

Tree Stand Falls: A Persistent Cause of Neurological Injury in Hunting

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Introduction

Tree stand falls are a well-known cause of hunting-related injury. Spine and brain injuries associated with such falls can result in significant neurological morbidity. We sought to characterize our current series of patients and compare to prior reports in order to identify any changes in the incidence of neurological injury related to such hunting accidents.

Methods

From September 2003 to November 2011, all tree stand-related injuries referred to our regional trauma center were reviewed. Information had been recorded in the hospital's trauma registry, and medical records were retrospectively reviewed for data pertaining to the injuries, with particular emphasis on neurological injuries and any associated details.

Table 1

Demographics and categorization of injuries from tree stands in 54 patients	
Characteristic	
Age (year)	
Average	47.9
Range	15-69
Male gender (%)	96%
Average Height of fall (feet)	18.2
Range (feet)	4 - 40
Average Length of Stay (days)	6.56 ± 1.07
Disposition	
Home	72%
Home w/ services	11%
Rehabilitation placement	17%

Results

A total of 54 patients were identified. Ninety-six percent of patients were male. Mean age 47.9 yrs (range 15-69). The mean Injury Severity Score was 12.53 +/- 1.17 (range 2-34). Average height of fall was 18.2 feet (range 4-40 feet). All patients fell to the ground with exception of one patient falling onto rocks; and many hit the tree or branches on the way down. A reason for fall was documented in only 13 patients, and included tree stand construction (3 patients), loss of balance (3 patients), falling asleep (3 patients), structural failure (2 patients), safety harness breaking (3 patients) or light-headedness (1 patient). The most common injuries were spinal fractures (54% patients). In these patients, fractures to the cervical spine were the most common (69%), followed by the thoracic (38%) and lumbar (21%) spine. Eight patients went to the operating room for fusion. Head injuries occurred in 22% of patients. Average LOS was 6.56 +/- 1.07 days. Disposition was home (72%), home with services (11%), and rehab placement (17%). Other systemic injuries such as orthopaedic, abdominal and thoracic are as detailed in the table.

Table 2

Reasons reported as cause of falls from tree stands		
Reported reason	Number of falls	%
Tree stand construction	3	23
Loss of balance	3	23
Falling asleep	3	23
Structural failure	2	15
Light-headedness	1	8
Other	1	8
Totals	13	100

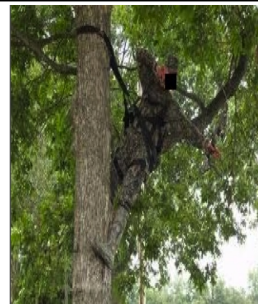


Table 3

Spectrum of Injuries	
Characteristic	
Spinal fractures	(54%)
Cervical	69%
Thoracic	38%
Lumbar	21%
To Operating Room	15%
Head Injuries	(22%)

Conclusions

Falls from hunting tree stands are still common, with a high rate of neurological injury. Injuries from tree stand falls are a significant cause of morbidity and mortality in Rochester, New York. Compared to a decade ago we have made no progress in preventing these neurological injuries, despite safety advances - which is unacceptable.

- 1) Prevention through education is critical, especially when observing that predisposing factors have not changed (structural failure, slips, alcohol use)
- 2) Hunter Safety courses by community-wide, region, county, and state offices should be employed when obtaining a hunting license or purchasing tree stands
- 3) Physician initiated advocacy campaigns for prevention of neurological injury during hunting is needed

Comparison of Tree stand studies

Metz et al., SMJ, 2004 (n = 51)	Our Study, 2012 (n=54)
2 Regional Trauma Centers Over 5 yrs	1 Regional Trauma Center Over 8 yrs
Spinal Column Injuries – 52%	Spinal Column Injuries – 54%
Thoracic/Lumbar most common	Thoracic/Lumbar most common
16% patients are taken to OR	15% patients are taken to OR
Head Injury - 24%	Head Injury - 22%

Learning Objectives

By the conclusion of this session, participants should be able to: 1) Describe the spectrum of neurological injuries encountered in hunting tree stand-related falls, 2) Discuss, in small groups, key causes of falls, 3) Identify potential ways for neurosurgeons to advocate for hunter safety through regional and community-wide injury prevention programs

References

- 1) Metz M, Kross M, Abt P, Bankey P, Koniaris LG: Tree stand falls: a persistent cause of sports injury. South Med J. 2004 Aug;97(8):715-9.

TABLE 4
 Non-neurological Injuries Resulting From Tree Stand Falls

Injury	No (%) of patients (N=54)
<i>Orthopedic</i>	
Upper Extremity	10 (19)
Lower Extremity	13 (24)
Hip/Pelvis	6 (11)
<i>Abdominal</i>	
Liver	2 (4)
Kidney	3 (6)
Spleen	5 (9)
Other	2 (4)
<i>Thoracic</i>	
Pulmonary Contusion	4 (7)
Pneumo-/Hemothorax	10 (19)
Rib Fractures	22 (41)
Clavicle Fracture	3 (6)
Scapula Fracture	1 (2)
Sternal Fracture	3 (6)