ORIGINAL ARTICLE

Validation of the study of the management of blunt chest wall trauma (STUMBL) score for predicting in-hospital complications in patients with blunt chest trauma

Erdal Yılmaz,[1] Rohat Ak,[1] Avni Uygar Seyhan,[1] Recep Demirhan[2]

[1]Department of Emergency Medicine, Kartal Dr. Lütfi Kırdar City Hospital, Istanbul-*Türkiye*
[2]Department of Thoracic Surgery, Kartal Dr. Lütfi Kırdar City Hospital, Istanbul-*Türkiye*

ABSTRACT

BACKGROUND: This study aimed to validate the Study of the Management of Blunt Chest Wall Trauma (STUMBL) score as a prognostic tool for predicting in-hospital complications in patients with blunt chest trauma admitted to a tertiary care hospital emergency department.

METHODS: A retrospective cohort study was conducted between January 2022 and January 2024. Adult patients (≥18 years) diagnosed with blunt thoracic trauma were included. Data were collected from electronic health records. Complications included pulmonary infections, pleural effusion, pneumothorax, intensive care unit (ICU) admission, and prolonged hospital stay. Discriminative performance was evaluated using receiver operating characteristic (ROC) analysis, with calculation of the area under the ROC curve (AUROC) and the area under the precision-recall curve (AUPRC).

RESULTS: A total of 536 patients were included, of whom 150 (28.0%) developed in-hospital complications. Patients with complications had significantly higher STUMBL scores (median 13 vs. 6, p<0.001). The STUMBL score demonstrated strong discriminative ability, with an AUROC of 0.934 (95% confidence interval [CI], 0.909-0.959) and an AUPRC of 0.889 (95% CI: 0.847-0.924). The optimal cutoff value identified was 20.5; for clinical applicability, this was rounded to ≥21, yielding a sensitivity of 84% and a specificity of 89%.

CONCLUSION: The STUMBL score demonstrated excellent performance in predicting in-hospital complications among patients with blunt chest trauma. Its simplicity and strong predictive value suggest it can be effectively incorporated into emergency department clinical decision-making.

Keywords: The Study of the Management of Blunt Chest Wall Trauma (STUMBL) score; blunt chest trauma; risk stratification.

INTRODUCTION

Blunt chest trauma is a common cause of emergency department admissions worldwide, with clinical presentations ranging from minor contusions to life-threatening thoracic injuries. In the United States, it accounts for approximately 15% of trauma-related hospital visits, with significant implications for morbidity and healthcare resource utilization. Recent research has emphasized the importance of simple, accessible clinical predictors in thoracic trauma to support early decision-making and risk stratification.[1,2] Early identification of patients at increased risk of complications is essential for guiding management decisions, allocating resources efficiently, and improving clinical outcomes.[3,4]

Several clinical prediction tools have been developed to aid risk stratification in trauma patients, but few have demonstrated consistent external validity across different populations.

Cite this article as: Yılmaz E, Ak R, Seyhan AU, Demirhan R. Validation of the study of the management of blunt chest wall trauma (STUMBL) score for predicting in-hospital complications in patients with blunt chest trauma. Ulus Travma Acil Cerrahi Derg 2025;31:959-965.

Address for correspondence: Erdal Yılmaz
Department of Emergency Medicine, Kartal Dr. Lütfi Kırdar City Hospital, Istanbul, Türkiye
E-mail: erdalyilmazmd@gmail.com

Ulus Travma Acil Cerrahi Derg 2025;31(10):959-965 DOI: 10.14744/tjtes.2025.72690
Submitted: 30.04.2025 Revised: 09.09.2025 Accepted: 12.09.2025 Published: 07.10.2025

The Study of the Management of Blunt Chest Wall Trauma (STUMBL) score was specifically designed for use in the emergency department, integrating age, rib fracture count, peripheral oxygen saturation (SpO_2), anticoagulant use, and chronic lung disease into a single prognostic framework.[5] Early studies have reported promising discriminatory performance of the STUMBL score,[6,7] but further validation in varied healthcare settings remains necessary. Additionally, concerns persist regarding the score's calibration and practical utility when applied to broader clinical cohorts.[8,9]

This study aims to validate the performance of the STUMBL score in predicting in-hospital complications among adult patients with blunt chest trauma.

MATERIALS AND METHODS

This retrospective cohort study was conducted in the emergency department of Kartal Dr. Lütfi Kırdar City Hospital Patients who presented to the emergency department with blunt chest trauma and were subsequently hospitalized between January 1, 2022 and January 1, 2024, were included. The hospital is a high-volume urban trauma center equipped with comprehensive emergency and critical care services. This study was approved by the Ethics Committee of Kartal Dr. Lütfi Kırdar Hospital (decision number: 2024/010.99/11/34, dated 25/12/2024) and conducted in accordance with the principles of the Declaration of Helsinki. Due to its retrospective nature, the requirement for informed consent was waived.

Eligible patients were adults aged 18 years and older who presented with blunt chest trauma, were hospitalized for further management, and had complete clinical and imaging data. Inclusion criteria included isolated blunt thoracic trauma, defined as thoracic injuries without major associated injuries in other body regions, with an Abbreviated Injury Scale (AIS) score <2 for non-thoracic regions. Patients with missing essential data or incomplete trauma severity scoring (AIS or Injury Severity Score [ISS]) were excluded from the study.

Data were extracted retrospectively from the hospital's health information management system using a standardized electronic data collection form developed in Microsoft Excel (Microsoft Corporation, Redmond, WA, USA). Information collected included demographic data (age, sex), clinical variables (number of rib fractures, peripheral oxygen saturation, respiratory rate, blood pressure, heart rate, and body temperature), comorbidities (such as chronic lung disease), medication use (anticoagulants, antiplatelets, nonsteroidal anti-inflammatory drugs [NSAIDs], and opioids), imaging findings (chest computed tomography [CT]), and in-hospital outcomes (pulmonary complications, intensive care unit [ICU] admission, and prolonged length of stay).

The STUMBL score was calculated for each patient based on the presence and severity of five variables: age, number of rib fractures, peripheral oxygen saturation, anticoagulant use, and chronic lung disease.[3] The score was determined by summing weighted values for these variables: age (1 point per 10 years starting from age 10), number of rib fractures (3 points per rib), chronic lung disease (5 points if present), pre-injury use of anticoagulants (4 points), and oxygen saturation, stratified as follows: 0 points for ≥95%, 2 points for 90-94%, 4 points for 85-89%, and 6 points for 80-84%. Higher scores indicated an increased risk of in-hospital complications. The STUMBL score was calculated using clinical and imaging data obtained at the time of emergency department presentation.

The primary outcome was the occurrence of any in-hospital complication, defined as pulmonary infection, pleural effusion, pneumothorax, hemothorax, pleural empyema, ICU admission, or prolonged hospitalization (≥7 days).

Statistical Analysis

Descriptive statistics were calculated for all variables and stratified by in-hospital complication status. Categorical variables were presented as counts and percentages and compared using Pearson's chi-squared test or Fisher's exact test, as appropriate. Continuous variables were assessed for normality using histograms and presented as mean ± standard deviation or median [interquartile range], depending on distribution. Comparisons between groups were performed using Student's t-test or the Mann-Whitney U test. For normally distributed variables with $p<0.05$, mean differences with 95% confidence intervals were reported. The discriminative performance of the STUMBL score was evaluated using the area under the receiver operating characteristic curve (AUROC) and the area under the precision-recall curve (AUPRC). Given the imbalanced distribution of complications (28% prevalence), the AUPRC was additionally calculated, as it provides a more informative measure of predictive performance than the AUROC alone under class imbalance. The optimal cutoff was determined using the Youden index. Diagnostic performance metrics—including sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV), accuracy, and likelihood ratios (+LR and -LR)—were calculated with corresponding 95% confidence intervals. To explore potential latent heterogeneity in score performance, latent class regression (LCR) was performed. A set of candidate covariates not included in the STUMBL score was selected using least absolute shrinkage and selection operator (LASSO) logistic regression with 10-fold cross-validation. The LCR model incorporated these variables along with the total STUMBL score. Models with one to four latent classes were fitted, and the optimal model fit was assessed using the Bayesian Information Criterion (BIC). All analyses were conducted using R version 4.4.2 (R Foundation for Statistical Computing, Vienna, Austria).

RESULTS

A total of 536 patients with blunt chest trauma were included in the study. The median ISS was 9 [interquartile range (IQR), 5-13], reflecting moderate injury severity across the cohort. As per the study inclusion criteria, all patients had AIS scores <2 for non-thoracic regions. Of these, 150 (28.0%) experienced one or more in-hospital complications, while 386 (72.0%) had none. The primary outcome group included pulmonary complications (e.g., infection, effusion, pneumothorax), pleural empyema, ICU admission, or prolonged hospital stay (≥7 days).

Demographic, clinical, and physiologic characteristics stratified by complication status are presented in Table 1. Patients who developed complications were significantly older (median 71 [IQR 61-80] vs. 62 [51-70] years, p<0.001), had a higher Charlson Comorbidity Index (3 [2-4] vs. 1 [0-2], p<0.001), and exhibited more rib fractures (5 [4-6] vs. 2 [1-3], p<0.001). They also had lower SpO_2 (94% [92-96] vs. 97% [97-98], p<0.001), higher respiratory rates, and more abnormal vital signs. STUMBL scores were substantially higher in the complication group (13 [9-17] vs. 6 [4-9], p<0.001).

Medication use, imaging utilization, and outcome components are summarized in Table 2. The complication group had higher rates of anticoagulant and antiplatelet use, chronic lung disease, and received more opioid analgesia in the emergency department. Among the 150 patients with complications, pulmonary infection occurred in 42 (28%), pleural effusion in 37 (25%), pneumothorax in 40 (27%), hemothorax in 25 (17%), pleural empyema in 12 (8%), ICU admission in 49 (33%), and prolonged hospital stay (≥7 days) in 98 (65%).

Table 1. Demographic, clinical, and physiologic characteristics by complication status

Variable	No Complication (n=386)	Complication (n=150)	p	Mean Difference (95% CI)
Age, years	62 [51-70]	71 [61-80]	<0.001	-
Male sex, n (%)	241 (62%)	92 (61%)	0.049	-
Charlson Comorbidity Index	1 [0-2]	3 [2-4]	<0.001	-
Rib fractures, n	2 [1-3]	5 [4-6]	<0.001	-
SpO_2, %	97 [97-98]	94 [92-96]	<0.001	-
Respiratory rate, /min	19 [17-20]	22 [20-25]	<0.001	-
Systolic BP, mmHg	134 [123-146]	129 [115-143]	<0.001	-
Diastolic BP, mmHg	79 [72-86]	72 [64-80]	<0.001	6.46 (4.53 to 8.40)
Heart rate, bpm	84 [76-93]	96 [84-110]	<0.001	13.42 (10.50 to 16.34)
Body temperature, °C	37.0 [36.6-37.3]	37.4 [36.9-38.0]	<0.001	0.48 (0.33 to 0.63)
LOS, days	2 [1-4]	10 [6-16]	<0.001	-
STUMBL score	6 [4-9]	13 [9-17]	<0.001	-

SpO_2: Peripheral Oxygen Saturation; LOS: Length of Stay; BP: Blood Pressure; bpm: Beats per Minute; °C: Degrees Celsius.

Table 2. Medication use, imaging, and complications by complication status

Variable	No Complication (n=386)	Complication (n=150)	p
Anticoagulant use, n (%)	33 (9%)	40 (27%)	<0.001
Antiplatelet use, n (%)	49 (13%)	41 (27%)	<0.001
Chronic lung disease, n (%)	30 (8%)	40 (27%)	<0.001
Chest CT performed, n (%)	316 (82%)	138 (92%)	0.005
High-risk mechanism, n (%)	73 (19%)	47 (31%)	0.003
Paracetamol use, n (%)	308 (80%)	119 (79%)	1.000
NSAID use, n (%)	209 (54%)	61 (41%)	0.007
Opioid use, n (%)	65 (17%)	49 (33%)	<0.001

Chest CT: Computed Tomography of the Chest; NSAID: Nonsteroidal Anti-Inflammatory Drug.

Table 3. Discriminative performance of the Study of the Management of Blunt Chest Wall Trauma Score (STUMBL)

Metric	Value	95% Confidence Interval
AUROC	0.934	0.909-0.959
AUPRC	0.889	0.847-0.924
Optimal cutoff (Youden index)	≥21	—
Sensitivity	0.84	0.78-0.90
Specificity	0.89	0.85-0.92
PPV	0.74	0.67-0.81
NPV	0.94	0.91-0.96
+LR	7.49	5.62-9.96
-LR	0.17	0.11-0.24
Accuracy	0.88	0.85-0.90

All values were calculated at the optimal cutoff of ≥20.5 derived from the Youden index. AUROC: Area Under the Receiver Operating Characteristic Curve; AUPRC: Area Under the Precision-Recall Curve; PPV: Positive Predictive Value; NPV: Negative Predictive Value; +LR/-LR: Positive/Negative Likelihood Ratio.

The STUMBL score demonstrated strong discriminative ability for predicting in-hospital complications (Table 3). The area under the receiver operating characteristic curve (AUROC) was 0.934 (95% confidence interval [CI]: 0.909-0.959), while the area under the precision-recall curve (AUPRC) was 0.889 (95% CI: 0.847-0.924). The optimal cutoff identified by the Youden index was 20.5. For clinical use, this threshold was rounded to the nearest integer (≥21), which demonstrated comparable diagnostic performance (sensitivity 84% [95% CI: 78-90%], specificity 89% [95% CI: 85-92%]), a positive predictive value of 74%, and a negative predictive value of 94%. The corresponding positive and negative likelihood ratios were +LR=7.49 (95% CI: 5.62-9.96) and -LR=0.17 (95% CI: 0.11-0.24), respectively. Discrimination curves are shown in Figure 1.

As an exploratory adjunct to score validation, we performed latent class regression to assess potential heterogeneity in STUMBL score performance across unobserved patient subgroups. To avoid redundancy, the five variables already embedded in the STUMBL score (age, rib fracture count, SpO_2, anticoagulant use, and chronic lung disease) were excluded from multivariate consideration. The remaining covariates were subjected to LASSO logistic regression with 10-fold cross-validation (optimal penalization lambda=0.0031). This process identified 11 variables with nonzero coefficients: sex (male), Charlson Comorbidity Index, respiratory rate, systolic and diastolic blood pressure, heart rate, temperature, high-risk mechanism of injury, chest CT performed, antiplatelet use, NSAID use, and opioid use.

These 11 covariates were incorporated into the LCR model alongside the total STUMBL score, and models with 1 to 4 latent classes were compared using the Bayesian Information Criterion. The two-class model yielded groups of 20 and 516 patients, with modest differences in mean STUMBL scores (19.5 vs. 17.6) and complication rates (40.0% vs. 27.5%). However, the lowest BIC was observed for the one-class

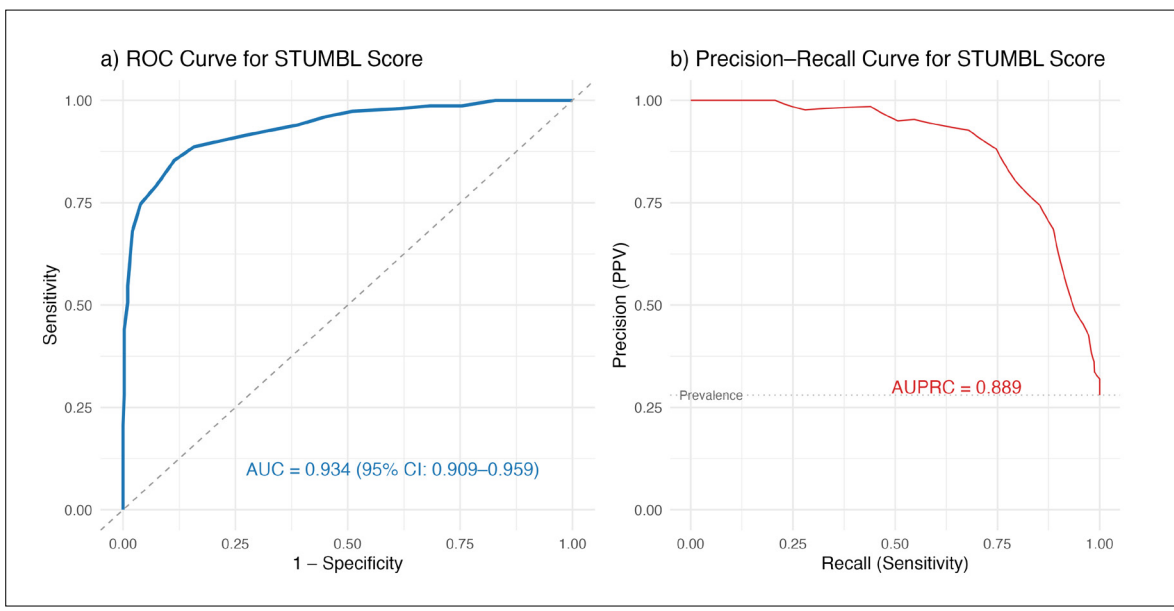

Figure 1. Receiver Operating Characteristic (ROC) and precision-recall curves for the Study of the Management of Blunt Chest Wall Trauma Score (STUMBL): **(a)** ROC curve with the area under the receiver operating characteristic (AUROC) and 95% confidence interval for prediction of in-hospital complications. **(b)** Precision-recall curve with baseline prevalence and area under the precision-recall curve (AUPRC).

Table 4. Latent class regression analysis of the Study of the Management of Blunt Chest Wall Trauma Score (STUMBL) performance

Metric	Class 1 (n=20)	Class 2 (n=516)
Complications, n (%)	8 (40.0%)	142 (27.5%)
Mean STUMBL Score	19.5	17.6
BIC (k=2)	268.1	-
Best BIC (k=1)	222.1	-

Latent class regression (LCR) was performed using the Study of the Management of Blunt Chest Wall Trauma Score (STUMBL) score and least absolute shrinkage and selection operator (LASSO)-selected covariates. The Bayesian Information Criterion (BIC) was used to evaluate model fit across 1-4 classes. The model with k=1 latent class demonstrated the best fit (lowest BIC), indicating homogeneity in score performance across subgroups.

model (BIC=222.1), indicating a homogeneous latent structure. Accordingly, no evidence was found for clinically meaningful latent subgroups with differential score performance. As illustrated in Figure 2, the two-class model showed modest differences between classes, with Class 1 having a higher mean STUMBL score (19.5 vs. 17.6) and a higher complication rate (40.0% vs. 27.5%). Summary data are presented in Table 4, and a visual comparison of class-wise STUMBL scores and complication rates is shown in Figure 2.

DISCUSSION

This study demonstrated that the STUMBL score has strong discriminatory ability in predicting in-hospital complications among adult patients hospitalized with isolated blunt chest trauma.

Blunt chest trauma continues to pose significant challenges in emergency and trauma care settings due to its association with pulmonary complications, prolonged hospital stays, and increased mortality.[10-12] Accurate early risk stratification is essential for directing appropriate interventions, preventing deterioration, and optimizing resource use. Prognostic models like the STUMBL score, which rely on easily obtainable clinical parameters, may bridge the gap between initial evaluation and more advanced diagnostic procedures, offering a pragmatic approach to clinical decision-making.[13-16] Because the STUMBL score is derived from readily available data at presentation, it can support early triage decisions in the emergency department, potentially guiding timely resource allocation and monitoring.

In this retrospective cohort, the STUMBL score effectively identified patients at risk of in-hospital complications following isolated blunt chest trauma. Its clinical performance in our population is consistent with prior validations across different healthcare systems. Mukerji et al.[7] demonstrated that the score retained good discriminatory ability in a multiethnic New Zealand cohort, particularly for predicting ICU admissions and prolonged hospitalization, although they noted challenges in calibration among non-European populations. Similarly, Giamello et al.[6] confirmed high AUROC values in their Italian study, supporting the score's robustness across European settings. In the UK, Callisto et al.[9] observed that while clinician judgment often influenced triage decisions, the STUMBL score nonetheless showed significant concordance with actual complication outcomes. These findings, along with our results, suggest that the STUMBL score offers added value as an objective adjunct to bedside assessment. Although the receiver operating characteristic-derived (ROC-derived) cutoff was 20.5, we reported the clinically applicable integer threshold of ≥21. This adjustment preserved nearly identi-

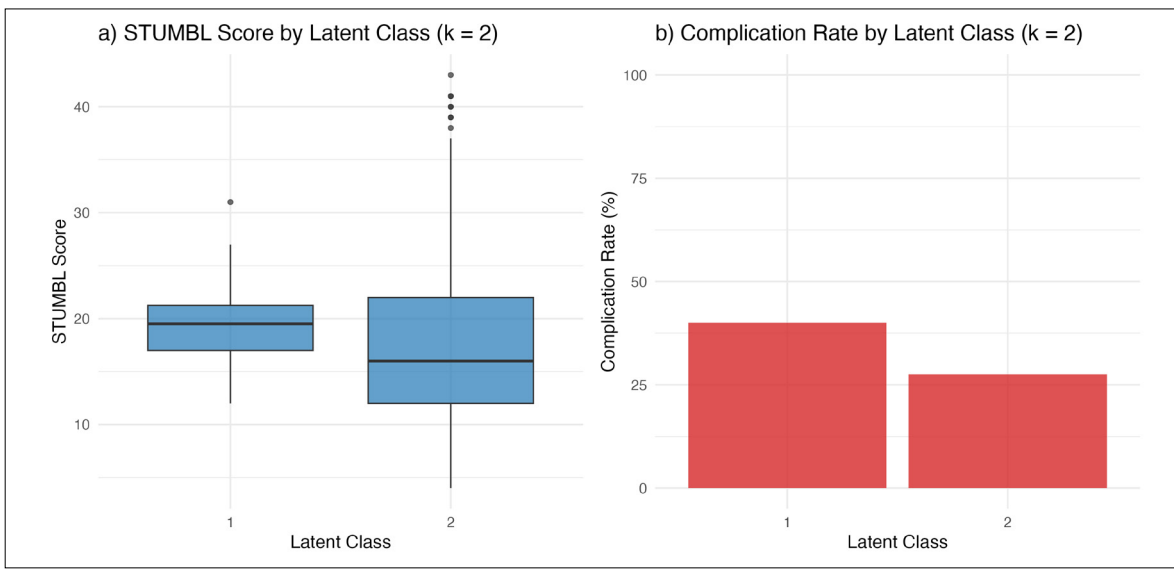

Figure 2. Latent class regression subgroup characteristics: **(a)** Distribution of the Study of the Management of Blunt Chest Wall Trauma Score (STUMBL) by latent class (k=2). **(b)** Complication rates (%) by latent class (k=2)

cal diagnostic performance (sensitivity 84%, specificity 89%) while ensuring practicality in real-world decision-making. Presenting integer-based thresholds is consistent with previous studies, thereby enhancing the score's comparability and clinical usability.

Additional evidence from prospective and systematic evaluations further contextualizes these findings. The STUMBL feasibility trial conducted by Battle et al.[17] indicated that while the score was well accepted by clinicians and integrated smoothly into ED workflows, there was no statistically significant difference in patient outcomes compared to conventional management, underscoring the need for a definitive impact trial. The absence of a statistically significant difference in outcomes in the feasibility trial primarily reflects its design as a feasibility and implementation study rather than a definitive efficacy trial. Accordingly, our findings complement Battle et al.'s[18] work by demonstrating robust predictive validity for the STUMBL score in a larger retrospective cohort. Moreover, a 2024 systematic review comparing 22 clinical prediction models for blunt chest trauma found that although STUMBL demonstrated superior predictive accuracy and external validation performance compared to many alternatives, concerns remained regarding risk of bias and calibration inconsistencies in some studies. Overall, our findings reinforce the score's utility in structured risk assessment but also highlight the need for careful consideration of its role within broader clinical and institutional frameworks.

Several limitations inherent to the study design must be acknowledged. The retrospective nature of the data collection process introduces the potential for selection and information biases. Additionally, as the study was conducted at a single tertiary care center, the generalizability of the findings to other settings, such as rural or lower-resource hospitals, may be limited. Although isolated thoracic trauma was strictly defined using AIS scores, subtle or clinically minor extra-thoracic injuries could have been underrecognized, even with comprehensive imaging and clinical assessments. Moreover, while the STUMBL score captures key risk factors, other variables potentially influencing outcomes might not have been fully accounted for within the scope of the study. Lastly, the relatively high AUROC reported in this single-center retrospective study may partly reflect selection bias or model overfitting. This limitation underscores the need for confirmation through future prospective and multicenter investigations to ensure external validity.

CONCLUSION

This study validates the STUMBL score as a reliable and practical tool for predicting in-hospital complications in patients with isolated blunt chest trauma. The strong discriminatory performance observed supports its potential integration into clinical decision-making pathways in emergency settings. Given its reliance on readily available clinical parameters and straightforward calculation, the STUMBL score can be quickly implemented at the bedside. The identified cutoff value of ≥20.5 may help clinicians efficiently triage patients at higher risk. Widespread adoption of the STUMBL score may facilitate early identification of high-risk patients, promote more efficient allocation of resources, and enable the implementation of targeted management strategies, ultimately contributing to improved patient outcomes. Future prospective or multicenter studies are warranted to further validate the STUMBL score's generalizability across diverse clinical settings.

Ethics Committee Approval: This study was approved by the Kartal Dr. Lütfi Kırdar City Hospital Ethics Committee (Date: 25.12.2024, Decision No: 2024/010.99/11/34).

Peer-review: Externally peer-reviewed.

Authorship Contributions: Concept: E.Y., R.D.; Design: E.Y., R.A.; Supervision: A.U.S.; Resource: E.Y.; Materials: E.Y., R.D.; Data collection and/or processing: E.Y., R.D.; Analysis and/or interpretation: R.A., A.U.S.; Literature review: R.A., A.U.S.; Writing: E.Y., R.D.; Critical review: E.Y., R.A., A.U.S., R.D.

Conflict of Interest: None declared.

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

REFERENCES

1. Battle CE, Hutchings H, Evans PA. Risk factors that predict mortality in patients with blunt chest wall trauma: A systematic review and meta-analysis. Injury 2012;43:8–17. [CrossRef]
2. Buz M, Ustaalioğlu İ. Predicting mortality in penetrating thoracic trauma in the emergency department: The prognostic value of the glucose-to-potassium ratio. Ulus Travma Acil Cerrahi Derg 2025;31:40-6. [CrossRef]
3. Battle C, Hutchings H, Lovett S, Bouamra O, Jones S, Sen A, et al. Predicting outcomes after blunt chest wall trauma: Development and external validation of a new prognostic model. Crit Care 2014;18:R98. [CrossRef]
4. Hefny AF, Almansoori TM, Smetanina D, Morozova D, Voitetskii R, Das KM, et al. Streamlining management in thoracic trauma: Radiomics- and AI-based assessment of patient risks. Front Surg 2024;11:1462692. [CrossRef]
5. Battle C, Cole E, Whelan R, Baker E. Scoping review of the literature to ascertain how the STUMBL Score clinical prediction model is used to manage patients with blunt chest wall trauma in emergency care. Injury 2023;54:110796. [CrossRef]
6. Giamello JD, Martini G, Prato D, Santoro M, Arese Y, Melchio R, et al. A retrospective validation study of the STUMBL score for emergency department patients with blunt thoracic trauma. Injury 2023;54:39-43. [CrossRef]
7. Mukerji S, Tan E, May C, Micanovic C, Blakemore P, Phelps K, Melville H, Jones P. Retrospective validation of a risk stratification tool developed for the management of patients with blunt chest trauma (the STUMBL score). Emerg Med Australas 2021;33:841-7. [CrossRef]
8. O'Neill C, Hutchings HA, Abbott Z, Battle C. Prognostic prediction tools and clinician communication: A qualitative study of the effect of the STUMBL tool on clinical practice. BMC Emerg Med 2020;20:36. [CrossRef]
9. Callisto E, Costantino G, Tabner A, Kerslake D, Reed MJ. The clinical effectiveness of the STUMBL score for the management of ED patients

with blunt chest trauma compared to clinical evaluation alone. Intern Emerg Med 2022;17:1785-93. [CrossRef]
10. Dogrul BN, Kiliccalan I, Asci ES, Peker SC. Blunt trauma related chest wall and pulmonary injuries: An overview. Chin J Traumatol 2020;23:125-38. [CrossRef]
11. Griffard J, Kodadek LM. Management of blunt chest trauma. Surg Clin North Am 2024;104:343-54. [CrossRef]
12. Marro A, Chan V, Haas B, Ditkofsky N. Blunt chest trauma: Classification and management. Emerg Radiol 2019;26:557-66. [CrossRef]
13. Buchholz CJ, Jia L, Manea C, Petersen T, Wang H, Stright A, et al. Revised Intensity Battle Score (RIBS): Development of a clinical score for predicting poor outcomes after rib fractures. Am Surg 2023;89:4668-74. [CrossRef]
14. Mommsen P, Zeckey C, Andruszkow H, Weidemann J, Frömke C, Puljic P, et al. Comparison of different thoracic trauma scoring systems in regards to prediction of post-traumatic complications and outcome in blunt chest trauma. J Surg Res 2012;176:239-47. [CrossRef]
15. Kim H, Lee MS, Yoon SY, Han J, Lee JY, Seok J. Validation of chest trauma scoring systems in polytrauma: A retrospective study with 1,038 patients in Korea. J Trauma Inj 2024;37:114-23. [CrossRef]
16. Elsaied Hussein MH, Fadl Mahmoud I, Ms Eita Y, Ahmed Aglan MA, Esmaiel MSA, Abdelshafy Ibrahim Farag G, et al. A prospective study of chest trauma scoring system as a morbidity and mortality predictor in patients with blunt chest trauma. Med J Islam Repub Iran 2024;38:4. [CrossRef]
17. Battle C, Hutchings HA, Driscoll T, O'Neill C, Groves S, Watkins A, et al. A multicentre randomised feasibility STUdy evaluating the impact of a prognostic model for Management of BLunt chest wall trauma patients: STUMBL Trial. BMJ Open 2019;9:e029187. [CrossRef]
18. Battle C, Cole E, Carter K, Baker E. Clinical prediction models for the management of blunt chest trauma in the emergency department: A systematic review. BMC Emerg Med 2024;24:189. [CrossRef]

ORİJİNAL ÇALIŞMA - *ÖZ*

STUMBL skorunun künt toraks travmalı hastalarda hastane içi komplikasyonları öngörmedeki geçerliliği

AMAÇ: Bu çalışmanın amacı, künt toraks travması nedeniyle üçüncü basamak bir hastanenin acil servisine başvuran hastalarda hastane içi komplikasyonları öngörmede Study of the Management of Blunt Chest Wall Trauma (STUMBL) skorunun prognostik bir araç olarak geçerliliğini değerlendirmektir.
GEREÇ VE YÖNTEM: Bu retrospektif kohort çalışma Ocak 2022 ile Ocak 2024 tarihleri arasında yürütüldü. Künt toraks travması tanısı alan 18 yaş ve üzeri erişkin hastalar çalışmaya dahil edildi. Veriler, hastane bilgi yönetim sisteminden elde edildi. Komplikasyonlar arasında pulmoner enfeksiyonlar, plevral efüzyon, pnömotoraks, yoğun bakım ünitesi (YBÜ) yatışı ve uzamış hastane yatışı yer aldı. Ayırt edici performans, alıcı işletim karakteristiği (ROC) analizi ile değerlendirildi; ROC eğrisi altında kalan alan (AUROC) ve hassasiyet–geri çağırma eğrisi altında kalan alan (AUPRC) hesaplandı.
BULGULAR: Toplam 536 hasta çalışmaya dahil edildi. Bunların 150'sinde (%28.0) hastane içi komplikasyon gelişti. Komplikasyon gelişen hastaların STUMBL skorları anlamlı şekilde daha yüksekti (medyan 13'e karşı 6, p<0.001). STUMBL skoru, AUROC 0.934 (güven aralığı [GA] %95, 0.909–0.959) ve AUPRC 0.889 (GA %95, 0.847–0.924) değerleri ile güçlü ayırt edici performans gösterdi. En uygun eşik değeri ≥21 olarak belirlendi ve bu noktada duyarlılık %85, özgüllük %89 olarak saptandı.
SONUÇ: STUMBL skoru, künt toraks travmalı hastalarda hastane içi komplikasyonları öngörmede mükemmel performans göstermiştir. Basit yapısı ve yüksek öngörü değeri sayesinde, acil servislerde klinik karar verme süreçlerine etkili biçimde entegre edilebilir.

Anahtar sözcükler: STUMBL skoru, künt toraks travması, risk sınıflandırması.

Ulus Travma Acil Cerrahi Derg 2025;31(10):959-965 DOI: 10.14744/tjtes.2025.72690