DOI: 10.37990/medr. 1660255 Med Records 2026;1:1660255

MEDICAL RECORDS-International Medical Journal

Research Article

# The Role of Plastic Surgery in the Emergency Department: Injury Profiles and Treatment Approaches

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**Abstract**

**Aim:** Emergency departments are critical units that serve a wide range of patients requiring consultations from different specialties. Plastic surgery is a branch frequently consulted in cases such as trauma, burns, and facial and extremity injuries. In this study, the demographic and clinical characteristics, types of injuries, and intervention outcomes of patients who required plastic surgery consultation in the emergency department were evaluated.
**Material and Method:** This retrospective study was conducted on 864 patients who presented to the Emergency Department of Balıkesir University Faculty of Medicine and required plastic surgery consultation between January 2020 and January 2025. Demographic data, reasons for admission, mechanisms of injury, and surgical interventions performed were obtained from hospital records and analyzed using SPSS software.
**Results:** The proportion of male patients was 73%. The most common reasons for admission were fractures (27.1%), soft tissue injuries (24.7%), and tissue loss (14.1%). The most frequent mechanisms of injury were falls (17.3%) and traffic accidents (12.9%). While 60.6% of the patients were discharged, 22.5% were hospitalized.
**Conclusion:** Cases requiring plastic surgery consultation in the emergency department are generally caused by traumatic injuries. Early intervention is critically important in terms of functional and aesthetic outcomes.

**Keywords:** Plastic surgery, Emergency Department, Traumatic Injuries

## INTRODUCTION

Emergency departments are critical units that serve a wide patient population requiring consultations from different specialties (1). Plastic surgery is one of the frequently consulted specialties in emergency departments, especially in cases of trauma, burns, and injuries to the face and extremities (2). Plastic surgery consultations are part of the multidisciplinary approaches required due to high-energy traumas, workplace accidents, traffic accidents, and various injuries occurring in daily life (3).

Hand injuries are among the most significant traumatic conditions that cause loss of workforce, and early interventions by plastic surgeons are of great importance in preventing functional losses (4). However, traumas occurring in the face and neck region constitute a significant portion of plastic surgery consultations due to functional and aesthetic concerns. A large portion of facial injuries occur due to reasons such as traffic accidents and high-energy collisions, and they are often seen alongside multiple system injuries (5).

Burns also constitute a significant part of plastic surgery consultations. The accurate assessment of burn cases, timely intervention, and the application of appropriate surgical techniques are determining factors for the functional and cosmetic outcomes of patients. In cases where fine motor movements of the extremities need to be preserved, such as hand burns, and in advanced burn cases, the skin grafting and reconstructive surgical procedures performed by plastic surgeons play a critical role in the patient's healing process (6). The management of patients requiring plastic surgery consultation in the

**CITATION**
Kıyak R, Taşkın G, Serin S, et al. The Role of Plastic Surgery in the Emergency Department: Injury Profiles and Treatment Approaches. Med Rec 2026;1:1660255. DOI: 10.37990/medr.1660255

**Received**: 18.04.2025 **Accepted**: 01.05.2025 **Published**: 31.01.2026
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emergency department is of great importance in terms of proper triage and accurate patient referral.

The aim of this study is to determine the demographic and clinical characteristics of patients who required plastic surgery consultation in the emergency department, classify the types of injuries, and evaluate the outcomes of the interventions performed.

## MATERIAL AND METHOD

This study has been designed as a retrospective observational research. The study was conducted on patients who presented to the Emergency Department of Balıkesir University Faculty of Medicine and required plastic surgery consultation between January 2020 and January 2025. This study was conducted in accordance with the Helsinki Declaration, and approval was obtained from the Non-Interventional Research Ethics Committee of Balıkesir University (Date: 07/01/2025; Decision No: 2025/25).

### Study Population

Patients who presented with traumatic injuries or conditions requiring plastic surgery consultation (e.g., hand injuries, facial trauma, burns, tendon or nerve injuries), who were aged 18 years and over, and who had complete and accessible clinical records were included in the study. Patients under the age of eighteen, those whose consultation did not involve plastic surgery, and those with incomplete or missing clinical documentation were excluded from the study. A total of 864 patients were included in our study.

### Data Collection

The demographic data, mechanisms of injury, interventions performed, and outcomes of these patients were examined. Traumatic and surgical cases requiring plastic surgery consultation (hand injuries, facial traumas, burns, tendon and nerve injuries, etc.) and patients with complete clinical records were included. The demographic information of the patients (age, gender), reasons for admission, mechanisms of injury, surgical interventions performed, and patient outcomes (discharge, hospitalization, transfer, etc.) were recorded. The data were obtained by scanning the hospital automation system and patient files.

### Statistical Analysis

The obtained data were analyzed using SPSS (Statistical Package for the Social Sciences) software. Descriptive statistics such as mean, standard deviation, and percentage distributions were used. The Chi-square test was used for the comparison of categorical data, and the independent samples t-test or Mann–Whitney U test was applied for continuous variables. A p-value < 0.05 was accepted as the criterion for statistical significance.

## RESULTS

The average age was 27.5 years (range: 1–100 years). 73% of the patients who requested a plastic surgery consultation (n = 631) were male, while 27% (n = 233) were female. 72.5% of the applications (n = 626) were made through outpatient visits, while 27.5% (n = 238) were made via ambulance (Figure 1).

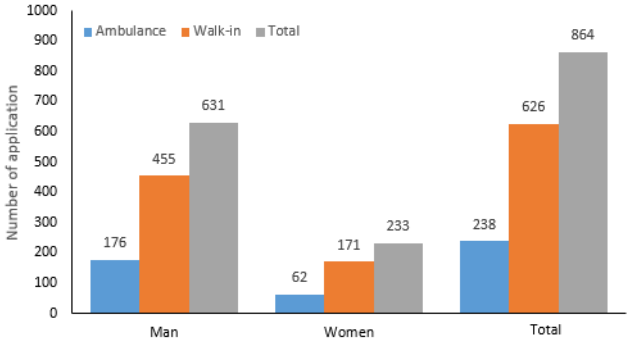


**Figure 1.** Distribution of applications by gender and application type.

When the distribution of the individuals included in the study according to age groups is examined, it is seen that the 50–59 age range is the most represented group with 16.5%. In general, it was observed that a significant portion of the participants were between the ages of 20–59 (57.3%) (Figure 2).

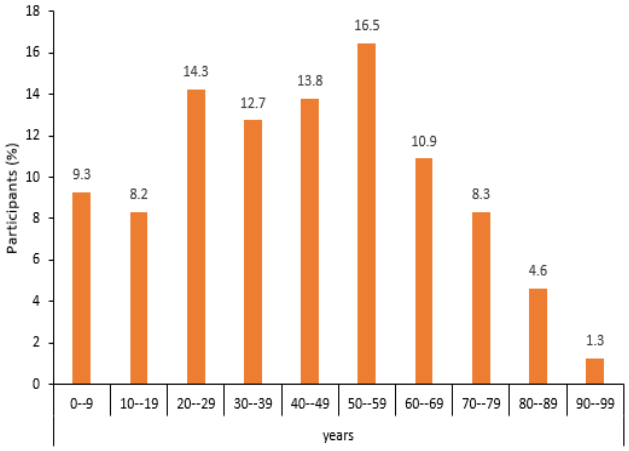


**Figure 2.** Distribution of the participants included in the study according to age groups.

According to the data, the months with the highest number of applications were August (11.8%), July (11.3%), and September (11.0%). The months with the lowest number of applications were observed to be February (5.1%), June (5.3%), and December (5.9%) (Figure 3).

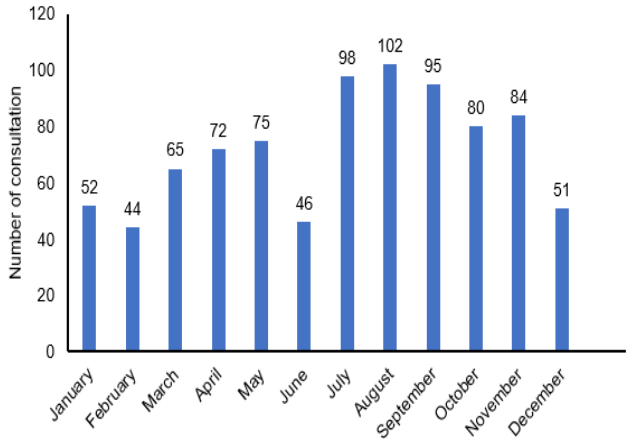


**Figure 3.** Frequency of consultations by month.

When looking at the distribution of consultations by year, it was observed that 3.2% of total plastic surgery

consultations occurred in 2020, while this rate increased to 41.7% in 2024 (Figure 4).

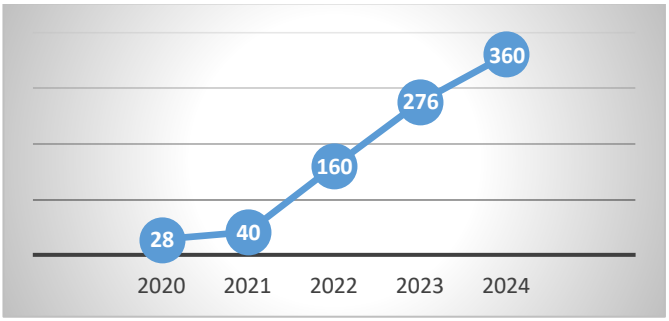


**Figure 4.** Consultations conducted by years.

When the consultations are examined by day, Friday (16.7%) and Monday (15.2%) are the days when plastic surgery consultations are most frequently held. Saturday (12.2%) and Tuesday (13.1%) are the days with the lowest number of consultations (Figure 5).

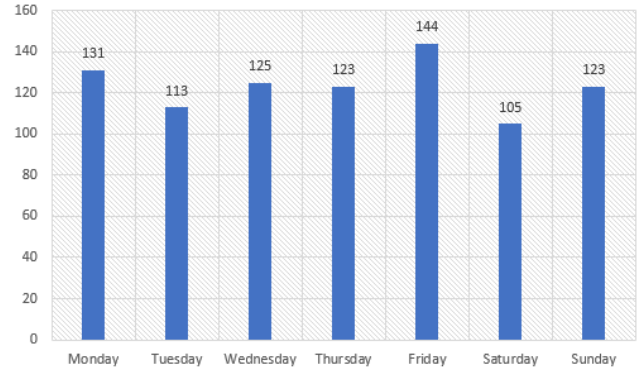


**Figure 5.** Distribution of consultations conducted by day.

When looking at the distribution of the types of injuries requiring plastic surgery consultation in the emergency department, the most commonly observed injuries were as follows: Fractures (27.1%, n = 234) — the most common type of injury. Soft tissue injury (24.7%, n = 213) — the second most common type of injury requiring plastic surgery. Tissue loss (14.1%, n = 122) — another type of injury observed at a high rate. Less common injuries included amputation (5.0%, n = 43), infection (3.7%, n = 32), arterial laceration (2.5%, n = 22), and necrotic-circulatory disorder (2.2%, n = 19) (Figure 6).

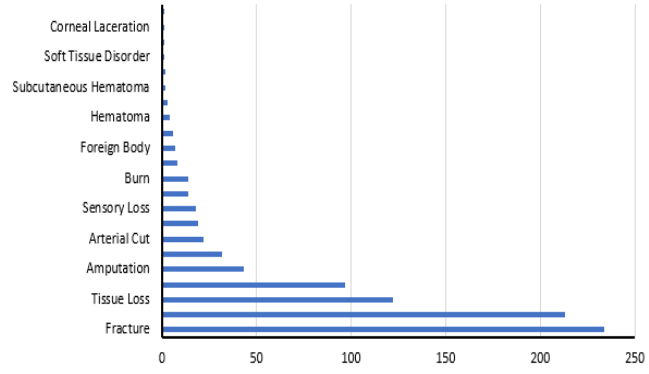


**Figure 6.** Plastic surgery consultations by type of injury.

In the distribution of the mechanisms of injuries requiring plastic surgery consultation in the emergency department, the most commonly observed mechanisms of injury were as follows: Falls (17.3%, n = 150) — observed as the most common cause of injury. Traffic accidents (12.9%, n = 112) and cuts from garden shears, axes, and knives (10.3%, n = 89) were also frequently encountered. Gunshot wounds (2.3%, n = 20), head trauma (2.6%, n = 23), and incidents such as insect bites, human bites, and explosions were observed at low rates of 0.1% (Figure 7).

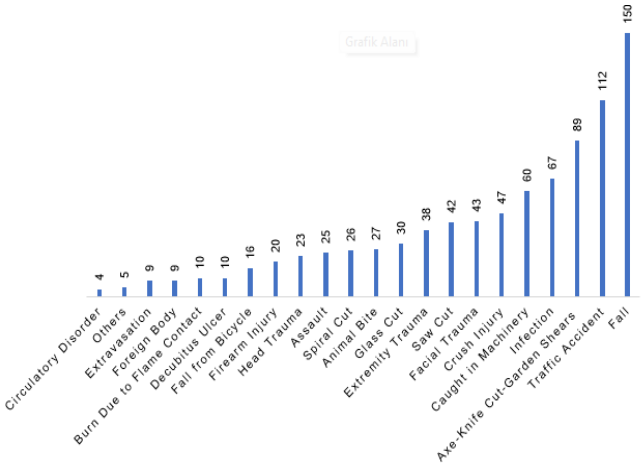


**Figure 7.** Plastic surgery consultations according to the mechanism of formation.

Among the patients evaluated, the majority received a single plastic surgery consultation (n = 450, 52%). Additionally, 20.8% (n = 180) of the patients required two consultations.Consultations involving three different specialties were recorded in 12.3% (n = 107) of the cases (Table 1).

**Table 1. Distribution of plastic surgery consultations by number of consultations**

| Consultation Count | Frequency | (%) |
|---|---|---|
| 1 | 450 | 52 |
| 2 | 180 | 20.8 |
| 3 | 107 | 12.3 |
| 4 | 48 | 5.5 |
| 5 and more | 79 | 9.1 |
| Total | 864 | 100 |

When examining the types of interventions applied to patients after plastic surgery consultations in the emergency department, the most frequently performed intervention was suturing, which constituted 80.1% of the cases (n = 692). Patients requiring surgery accounted for 13.9% (n = 120) (Figure 8).

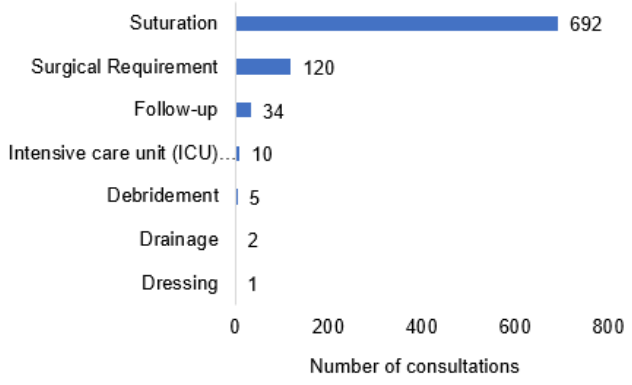


**Figure 8.** Analysis of plastic surgery consultations by type of intervention.

When we examined the outcomes of patients who underwent plastic surgery consultation in the emergency department, it was found that the majority of patients were discharged (n = 524, 60.6%). Hospitalization was required in 22.5% of cases (n = 195), while 16.3% (n = 141) were transferred to another hospital (Figure 9).

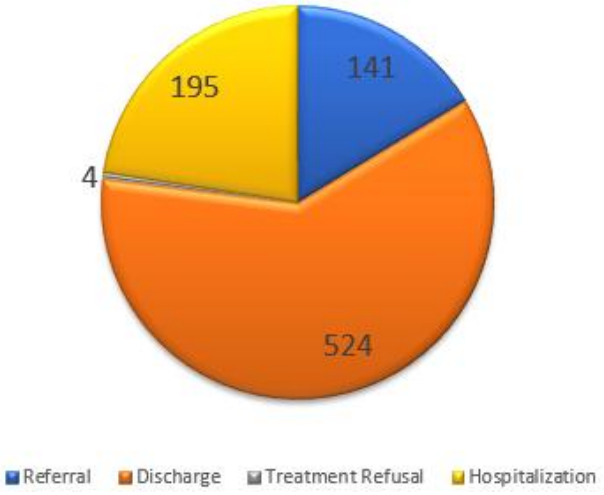


**Figure 9.** Analysis of patient outcomes after plastic surgery consultation.

When examining which clinics the patients were admitted to after at least one plastic surgery consultation, it was found that there were 195 patient admissions. The majority of these patients were admitted to the Plastic, Reconstructive, and Aesthetic Surgery clinic (n = 107, 55.1%). Other frequently admitted departments included the Orthopedics and Traumatology clinic (n = 23, 11.3%) and the Neurosurgery clinic (n = 23, 11.3%) (Figure 10).

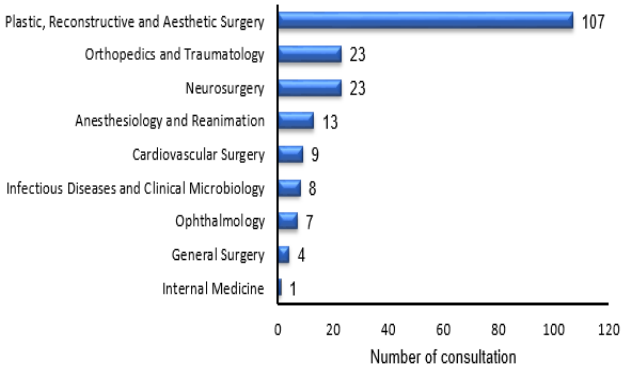


**Figure 10.** Analysis of units admitted after consultation.

## DISCUSSION

The findings obtained in this study are largely consistent with the literature data on plastic surgery consultations in the emergency department, but some differences are also noteworthy. The fact that 73% of the patients were male is consistent with previous studies reporting that the male gender predominates in trauma-related plastic surgery consultations. In a similar manner, Topkara and colleagues reported that 70.8% of the cases in their retrospective analysis at the university hospital were male (9). It shows that patients requiring plastic surgery are relatively more male-dominated. The average age of the patients in our series (27.5 years) indicates that patients requiring plastic surgery consultation are concentrated in the young adult group, which aligns with the findings of similar studies in the literature (7). In a study conducted by van Leerdam and colleagues, the average age of patients presenting with hand and wrist injuries was found to be 33, which is consistent with our study (8).

Some differences have been observed in terms of injury mechanisms and types (5). In our study, falls were identified as the most common cause of injuries (17.3%), followed by traffic accidents (12.9%) and injuries from cutting tools (10.3%). However, in the study by Topkara and colleagues, injuries caused by sharp objects were reported as the most common cause (31.7%), followed by work accidents and traffic accidents (9). In one study, the most common diagnoses (52%) were burns and hand trauma (10). This difference may be due to the sociodemographic characteristics of the region where the study was conducted or differences in definitions.

In terms of timing, our findings are partially consistent with the literature. In our study, it was observed that plastic surgery consultations most frequently occurred during the summer months (especially July–August). Based on the days of the week, consultations peaked on Fridays and Mondays. This finding suggests that injuries occurring on the first working day after the weekend and those entering the weekend are reflected in the emergency department. A previous study conducted an hourly evaluation and reported that consultation requests were most frequent between 20:00–24:00 hours (43.4%) (9).

The clinical results we obtained (discharge, admission, transfer) are also close to the rates reported in the literature. In our study, 60.6% of the patients who received plastic surgery consultation were discharged from the emergency department, 22.5% were hospitalized, and 16.3% were referred to another center. In the study by Dönmez et al., which covered all emergency department consultations, it was reported that 58.6% of the patients were discharged, 27.9% were admitted, and 9.1% were referred (11). Only a subset of patients required escalation to the operating theater for procedures under general anesthesia (such as replantations or multi-tendon repairs), highlighting that timely involvement of plastic surgeons in the emergency department can definitively treat many injuries on site (12).

The high referral rate (16.3%) in our center compared to other studies may be due to the referral of cases requiring advanced microsurgery or situations like burns that necessitate specialized centers. One study showed that approximately three-quarters of the transfers for plastic surgery consultation were found to be unnecessary; patients could have been treated in that center (13). Additionally, a significant increasing trend has been observed in the distribution of consultations over the years: while only 3.2% of all plastic surgery consultations occurred in 2020, this rate reached 41.7% in 2024. In the literature, there are reports of a decrease in trauma admissions in 2020 due to pandemic-related restrictions, followed by an increase in subsequent years with normalization. Our findings indicate that the demand for plastic surgery

consultations has significantly increased in the post-pandemic period.

Compared to the existing literature, our study presents data that align with general trends in terms of demographic characteristics, causes of injuries, and outcomes, while also showing some institution-specific differences. Understanding these differences is important for each center to be able to make adjustments according to its own needs. In the visible parts of the body and cuts in the facial area, the patient is requested by the plastic surgery physician to suture these cuts. However, it does not mean that every cut case will be sutured by a plastic surgeon. When the plastic surgery physician does not evaluate the existing incision as a special incision in the consultation note, the attending physician performs the suturing (14).

Avoiding unnecessary consults is an area for improvement; recent innovations in telemedicine and e-consultation support this goal. For example, a 2025 study of electronic consultations (eConsults) showed that remote specialist advice was able to avert about 32% of in-person plastic surgery referrals in non-emergency settings (15). Early evidence suggests that such telehealth adjuncts can facilitate timely input and reduce unnecessary in-person evaluations (16).

The identification of periods when consultation requests peak will serve as a guide for clinical workforce planning (17). It has been determined that plastic surgery consultations increase, especially during the summer months and on certain days of the week (Monday and Friday). This situation indicates that hospital administrations should ensure the availability of experienced plastic surgeons and support teams during these time periods.

Our study provides important messages in the context of injury types and the interventions applied. In the majority of cases, the intervention performed was suturing, which accounted for 80.1% of the cases. This finding shows that a significant portion of the wounds presenting to the emergency department can be appropriately treated with primary repair. However, although suturing may seem like a simple procedure, it can require plastic surgery expertise in terms of the aesthetic and functional outcomes of the cases. Therefore, the role of plastic surgery in managing such injuries in the emergency department is critical. Our findings support that, in addition to providing basic wound care, emergency medicine physicians should collaborate with plastic surgery when necessary for the benefit of the patient. The proportion of patients requiring surgical intervention in our study (13.9%) is not insignificant. The need for surgery in one out of every ten patients underlines the need for coordination to ensure that these patients are operated on without delay (13).

The results of our study also highlight the importance of a multidisciplinary approach. In only 52% of the patients who received a plastic surgery consultation, a single specialty (plastic surgery) consultation was sufficient, while in the remaining 48%, consultations with additional specialties (orthopedics, neurosurgery, etc.) were also necessary. This finding indicates that approximately half of the trauma patients evaluated in the emergency department have multiple injuries or require care from multiple specialties. Especially in cases of high-energy trauma or complex injuries, plastic surgeons have needed to work in coordination with specialties such as orthopedics and neurosurgery. Indeed, the fact that 55.1% of the 195 patients admitted to the hospital were placed in the Plastic Surgery clinic, 11.3% in the Orthopedics clinic, and 11.3% in the Neurosurgery clinic confirms this multidisciplinary management.

In light of this data, it can be said that trauma management in the emergency department is a team effort, and plastic surgery has become an integral part of this team. In clinical practice, especially in hand injuries, facial traumas, or soft tissue losses, early assessment by plastic surgeons can improve patient outcomes. Additionally, the transfer of some patients (16.3%) to advanced centers serves as a reminder that not every institution can handle every type of complex case, and the transfer chain between regional trauma centers is vital. This high referral rate highlights the importance of collaboration with appropriate centers for cases requiring subspecialty expertise that are not available in our province or hospital.

The study has some limitations. First of all, because it is a study with a retrospective design, the data were compiled from existing patient records. This situation brings the potential for deficiencies or errors in the record system to reflect in the results. For example, factors such as some minor injury cases not being recorded or consultation request forms being incompletely filled out can lead to deviations from the actual frequencies. The research was conducted at a single center (a tertiary hospital). The fact that it is a single-center study may limit the direct generalization of the obtained results to different types of hospitals or regions. The low number of consultations in 2020, which coincided with the beginning of our study period, was likely affected by pandemic-related restrictions and a decrease in hospital admissions. In the post-2020 period, an increase in both trauma cases and consultation requests has been observed. This fluctuation may affect our trend analysis, but it might not reflect the distribution under normal conditions. Therefore, it would be more accurate to compare the data obtained during a more stable period when the pandemic's impact has subsided.

## CONCLUSION

This study provides important insights into plastic surgery consultations in the emergency department and their impact on patient care. Plastic surgery consultations are the cornerstone of comprehensive emergency care for patients and contribute significantly to both functional and cosmetic outcomes after injury. Our study confirms that when plastic surgeons are rapidly involved, most patients receive definitive care without the need for hospitalization, and those requiring surgery are effectively managed. We conclude that continuous improvement in consultation processes will enhance patient management and overall care quality. Streamlining consultation workflows and

adopting innovative consultation methods will help maximize the life- and limb-saving impact of plastic surgery in the emergency department and ensure that severe cases are efficiently directed to the operating theatre.

*Financial disclosures: The authors declared that this study has received no financial support.*

*Conflict of interest: The authors have no conflicts of interest to declare.*

*Ethical approval: This study was conducted in accordance with the Helsinki Declaration, and approval was obtained from the Non-Interventional Research Ethics Committee of Balıkesir University (Date: 07/01/2025; Decision No: 2025/25).*

*Acknowledgement: None*

*Author Contributions: Conceptualization, R.K.; methodology, R.K., G.T., S.S., B.Ç., M.F., E.I., and E.K.; data curation, R.K., G.T., S.S., B.Ç., M.F., E.I., and E.K.; formal analysis, R.K., G.T., S.S., B.Ç., M.F., E.I., and E.K.; Resources, R.K., G.T., S.S., B.Ç., M.F., E.I., and E.K.; writing—original draft preparation, R.K., writing—review and editing, G.T., S.S., B.Ç., M.F., E.I., and E.K. All authors have read and agreed to the published version of the manuscript.*

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