IMAGING OF FRACTURES WITH EXTERNAL FIXATORS USING FLEXIBLE CASSETTES

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External fixation has been in use for over a century and its value in the treatment of complicated fractures is clear (Harkess, Ramsey and Harkess 1991; Russell 1992). Large radiodense systems of fixation make radiological evaluation of a fracture difficult, especially at a joint surface (Fig. 1a).

Fig. 1a

Manufacturers are now producing components made of radiolucent material, but these are expensive, and may not be available to all surgeons.

We have used panoramic radiography products (Kodak Dental Products Catalog and Reference Guide 1991), as used by dental surgeons for the mandible, to image fractures in some forms of external fixation (Fig. 1b). The range of products includes small films and a thin, flexible cassette which can be placed in the limited space between the patient and the external fixator. This eliminates the radiodense components from the path of the X-ray beam.

We have found this technique simple and useful for evaluating fractures of the distal radius, femur, tibia and

tibial plafond, especially for views in the plane of a unilateral pin or clamp fixator. The cost is no greater than that of a regular radiograph; standard radiographic equipment is used. Both the cassettes and the intensifying screens are reusable.

Fig. 1b

Technique. The image receptor is composed of a panoramic film, available in 5×7 -, 5×12 -, and 8×10 -inch sizes, which is placed between two thin, flexible intensifying screens. All three are then slid into a thin, flexible, light-tight cassette which can easily be placed between the patient and the external fixator (Fig. 2).

Fig. 2

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0301-620X/95/1R28 \$2.00

J Bone Joint Surg [Br] 1995;77-B:157-8.

Received 27 January 1994; Accepted 20 April 1994

The Kodak Dental Products Catalog and Reference Guide (1991) is useful for choosing films, cassettes and intensifying screens. Exposure settings vary depending on body bulk and the bone structure of the individual patient (Kodak Dental Radiography Series: Successful Panoramic Radiography 1991), but the initial settings recommended

for the forearm are 55 kVp, 3 mA; for the wrist, 50 kVp, 3 mA; and for the leg and ankle, 60 kVp, 4 mA. For an obese patient or one with a large bone structure, the exposure may be increased.

No benefits in any form have been received or will be received from a commercial party related directly or indirectly to the subject of this article.

REFERENCES

Harkess JW, Ramsey WC, Harkess JW. In: Rockwood CA Jr, Green DP, Bucholz RW, eds. *Rockwood and Green's fractures in adults*. Third ed, Vol 1. Philadelphia, etc: J. B. Lippincott, 1991:1-180.

Kodak Dental Products. *Catalog and Reference Guide*. Rochester, NY: Eastman Kodak Company, 1991.

Kodak Dental Radiography Series. *Successful panoramic radiography*. Rochester, NY: Eastman Kodak Company, 1991.

Russell TA. General principles of fracture treatment. In: Crenshaw AH, ed. *Campbell's operative orthopaedics*. Eighth ed, Vol 2. St Louis, etc: CV Mosby, 1992:725.

TIBIOFIBULAR IMPACTION: OBSTRUCTION TO TIBIAL FRACTURE REDUCTION

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The failure of closed reduction of tibial fractures is not uncommon and is usually due to the configuration of the fracture or to soft-tissue interposition. We report two cases

in which reduction was prevented by tibiofibular impaction.

Case 1. A 24-year-old professional footballer sustained a

Fig. 1

Fig. 2a

Fig. 2b

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©1995 British Editorial Society of Bone and Joint Surgery
0301-620X/95/1R27 \$2.00
J Bone Joint Surg [Br] 1995;77-B:158-9

Received 28 February 1994; Accepted 13 April 1994

direct blow to his right tibia in a tackle. The lateral radiograph of his deformed leg showed tibiofibular impaction (Fig. 1) with the distal fibula wedged into the proximal tibia. It was decided to perform intramedullary nailing of his tibia, but despite using standard reduction techniques, repeating the deforming force and subsequent traction, reduction could not be achieved. Open reduction was per-