

Dynamic C-spine x-ray in Trauma may modify the application of the Sub-axial cervical spine injury classification (SLIC) increasing Surgical Intervention

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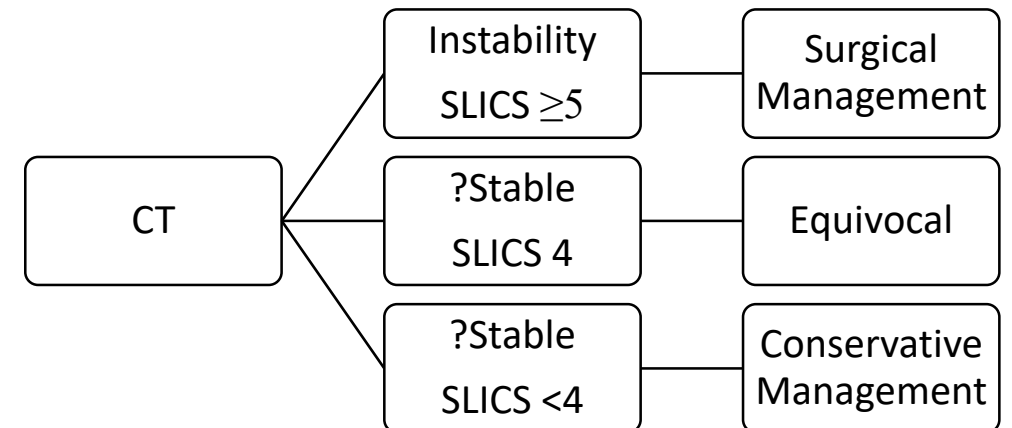
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St George's University Hospitals 
NHS Foundation Trust

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Introduction

- Level 1 Major Trauma Hospital: emergency department whole body CT is performed routinely on major trauma patients.
- Unstable c-spine trauma can arise in around 40% of spinal trauma cases.
- ATLS requires a C-spine CT (A lateral C Spine X Ray is no longer performed)
 - Unstable fracture or facet joint dislocation
 - Stable fracture
- However the CT C-spine is performed in the supine position and therefore there may be instability which is being missed



Methods

- Systematic review: Erect Cervical Spine X-ray after cervical injury.
 - A pubmed search was conducted searching for cervical spine fracture, Subaxial cervical spine injury classification (SLIC) and erect/dynamic cervical spine x-ray.
- Between January 2017 and November 2017 – we analysed all of our Cervical Spine Trauma retrospectively

Results

Erect Radiographs to Assess Clinical Instability in Patients with Blunt Cervical Spine Trauma

Simon Humphry, MRCS, Andrew Clarke, FRCS (Orth), Michael Hutton, FRCS (Orth), and Daniel Chan, FRCS (Orth)

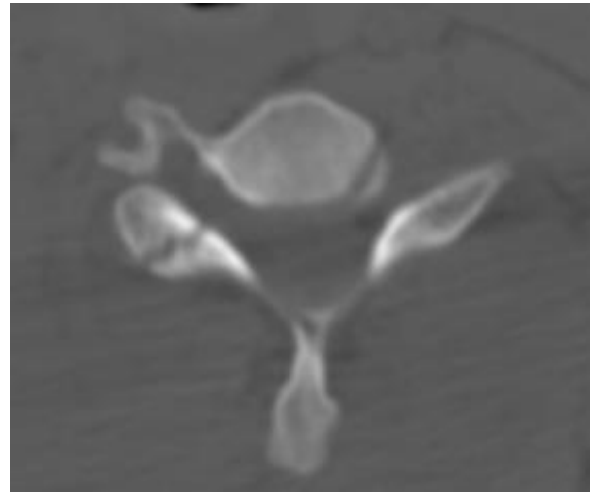
Investigation performed at the Peninsula Spine Unit, Princess Elizabeth Orthopaedic Centre, Royal Devon and Exeter Hospital, Exeter, United Kingdom

- Humphrey et al. found 4 cases but did not utilise an SLIC score
- There were 15 cases of C spine fractures requiring surgery. 4 cases were identified which had initially low SLIC scores
- Combining Humphrey et al + St George's Cases there were 8 cases retrospectively analysed and reviewed.
- SLIC score pre X-ray = 0.71 vs Post X-ray mean score of 6.0
 - Paired T-test the (p-value was 0.00005)

Example Case

- 28y Male
- Crushed under lorry
- ATLS
- ED Whole Body CT
- Undisplaced C7 facet fracture (F1)
- No Neurodeficit

- Tx: Miami J Collar



Erect C Spine

- Previous SLICS = 0
- F1 (Stable FJ fracture)
- Erect c-spine x-ray
- SLIC score = 6
(Morphology 4; DLC 2)



Discussion

- We are in a modern era where supine CT whole body is routinely performed for Major Trauma Patients
- They have improved fracture diagnosis over Lateral C spine X ray
- Supine CT/MRI eliminates the gravitational loads & will not always delineate Instability
- Supine imaging It can be difficult to obtain Flexion Extension Dynamic views in fear of injuring a patient or if they have significant pain
- Therefore a simple erect C spine X Ray even in the Miami J Collar could help to mitigate missing Cervical Instability where fractures have been identified.

Conclusion

- CT can propose instability if there is major ligamentous injury.
- The Subaxial Injury Classification system (SLIC) has been proven to be useful in the management of Cervical Injury.
- We show 8 cases of assumed cervical stability based on CT. These patients were treated conservatively in Miami J Collars.
- Erect cervical spine x-ray revealed their true SLICS score
- We suggest a modification to the SLIC algorithm to include Erect C Spine X Ray when SLICS ≤ 4 .
- Always assume F2 until proven otherwise!

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