

*Osmangazi Journal of Medicine**e-ISSN: 2587-1579***Urogenital Traumas: An Emergency Department Experienter**

Ürogenital Travmalar: Acil Servis Deneyimi

Gözde Yılmaz Dursun , Rukiye Aytekin Akdağ , Hatice Nur Karakartal , Necmi Baykan , Ömer Salt 

Kayseri City Hospital, Department of Emergency Medicine, Kayseri, Türkiye

Correspondence / Sorumlu yazar

Gözde YILMAZ DURSUN

Kayseri City Hospital, Department of
Emergency Medicine, Kayseri, Türkiyee-mail: beau_gozde@hotmail.com

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Abstract: The aim of this study is to retrospectively evaluate the demographic characteristics, types of trauma, clinical outcomes, and treatment approaches of urogenital trauma cases presenting to the emergency department. In this retrospective study, the medical records of a total of 80 patients who presented to the emergency department with trauma between January 1, 2024, and December 31, 2024, were examined. Information on the patients' age, gender, time of presentation, type of trauma, treatment method, and emergency outcome was analyzed. Descriptive statistics were used; chi-square test and one-way ANOVA were applied for intergroup comparisons. A total of 80 urogenital trauma patients who presented to the emergency department during the study period were evaluated. Of the patients, 81.3% were male. Examination of trauma types revealed that 67.5% (n:54) had multitrauma, whereas 32.5% (n:26) had isolated urogenital trauma. Regarding clinical outcomes, 28.8% of the patients were discharged (n:23), 70% were hospitalized (n:56), and 1.3% died in the emergency department (n:1). The overall mean age of the cohort was 40.27 ± 18.03 years. While 90.7% of multitrauma patients (n:49) required hospitalization, 73.1% of isolated urogenital trauma cases (n:19) were discharged ($p < 0.001$). Age, trauma type, and treatment strategy are key determinants in the clinical management of urogenital trauma. Cases associated with multitrauma carry a higher risk of hospitalization and adverse outcomes. This study contributes valuable insight into the emergency department evaluation and management of urogenital injuries. A total of 7 patients required surgical intervention, and all of them underwent inpatient management.

Keywords: Emergency Service, Hospital, Urogenital System, Multiple Trauma

Ethics Committee Approval: The study was approved by Kayseri City Hospital Non-Interventional Clinical Research Ethics Committee (Decision No: 664, Date: 18.11.2025).

Informed Consent: The authors declared that it was not considered necessary to get consent from the patients because the study was a retrospective data analysis.

Authorship Contributions: GYD contributed to the study conception and design, conducted the literature review, and wrote the original draft of the manuscript. NB was responsible for supervision and control of the study and contributed to reference. HK carried out data collection and data processing. RAA performed the data analysis and interpretation and contributed to the study materials. ÖS critically reviewed the manuscript. All authors read and approved the final manuscript.

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Özet: Bu çalışmanın amacı, acil servise başvuran ürogenital travma olgularının demografik özelliklerini, travma tiplerini, klinik sonuçlarını ve tedavi yaklaşımlarını retrospektif olarak değerlendirmektir. Retrospektif olarak planlanan bu çalışmada, 01 Ocak 2024–31 Aralık 2024 tarihleri arasında acil servise travma nedeniyle başvuran toplam 80 hastanın tıbbi kayıtları incelendi. Hastaların yaş, cinsiyet, başvuru zamanı, travma tipi, tedavi yöntemi ve acil sonlanış bilgileri analiz edildi. Tanımlayıcı istatistikler kullanıldı; gruplar arası karşılaştırmalarda ki-kare testi ve One-Way ANOVA uygulandı. Çalışma döneminde acil servise başvuran toplam 80 ürogenital travma hastası değerlendirildi. Hastaların %81,3'ü erkekti (n:65). Travma tipleri incelendiğinde %67,5'inin multitravma (n:54), %32,5'inin ise izole ürogenital travma (n:26) olduğu belirlendi. Klinik sonlanış açısından hastaların %28,8'i taburcu olup (n:23), %70'i yatırılarak tedavi edilmiş (n:56) ve %1,3'ü acil serviste exitus olmuştur (n:1). Yaş ortalaması tüm hastalarda $40,27 \pm 18,03$ yıl oldu. Multitravma hastalarının %90,7'si (n:49) yatırılarak tedavi edilirken, izole ürogenital travmaların %73,1'i (n:19) taburcu edilmiştir ($p < 0,001$). Başvuru saatlerinin dağılımı 16.00–23.59 aralığında belirgin yoğunluk göstermiştir (%55, n:44). Cerrahi işlem gerektiren hasta sayısı 7 olup, bu hastaların tamamı yatırılarak tedavi edilmiştir. Ürogenital travmaların klinik yönetiminde yaş, travma tipi ve tedavi yaklaşımı belirleyici faktörlerdir. Multitravma ile birlikte görülen olgularla hastane yatışı ve kötü klinik sonlanım riski artmaktadır. Bu çalışma, ürogenital travmaların acil servisteki değerlendirilmesine ve yönetim stratejilerinin geliştirilmesine katkı sağlamaktadır.

Anahtar Kelimeler: Acil servis, Hastane, Çoklu travma, Ürogenital sistem

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1. Introduction

Genitourinary trauma is encountered in a notable proportion of trauma patients presenting to healthcare facilities and may be associated with both life-threatening complications and significant long-term morbidity if not appropriately managed. Effective initial evaluation and management are therefore critical and should be conducted in accordance with established Advanced Trauma Life Support (ATLS) principles, with priority given to airway security and the maintenance of hemodynamic stability (1,2).

Traumatic injuries continue to be a major source of morbidity and mortality worldwide, particularly among the young adult population. Although urogenital system injuries are encountered relatively infrequently among trauma patients presenting to emergency departments, their diagnosis, management, and long-term outcomes constitute a fundamental component of trauma care. The literature reports that urogenital injuries account for approximately 1.5–10% of all traumatic cases; the kidneys, urethra, and external genital organs are among the most commonly affected sites, with blunt trauma mechanisms being predominant (3,4).

Urogenital trauma may present with a wide spectrum of clinical manifestations depending on the mechanism of injury. Blunt trauma is most commonly associated with motor vehicle collisions, falls, and high-energy impacts, whereas penetrating injuries related to sharp objects and firearms are less frequent (5). These injuries are often observed as part of multisystem trauma and require a high index of suspicion for early diagnosis, as delays in recognition may result in long-term complications such as loss of renal function, urinary incontinence, and urethral strictures (6).

Epidemiological data on the demographic characteristics and injury patterns of urogenital trauma cases are of critical importance for effective clinical management in the emergency setting. Large-scale retrospective studies have demonstrated that patients with urogenital trauma are predominantly male and belong to the young adult age group. Renal injuries are reported as the most common, followed by injuries to the external genital organs, which also constitute a substantial proportion (3,7). The evaluation and management of urogenital trauma necessitate a multidisciplinary approach. In this context, recently published guidelines emphasize evidence-based strategies focusing on early diagnosis in the emergency department, appropriate imaging modalities, and the

integration of both conservative and surgical treatment options (8). In particular, the role of non-operative management in hemodynamically stable patients and the application of advanced imaging techniques are critical components of contemporary trauma care (9).

The aim of this study is to evaluate the demographic characteristics, presentation times, trauma types, treatment modalities, and emergency outcomes of patients presenting to the emergency department with urogenital trauma. By providing a comprehensive analysis of the clinical course, risk factors, and in-hospital management processes of urogenital trauma, this study seeks to contribute to more effective assessment and management strategies for this patient population in the emergency setting.

2. Materials and Method

2.1 Study Design

This study was designed as a retrospective observational investigation in which the medical records of patients who presented to the emergency department over a one-year period between January 1, 2024, and December 31, 2024, were reviewed. Study data were obtained from the hospital information management system, and all records were evaluated retrospectively. Analyses were conducted based solely on existing medical data without any intervention. Only patients who presented to the emergency department with urogenital trauma during the study period and for whom complete emergency department outcome data were available were included. For each case, parameters such as demographic characteristics, time of presentation, type of trauma, emergency department disposition, treatment approach, and requirement for surgical intervention were recorded.

Inclusion criteria comprised all adult and pediatric patients who presented to the emergency department with urogenital trauma within the study period; patients who were discharged from the emergency department, hospitalized for treatment, or died after evaluation; and cases with complete medical records including age, sex, time of presentation, type of trauma, and emergency department outcome. All patients meeting these criteria were included in the study.

Exclusion criteria included patients who presented to the emergency department for non-traumatic reasons, cases presenting outside the specified study

period, patients with incomplete medical records lacking information on age, sex, type of trauma, time of presentation, or emergency department outcome, cases referred from external centers with incomplete data, and duplicate records, with only the first presentation evaluated in patients with multiple admissions. All patients not meeting the inclusion criteria were excluded from the study.

The data obtained in the study were reviewed for accuracy and consistency prior to statistical analysis, and the relevant variables were evaluated using descriptive statistics. Due to the retrospective nature of the study, no patient intervention was involved, and all data were analyzed after anonymization to ensure confidentiality.

2.2 Statistical Analysis

Statistical analyses were performed using SPSS for Windows version 21.0. Descriptive statistics were presented as frequencies, percentages, means, and standard deviations. The normality of distribution for continuous variables was assessed using histograms, Q–Q plots, and the Shapiro–Wilk test, while homogeneity of variances was evaluated with the Levene test. The normality of continuous variables was evaluated using histograms, Q–Q plots, and the Shapiro–Wilk test, whereas homogeneity of variances was assessed with Levene's test. Comparisons between categorical variables were conducted using the Pearson chi-square test. Comparisons of mean age between independent groups were performed using the Student's t-test and/or one-way analysis of variance (ANOVA), as appropriate. Categorical variables were compared using the Pearson chi-square test or Fisher's Exact Test when expected cell counts were small. Continuous variables were compared using the Student's t-test or one-way analysis of variance (ANOVA), where appropriate. Due to the presence of a single mortality case, descriptive statistics were used for this subgroup, and inferential comparisons involving this group were interpreted cautiously. A p value of <0.05 was considered statistically significant at the 95% confidence level.

2.3 Ethical Approval

The study was initiated after obtaining ethical approval from the XXX Hospital Non-Interventional Clinical Research Ethics Committee (decision dated 18/11/2025, number 664). All stages of the research

were conducted in accordance with the principles of the Declaration of Helsinki.

3. Results

During the study period, a total of 80 patients who presented to the emergency department with urogenital trauma were evaluated. Of these patients, 81.3% were male ($n = 65$) and 18.7% were female ($n = 15$), indicating a marked predominance of male patients in the study population. Analysis of trauma types revealed that 67.5% of patients sustained multitrauma ($n = 54$), while 32.5% had isolated urogenital trauma ($n = 26$). Patients with multitrauma exhibited a more severe clinical course; 90.7% of these patients ($n = 49$) required hospitalization. In contrast, 73.1% of patients with isolated urogenital trauma ($n = 19$) were discharged from the emergency department. The difference between trauma type and clinical outcome was statistically significant ($p < 0.001$).

Regarding emergency department disposition, 28.8% of patients ($n = 23$) were discharged, 70.0% were admitted for inpatient treatment ($n = 56$), and 1.3% died in the emergency department ($n = 1$). The mean age of hospitalized patients was 43.00 ± 17.47 years, whereas the mean age of discharged patients was 31.91 ± 15.55 years; the patient who died in the emergency department was 80 years old. The age difference among the groups was statistically significant ($p = 0.002$). Because the mortality group consisted of a single patient, age comparisons involving this group were interpreted descriptively.

Evaluation of the distribution of presentation times showed that the highest number of admissions occurred between 16:00 and 23:59, accounting for 55.0% of the study population ($n = 44$). Morning and afternoon presentations between 08:00 and 15:59 constituted 31.2% ($n = 25$), while presentations during nighttime hours between 00:00 and 07:59 accounted for 13.8% ($n = 11$).

Assessment of treatment modalities indicated that surgical intervention was required in seven patients, all of whom were hospitalized. The indications for surgery included penile fracture in two patients, penile hematoma in one patient, isolated advanced renal laceration in one patient, deep scrotal laceration in one patient, and multiple organ injuries requiring surgical management in two patients. The study data are presented in Table 1.

Table 1. Comparison of patients based on their emergency department outcome

Data	Discharge	Inpatient treatment	Death	Total	p value*	Statistical Test*
	(n/%/SD)	(n/%/SD)	(n/%/SD)	(n/%/SD)		
Gender						
Man	21 (32.3)	44 (67.7)	0 (0)	65 (81.3)	$p=0.047$	$\chi^2=6.123$
Female	2 (13.3)	12 (80)	1 (6.7)	15 (18.7)		
Age (Average)	31.91±15.55	43±17.47	80	40.27±18.03		
Vizit Time (hours)						
08.00-15.59	3 (12)	21 (84)	1 (4)	25 (31.2)	$p=0.061$	$\chi^2=8.997$
16.00-23.59	18 (40.9)	26 (59.1)	0 (0)	44 (55)		
00.00-07.59	2 (18.2)	9 (81.8)	0 (0)	11 (13.8)		
Trauma Type						
Isolated urogenital	19 (73.1)	7 (26.9)	0 (0)	26 (32.5)	$p=0.000$	$\chi^2=37.017$
Multitrauma	4 (7.4)	49 (90.7)	1 (1.9)	54 (67.5)		
Treatment Type **						
Conservative	0 (0)	49 (100)	0 (0)	49 (87.5)	$p=0.000$	$\chi^2=80.000$
Surgical	0 (0)	7 (100)	0 (0)	7 (12.5)		
Surgical Type***						
Elective	0 (0)	6 (100)	0 (0)	1 (14.2)	$p=0.511$	$\chi^2=3.288$
Emergency Surgery	0 (0)	1 (100)	0 (0)	6 (85.8)		
Total	23 (28.8)	56 (70)	1 (1.3)	80 (100)		

*Categorical variables were analyzed using the Pearson chi-square test or Fisher's Exact Test when appropriate. Continuous variables are presented as mean ± standard deviation. **Treatment type was evaluated only among hospitalized patients. ***Surgical type was evaluated only among patients who underwent surgical intervention.

The distribution of urogenital injury locations is presented in Table 2. Multiple urogenital injury sites were the most common pattern, observed in 51 patients (63.7%). Among isolated injuries, scrotal trauma was the most frequent, accounting for 16

patients (20.0%), followed by isolated renal injury in 7 patients (8.8%) and isolated penile injury in 6 patients (7.5%). These findings indicate that combined urogenital injuries constituted the majority of trauma cases in the present cohort.

Table 2. Distribution of urogenital injury locations

Injury Location	n	%
Isolated penile injury	6	7.5
Isolated renal injury	7	8.8
Isolated scrotal injury	16	20.0
Multiple urogenital injury sites	51	63.7
Total	80	100.0

The distribution of trauma mechanisms is presented in Table 3. Traffic accidents were the leading cause of urogenital trauma, accounting for 39 patients (48.8%). Blunt trauma was the second most common mechanism, observed in 15 patients (18.7%).

Penetrating trauma and falls from height each accounted for 11 patients (13.8%). Firearm injuries and falls on the same level were relatively uncommon, with two cases (2.5%) each.

Table 3. Distribution of trauma mechanisms

Mechanism of Injury	n	%
Traffic accident	39	48.8
Blunt trauma	15	18.7
Penetrating trauma	11	13.8
Fall from height	11	13.8
Firearm injury	2	2.5
Fall on the same level	2	2.5
Total	80	100.0

4. Discussion

Urogenital trauma represents a heterogeneous group of injuries frequently encountered in the context of multisystem trauma, involving various components of the genitourinary tract. Although these injuries are rarely immediately life-threatening, they are associated with considerable long-term morbidity, underscoring their clinical significance (10,11). In the broader context of global trauma burden, urogenital injuries constitute a notable proportion; however, their true incidence may be underestimated in resource-limited settings due to restricted healthcare access and sociocultural barriers, which often contribute to delayed presentation and adversely affect clinical outcomes (12,13).

In this study, the demographic and clinical characteristics of patients with urogenital trauma were evaluated, and our findings are consistent with several data reported in the international literature. The marked predominance of male patients in our study population (81.3%) is in line with reports from large international trauma databases as well as studies of trauma cases presenting to emergency departments, which consistently demonstrate male predominance. For instance, data from the United States National Trauma Data Bank indicate that approximately 77% of urogenital trauma cases occur in males (14). This male predominance may be attributed to a higher involvement of men in high-risk activities associated with trauma. Similarly, a retrospective study conducted in Iran reported that

males constituted 74% of the trauma cohort, supporting the notion that gender distribution patterns are comparable across different geographical regions (15).

With respect to age distribution, the greater representation of young and middle-aged individuals and the association of advanced age with poorer clinical outcomes observed in our cohort are also consistent with findings from other centers. A study analyzing German national data reported a median age of approximately 40–50 years for urogenital trauma cases and demonstrated that increasing age was associated with higher mortality and longer hospital length of stay (16). Moreover, emergency department trauma cohort analyses have shown that hospitalization requirements and the risk of complications increase with advancing age, whereas younger patients are more likely to be discharged with less severe injuries (17). These findings underscore the pivotal role of age in determining trauma severity and hospital outcomes.

In our study, the observation that patients with multitrauma exhibited a more severe clinical profile is a well-documented finding in the literature. A study conducted in Nigeria by Ofoha et al. demonstrated that urogenital trauma predominantly affects young male patients, with genital involvement being the most frequently observed site and gunshot wounds representing the leading mechanism of injury. Management strategies

encompassed both operative and nonoperative approaches, guided by the severity and nature of the injury. These findings highlight the importance of thorough clinical evaluation and the need for specialized care to ensure appropriate and effective management (18). Urogenital injuries accompanied by multisystem trauma are generally associated with more complex treatment processes and prolonged hospital stays. For example, in a large trauma cohort, patients with multiple organ injuries were reported to have higher intensive care unit requirements and increased mortality risk (14). Similarly, other studies have demonstrated that isolated urogenital trauma cases can often be successfully managed with conservative approaches, whereas patients with multitrauma have an increased need for surgical intervention and intensive care (3). This highlights the critical importance of trauma mechanism and the extent of system involvement in clinical decision-making. These findings also provide important clinical insights into the characteristics of urogenital trauma patients presenting to our emergency department. Although the demographic patterns observed in our cohort are generally consistent with previously reported data, our results reflect the specific trauma profile and management requirements of a tertiary emergency care setting. The high proportion of multitrauma cases and their strong association with hospitalization emphasize the need for early identification of associated injuries and a systematic approach during initial trauma evaluation. From an emergency medicine perspective, recognizing patients at higher risk of complex clinical courses may facilitate appropriate triage decisions, timely specialist consultation, and more effective allocation of emergency department resources.

The distribution of presentation times in our study, with a higher frequency of trauma admissions during the evening hours, is consistent with findings from studies conducted in different geographical regions. An Indonesia-based pediatric urogenital trauma study similarly reported that trauma cases occurred more frequently during the active hours of the day (19). This pattern may be associated with peak traffic hours. Furthermore, the general trauma literature indicates that traffic accidents and trauma related to outdoor activities are more likely to occur during daytime and evening hours (20). This finding has important implications for emergency department planning and the optimization of staffing and resource allocation according to patient demand. However, given the single-center design and relatively small sample size of our study, this observation should be interpreted with caution and is likely to reflect the patient flow characteristics of

our emergency department rather than a broader epidemiological pattern. Nevertheless, these findings may provide useful information for optimizing staffing and resource allocation in emergency departments with similar patient populations.

Regarding treatment modalities, we observed that the majority of patients in our cohort were managed conservatively, with surgical intervention required in only a small subset of cases. This result aligns with treatment approaches reported by trauma centers in both Europe and Asia, where non-operative management is generally preferred for hemodynamically stable urogenital trauma patients (19). Nevertheless, international studies emphasize that severe cases requiring surgical intervention necessitate systematic follow-up and advanced levels of care (3). This underscores the importance of tailoring treatment strategies according to trauma severity and the clinical needs identified during patient evaluation.

Overall, the findings of this study are not limited to our institution but are consistent with trends reported in studies conducted across diverse geographical regions. Systematic consideration of parameters such as age, sex, mechanism of injury, and associated injuries during trauma assessment may contribute to more effective clinical approaches and improved patient management outcomes. Overall, our findings provide insight into the demographic characteristics, injury patterns, and clinical outcomes of urogenital trauma patients presenting to our emergency department. Although several observations are consistent with previously published studies, the single-center design and limited sample size warrant caution when extrapolating these results to other populations. Future multicenter studies with larger cohorts are needed to further validate these findings and improve their generalizability. Within similar clinical settings, systematic consideration of parameters such as age, sex, mechanism of injury, and associated injuries during trauma assessment may contribute to more effective clinical decision-making and improved patient management.

5. Conclusion

Our findings indicate that urogenital traumas predominantly occur in the adult population and that the clinical course is significantly more severe when associated with multitrauma, with the majority of these patients requiring hospitalization. In contrast, isolated urogenital traumas generally follow a milder course and most often result in discharge from the emergency department. Age was identified as an

important determinant of clinical outcome, with advanced age associated with an increased risk of adverse outcomes. Analysis of presentation times revealed a higher trauma burden during evening hours, highlighting considerations for emergency department workload and staffing planning. Although the number of cases requiring surgical intervention was limited, all such patients necessitated inpatient care. Overall, age, type of trauma, and the chosen treatment approach emerge as critical factors in the clinical management of urogenital traumas in the emergency setting. This study provides valuable insights into the assessment of urogenital traumas in the emergency department and contributes to informed clinical decision-making.

This study has several limitations. First, as a retrospective investigation, the data relied entirely on existing medical records, and cases with incomplete, inaccurate, or insufficient information had to be excluded from analysis. This may have limited the detailed evaluation of certain variables, such as trauma severity, imaging findings, or clinical progression. (In particular, standardized trauma

severity scores, such as the Injury Severity Score (ISS), were not consistently available for all patients and therefore could not be included in the analysis. The absence of objective trauma severity assessment may have limited a more detailed evaluation of the relationship between injury severity and clinical outcomes.) The sample size was restricted due to the naturally low incidence of urogenital trauma; in particular, the small number of pediatric patients hindered subgroup analyses and the generalizability of findings. Additionally, the study was conducted at a single center, which may limit the direct applicability of the results to other hospital settings or regional trauma profiles. The low number of patients undergoing surgical intervention also precluded a more robust analysis of the relationship between surgical treatment and clinical outcomes. Finally, limited availability of detailed data regarding trauma mechanism, energy of injury, and associated comorbidities constrained the ability to perform a more comprehensive analysis. Despite these limitations, the study provides valuable insights into the emergency management of urogenital traumas and serves as a foundation for future prospective research.

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