based treatment system is considered an effective and safe method in the treatment of LUTS due to BPH with good follow-up outcomes, minor complications, and good patient satisfaction. This system has been shown not to compromise sexual functioning. The Rezum appears an attractive option for patients who want to avoid pharmacotherapy and preserve their sexual function.

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CHAPTER 2

ABDOMINAL COMPARTMENT SYNDROME

Murat TAN[1]

INTRODUCTION

Abdominal compartment syndrome (ACS) is a condition in which intra-abdominal pressure (IAP) is >20 mmHg, leading to intra-abdominal hypertension (IAH) that is associated with a new organ failure or dysfunction. IAH is defined as a steady IAP ≥ 12 mmHg. ACS has significant relevance in the surgical practice and the care of critically ill patients, because it has tremendous effects on multiple organ systems. ACS is classified as primary, secondary and recurrent. Mortality rate of ACS is reported between 40 and 100%. Recent studies have demonstrated a high prevalence of this condition (4-12%) in medical/surgical patients admitted to the ICUInterest in IAH and ACS as causes of significant morbidity and mortality among the critically ill patients has increased exponentially over the last decades. Early recognition and appropriate management of IAH and ACS significantly decreased morbidity and mortality in recent years. In this chapter definition, etiology and risk factors, pathophysiology, diagnosis, medical and surgical treatment of ACS is discussed.

DEFINITIONS

Intraabdominal Pressure (IAP)

Intraabdominal pressure is the pressure in the abdominal cavity. An increase in the volume of retroperitoneal or abdominal contents leads to an increase in IAP. IAP is defined as a steady-state pressure concealed within the abdominal cavity (Papavramidis et al., 2011). IAP varies with respiration. IAP increases with diaphragmatic contraction (inspiration) and increases with diaphragmatic relaxation (expiration) (Park and Han, 2015). IAP is expressed as mmHg and measured in a patient in the supine position in absence of abdominal muscle contractions. According to Pascal's law, IAP measured at one point in the abdomen is assumed to represent the IAP throughout the abdomen (De Laet and Malbrain, 2007). The intermittent indirect IAP is measured through transduction of the pressure within the bladder, while the continuous indirect IAP is measured

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As an advantage, it prevents abdominal domain loss and is easy to re-entry (Demetriades and Salim, 2014).

Expanded Polytetrafluoroethylene (ePTFE) Mesh

Decompression laparotomy associated with temporary abdominal closure using ePTFE mesh enables reduction of IAP in patients with severe acute pancreatitis. This method allows early abdominal reconstruction (Robin et al., 2013). ePTFE smesh has several advantages such as absence of adherence, enabling re-examining the abdominal cavity through the mesh and the resistance of the material to high traction pressures. In addition, progressive approximation of the ePTFE mesh can be performed in order to facilitate later definitive abdominal wall closure (Cheatham and Safcsak, 2011).

CONCLUSION

ACS is a life-threatening condition characterized by sustained acute elevation of IAP more than 20 mmHg. Studies have shown a high incidence of IAH and ACS in ICU patients. Inflammatory intrabdominal complications and large volume fluid resuscitations are among the frequent etiologies of ACS. Regular monitoring of IAP in patients at risk is vital for early diagnosis and treatment of IAH and ACS. When IAH is diagnosed, first medical therapy should be initiated with bowel and gastric decompression, paracentesis, evacuating intraluminal content, diuresis and sedation. Surgical abdominal decompression is the definitive treatment method when non-surgical methods fails.

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CHAPTER 3

ACUTE CHOLECYSTITIS TREATMENT

Ahmet Tarık HARMANTEPE[1]

INTRODUCTION

It is estimated that the incidence of gallstones in adults ranges from 10% to 15% (1). The formation of stones in patients can be attributed to various independent factors such as their family background, inherent tendency, cultural heritage, being female, and advancing age (2). Approximately 80-90% of the stones analyzed after removal of the gallbladder are made of cholesterol. The majority, about 80%, of gallstones do not produce symptoms (3). Gallstones can cause blockages in the cystic duct, leading to an enlarged gallbladder and eventually AC, a condition characterized by infection, inflammation, and ischemia. Each year, 1-4% of patients experience biliary colic. Although most gallstones do not cause symptoms, about 25% can result in symptomatic conditions such as cholecystitis, cholangitis, or biliary pancreatitis. Women under the age of 50 are three times more likely to develop AC than men (3).

The standard treatment for AC is LC. It has replaced open surgery because it has less morbidity, less hospital stay, and higher postoperative patient comfort (4,5).

A 2-year prospective multicenter study in Belgium revealed that open surgical and LC approaches were used in 6.8% and 93.2% of patients, respectively. (6). The research discovered that some factors increased the probability of having open surgery, including being over 70 years old, a history of surgery in the upper abdominal area, gangrenous cholecystitis, and being operated on by a surgeon with over 10 years of experience. The conversion rate from laparoscopic to open surgery was 11.4%. Injuries to the bile duct happened in 2.7% of the open surgery patients and 1.1% of the laparoscopic surgery group. Damage to the biliary tract was observed in 13.7% of the cases where open surgery was converted from laparoscopic.

In the study of Teixeira et al., which included 520 patients with cholecystectomy, they found better results in LC compared to open surgery in terms of mortality, preoperative and postoperative surgical complications, and hospital stay (7).

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The 2020 WSES guideline recommends removing metal stents used in EUS-GBD within 4 weeks to avoid blockage of the lumen and reduce the risk of recurrent AC (8).

ANTIBIOTIC THERAPY

The 2020 WSES guidelines recommend administering antibiotics based on the most commonly found microorganisms, taking into account local antibiotic resistance and drug availability. In biliary infections, the most commonly isolated bacteria are Gram-negative aerobes and anaerobes such as E. coli and K. pneumoniae, as well as B. fragilis (44,45). The role of Enterococci in causing biliary sepsis is uncertain and providing treatment specifically against these microorganisms is not a standard recommendation for biliary tract infections that are acquired in the community. (46). The biggest issue with antibiotic resistance in biliary tract infections is the production of extended-spectrum beta-lactamases by Enterobacteriaceae bacteria. This is commonly seen in patients who have had prior exposure to antibiotics in community-acquired infections. (44,45).

In the study, the authors discovered that postoperative antibiotics did not lower the rate of infectious complications compared to only continuing preoperative antibiotics. This indicates that using postoperative antibiotics as a routine practice may not be necessary for patients undergoing cholecystectomy for uncomplicated acute cholecystitis. (47). The results of the study showed that there was no change in the rate of postoperative infections.

CONCLUSION

The curative treatment of acute cholecystitis is LC or open cholecystectomy. The optimal time for LC is within the first 72 hours from the start of symptoms. For patients who are at high risk and not suitable for surgery, endoscopic or percutaneous gallbladder drainage can be done as a temporary solution until a final treatment or delayed surgery can be performed.

Keywords: acute cholecystitis, treatment, surgical timing, percutaneous cholecystostomy

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CHAPTER 4

CURRENT APPROACH TO ANAL STENOSIS

Hakan DEMİR[1]
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INTRODUCTION

Anal stenosis is the narrowing of the anoderm along with the anal mucosa. This may consist of a real anatomical stenosis or a functional stenosis due to the anal muscles. True anal stenosis is the replacement of flexible anoderm with varying degrees of fibrotic tissue. Stenosis causes a morphological change in the anal canal and consequently a deterioration in the functionality of the region(1,2). Anal stenosis may occur as a result of different pathologies causing scarring in the anoderm. Anal canal surgery is one of the leading causes of anal stenosis. In addition, trauma, inflammatory bowel disease, radiotherapy are the most common causes.

Anal stenosis is a serious complication of anorectal surgery. In 5-10% of cases, the cause of anal stenosis is excisional hemorrhoidectomy, which is generally preferred for advanced hemorrhoidal disease(3,4,5). Removal of the rectal mucosa and anoderm together with a large hemorrhoidal sac, especially from the anal canal, is a predisposing cause of stenosis (6).

In some cases of mild anal stenosis, good results can be obtained with non-surgical treatment methods including mechanical dilation, fiber supplements and laxatives (1,6,7). However, operative treatment is inevitable in cases with moderate and severe anal stenosis(8,9).

ETIOLOGY

Hemorrhoidectomy causes 90% of secondary anal stenosis (7,33). Extensive removal of the anodermal mucosa during hemorrhoidectomy can lead to scarring and chronic stenosis. The incidence of anal stenosis increases especially after Whitehead hemorrhoidectomy, which is an old method, which is not applied

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CONCLUSION

There are many flap options for the surgical treatment of anal stenosis. However, there are not enough prospective and comparative studies showing the superiority of these flap shapes over each other. Among flap techniques, V-Y and diamond advancement flaps are the preferred techniques with very good results (17,25,26). The House advancement flap was preferred because it provides a wide skin flap, especially in circular severe stenosis(27,28). In the limited number of comparative studies in the literature, it is not clear what the ideal dimensions of the anal canal should be after the flap. Good results have been obtained in patients treated with diamond flaps with an anal canal calibration of 25-26 mm(29). In a prospective randomized study by Farid et al.(30), although the house advancement flap has a longer operation time than the V-Y and rhomboid flaps; reported that it provides less complications and better clinical recovery rate. An ideal surgical technique; It should be easy to apply and well tolerated by the patient. In addition, it is aimed to have a good level of continence and comfort. However, there is no ideal treatment method with effective results for the patient(31,32). Therefore, the degree of disease and the level of anal stenosis should be considered in the selection of the appropriate surgical technique. The most appropriate flap shape for the patient should be considered. At the same time, the method with which the surgeon is experienced increases the success rate.

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CHAPTER 5

DIAGNOSIS AND TREATMENT OF FOURNIER'S GANGRENE

Cemil KUTSAL[1]

Fournier's Gangrene was described in 1883 by Jean Alfred Fournier, a dermatologist, and venerologist from Paris, and is referred to by its specific name (1).

Fournier's Gangrene is a severe disease that affects the genital, perianal, and perineal regions. When the diagnosis and treatment are delayed, it progresses rapidly between the facial planes and causes widespread soft tissue necrosis. The disease typically spreads aggressively between the fascial planes and involves surrounding soft tissue. The spread of the infection causes microemboli in the arterial vessels, causing blood circulation disorder and tissue necrosis in the surrounding soft tissue and facial planes (2).

This process spreads rapidly between Dartos, Colles, and Scarpa fascia planes(2). Due to the involvement of the subcutaneous and facial areas first, doctors may be unable to diagnose it in the early stages of the disease. The overlying skin often appears as uncomplicated cellulitis(2-4).

Urogenital infections, anorectal infections, and trauma are the primary etiologic factors of Fournier's Gangrene. It is a polymicrobial condition usually caused by various aerobic and anaerobic microorganisms(5-7). The most common and cultured organisms are gram-negative bacteria in polymicrobial form. These include Group A Streptococci and Staphylococcus aureus, and E. Coli and Pseudomonas aeruginosa. (8,9).

These bacteria can enter the body from the urinary, intestinal systems, or dermal routes. Sometimes, urinary tract infections and perianal abscesses may also cause infection(2).

In FG, it may first give symptoms as local infection depending on the way of entry into the body. It may start as a local infection around the rectum in the perineum, the urethra, and the scrotum in the genital area (10,11). Although Fournier's Gangrene is more common in men and the elderly, it can affect both sexes and all age groups (12-15).

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nutrition. Therefore, oxygenation of the tissues will help the treatment. Oxygen therapy stimulates the immune system by increasing fibroblast proliferation and neutrophil functions and accelerating the passage of antibiotics into the cell, which accelerates wound healing (52).

VACUUM ASSISTED CLOSURE

Vacuum-assisted closure (VAC) method accelerates wound healing by reducing edema and increasing blood flow. This system increases angiogenesis and accelerates tissue nutrition and healing. Thanks to this system is the primary mechanism of the system to drain the infected fluid and debris (53).

TREATMENT SUMMARY

• Success in the treatment of Fournier's Gangrene is early diagnosis and surgical debridement.

•Hemodynamic resuscitation and broad-spectrum antibiotics should be added to the treatment.

• Early surgical intervention is essential for survival, imaging and laboratory tests should not delay intervention in critical cases.

• Postop debrided areas should be treated with sterile dressings or vacuum wound pressure systems.

• As the vascular structure of the testicles is not affected, it is usually preserved.

• If there is urethral involvement, a suprapubic catheter should be placed instead of the urethral catheter.

• If the rectum or anus is affected, a temporary colostomy may be required.

• Hyperbaric oxygen therapy can help reduce morbidity and mortality.

Reconstructive surgery should be performed when the debrided wound is completely healed. (35).

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CHAPTER 6

MANAGEMENT OF PSYCHIATRIC COMORBIDITIES IN SURGICAL PATIENTS

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INTRODUCTION

The incidence of comorbid psychiatric conditions among surgical populations is substantial, with various studies reporting a prevalence ranging from 30-50%. The presence of comorbid psychiatric conditions in surgical patients has been shown to have a significant impact on surgical outcomes, including a greater likelihood of complications, prolonged hospitalization, and impaired postoperative recovery. In addition to the negative impact on patients' physical health, the presence of psychiatric comorbidities also leads to increased healthcare costs and decreased patient satisfaction (1) .

In addition, identifying and managing psychiatric comorbidities in surgical patients can pose a challenge due to the complexity and variability of the perioperative period. The perioperative period encompasses the time frame from preoperative assessment and preparation to postoperative recovery and rehabilitation, and it is a crucial period for patients as it can greatly impact their overall recovery and outcomes. The perioperative period is also a time of increased stress, which can exacerbate existing psychiatric symptoms or trigger new ones (2) .

Given the high prevalence of psychiatric comorbidities and their negative impact on surgical outcomes, it is imperative for healthcare providers to be knowledgeable about the identification, assessment and management of psychiatric comorbidities in surgical patients. Effective management of psychiatric comorbidities in surgical patients begins with identifying at-risk individuals through preoperative screening, followed by appropriate management strategies such as preoperative interventions, psychological support during the perioperative period, and postoperative follow-up care. A multidisciplinary approach involving surgeons, psychiatrists, psychologists, and other members of the healthcare team is crucial for effective management of psychiatric comorbidities in surgical

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interventions can include medication adjustments, counseling, psychological support, and referral to specialized services (20, 22).

Perioperative interventions: Perioperative interventions are designed to provide psychological support during the perioperative period, which can include the preoperative, operative, and postoperative recovery phases. These interventions can include psychological support, patient education, family support, specific management of analgesic and sedative medications, and postoperative care (20, 22).

Postoperative interventions: Postoperative interventions are designed to provide follow-up care and support for patients after their surgery. These interventions can include follow-up appointments, medication management, psychological support, referral to specialized services, and patient and family education (16).

Multidisciplinary approach: A multidisciplinary approach is essential for effective management of psychiatric comorbidities in surgical patients. This approach involves a team of healthcare professionals from different specialties working together to provide exhaustive care for the patient (11).

In conclusion, managing psychiatric comorbidities in surgical patients effectively necessitates a holistic approach that addresses the patient's physical and mental health needs concurrently. Identifying patients at-risk and providing preoperative, perioperative, and postoperative interventions, as well as a multidisciplinary approach, are key strategies for managing psychiatric comorbidities in surgical patients. It's important to involve the patient and their family in the settling process, and to tailor the treatment plan to the patient's specific needs (25).

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CHAPTER 7

SURGICAL SITE INFECTIONS (SSI)

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INTRODUCTION

Surgical site infections (SSIs) are infections occurring within 30 days of a surgical procedure or within one year if an implant or prosthesis is inserted. They remain a common complication of surgical procedures despite advances in infection control measures. SSIs are an important cause of morbidity and mortality. SSIs occur due to several reasons including microbe-related, patient-related and procedure-related causes. SSIs bring a substantial financial burden on healthcare systems. SSIs are an important cause of readmission and prolonged length of stay in hospital. These infections can be classed as superficial, deep and organ/space infections. The most commonly isolated causative agent is *S. Aureus*. The diagnosis of SSIs is established with imaging investigations and cultures. Perioperative preventive measures are of paramount importance in SSIs. This chapter begins with epidemiology of SSIs and continues with their impact on healthcare systems, pathogenesis and risk factors. In addition, clinical features, pathogenesis, diagnosis and prevention of SSIs are discussed.

EPIDEMIOLOGY

Surgical site infection (SSI) is the most commonly seen health-care related infection following surgical procedures. SSI is associated with significant morbidity and mortality, prolongation of hospitalization, increased healthcare costs and hospital readmissions.

Over the past few centuries, the risk of surgery was exceedingly high due to higher rates of SSIs. Combined with the lack of effective anesthesia, the success rate was low. Aseptic approach has provided enormous gains to the surgery and only introduction of hand washing into daily practice has decreased mortality from puerperal sepsis from 12% to 2% (1).

Heterogeneity of surgical procedures and SSIs make epidemiological studies complicated with the incidence of SSIs differing significantly among procedures,

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mortality. SSIs implicate substantial economic burden on the healthcare system with readmission and prolonged hospitalization. Therefore, they continue to pose an important clinical challenge. It is important that much burden of morbidity and mortality from SSIs is preventable. It is evident that attention to patient and procedure-related risk factors and taking necessary measures timely leads to a decrease in the incidence of SSIs.

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CHAPTER 8

TREATMENT APPROACH IN ADOLESCENT VARICOCELE PATIENTS

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INTRODUCTION

In addition to symptoms such as scrotal pain, varicocele can cause subfertility as a result of stagnation in testicular development, atrophy and deterioration of sperm values. It is a common disease in the adolescent age group in parallel to the age of the child. When a careful physical examination is performed, the frequency of detection of bilateral varicocele is higher than expected (1). While left varicocele is seen in 90% of cases, bilateral varicocele is detected in approximately 10% of cases. Most of the varicocele cases in childhood and adolescent age group are asymptomatic. They are usually detected incidentally by physical examination or noticed by families. When a careful physical examination is performed in cases with varicocele, volume loss can be detected in the testis on the affected side. It is the most common pathology that can lead to surgically correctable male infertility in this age group (1, 2).

Measuring testicular volume is important in terms of the necessity of varicocele treatment and monitoring of after varicocelectomy. Testicular volume can be measured by ultrasonography as well as various types of orchidometers *(Prader, Takahara)*. Prader orchidometry is sufficient for practical use to measure testicular volumes (3).

When deciding on the treatment of adolescent varicoceles, the volume loss of 20% or more than 2 mL in the affected testis, softening of the testis, deterioration in sperm parameters, bilateral palpable varicocele, and the presence of symptomatic varicocele are taken into account (4).

Treatment options in adolescent cases with varicocele can be elaborated as: open surgery *(high retroperitoneal, inguinal, subinguinal),* laparoscopic surgery and radiological methods *(sclerotherapy or embolization)*. However, current treatment methods are inguinal or subinguinal approaches. The aim of varicocelectomy is to connect all internal spermatic vein branches and external spermatic vein

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CONCLUSION

Varicocele in adolescence is one of the most important surgically correctable causes of testicular atrophy. Therefore, testicular volumes of patients with adolescent varicocele should be closely monitored with serial ultrasound measurement and examination. After puberty, spermiogram follow-up also makes important contributions to ultrasound measurements. Varicocele is a disease whose incidence increases with puberty in adolescents and its incidence varies between 14-20%. 20% of affected adolescents have fertility problems. A 20% reduction in testicular size or a reduction of more than 2 ml on the side with varicocele is considered testicular atrophy and is an indication for surgery. Today, there is strong evidence that timely surgical treatment will prevent testicular atrophy and infertility caused by adolescent varicocele.

Today, surgery is the gold standard among treatment methods. The use of a microscope or optical magnifier during surgery is the main factor in increasing treatment efficacy and reducing complication rates. Although surgical treatment is at the forefront, the results of embolization with angiography are comparable in experienced hands.

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CHAPTER 9

UPPER URINARY SYSTEM TRAUMAS

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Urogenital traumas constitute 10% of all traumas. In recent years, the development of technology and the widespread use of ultrasonography and computed tomography have made it easier to detect urinary tract injuries. The approach to trauma patients has improved in parallel with technological innovations. The approach to urogenital traumas constantly evolves, mainly due to better diagnostic tools and trauma care. Today, with the help of advanced radiological techniques, most patients with solid organ injuries can be treated with close follow-up without surgery. Examining the abdomen and genital organs can give an idea about retroperitoneum and pelvic organ injuries. Fractures of the lower ribs are often associated with renal injuries, and pelvic fractures often accompany injuries to the bladder and urethra (1).

RENAL TRAUMAS

Etiology

The kidneys are less affected by trauma than other abdominal organs due to their location in the retroperitoneal region, the fatty supporting tissue provided by Gerota's fascia, and their proximity to the ribs. Renal traumas are seen together with other organ injuries at a rate of 80-95% (2). The kidney is the most frequently injured organ in genitourinary traumas (3).

The initial evaluation should include control of hemorrhage and shock, with resuscitation as needed. Intravenous access and insertion of a urethral catheter may be required for resuscitation (1).

Kidney traumas are classified into two main groups blunt and penetrating traumas. Iatrogenic injuries are very rare. Although blunt kidney traumas (71-95%) are common, penetrating traumas are reported more frequently in some countries where individual violence is high (4,5). The etiology of blunt kidney traumas is 63% motor vehicle injuries, 43% falls from height, 11% sports injuries, and 4% non-vehicle traffic accidents (1). In penetrating trauma, gunshot wounds (65%) are the most common etiologic factor, followed by stabbing (35%). Most

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are inadequate or ureteral fistula that is resistant despite previous intervention. It should be kept in mind that it is the surgical method to be applied as the last option in cases where all other procedures failed (21, 39, 40). With nephrectomy, the risk of urinary leakage, urinoma, sepsis, and graft infection that can be caused by ureteral injury is reduced (41)

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