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# Standing (Weight Bearing) Extremity CT Scans (SECT Scan)

There are situations where it is important to do x-rays or CT scans in the weight-bearing position, especially with respect to the lower extremities. Conventional systems don't allow this.

New cone beam CT scanners have now been designed to overcome this handicap (Fig. 1) and weight bearing, standing CT scans of the foot, ankle, leg, knee and the fingers, wrist, forearm and elbow are now easy to do.

The SECT scanner scans one limb at a time with the patient placed in as comfortable a position as possible. The images are obtained as highresolution CT scan images that are then reconstructed in various planes depending on the situation.

In the foot and ankle, a SECT scan is very useful for unmasking subtle Lis-Franc dislocations / disease (Fig. 2) as well for evaluating a variety of



Fig. 1: The standing extremity cone beam CT scanner.



with a twisting foot injury and pain and swelling. The plain radiograph (A) shows a fracture with a possible malalignment at the tarsometatarsal articulation. The SECT scan with sagittal (B), axial (C) and coronal (D) images of the foot shows the typical fractures and dislocation suggestive of a Lis-France fracture dislocation, better appreciated because of the separation after weight bearing and application of stress.

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# SECT Scan



### At a glance:

The SECT scanner is a cone-beam scanner for standing, weight bearing CT scans of the extremities Current indications include

- a. Add on to x-rays for acute trauma
- b. Foot and ankle problems in adults and children
- c. MARS CT of the knee
- d. Rheumatoid arthritis patients for erosions, etc.

pediatric conditions that require assessment of the bones, joints as well as different angles and other measurements (next issue).

As an add-on to routine x-rays, the SECT scanner allows better evaluation of fractures and dislocations (Fig. 3).

In rheumatoid arthritis and other polyarticular diseases, the number and presence of erosions can be accurately evaluated using a SECT scanner with a far higher sensitivity than a plain radiograph (next issue).

The metal-artifact reduction (MARS) software on the SECT scanner is extremely useful for evaluating post-knee replacement problems (next issue).

Fig. 3 (A-D). 32-years old lady with blunt trauma to the elbow and pain. The plain radiograph (A) shows no obvious abnormality. An MRI was then done and a coronal PD fat-saturated image (B) shows marrow edema of the lateral condyle (arrow). A SECT scan was then performed and the coronal (C) and sagittal (D) images show an obvious impacted fracture (arrows) of the lateral condyle and capitellum with intra-articular extension.

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