

“Next Day” Exam Reduces Radiation Exposure in Cervical Spine Clearance at a Level 1 Pediatric Trauma Center: A Pilot Study

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No Disclosures

Introduction

- Cervical spine injuries in the pediatric trauma population
 - 1-2% incidence
 - High rate of neurologic deficit and mortality
- Cervical spine clearance
 - First step in evaluation
 - Challenging



Cervical Spine Clearance

- No Consensus Recommendations
 - Across Subspecialties
- No Standardized Protocol
- Unreliable Physical Exam
- Role of CT?
 - Gold standard
 - Increased radiation exposure



Pediatric Cervical Spine Study Group

Cervical Spine Clearance Survey

- 25 Pediatric Trauma Centers
 - ONLY 46% had a cervical spine clearance protocol
 - NO CONSENSUS
 - Primary Team Responsible for Clearance
 - Imaging Modalities used

Objectives

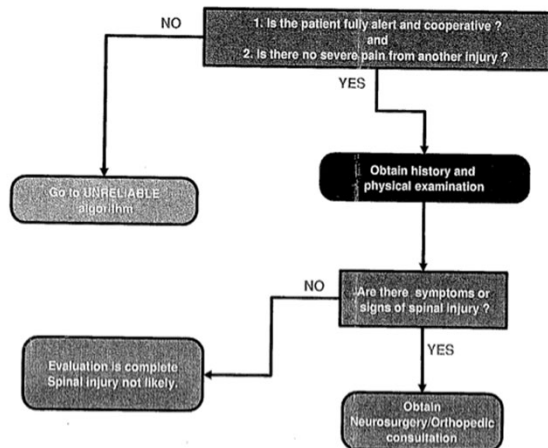
- Developing a better algorithm for cervical spine clearance
 - “Next Day” Physical Exams
 - Increasing Reliance Upon the Spine Service
- Goals
 - Identify Cervical Spine Injury
 - Decrease Radiation Exposure

Materials and Methods

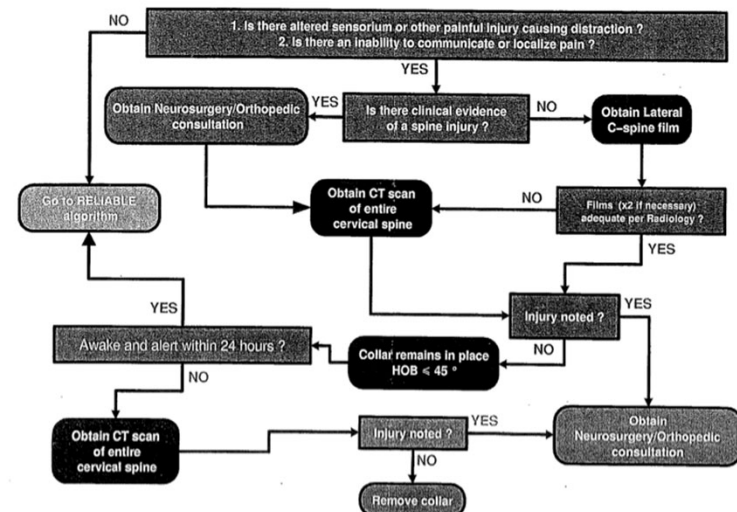
- 2011 Protocol
- 2012 Protocol
 - Guide indications for imaging
- 2014 Protocol
 - Increase in “next day” physical exams
 - Increased involvement of the Spine Service
 - Decrease unnecessary CT scans

Original Protocol

Algorithm for Evaluation of the Trauma Patient for Cervical Spine injury
COOPERATIVE PATIENT

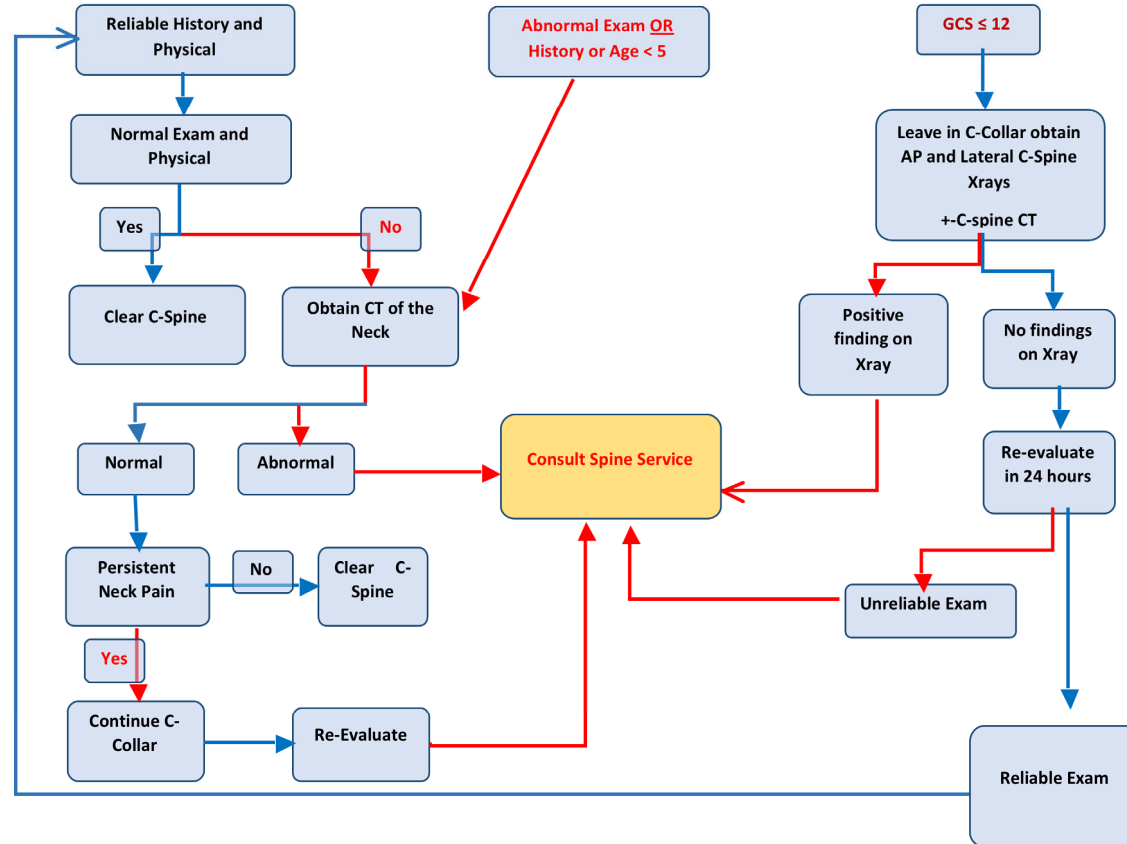


Algorithm for Evaluation of the Trauma Patient for Cervical Spine injury
UNCOOPERATIVE PATIENT



2012 Protocol

ALGORITHM FOR EVALUATION OF THE TRAUMA PATIENT FOR CERVICAL SPINE INJURY





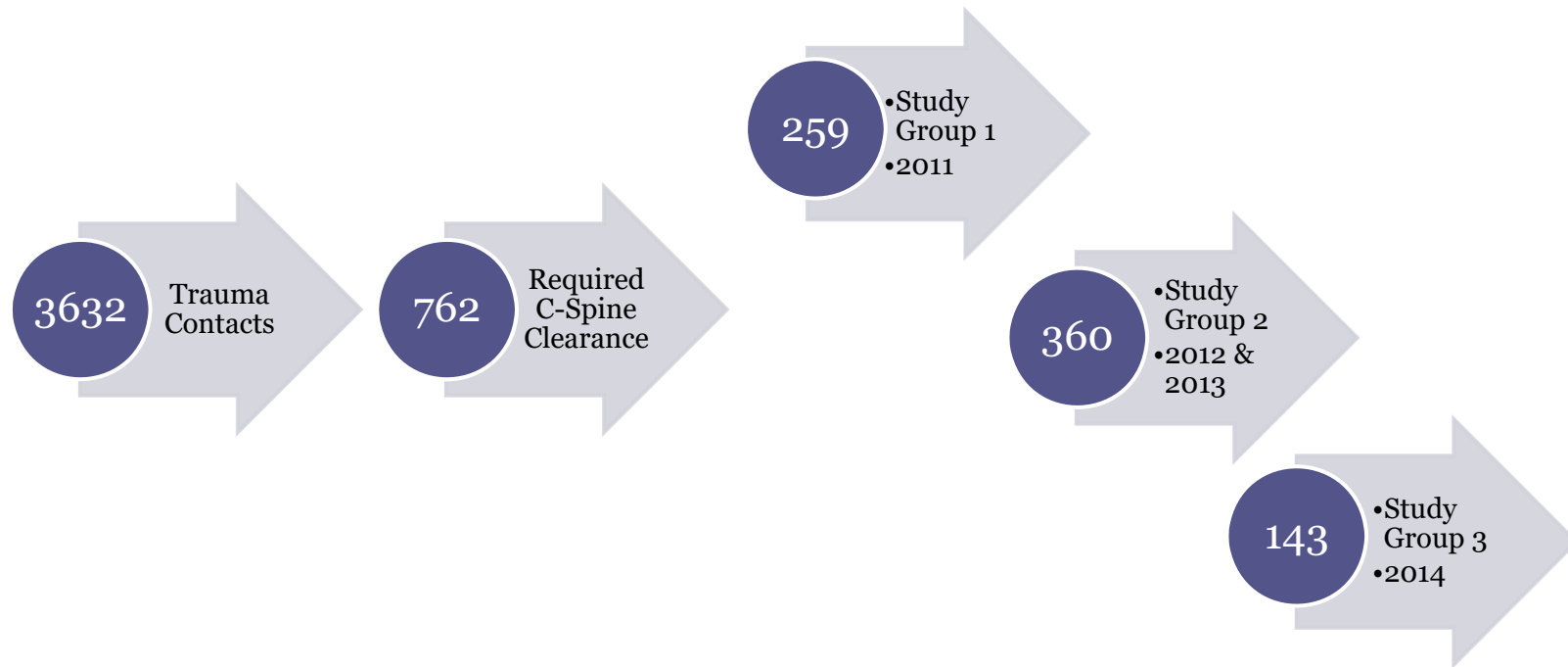
Materials and Methods

- Retrospective review of trauma database 2011-2014
 - Inclusion Criteria
 - <18yrs of age
 - Suspected C-spine injury w/ trauma mechanism
 - ER & Trauma Surgery
 - Exclusion Criteria
 - All deaths
 - Trauma pts w/ CT C-spine from outside facility

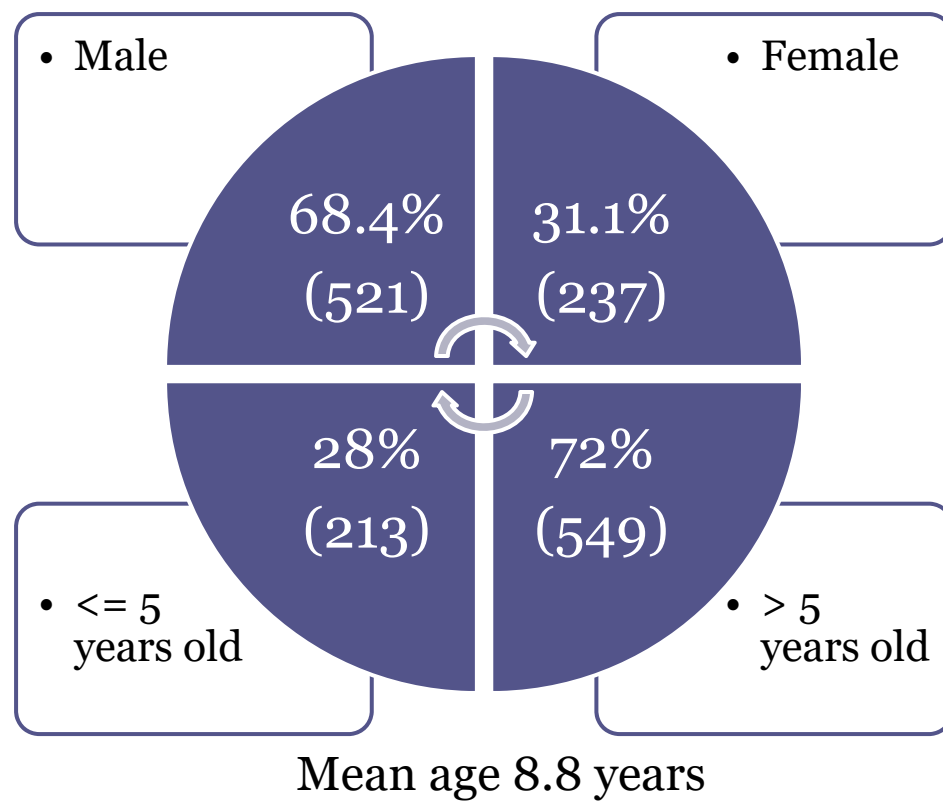
Materials and Methods

- Data Collected
 - Age
 - MOI
 - ISS
 - GCS on arrival
 - Imaging studies
 - CT findings
 - Time to collar removal
 - Discharged in collar
 - Who cleared C-spine
 - Spine Service
 - Length of stay
 - C-spine injuries
 - Missed/delayed diagnosis
- 3 Groups for Analysis
 - Original protocol
 - 2012 protocol
 - 2014 protocol

Results



Results



Sub Group Analysis

	SG1	SG2	SG3
Number of CT's p=<0.0001	90%% (233)	42.2% (152)	28.7% (41)
LOS	2.51	2.45	2.27
Clearance By			
Emergency Medicine	44% (96)	25% (76)	28% (34)
Surgery	44% (97)	46% (141)	48% (58)
Spine Service	12% (27)	29% (90)	24% (29)

Time to Clearance

	SG1	SG2	SG3
< 13 hours	91% (197)	76% (232)	79% (97)
13-24 hours	8% (18)	22% (69)	19% (23)
> 24 hours	1% (2)	2% (5)	2% (2)

- However, this did not affect length of stay significantly

Conclusions

- Repeat “next day” clinical examinations and increased involvement of the Spine Service:
 - Significant decrease in radiation exposure
 - No missed injuries
 - Increase in time to C-collar removal



Limitations

- PILOT Study
- Small numbers
- Retrospective Study

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