

# An Accessory for Estimating Organ Size From Gamma Camera Images

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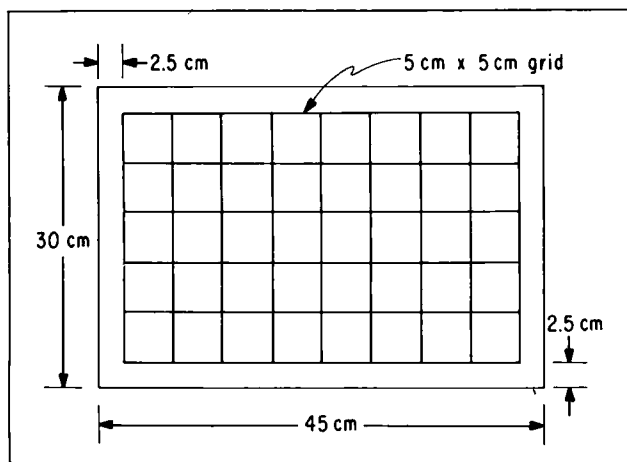
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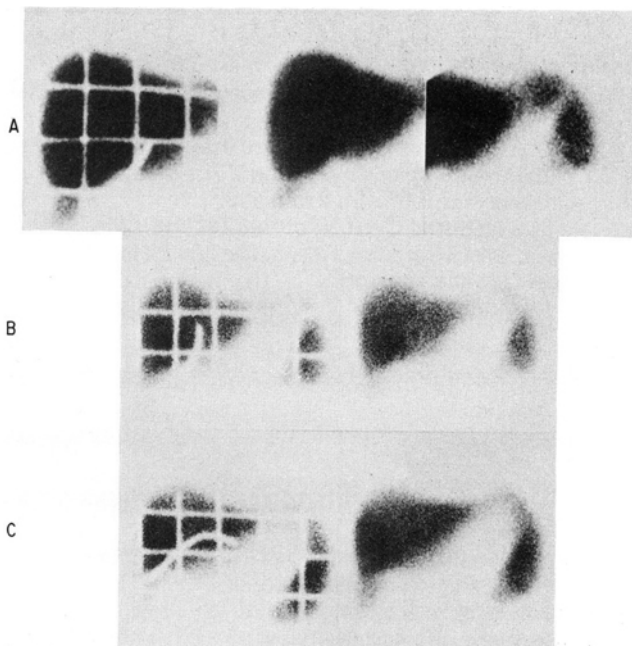
*We have devised an imaging accessory to facilitate estimation of organ size. A plastic sheet has embedded lead (solder) strips on a 5 cm × 5 cm grid. When interposed between patient and gamma camera, the resulting grid shadow is superimposed on the image. The device is light and inexpensive.*

We have constructed a simple device that is useful in estimating liver size from gamma camera images. A lead grid, supported on a plastic base, is placed between the patient and camera collimator. Lead strips  $\frac{1}{8}$ -in. wide, spaced at 5-cm intervals, overlay the liver image with a "shadow" of the grid, allowing easy estimation of the extent of the liver image. It should be useful in estimating the size of other organs as well.

Our first device consisted of cut lead strips taped to a plastic support and was entirely satisfactory from the imaging aspect, but suffered physical damage easily. The current grids are more expensively made, but should last much longer. Grooves are milled  $\frac{1}{8}$ -in. wide and  $\frac{1}{8}$ -in.



**FIG. 1.** Drawing of  $\frac{1}{8}$ -in. thick plastic sheet with embedded lead grid.



**FIG. 2.** (A) Standard field of view camera images of liver-spleen with 5-cm grid device interposed. (B and C) Follow-up images were made with large field of view camera.

deep in a  $\frac{1}{4}$ -in. thick polycarbonate plastic sheet 30 cm by 45 cm (12 in. × 18 in.), in a square grid pattern on 5-cm centers (Fig. 1). Machining of lead strips is avoided by filling the grooves with solid solder (60% lead)  $\frac{1}{8}$  in. in diameter, cut to appropriate lengths. The solder strips are cemented in place. To reduce their tendency to break along the grooves outside the grid, the unfilled grooves along the edge of the plastic sheet are filled with short pieces of  $\frac{1}{8}$  in. plastic cemented in place.

The accessory weighs only 2.9 lbs (1.3 kg). An acrylic plastic sheet could be used for a base but the polycarbonate should be more resistant to breakage. For between-use storage, a hole drilled in the center of one end allows hanging on a nail or peg.

Use of the grid device does not necessarily extend examination time. One can obtain an image as soon as a patient has been positioned and while the radiopharmaceu-

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tical is still clearing from blood.

Routine use of the grid in clinical studies provides a direct measurement scale on the image itself. This can be important because, while regular quality assurance procedures may be performed on imaging equipment, the actual size of images may be difficult to judge or may change when the equipment is serviced or readjusted.

The grid provides a basis for comparing images per-

formed on different camera systems. Figure 2 shows sequential liver-spleen images on a patient receiving chemotherapy for breast carcinoma. The initial images (Fig. 2A) were obtained using a standard field of view camera; follow-up images (Fig. 2B and C) were made on a large field of view camera. Use of the grid to establish a size comparison permits appreciation of the slightly increased splenomegaly in Fig. 2C.