

Retrohepatic Inferior Vena Cava Injury Following Blunt Trauma: An Interdisciplinary Team Approach



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Introduction

Inferior vena cava (IVC) injury is a rare but highly fatal complication of blunt trauma. Retrohepatic IVC injury is a subset of IVC injury that is particularly challenging to manage due to location and possible extension to the atrio-caval junction. Due to the rarity of these injuries, there is no established protocol for their management.

Objectives

The objective of this study was to investigate the effect of an interdisciplinary team in the operating room on the outcomes of patients who suffered blunt retrohepatic IVC injuries at a single level I trauma center.

Methods

A retrospective chart review was performed of all blunt retrohepatic inferior vena cava injuries from 2013-2020 of this center in the trauma registry. Operative reports were reviewed for the presence of trauma, hepatobiliary, and cardiac surgical teams in the operating room and correlated with patient outcomes.

Results

Ten patients at this level I trauma center were identified as suffering retrohepatic IVC injuries. Eight patients sustained their injury through a blunt mechanism of injury. Of these eight patients, three patients were managed by trauma surgery alone; two were managed by trauma surgery in conjunction with either cardiac or hepatobiliary surgery; and three were managed with all three surgical services present in the operating room simultaneously. Only the patients who had all three surgical services in the operating room survived to completion of IVC repair with one patient surviving to hospital discharge.

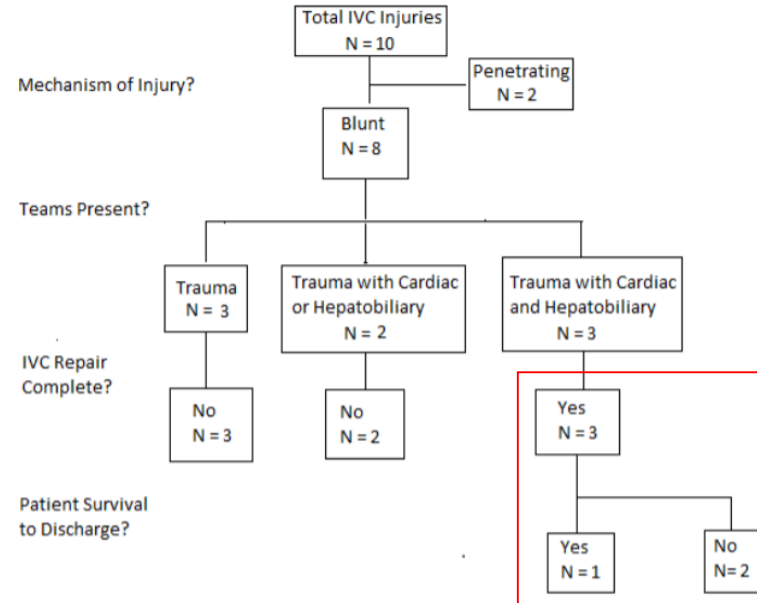


Figure 1. A flow chart demonstrating outcomes of patients who suffered blunt IVC injuries at a level I trauma center.

Conclusions

In conclusion, retrohepatic IVC injuries secondary to blunt trauma are highly complex and carry a high associated rate of mortality; patient outcomes can benefit from interdisciplinary management. Implementation of protocols to notify all three teams upon identification of these injuries may increase patient survival rates after operative intervention.

Patient	Age/Sex	Mechanism of Injury	IVC Repair Completed in OR	Complete Avulsion of IVC	Involvement of Atrio-caval Junction	Shock Present?	Cardiac Arrest?	Additional Services Present	Cardiopulmonary Bypass	Portal-Systemic Bypass	Successful Transfer to ICU
1	56/F	MVC	No	No	Yes	Yes	Yes	N/A	No	No	No
2	40/M	Pedestrian vs. MVC	N/A - Patient not taken to OR	No	Yes	Yes	No	N/A	N/A	N/A	Yes
3	58/F	MVC	No	No	Yes	Yes	Yes	Transplant	No	No	No
4	21/M	MVC	No	No	Yes	Yes	Yes	Cardiac - contacted but did not arrive in time	No	No	No
5	31/F	MCC	No	No	No	Yes	Yes	N/A	No	No	No
6	32/F	MVC	Yes	Yes	No	Yes	Yes	Cardiac, Transplant	Yes	No	No
7	18/M	MVC	Yes	Yes	No	Yes	Yes	Cardiac, Transplant	No	Yes	No
8	57/F	MVC	Yes	Yes	Yes	Yes	Yes	Cardiac, Transplant	Yes	Yes	Yes

Table 1. Additional characteristics of the eight patients with blunt retrohepatic IVC injuries.