

SIMPLE TECHNIQUE FOR RECORDING ANTERIOR LANDMARKS**ON A PRONE PATIENT IN DUAL-CRYSTAL SCANNING**

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One of the major justifications of organ scanning is the feasibility of relating the system under investigation to various landmarks to (A) confirm a clinical impression, (B) direct further diagnostic procedures, and (C) plan therapeutic measures. Thus the transfer of anatomic landmarks and/or mass outlines to the scan constitutes an essential part of the scanning procedure. This can be readily accomplished in rectilinear scanning with the detector above the patient. With the use of a dual-probe scanner only landmarks viewed by the upper detector can be transferred to the photoscan. Therefore in liver scans conventionally obtained in the supine position, the costal margins can easily be identified and recorded on the scan.

In an attempt to minimize respiratory artifact which commonly obscures details of the upper and lower borders of the liver in scans obtained in the supine position, we had resorted to scanning patients in the prone position with the Ohio-Nuclear dual 8-in. scanner. Confronted with the challenge of devising a means of transferring the costal margin markings of a prone patient to the anterior scan, a technique using small sources of ^{85}Sr as markers was developed in our department.

Strontium-85 has a single gamma-ray energy of 513 keV and a relatively long half-life of 65 days. Markers are prepared as follows: an Abbott 23-gage Butterfly scalp vein infusion set tubing 30 cm long has a volume of 0.4 ml. Using ^{85}Sr with a specific activity of 200 $\mu\text{Ci}/\text{ml}$, 80 μCi is drawn up into the tubing with a syringe, and the needle and adaptor are severed after both ends of the tubing are sealed by clamping them with a warm hemostatic clamp. This particular tubing melts on direct contact with heat.

The ^{85}Sr -filled tubing is then divided into six 4-cm segments separated by 1 cm and severed between two adjacent clamped areas. Each 4 cm segment of tubing is then curled upon itself and sealed between two pieces of transparent tape, thus forming a small, flat, circular 1.5-cm radioactive marker. Each marker contains approximately 10 μCi of ^{85}Sr , giving a counting rate of 160,000. The useful life of ^{85}Sr markers is 3 months. The entire procedure of preparing these markers is carried out with the usual precaution used in handling radioactive materials.

With the patient supine, three markers are positioned at the xiphisternum and right and left costal margins. The lateral costal margins can always be identified with the patient prone or supine and do not require markers. The patient is then placed prone with the lower detector set for ^{85}Sr . The sources are located and a mark placed at the corresponding sites on the patient's back as indicated by the light source from the upper detector. The spectrometer settings on the lower detector are subsequently changed to those for $^{99\text{m}}\text{Tc}$ and the scan set up as usual. At the termination of the scan, the marks are located on the patient's back and can then be transferred in the usual manner to the anterior scan.

In the continuous use of these markers we have had no leakage or contamination at any time. A further refinement of this technique using ^{137}Cs as the source would provide the advantage of a marker with a long half-life, obviating the necessity of making up new markers every few months.

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