Predictors of First-Attempt Failure in Definitive Airway Management Among Combat Casualties in the battlefield

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August 2026

At the moment of truth,
IDF MEDICAL CORPS.

Disclosure

- CPT Gal Khanchin, MD has no conflict to report.
- This study was performed as part of the Israel Defense Forces Trauma and Combat Medicine Branch effort to improve the quality of combat casualty care and received no external funding or support.

From the literature

The Journal of Trauma and Acute Care Surgery

CLINICAL SCIENCE: PREHOSPITAL CARE

Prehospital intubation success rates among Israel Defense Forces providers

Epidemiologic analysis and effect on doctrine

Katzenell, Udi MD; Lipsky, Ari M. MD, PhD; Abramovich, Amir MD; Huberman, David MSc; Sergeev, Ilia MD; Deckel, Avishai; Kreiss, Yitshak MD, MHA, MPA; Glassberg, Elon MD, MHA

The Journal of Trauma and Acute Care Surgery

CLINICAL-REGISTRY

Prehospital definitive airway is not associated with improved survival in trauma patients

Tsur, Avishai M. MD, MHA; Nadler, Roy MD; Tsur, Nir MD; Sorkin, Alex MD; Bader, Tarif MD; Benov, Avi MD, MHA; Glassberg, Elon MD, MHA; Chen, Jacob MD, MHA, MSc

High Success Rate of Prehospital and En Route Cricothyroidotomy Performed in the Israel Defense Forces: 20 Years of Experience

Published online by Cambridge University Press: **08 November 2021**

Eran Beit Ner, Avishai M. Tsur, Roy Nadler, Elon Glassberg, Avi Benov and Jacob Chen

Show author details

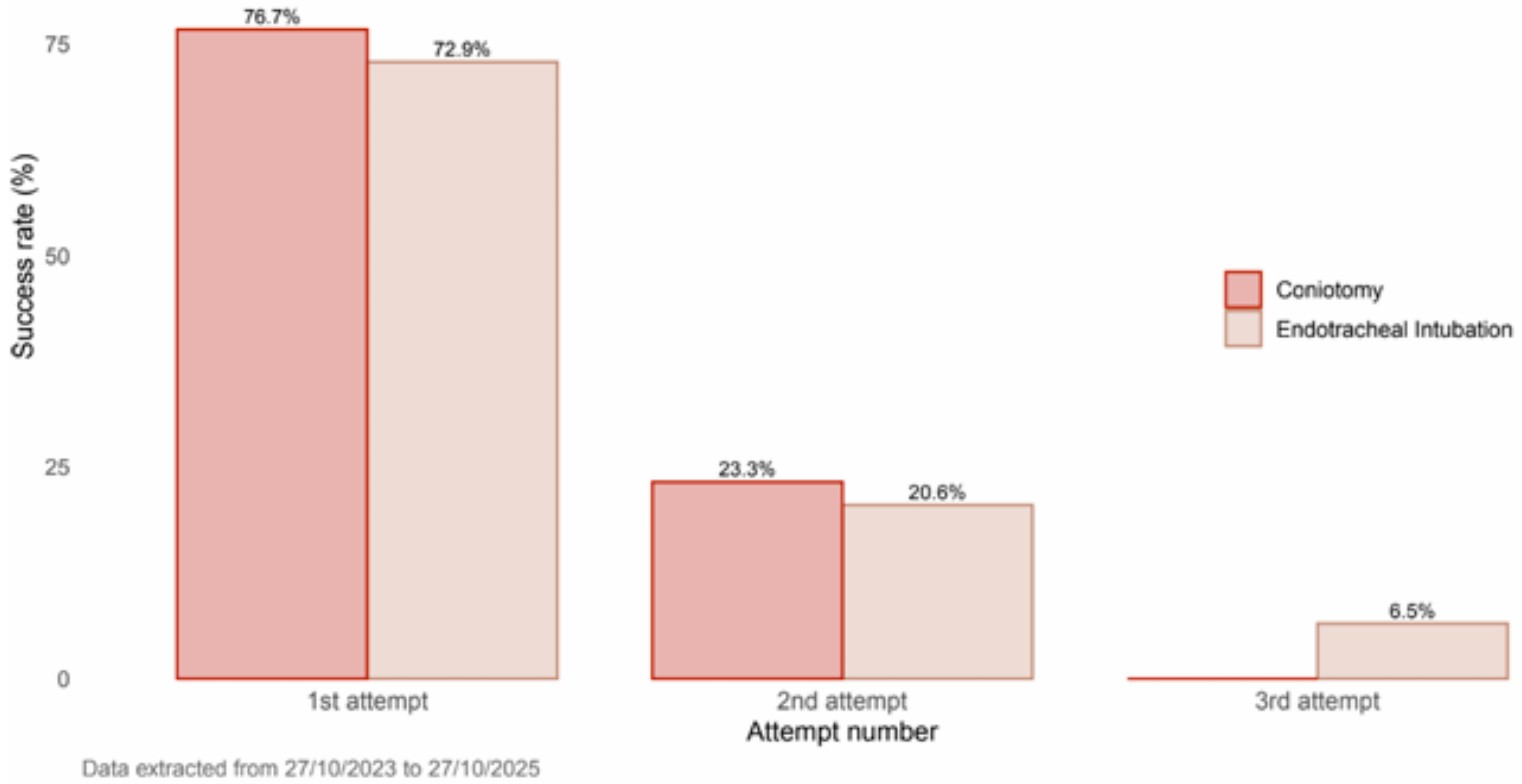
Our CPG

2014 GCS<8

2020
- Airway Obstruction
- SpO2<88%

2024
- Conservative AW Management
- Rapid Evacuation

Definitive Airway Success Rate – Swords of Iron War



Study Objectives

Discuss the **challenges and risks associated with establishing a definitive airway** in combat casualties

Assess **injury patterns and clinical factors** associated with difficulty in achieving first-attempt definitive airway

Evaluate the **potential implications** of failed initial airway management on early outcomes

Methods

Study Design

Retrospective cohort study of IDF casualties during the Swords of Iron War (October 7, 2023 – July 31, 2025).

Data Sources

Data was obtained from the IDF Trauma Registry and meticulously cross-referenced with the Israeli National Trauma Registry.

Inclusion Criteria

Any field attempt to achieve a definitive airway, executing either by endotracheal intubation or coniotomy.

Results

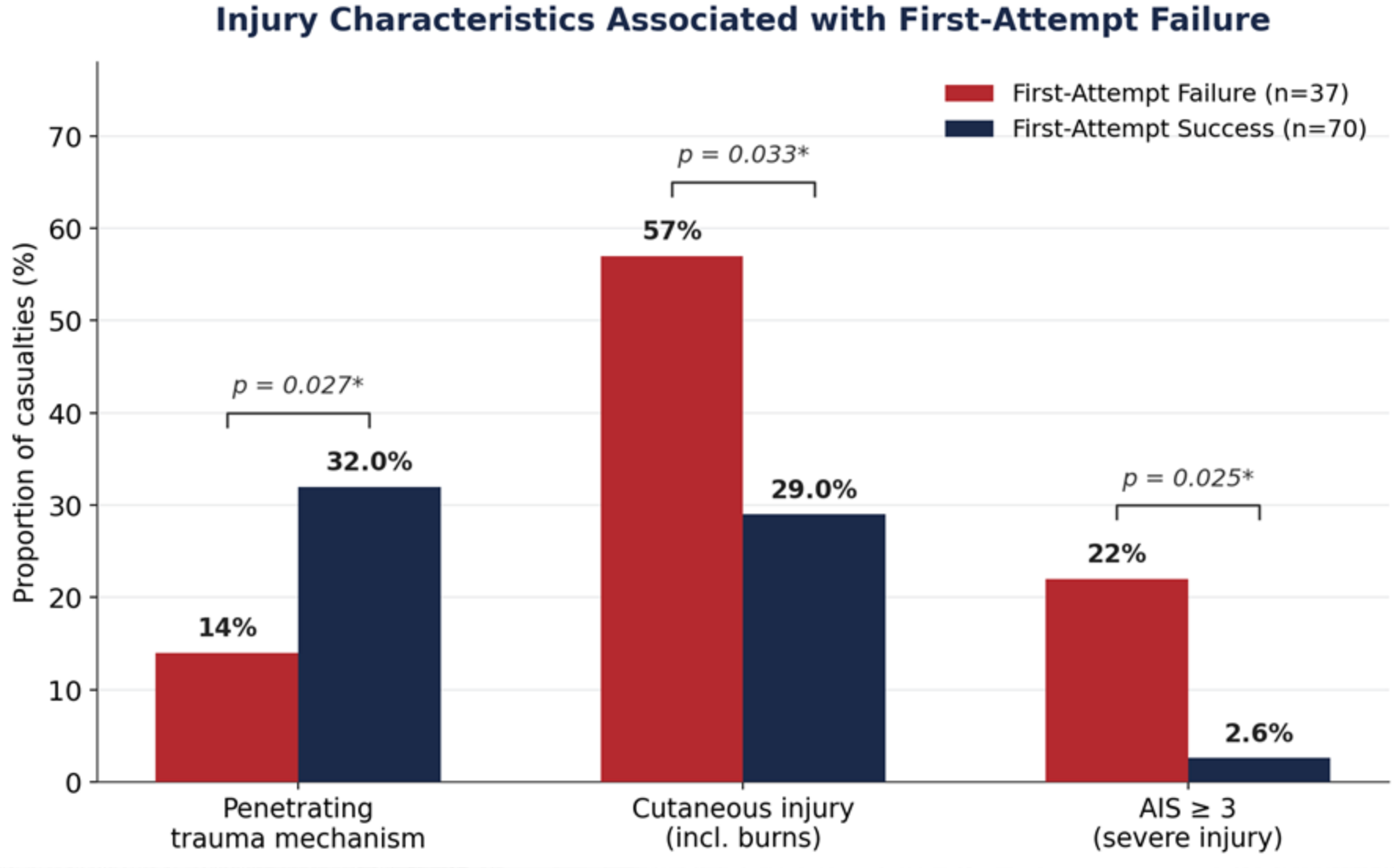
1st attempt success
N=70

1st attempt failure
N=37

Inclusion:
any attempt to achieve a definitive airway

N=107

Results


Injury Characteristics Associated with First-Attempt Failure
First-Attempt Failure (n=37)
First-Attempt Success (n=70)
Proportion of casualties (%)
0
10
20
30
40
50
60
70
p = 0.027*
p = 0.033*
p = 0.025*
14%
32.0%
57%
29.0%
22%
2.6%
Penetrating trauma mechanism
Cutaneous injury (incl. burns)
AIS ≥ 3 (severe injury)

Results

Parameter	Successful First Attempt	Failed / Multiple Attempts	p-value
MORTALITY OUTCOMES			
24-hour mortality	40 (57%)	14 (38%)	0.057
Overall mortality	42 (60%)	19 (51%)	0.39
INJURY SEVERITY SCORE (ISS)			
ISS 1-8	7 (11%)	0 (0%)	0.097
ISS 9-14	5 (7%)	6 (17%)	
ISS 16-24	11 (17%)	8 (22%)	
ISS 25+	42 (65%)	22 (61%)	

No statistically significant difference between groups

Conclusions

Injury patterns matter

First-attempt failure to establish a definitive airway was associated with specific injury patterns — particularly non-penetrating mechanisms, burns, and more severe lower extremity trauma.

No mortality difference

Despite these associations, mortality rates did not differ significantly between groups — a reassuring and notable finding.

Clinical and training implications

These findings may aid early identification of casualties at higher risk for difficult airway management, and can help direct future training priorities.

THANK YOU

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IDF MEDICAL CORPS.