



## Trauma Series: Is It Really Necessary For Every Trauma Patient?

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### ABSTRACT

**Objective:** To review role of Trauma Series, established by American college of surgery for patients of multiple trauma, which include lateral cervical spine, AP chest, and anteroposterior pelvis in evaluation of trauma patient in our local set up.

**Methods:** A retrospective descriptive study was carried out 10 months in the Department of Diagnostic Radiology, Aga Khan University Hospital Karachi. Subject of our study were adult patients with blunt trauma who had undergone trauma series.

**Results:** Total of 600 x-rays of 200 patients were reviewed. The age range from 16 - 65 years (Mean 24.5 +/- 8.5). Trauma series was negative in 162 patients, as they had normal lateral cervical spine, anteroposterior chest, and anteroposterior pelvis x-rays, however it turned out to be positive in 38 patients. These 38 patients were received in Emergency with history of trauma among these most of the patients had the history of RTA. Out of 38 positive cases (total 45 sites of injury), 10 rib fracture, 10 fractures of clavicle, 1 pneumothorax, 2 pleural effusion, 4 cervical spine fracture, 1 dislocation of cervical spine, 1 rudimentary intervertebral disc at C6-C7, 7 fracture of femur and 4 fracture of pubic rami, 1 ischium fracture, 2 iliac fracture, 1 hip dislocation, 1 inter-trochanteric region fracture identified.

**Conclusion:** Our review suggests that use of whole trauma series in evaluation of trauma in conscious patient is not necessary when adequate clinical information can be obtained. Instead, a selective approach by using individual component of whole trauma series in conscious patient may be effective.

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**Keywords:** Multidetector Computed Tomography, Abdominal Pain, Acute Cholecystitis, Gallstone, Biliary Calculi.

#### 1. Introduction:

Every year more than 5 million people die of injuries. Road traffic injuries are the third leading cause of death of all ages (Cales, & Trunkey, 1985; Chan et al., 2005). Advanced Trauma Life Support (ATLS) Guidelines by American College of Surgery (ACS), recommends lateral view of the cervical spine, AP chest and AP pelvis as essential screening radiographs for the assessment of trauma patient. This definitely has important role of Trauma series in Road Traffic Accidents (RTA) patients and has been recommended in multiple guidelines internationally as initial radiographic screening of polytrauma patient provides useful and timely information which influence early diagnosis and helps in management (Kool, & Blickman, 2007)

However authors intend to review that these recommendations applies well in our local setup for each and every patient presenting to Emergency room with

trauma. These considerations are important due to lower socioeconomic status and as most of the patients are self-paying. Other than financial constraints there is also a difference in trauma impact, considering the quality of roads and vehicle the speed which is relatively less as compared to Western countries. Overutilization of ATLS trauma protocols for the management of every trauma patient is inappropriate and does not improve the care or the outcome. Trauma series radiographs can be ordered selectively, based on the patient's clinical findings (Kevill et al., 2002)

#### 2. Objective of the Study:

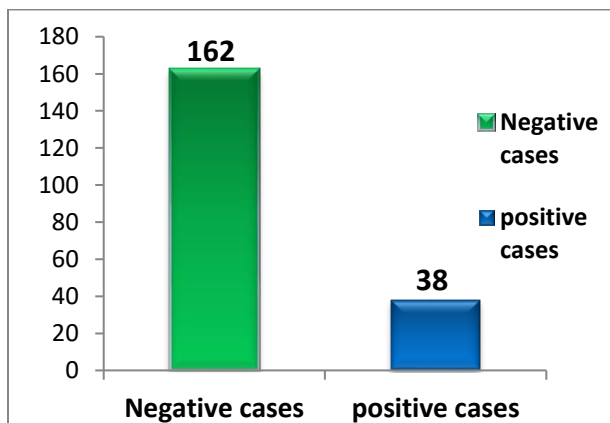
To determine role of Trauma Series established by American college of surgery for patients of multiple trauma, which include lateral cervical spine, AP chest, and anteroposterior pelvis in evaluation of each and every trauma patient.

### 3. Material And Methods:

A retrospective descriptive study was carried out between April 2011 to February 2012 in the Department of Diagnostic Radiology, Aga Khan University Hospital Karachi. Subject of our study were adult patients with blunt trauma who had undergone trauma series. Emergency room (ER) summaries reviewed for mode of presentation, Glasgow Coma Scale/Score (GCS), presence or absence of localizing signs and symptoms of the patients. Reports of all radiographic studies reviewed on PACS. All patient who had fracture or any pathological finding related to x-ray trauma series were considered positive

### 4. Results:

Total of 600 x-rays of 200 patients were reviewed. The age range from 16 - 65 years (Mean 24.5 +/- 8.5). Trauma series was negative in 162 patients, as they had normal lateral cervical spine, anteroposterior chest, and anteroposterior pelvis x-rays, however it turned out to be positive in 38 patients (Figure 1). These 38 patients were received in Emergency with history of trauma among these most of the patients had the history of RTA. Out of 38 positive cases (total 45 sites of injury), 10 rib fracture, 10 fractures of clavicle, 1 pneumothorax, 2 pleural effusion, 4 cervical spine fracture, 1 dislocation of cervical spine, 1 rudimentary intervertebral disc at C6-C7, 7 fracture of femur and 4 fracture of pubic rami, 1 ischium fracture, 2 iliac fracture, 1 hip dislocation, 1 intertrochanteric region fracture identified.



**Figure 1.** 200 patients radiographs reviewed. Negative cases showed no significant abnormality and positive case had some bony fractures or abnormality.

### 5. Discussion

Over the period of years trauma series which includes chest x-ray lateral cervical spine x-ray and pelvic x-rays, played important role in evaluation of trauma patients but our data review suggest that authors may be overburdening the patients not only in terms of finances but also giving unnecessary radiation exposure which

may be harmful for the patient. In our study out of 200 patients only 38 patients were positive in trauma series and 162 were negative. So in conscious patient before performing the X-ray examination sufficient clinical examination may be performed for localizing signs. Canadian CT Head & C-Spine (CCC) Study Group, 110,000 alert stable trauma victims undergo C-spine radiography each year and more than 98% of these examinations turned out normal. Huge number of normal radiographs adds to health care costs and over burden the ER staff and are time consuming (Stiell et al., 2002). Study done by Gleadhill et al., (1987), included 5463 patients with polytrauma in 5 yr. period. 88% were negative and only 12% were positive radiograph (Gleadhill et al., 1987). Over use of x-ray trauma series did not improve the outcome and put excessive patient load on emergency and radiology. They concluded that the number of x ray examinations carried out in A & E department can be reduced by appropriate use of guidelines and this does not compromise the quality of patient care (Sumchai, 1988). Trunkey, (1991), in a study of 848 trauma patient found that patient with positive radiographs had some signs on clinical examinations. Selective use of individual components of the full trauma series when an adequate clinical examination can be performed, would be safe and reduces unnecessary exposure to ionizing radiation of trauma patients (Trunkey, 1991)

### 6. Conclusion:

On basis of the current study, authors suggest judicious approach by utilizing individual component of whole trauma series in conscious patient, when an adequate clinical examination can be performed. It would be safe, avoid unnecessary radiation exposure, less time consuming and more cost effective.

### Conflicts of Interest:

The authors unanimously declare that this work does not involve any conflicting interests.

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