Plain radiographs

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Conventional radiography allows rapid assessment of the major injuries and can be carried out in the trauma room while the patient is clinically assessed and treated. Despite the time constraints, the number of sta ff involved and the restricted mobility of the patient, high-quality images can be routinely obtained with due care and attention. Increasingly plain films are being replaced by whole-body CT . In many centres CT scanners are immediately available in the emergency depart ment and indeed in some departments patients are assessed and treated on the scanning table. There is no routine set of radiographs to be obtained, and the decision is based on the mechanism of injury , the stability of the patient’s condition and w hether the patient is intubated. The most commonly performed initial radiographs are a chest radiograph, a single anteroposterior view of the pelvis and a cervical spine series. The supine chest radiograph should encompass an area from the lung apices to the costophrenic recesses and include the ribs laterally . Chest radiographs give valuable information in both blunt and penetrating trauma. Evaluation of the radio- graph should be undertaken in a systematic manner to mini mise the chances of missing an injury . In the first instance, the should be assessed, followed by assessment of the central air - ways. Following this, the lungs should be evaluated for abnormal focal ar eas of opacification, which may represent aspiration, haemorrhage, haematoma or oedema, as well as more di ff use opacifica tion reflecting a pleural collection. Alternatively , rel - ative focal or unilateral lucency may reflect a pneumothorax in the supine position. Evaluation of the mediastinum should include its position, which may be altered by tension pneumo - thoraces or large collections, as well as its contour, an alter - ation of w hich may reflect a mediastinal haematoma due to aortic or spinal injury . Finally , the skeleton and the soft tissue should be carefully examined for rib, vertebral, scapular and limb fractures, as well as evidence of surgical emphysema and paraspinal haematomas (Figure 8.27). Pelvic radiographs are also commonly performed to screen for, and assess, fractures of the bony pelvis. The image should include the iliac crests in their totality and extend inferiorly to below the lesser trochanters. When assessing the film, the align - - ment of the sacroiliac joints and the symphysis pubis should be carefully examined, as some fractures, especially those of the sacral arcades, can be very subtle on the pelvic radiograph. The presence of pubic fractur es raises the possibility of ure - thral injury and should alert clinicians to exercise caution with bladder catheterisation (Figure 8.28). The utility of cervical spine x-rays depends on the con - sciousness level of the patient and the presence of distracting injuries. In fully conscious patients with an isolated neck injury , clinical assessment can be used to guide the need for x-rays. In patients with distracting injuries and/or altered consciousness, including intubated patients, CT is preferr ed (Figure 8.29). Further radiographs of the thoracic and lumbar spine - and the peripheral skeleton may be required, depending on the clinical setting. As with all skeletal radiographs, two

Figure 8.27 Supine chest radiograph of a patient involved in a road traf /f_i c accident. The patient is intubated. There are multiple left-sided rib fractures (arrows) and extensive surgical emphysema. Depression of the left hemidiaphragm and mediastinal shift to the right suggest that there is a

tension pneumothorax present. Figure 8.28 Retrograde urethrogram in a patient who sustained extensive pelvic fractures following a fall. The pelvic injuries have been stabilised using an external /f_i xation device. The urethrogram identi /f_i es extensive injury to the urethra with extravasation of contrast (arrow).

perpendicular views are required for adequate assessment. However, with the increasing use of CT in assessment of the torso the need for plain films is diminishing. Radiographs of the skull or facial bones have no role in the immediate assessment of the multitrauma individual, except for immediate localisation of a penetrating object.

(b) Figure 8.29 Lateral view of the cervical spine (a) fails to demonstrate the cervicothoracic junction. In addition, there appears to be a break in the posterior arch of C1 (arrow). Computed tomography of the cervical spine (b) demonstrates a fracture of the anterior arch as well as the posterior ar ch of C1 (arrow).

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