ORIGINAL ARTICLE

A new scoring system for the prediction of mortality in Fournier's gangrene: The Eğin score

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ABSTRACT

BACKGROUND: This study aimed to investigate the factors affecting mortality in Fournier's gangrene (FG) and to establish a simplified scoring system that enables practical bedside assessment for clinicians.

METHODS: The medical records of 130 patients treated for FG between February 2012 and January 2025 were retrospectively reviewed. Survivors (Group 1, n=101) were analyzed separately from non-survivors (Group 2, n=29). The collected data included sex, age, infection spread score, Uludag Fournier's Gangrene Severity Index (UFGSI), Fournier's Gangrene Severity Index (FGSI) scores, source of infection, presence of diabetes mellitus (DM), obesity, and other comorbidities. Additional variables included the presence of a diverting stoma, duration of vacuum-assisted closure (VAC) therapy, length of hospital stay, intensive care period (ICP), and isolated bacterial species. Associations between mortality and factors such as age, infection spread score, comorbidities other than DM and obesity (CADO), and ICP were examined.

RESULTS: A significant difference was observed between the groups in terms of age and age score. The infection spread score was significantly higher in Group 2. While 60 patients in Group 1 had CADO, all patients in Group 2 had CADO, demonstrating a statistically significant difference. ICP was also significantly longer among non-survivors. Receiver operating characteristic (ROC) analysis demonstrated that the Eğin score had a sensitivity of 96.6% and a specificity of 63.4% at a threshold value of >3.

CONCLUSION: Age, infection spread score, CADO, and ICP, which constitute the Eğin score, demonstrated significant differences between survivors and non-survivors. These parameters are crucial for predicting mortality in patients with FG.

Keywords: Fournier's gangrene; Fournier's Gangrene Severity Index; Uludag Fournier's Gangrene Severity Index; mortality; vacuum-assisted closure.

INTRODUCTION

Fournier's gangrene (FG) is a polymicrobial, necrotizing infection affecting the anorectal, perineal, and genitourinary regions. It progresses rapidly—at a rate of up to 2 cm per hour—and is associated with high morbidity and mortality rates. As a form of synergistic necrotizing fasciitis, FG causes thrombosis of the subcutaneous vessels, ultimately leading to gangrene of the overlying skin. Because delays in diagnosis and treatment can be fatal, early recognition of symptoms is critical. Prompt and aggressive surgical debridement is essential for management.

The disease often presents abruptly with severe pain and rapidly spreads from the fascia of the anterior abdominal wall to the muscles of the gluteal and femoral regions. FG was first described in 1883 by Jean Alfred Fournier, a French dermatologist and venereologist. Clinical presentation varies depending on the stage at which the patient seeks medical attention. In the early stage, signs may include localized induration, erythema, and swelling in the pelvic region. In advanced stages, sepsis and systemic inflammatory response syndrome may develop. Common clinical findings include localized erythema, hyperemia, pruritus, fever, and scrotal swelling. Early manifestations may be subtle, making diagnosis challenging.

Cite this article as: Eğin S. A new scoring system for the prediction of mortality in Fournier's gangrene: The Eğin score . Ulus Travma Acil Cerrahi Derg 2026;32:270-278.

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Ulus Travma Acil Cerrahi Derg 2026;32(3):270-278 DOI: 10.14744/tjtes.2025.55901

Submitted: 11.06.2025 Revised: 23.12.2025 Accepted: 30.12.2025 Published: 10.03.2026

However, due to the aggressive nature of the disease, more pronounced symptoms, such as cyanosis, malodorous discharge, fecaloid odor, and skin necrosis, can rapidly emerge.[1]

Although FG can occur at any age and in both sexes, it is most prevalent in men between 30 and 60 years of age.[2] Advanced age is a recognized risk factor for the development of FG.[3] The disease is frequently associated with comorbid conditions such as diabetes mellitus (DM), alcoholism, atherosclerosis, peripheral arterial disease, malnutrition, prostate cancer, Human Immunodeficiency Virus (HIV) infection, leukemia, and liver disease.[4] The risk and severity of FG increase in patients with multiple comorbidities.[5]

Fournier's gangrene typically results from synergistic infections involving both aerobic and anaerobic bacteria. Although substantial progress has been made in understanding the etiology and pathophysiology of the disease, mortality rates remain high, ranging from 3% to 45%.[6] Current treatment strategies include hemodynamic stabilization, prompt and aggressive surgical debridement, removal of necrotic tissue, and administration of broad-spectrum intravenous antibiotics.[7] Although recent studies have highlighted the potential benefits of hyperbaric oxygen therapy, its use remains limited due to logistical challenges related to patient transfer and restricted access to specialized treatment facilities.[8]

Several scoring systems have been developed to assess the severity of FG at the time of admission. The Fournier's Gangrene Severity Index (FGSI), introduced by Laor et al. in 1995, was designed to predict mortality.[9] It incorporates nine clinical and laboratory parameters: heart rate, respiratory rate, body temperature, sodium, potassium, creatinine, leukocyte count, hematocrit, and bicarbonate levels. Each parameter is scored from 0 to 4, and the total score reflects disease severity.

In 2010, Yilmazlar et al. developed the Uludag Fournier's Gangrene Severity Index (UFGSI), which incorporates patient age and disease extent into the original FGSI model.[10] They demonstrated that the UFGSI had greater predictive power than the FGSI alone. Lin et al. later proposed a simplified version (SFGSI), including only three variables—serum potassium, creatinine, and hematocrit—to improve usability while maintaining predictive accuracy.[11] However, many of these scoring systems are still too complex for routine bedside application. Clinicians require a simpler and more practical tool.

This study aims to identify mortality-related risk factors in FG and to propose a novel, straightforward scoring system that can be easily applied at the bedside. We hypothesize that age over 60 years, a higher infection spread score, the presence of comorbidities other than DM and obesity (CADO), and a prolonged intensive care period (ICP) are predictors of mortality in patients with FG. The Eğin score, developed based on these variables, is expected to correlate significantly with increased mortality when exceeding a defined threshold.

MATERIALS AND METHODS

A total of 130 patients with FG, aged between 30 and 90 years, were included in the study. Among them, 123 patients received vacuum-assisted closure (VAC) therapy following aggressive surgical debridement, whereas seven patients did not. Patients who were admitted with a preliminary diagnosis of FG but in whom fascial, subcutaneous, or skin necrosis was not detected during debridement were excluded from the study.

Ethical approval was obtained from the Ethics Committee of Prof. Dr. Cemil Taşcıoğlu City Hospital, Istanbul, Türkiye (Approval No: 117, Date: 24.03.2025). All procedures were conducted in accordance with ethical standards and the principles of the Declaration of Helsinki. Data from 130 patients treated for FG between February 2012 and January 2025 at the General Surgery Clinic of Istanbul Prof. Dr. Cemil Taşcıoğlu City Hospital were analyzed. Although the cases were prospectively recorded, the study design was retrospective. Patients were divided into survivors (Group 1, n=101) and non-survivors (Group 2, n=29). The collected variables included sex, age, extent of infection, UFGSI, and FGSI scores, source of infection, presence of diabetes mellitus, obesity, and other comorbidities, presence of a diverting stoma, duration of VAC therapy (days), length of hospital stay (LOHS), intensive care period, and isolated bacterial species.

Based on these data, factors influencing mortality in patients with FG were analyzed. During the surgical management of the cases, four parameters closely associated with mortality were identified:

1. Age and extent of infection have been well established as significant factors in previous studies and were selected as the first two components of the Eğin scoring system.

2. Comorbidities other than DM and obesity (CADO)—including heart failure, chronic obstructive pulmonary disease, hypertension, and malignancies—were observed to correlate with increased mortality. Therefore, the presence of CADO was selected as the third parameter.

3. ICP duration was determined to be a significant predictor of mortality; longer stays were associated with worse outcomes, making it the fourth parameter in the Eğin score.

The scoring criteria were defined as follows:

• Age: <60 years=0 points; ≥60 years=1 point.

• Extent of infection: Limited to the urogenital and/or anorectal region=1 point; limited to the pelvis=2 points; extension beyond the pelvis=6 points.

• CADO: Absent=0 points; present=1 point.

• ICP (days): Below the statistically determined threshold=0 points; above the threshold=1 point.

The diagnosis of FG was based on a physical examination. In suspected cases, soft tissue ultrasonography or pelvic com-

Table 1. Baseline characteristics and clinical variables according to mortality status

	Group 1 (Survivors)	Group 2 (Non-survivors)	p
Sex			
Female	34 (33.7%)	17 (58.6%)	**0.015**
Male	67 (66.3%)	12 (41.4%)	
Age category			
<60 years	65 (64.4%)	7 (24.1%)	**<0.001**
≥60 years	36 (35.6%)	22 (75.9%)	
Infection source			
Urogenital	40 (39.6%)	20 (69.0%)	**0.005**
Anorectal	61 (60.4%)	9 (31.0%)	
Diabetes mellitus (DM)			
No	28 (27.7%)	5 (17.2%)	0.253
Yes	73 (72.3%)	24 (82.8%)	
Comorbidities other than DM and obesity			
No	41 (40.6%)	0 (0.0%)	**<0.001**
Yes	60 (59.4%)	29 (100%)	
Obesity			
No	68 (67.3%)	14 (48.3%)	0.061
Yes	33 (32.7%)	15 (51.7%)	
Isolated bacterial type			
None	54 (53.5%)	12 (41.4%)	0.512
Escherichia coli	38 (37.6%)	14 (48.3%)	
Other organisms	9 (8.9%)	3 (10.3%)	
Definitive closure method			
None	8 (7.9%)	25 (86.2%)	**<0.001**
Primary closure	29 (28.7%)	2 (6.9%)	
Split-thickness skin graft	37 (36.6%)	2 (6.9%)	
V-Y flap	20 (19.8%)	0 (0.0%)	
Rotation flap	7 (6.9%)	0 (0.0%)	
Stoma formation			
No	87 (86.1%)	24 (82.8%)	0.766
Yes	14 (13.9%)	5 (17.2%)	

puted tomography (CT) was performed to detect subcutaneous gas. Upon admission to the emergency department, patients were kept nil per os, and intravenous fluid resuscitation along with broad-spectrum antibiotics was initiated. The surgical team proceeded promptly with extensive debridement to remove necrotic tissue, prevent further spread of infection, and reduce systemic toxicity. Surgical interventions were repeated at 24-48 hour intervals until viable, well-vascularized tissue was achieved and the infection was controlled.

Although there is no universal consensus regarding the use of diverting colostomy, it is often recommended in cases with extensive sphincter damage or large perineal wounds. [12] The decision to perform a colostomy was generally made during the second or third debridement, when inflammation had subsided and the sphincter complex could be more accurately evaluated.

Following aggressive debridement, substantial tissue loss was observed in all patients, making wound management a critical component of FG treatment. VAC therapy, which has gained increasing popularity in recent years, was applied in 123 pa-

Table 2. Mean values and statistical significance of the characteristics across groups

	Group 1 (Survivors)	Group 2 (Non-survivors)	p**
Age (years)	53.97±11.57	68.28±13.15	<**0.001***
Temperature (°C)	36.92±0.57	36.94±0.94	0.339
Heart rate (/min)	0.22±0.63	0.76±0.99	**0.001**
Respiratory rate (/min)	22.79±2.02	24.83±4.52	**0.012**
Serum potassium (mmol/L)	4.21±0.7	4.15±1.01	0.597*
Serum sodium (mmol/L)	134.42±4.95	133.21±7.78	0.439
Serum creatinine (mg/100 mL)	1.21±1.00	1.54±1.35	0.597
Hematocrit (%)	36.56±6.11	31.82±5.54	<**0.001***
White blood cell count (×1000/mm^3)	20.16±8.48	21.19±8.80	0.447
Serum bicarbonate (venous, mmol/L)	22.88±4.83	21.75±7.12	**0.012**
Urea (mg/100 mL)	50.50±32.04	87.24±68.46	**0.002**
VAC therapy duration (days)	26.72±16.61	27.83±20.43	0.942
Length of hospital stay (days)	40.66±23.15	40.48±25.33	0.652
Intensive care period (days)	3.68±8.54	25.07±21.55	<**0.001**

*Student's t-test; **Mann–Whitney U test.

tients to promote granulation formation and facilitate wound healing.[13] VAC dressings were changed every 3-4 days. Once adequate granulation tissue had developed, definitive wound closure was achieved using delayed primary suture, V–Y advancement flaps, or-most commonly-split-thickness skin grafts for larger defects.

Among the seven patients who did not receive VAC therapy, five had small, localized defects. Of these, three underwent primary closure after two or more debridements, and two were managed with healing by secondary intention. Of the remaining two patients, one died due to hemorrhage from the open wound, and the other died as a result of malignant invasion of the wound bed.

Statistical Analysis

Statistical analyses were performed using SPSS for Windows, version 15.0 (SPSS Inc., Chicago, IL, USA). Descriptive statistics were expressed as numbers and percentages for categorical variables and as mean±standard deviation for continuous variables. Group proportions were compared using the chi-square test. For continuous variables, comparisons between two independent groups were conducted using the Student's t-test when the assumption of normality was satisfied and the Mann–Whitney U test when it was not. Receiver operating characteristic (ROC) curve analysis was performed to determine cut-off values. A p-value <0.05 was considered statistically significant.

RESULTS

A total of 130 patients were included in the study, comprising 79 males (60.8%) and 51 females (39.2%). The overall mortality rate was 22.3% (n=29). A statistically significant difference in sex distribution was observed between Group 1 (survivors) and Group 2 (non-survivors) (Table 1).

The mean age of patients in Group 1 was 53.97±11.57 years, which was significantly lower than that of Group 2 (68.28±13.15 years; p<0.001) (Tables 2 and 4). A significant difference was also identified in the age score within the UFGSI parameters (p<0.001) (Tables 3 and 4). The infection spread score was significantly higher in Group 2 (p<0.001) (Tables 3 and 4).

Hematocrit and serum bicarbonate levels (components of both the UFGSI and FGSI) were significantly lower in Group 2 (p<0.001 and p=0.015, respectively) (Table 2). Heart rate and respiratory rate were significantly higher in Group 2 (p=0.001 and p=0.012, respectively) (Table 2). Correspondingly, the scores for temperature, heart rate, respiratory rate, hematocrit, and bicarbonate were significantly elevated in Group 2 (p=0.002, p=0.002, p=0.003, p=0.016, and p<0.001, respectively) (Table 3).

Diabetes mellitus was present in 73 patients in Group 1 and 24 patients in Group 2, with no statistically significant difference between the groups (Table 1). Obesity was identified in 33 patients with DM in Group 1 and in 15 patients in Group 2; again, no significant difference was observed (Table

Table 3. Distribution of scores and statistical significance between groups based on the FGSI and UFGSI scoring systems

		Group 1 (Survivors)	Group 2 (Non-survivors)	p
Temperature score				
36-38.4°C	0	96	22	**0.002**
34-35.9/38.5-38.9°C	1	4	7	
30-31.9/39-40.9°C	3	1	0	
Heart rate score				
70-109	0	90	18	**0.002**
55-69/110-139	2	11	11	
Respiratory rate score				
12-24	0	93	20	**0.003**
10-11/25-34	1	8	9	
Serum potassium score				
3-3.4 mmol/L	0	24	4	0.208
2.5-2.9/3.5-5.4 mmol/L	1	72	21	
5.5-5.9 mmol/L	2	4	3	
<2.5/>6-6.9 mmol/L	4	1	1	
Serum sodium score				
130-149 mmol/L	0	81	19	0.075
120-129/155-159 mmol/L	2	20	9	
110-119/160-179 mmol/L	3	0	1	
Serum creatinine score				
0.6-1.4 mg/100 mL	0	70	13	0.029
<0.6/1.5-1.9 mg/100 mL	2	23	8	
2-3.4 mg/100 mL	3	6	6	
>3.5 mg/100 mL	4	2	2	
Hematocrit score				
30-45%	0	81	17	**0.016**
46-49%	1	4	0	
20-29/50-59%	2	15	12	
<20/>60%	4	1	0	
White blood cell score				
3-14.9 ×1000/mm^3	0	28	6	0.663
15-19.9 ×1000/mm^3	1	29	8	
1-2.9/20-39.9 ×1000/mm^3	2	41	13	
<1/>40 ×1000/mm^3	4	3	2	
Serum bicarbonate score				
22-31 mmol/L	0	73	8	**<0.001**
32-40 mmol/L	1	4	3	
18-21 mmol/L	2	11	12	
15-17/41-51 mmol/L	3	9	3	
<15/>52 mmol/L	4	4	3	
Infection spread score				
Limited to urogenital/anorectal region	1	41	5	**<0.001**
Limited to pelvis	2	43	9	
Extension beyond pelvis	6	17	15	
Age score				
<60 years	0	65	7	**<0.001**
≥60 years	1	36	22	

Table 4. Distribution of age, comorbidities other than diabetes mellitus (DM) and obesity, infection spread score, and intensive care unit stay between the groups

	Group 1 (Survivors)	Group 2 (Non-survivors)	p**
Age (years)	53.97±11.57	68.28±13.15	<**0.001**
Age <60 years (Score 0)	65 (64.4%)	7 (24.1%)	<**0.001**
Age >60 years (Score 1)	36 (35.6%)	22 (75.9%)	
Comorbidities other than DM and obesity			
No	41 (40.6%)	0 (0.0%)	<**0.001**
Yes	60 (59.4%)	29 (100%)	
Infection spread score			
Limited to urogenital/anorectal region (Score 1)	41	5	<**0.001**
Limited to pelvis (Score 2)	43	9	
Extension beyond pelvis (Score 6)	17	15	
Intensive care period (days)	3.68±8.54	25.07±21.55	<**0.001**

Table 5. Univariate analysis of risk factors associated with mortality

	p	OR	95% CI	
Age				
(Ref. <60 years)	<0.001	5.675	2.21	14.57
Infection spread score				
(Ref. Limited to urogenital/anorectal region)	0.001			
Limited to pelvis	0.367	1.716	0.531	5.552
Extension beyond pelvis	0.001	7.235	2.27	23.065
Infection spread score				
(Ref. Limited to pelvis)	0.001			
Limited to urogenital/anorectal region	0.367	0.583	0.18	1.885
Extension beyond pelvis	0.005	4.216	1.552	11.449
Intensive care period (Ref. ≤3 days)				
>3 days	<0.001	43.312	9.591	195.6

1). However, comorbidities other than DM and obesity were present in 60 patients in Group 1 and in all 29 patients in Group 2, demonstrating a significant association with mortality (p<0.001) (Tables 1 and 4). LOHS did not differ significantly between the groups (Table 2).

All 74 patients who developed respiratory failure required mechanical ventilation in the intensive care unit (ICU); 28 of these patients died. The ICP was significantly longer in Group 2 (p<0.001) (Tables 2 and 4).

Bacterial cultures from wound infections were obtained in 64 patients, including 47 in Group 1 and 17 in Group 2. The most frequently isolated organism was Escherichia coli (n=52). Other identified pathogens included Acinetobacter, Streptococcus, Staphylococcus aureus, Pseudomonas, and Klebsiella species, isolated in 12 patients. No statistically significant difference was observed between the groups with respect to the distribution of bacterial species (Table 1).

Age and age score, infection spread score, CADO, and duration of ICP—the components of the Eğin score—demonstrated significant differences between the groups (Table 4). In the univariate analysis, significant risk factors associated with mortality included age, infection spread score, and duration of ICP. Patients older than 60 years had a significantly increased risk of mortality (odds ratio [OR]=5.675; 95% confidence interval [CI]: 2.21–14.57; p<0.001) (Table 5). When the infection spread score was evaluated, the risk of

Table 6. Predictive performance of UFGSI, FGSI, and Eğin score for mortality in patients with Fournier's gangrene

	Threshold 95% CI	Sensitivity	Specificity	Likelihood Ratio	(+) Predictive Value	(-) Predictive Value
UFGSI	≥8	96.4%	61.8%	2.52	41.8%	98.4%
FGSI	≥6	82.8%	69.3%	2.70	43.6%	93.3%
Eğin Score	>3	96.6%	63.4%	2.64	43.1%	98.5%

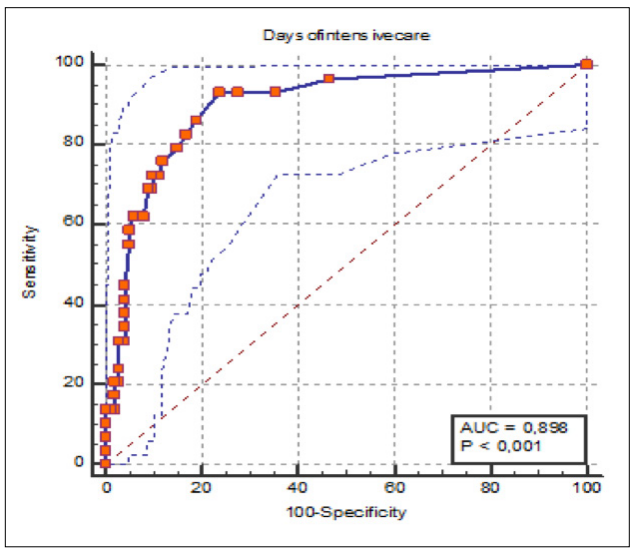

Figure 1. Receiver operating characteristic (ROC) curve or intensive care period duration at a threshold value of > 3 days.

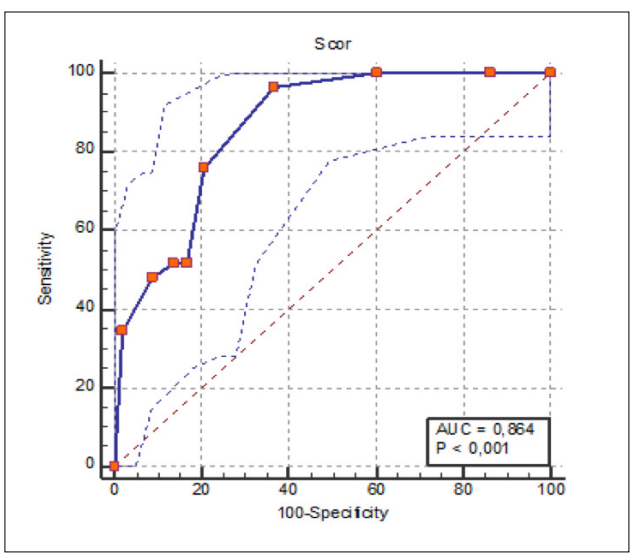

Figure 2. Receiver operating characteristic (ROC) curve of the Eğin score (threshold value: >3).

mortality was significantly higher in patients with infection extending beyond the pelvic boundaries compared with those with infection confined to the urogenital or anorectal regions (OR=7.235; 95% CI: 2.27–23.07; p=0.001) (Table 5). Mortality risk was also significantly elevated in patients with an ICP duration longer than three days (OR=43.312; 95% CI: 9.591–195.6; p<0.001) (Table 5). The presence of diabetes mellitus, obesity, and CADO did not reach statistical significance in the univariate analysis.

In the multivariate analysis, an ICP duration longer than three days (OR=17.505; 95% CI: 3.419–89.611; p=0.001) was identified as an independent predictor of mortality. This finding highlights the critical importance of early recognition and appropriate management of patients requiring prolonged intensive care. Age, obesity, DM, CADO, and infection spread score were not statistically significant in the multivariate model.

ROC analysis of ICP duration demonstrated a sensitivity of 93.1% and a specificity of 76.2% at a cut-off value of >3. The area under the ROC curve (AUC) for ICP days was 0.898 (95% CI: 0.833–0.944) (Fig. 1).

The Eğin score demonstrated a sensitivity of 96.6% and a specificity of 63.4% at a threshold value of >3. The AUC for the Eğin score was 0.864 (95% CI: 0.792–0.917) (Fig. 2). The threshold values, 95% CIs, sensitivity, specificity, odds ratios, positive predictive values, and negative predictive values for all three scoring systems are presented in Table 6.

DISCUSSION

Ongoing debates persist regarding the accurate prediction of mortality in FG. Although several studies have identified contributing factors, the issue remains complex. Among these factors, age has consistently been reported as a significant determinant of mortality.[10,14,15] In line with previous findings, our study demonstrated a significant difference in outcomes between patients older and younger than 60 years (Tables 1–4), with advanced age emerging as an independent predictor of mortality.

Another important finding was the significantly higher infection spread score observed in Group 2 (Tables 3 and 4). Similar to the studies by Yılmazlar et al.,[6,10] our results confirmed a strong correlation between the extent of infection and mortality, reinforcing this parameter as an independent predictive factor.

Numerous previous investigations have examined the impact of comorbidities on FG-related mortality. Although diabetes mellitus is frequently observed in patients with FG, and was present in 73 patients in Group 1 and 24 patients in Group 2

(Table 1), no significant association with mortality was identified in this study. Consistent with the literature, DM alone appears insufficient as a predictor of mortality.[10,14,15] However, while DM and obesity alone were not associated with increased mortality in our cohort, other comorbidities, such as malignancy, heart failure, and respiratory failure, were found to significantly influence mortality (Tables 1 and 4). Therefore, the presence of CADO was identified as a predictive factor.

Length of hospital stay did not differ significantly between the groups; however, the duration of the intensive care period was significantly longer among non-survivors (Tables 2 and 4). An ICP duration longer than 3 days emerged as an independent predictor of mortality in the multivariate regression analysis, rather than merely reflecting disease outcome. This finding, which has not been widely emphasized in the literature, represents an important contribution of the present study.

Although FGSI and UFGSI are widely used tools for predicting mortality in FG, with high reported sensitivity and specificity, their complexity limits their practical use in clinical settings. There remains a need for simpler and more user-friendly predictive models. In our study, age, infection spread score, CADO, and ICP duration—all components of the newly developed Eğin score—differed significantly between survivors and non-survivors (Table 4). In the univariate analysis, age, infection spread score, and ICP duration were identified as significant risk factors for mortality. In contrast, multivariate analysis demonstrated that only ICP duration was an independent predictor of mortality. Among these variables, ICP duration is potentially modifiable. Early diagnosis and prompt, aggressive debridement may limit infection spread, thereby reducing the infection spread score and potentially improving survival. In contrast, age and the presence of CADO are non-modifiable factors but remain essential for risk stratification.

The Eğin score demonstrated a sensitivity of 96.6% and a specificity of 63.4% at a threshold value of >3. In comparison, the reported sensitivities for UFGSI and FGSI were 96.4% and 82.8%, with specificities of 61.8% and 69.3%, respectively. The corresponding threshold values were ≥8 for UFGSI and ≥6 for FGSI. Although the Eğin score showed slightly lower specificity, its comparable sensitivity and simplified structure suggest that it may serve as a practical and reliable tool for bedside use.

Yılmazlar et al.[10] reported a sensitivity of 94% and a specificity of 81% for UFGSI, while Roghmann et al.[14] reported sensitivity and specificity values of 85% and 67%, respectively. In the literature, FGSI sensitivity and specificity values range from 65-100% and 67-88%, respectively. Recently, Çomçalı et al.[16] introduced the Fournier's Gangrene Mortality Prediction Model (FGMPM), which incorporates components of the FGSI, UFGSI, and the Age-Adjusted Charlson Comorbidity Index (ACCI), along with variables such as ICU admission, inotropic support requirement, and neutrophil-to-lymphocyte ratio. They reported AUC values (95% confidence intervals) of 0.788 for ACCI, 0.893 for UFGSI, 0.874 for FGSI, and 0.995 for FGMPM. Although the FGMPM demonstrated the highest predictive performance, its complexity and inclusion of multiple variables may limit its practicality for bedside use. In their multivariate regression analysis, hypoalbuminemia and the need for positive inotropic support were identified as independent risk factors for mortality. The authors therefore suggested that these two parameters might be more practical for mortality prediction than relying solely on the broader parameters included in the UFGSI and FGSI. They also emphasized that easily identifiable variables may be preferable to time-consuming and complex scoring systems. Similarly, the use of readily calculable parameters, as demonstrated in our study, may provide clinicians with a more practical approach to predicting mortality in patients with Fournier's gangrene.

A 2023 meta-analysis evaluating the performance of scoring systems in predicting mortality in Fournier's gangrene demonstrated a clear association between FGSI/UFGSI scores and mortality risk. However, no standardized cut-off value was identified, and mortality rates varied considerably across studies. Preexisting comorbidities, duration of symptoms, and delays in surgical intervention were identified as potential confounding factors. Most studies included in the meta-analysis were retrospective in design, underscoring the need for studies with larger populations to validate these findings. In that analysis, the UFGSI demonstrated the highest predictive accuracy, followed by the FGSI. Future research is required to externally validate newly proposed scoring systems,[17] and those developed in future studies may play a decisive role in improving mortality prediction.

Fecal diversion via sigmoid loop colostomy was performed in 14 patients in Group 1 and five patients in Group 2 (Table 1). No statistically significant association with mortality was observed. As Ozturk et al.[18] suggested, fecal diversion is not recommended unless there is significant sphincter damage or extensive perineal involvement. Delaying the decision until the second or third debridement allows for better sphincter assessment and improved hemodynamic stabilization. During this period, measures such as administering enemas prior to VAC changes, prescribing a low-fiber diet, and using agents such as loperamide hydrochloride to reduce bowel motility may help minimize the need for defecation. VAC therapy offers advantages over traditional dressings, including fewer dressing changes, reduced pain, and comparable costs, while also accelerating granulation tissue formation and wound healing.

The primary limitation of this study is its retrospective design. Another limitation is that, despite the relatively high number of Fournier's gangrene cases treated at our institution, the study was conducted at a single center. Consequently, the findings reflect the patient population, clinical practices, and treatment protocols of our hospital and may not be fully generalizable to centers with different demographic or clinical characteristics. Therefore, the results should be validated through prospectively designed, multicenter studies. The main strength of this study lies in its homogeneous patient population, with all patients managed according to the same therapeutic protocol.

CONCLUSION

These findings support the study hypothesis and demonstrate that the Eğin score is a strong predictor of mortality in patients with FG. An Eğin score greater than 3 was associated with a significantly increased risk of mortality. Therefore, the Eğin score may serve as a practical and reliable bedside tool for identifying high-risk patients with FG and guiding clinical management strategies aimed at reducing mortality.

Ethics Committee Approval: This study was approved by the University of Health Sciences Istanbul Prof. Dr. Cemil Taşcıoğlu City Hospital Clinical Research Ethics Committee (Date: 24.03.2025, Decision No: 117).

Peer-review: Externally peer-reviewed.

Conflict of Interest: None declared.

Financial Disclosure: The author declared that this study has received no financial support.

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ORİJİNAL ÇALIŞMA - *ÖZ*

Fournier gangreninde mortaliteyi tahmin etmek için yeni bir puanlama sistemi: Eğin Skoru

AMAÇ: Bu çalışmanın amacı Fournier gangreninde (FG) mortaliteyi etkileyen faktörleri araştırmak ve klinisyenler için pratik yatak başı değerlendirmesine olanak tanıyan basitleştirilmiş bir puanlama sistemi oluşturmaktır.

GEREÇ VE YÖNTEM: Şubat 2012 ile Ocak 2025 arasında FG nedeniyle tedavi edilen 130 hastanın tıbbi kayıtları retrospektif olarak incelendi. Sağ kalanlar (Grup 1, n=101) ve sağ kalamayanlar (Grup 2, n=29) iki ayrı grup olarak analiz edildi. Toplanan veriler cinsiyet, yaş, enfeksiyonun yayılma skoru, Uludağ Fournier gangreni şiddet indeksi skoru, Fournier gangreni şiddet indeksi skoru, enfeksiyon kaynağı, diabetes mellitus varlığı, obezite ve diğer eşlik eden hastalıkları içeriyordu. Ek değişkenler arasında saptırıcı stoma varlığı, vakum yardımlı kapatma tedavisinin süresi, hastanede kalış süresi, yoğun bakım süresi ve izole edilmiş bakteri türleri yer alıyordu. Mortalite ile yaş, enfeksiyonun yayılma skoru, diabetes mellitus ve obezite dışındaki komorbiditeler, yoğun bakım süresi gibi faktörler arasındaki ilişkiler incelendi.

BULGULAR: Gruplar arasında yaş ve yaş skoru açısından anlamlı bir fark gözlendi. Enfeksiyonun yayılma skoru Grup 2'de anlamlı olarak daha yüksekti. Grup 1'deki 60 hastada diabetes mellitus ve obezite dışındaki komorbiditeler varken, Grup 2'deki tüm hastalarda vardı ve istatistiksel olarak anlamlı bir fark olduğu görüldü. Yoğun bakım süresi sağ kalamayanlar arasında anlamlı olarak daha yüksekti. Eğin skoru, ROC analizinde >3 eşik değerinde %96.6 duyarlılık ve %63.4 özgüllük gösterdi.

SONUÇ: Eğin skorunu oluşturan yaş, enfeksiyonun yayılma skoru, diabetes mellitus ve obezite dışındaki komorbiditeler, yoğun bakım süresi, sağ kalanlar ve sağ kalamayanlar arasında anlamlı farklılıklar gösterdi. Bu parametreler FG ile ilişkili mortaliteyi tahmin etmede kritik öneme sahiptir.

Anahtar sözcükler: Fournier gangreni; Fournier gangreni şiddet indeksi; mortalite; Uludağ Fournier gangreni şiddet indeksi; vakum yardımlı kapatma.

Ulus Travma Acil Cerrahi Derg 2026;32(3):270-278 DOI: 10.14744/tjtes.2025.55901