

**Maine Medical Center  
Department of Emergency Medicine  
Journal Club Summary Template**

<b>Date:</b> 1/18/2018	<b>Presenter Name:</b> Heidi Goddard
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<b>Article Citation:</b> Asymptomatic cervical spine fractures: current guidelines can fail older patients. Healy CD, Spilman SK, King BD, Sherrill JE 2 <sup>nd</sup> , Palaez CA. J Trauma Acute Care Surgery. 2017 Jul;83(1):119-125.	
<b>Country(ies):</b> USA	
<b>Funding Source(s):</b>	
X None Stated	

Purpose
<b>Research Question(s):</b>
X None Stated
<b>Hypotheses:</b>
X None Stated
<b>Study Purpose:</b>
To investigate the association of neck pain and cervical spine fractures. They investigated if trauma patients aged 55 years or older with known c-spine fractures report pain on presentation or clinical examination.

Methods
<b>Study Design:</b> retrospective study
<b>Outcome(s) [or Dependent Variable]:</b>
<b>Intervention [or Independent Variable]:</b>
<b>Ethics Review:</b> <input checked="" type="checkbox"/> IRB Review <input type="checkbox"/> IACUC Review <input type="checkbox"/> Other: <input type="checkbox"/> None Stated
<b>Research Setting:</b> Level 1 adult trauma center in the Midwest at a medium-sized city
<b>Study Subjects:</b> All patients aged 55 years or older with a c-spine fracture who presented from March 2012 to February 2016.
<b>Inclusion Criteria:</b> Patients had to have an acute fracture of C1-C7.
<b>Exclusion Criteria:</b> Patients were excluded if they had a GCS <15, if there were any neurologic deficits, if they had dementia, if they were intoxicated, or if documentation was unavailable prior to CT.
<b>Study Interventions:</b> n/a
<b>Study Groups:</b> Patients with acute c-spine fractures were separate into two groups: <ol style="list-style-type: none"> <li>1. symptomatic, if they had pain documented in the history, review of systems, or on physical exam. If documentation was unclear, patients were considered symptomatic.</li> <li>2. asymptomatic, if they denied pain and had no tenderness on exam</li> </ol>
<b>Instruments/Measures Used:</b>
<b>Data Collection:</b> Data was collected via chart review of an electronic medical record using a standardized data abstraction form.
<b>Data Analysis:</b> Analyses were performed with IBM SPSS Basic Statistics for Windows, version 20.0. Descriptive statistics were examined and reported for continuous data as medians and interquartile ranges;

categorical data were reported as counts and percentages. All statistical tests were two-tailed and based on a 0.5 significance level. Differences between medians were assessed using the Kruskal-Wallis one-way analysis of variance. Differences between nominal variables were assessed using the X<sup>2</sup> test.

**A priori sample size calculation?**  Yes  No  Not Described  N/A

**Statistical analyses used:**

**Adjustment for potential confounders?**  Yes  No  Not Described  N/A

**If yes, list:**

## Results

### Study participants:

2390 patients were age 55 and older with GCS 15, and 1071 (45%) had C-spine imaging. 183 patients (17%) had a c-spine fracture, and 173 (16%) met study criteria. Groups did not differ statistically in terms of sex, age, mechanism of injury, presence of DJD or mortality. More than half were transferred from an outside hospital.

### Brief answers to research questions [key findings]:

36 of the 173 patients (21%) were asymptomatic. This was associated with a 79.2% sensitivity (CI 72.4-85) and 59.6% specificity (56.3-62.8). Neck pain had a positive predictive value of 27.6% (CI 25.5-29.9).

In summary: One fifth of pts 55 years and older with a c-spine fracture reported no pain on initial presentation and denied tenderness to palpation on examination – abundance of caution when evaluating older trauma patients

### Additional findings:

- Patients without neck pain had a higher median ISS (p=0.001) and longer hospitalization (7 vs 5 days, p=0.008).
- 2/3rds of asymptomatic patients had an injury in another body region (significantly more thoracic or abdominal injuries). Authors note they suspect this distracted from neck pain, but was not tested.
- more than 1/3<sup>rd</sup> of patients had c-spine fractures at more than one level (not statistically different between the two groups)
- most frequent type across both groups was odontoid (not statistically significant)
- age group most likely to report pain was 75 to 84 (83%), but even the youngest group reported no pain 21% of the time
- 22% of symptomatic patients and 19% of asymptomatic patients required surgical intervention (not statistically different).

### Limitations:

The study was limited by imperfect charting. It was also limited in that it required retrospective collection of data. No comparison to younger patients.

## Clinical Implications

**Applicable?**

**Feasible?**

**Clinically relevant?**

**Comments:** Yes, I will be more cautious when examining older patients and also be more liberal with CT imaging. It think this is feasible to implement.

**Level of evidence generated from this study**

- Ia: evidence obtained from meta-analysis of randomized controlled trials
- Ib: evidence obtained from at least one randomized controlled trial
- IIa: evidence obtained from at least one well-designed, controlled study without randomization
- IIb: evidence obtained from at least one other type of well-designed quasi-experimental study
- X III: evidence obtained from a well-designed, non-experimental study
- IV: expert committee reports; expert opinion; case study; case report

**Additional Comments/Discussion/Notes**