

Incidence of positive toxicology in trauma patients undergoing surgical stabilization of rib fracture

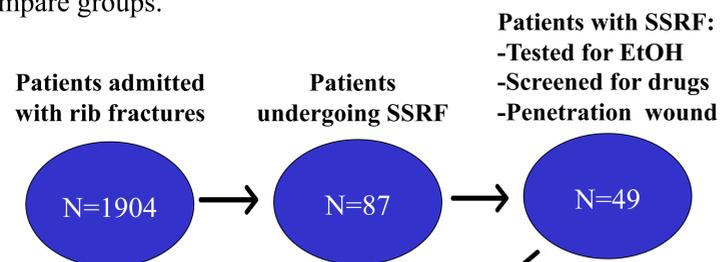
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Background

- In blunt chest trauma there are two elements in the treatment of rib fractures: pain control and management of pulmonary dysfunction.
- It is well established that alcohol and/or drug abuse are prevalent among trauma patients and that these create challenges in the management of injury and lead to worse clinical outcomes.
- Alcoholic patients have higher rates of pneumonia, unplanned intubation, sepsis, acute respiratory distress syndrome and mortality. They also spent more days in the hospital and intensive care unit.
- Our aim was to examine the incidence of positive toxicology among patients with traumatic rib fractures undergoing surgical stabilization of rib fracture (SSRF) and examine factors that increase risks for complications and clinical management challenges.

Methods

This is a retrospective study using the trauma registry at our Level 1 trauma center examining patients who underwent SSRF between Jan 2016 and Jan 2021. Of the 87 patients who underwent SSRF, we included 49 who had alcohol and drug screening performed in our study cohort. Patients were grouped according to EtOH and drug positivity. Demographic and clinical data were collected and analyzed using Fisher's exact test to compare groups.



Outcomes studied:
Ventilator, Chest tube, Tracheostomy,
Length of stay and Vital status

Results

	All		Any Toxicity				p-value	Alcohol				p-value	Drugs				p-value
			No	Yes	No	Yes		No	Yes	No	Yes						
	N	%	N	%	N	%		N	%	N	%		N	%	N	%	
All	49	100.0	10	100.0	39	100.0		31	100.0	18	100.0		15	100.0	34	100.0	
Age							0.243					0.527					0.048
18-34	9	18.4	0	0.0	9	23.1		4	12.9	5	27.8		0	0.0	9	26.5	
35-59	20	40.8	5	50.0	15	38.5		11	35.5	9	50.0		9	60.0	11	32.4	
60+	20	40.8	5	50.0	15	38.5		16	51.6	4	22.2		6	40.0	14	41.2	
# Fractured Ribs							0.061					1.000					0.014
1-3	13	26.5	3	30.0	10	25.6		8	25.8	5	27.8		5	33.3	8	23.5	
4-6	24	49.0	2	20.0	22	56.4		15	48.4	9	50.0		3	20.0	21	61.8	
7-10	12	24.5	5	50.0	7	17.9		8	25.8	4	22.2		7	46.7	5	14.7	

Table 1. Patients characteristics upon admission (n=49).

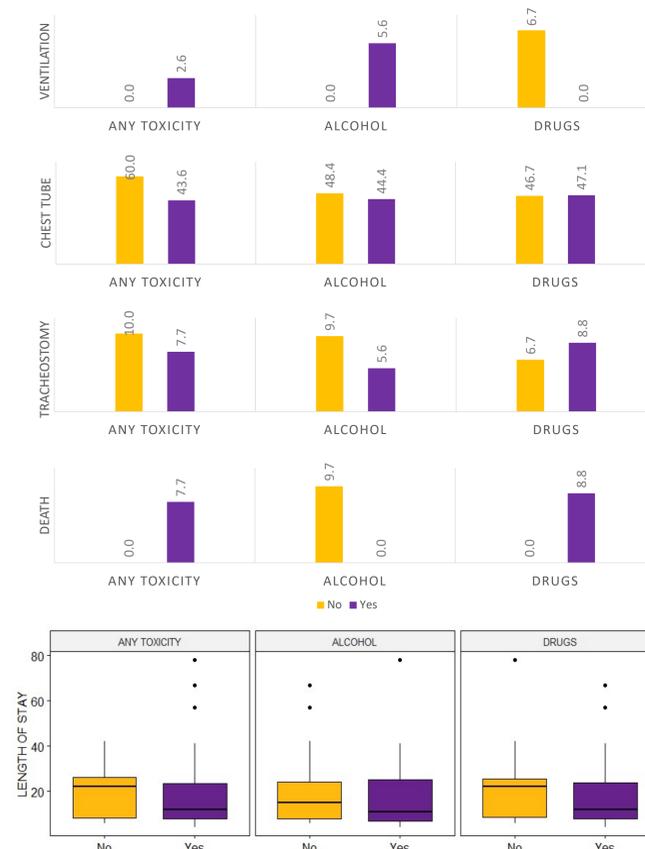
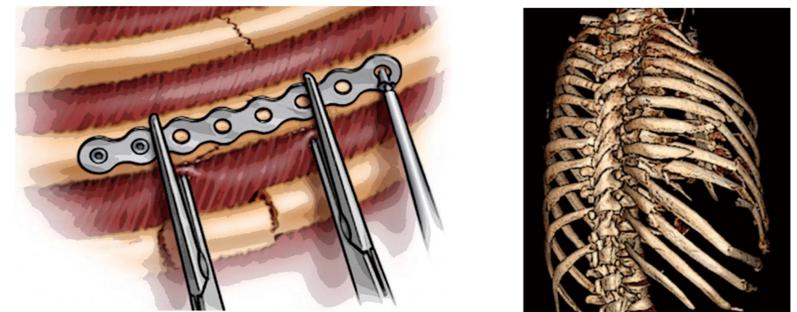


Figure 1. Patient outcomes undergoing surgical stabilization of rib fracture (n=49). No group comparisons were statistically different (p>0.05).



Discussion

- The majority of patients who underwent SSRF tested positive for alcohol and/or drugs on admission.
- There were no significant differences in patient characteristics between Alcohol, Drug, or polysubstance abuse in our cohort.
- Nor were there differences between the groups relating to need for chest tube insertion, tracheostomies, ventilation, or hospital length of stay.
- There were three deaths, all tested positive for drugs only, all died of complications of their injuries unrelated to their thoracic trauma or SSRF.

Conclusion

The pre-injury positive toxicology status is a prevalent issue on trauma centers. Treating different populations of trauma patients gives space for SSRF procedure to be considered as an applicable option. Patients admitted with severe rib fractures can benefit from receiving this line of treatment. Assessing longstanding outcomes such as time to return to work and long-term pain maybe the way to go as a future projection.

References

- Vartan P, Asmar S, Bible L, et al. Alcohol Use Disorder Is Bad for Broken Ribs: A Nationwide Analysis of 19,638 Patients With Rib Fractures. *J Surg Res.* 2020;255:556-564. doi:10.1016/j.jss.2020.05.053