

# Assessment of Ultrasound as a Diagnostic Modality for Detecting Cervical Spine Fractures in Head Injured Patients

Deepak Agrawal MBBS MS MCh; Sanjeev Bhoi; Tej Prakash Sinha

## Introduction

Background: Early cervical spine clearance is extremely important in patients with head injuries and may be difficult to achieve in emergency setting. This is especially true in hemodynamically unstable unconscious patients and in low resource settings.

Aims & Objectives: To assess the feasibility of standard portable ultrasound in detecting cervical spine injuries in severe head injured patients.

## Methods

This retro-prospective pilot study carried out over one month period (June-July 2011) after approval from the institutional ethics committee. During the study period the technique of cervical ultrasound was standardized by the authors and tested on ten admitted patients of cervical spine injury. To assess feasibility in the emergency setting, three patients with severe head injury (GCS = 8) coming to emergency department underwent ultrasound examination. All these patients continued to receive standard management and underwent a head CT with CT cervical Spine up to T1. All cervical ultrasound examinations were done by a neurosurgeon (without any formal training on ultrasound) or emergency physicians on a portable ultrasound machine (Micromaxx, Sonosite Inc, WA, USA).

## Results

Ultrasound examination of the cervical spine was possible in the emergency setting, even in unstable patients and could be done without moving the neck. The best window for the cervical spine was through the anterior triangle using the linear array probe (6-13Mhz). In the ten patients with documented cervical spine injury, bilateral facet dislocation at C5-6 was seen in 4 patients and at C6-7 was seen in 3 patients. C5 burst fracture was present in one and C2 anterolisthesis was seen in one patient. Cervical ultrasound could easily detect fracture lines, canal compromise and ligamentous injury in all cases.

## Conclusions

Cervical ultrasound may be a useful tool for detecting cervical spine injury in unconscious patients, especially those who are hemodynamically unstable. It may be particularly useful in the resource constrained setting of developing countries

## Learning Objectives

How to clear cervical spine in an emergent resource starved setting

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