other known reconstruction methods (Ref. *1* and other references therein) and the ultimate solution to the quantitative imaging problem will probably be found in another technique.

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THE AUTHORS' REPLY

The OTC algorithm is correctly presented in our paper. The example chosen to illustrate its operation was intentionally simplified but apparently misunderstandings can arise when relatively few picture elements are used to illustrate processes which involve thousands of picture elements for proper approximations.

OTC does produce zeros appropriately. With repeated application of correction factors having values less than unity, the count value corresponding to a void converges toward zero. Truncation deletes those matrix values which are substantially less than unity and zeros result in the final reconstruction.

There is probably no single reconstruction method which will be optimum in economy and performance for all hardware and for all classes of emission and transmission pictures. We replaced our earlier DSA process with OTC in order to quantify radioactivity in brain sections, which was not possible before. This method, including attentuation correction, has worked well in hundreds of quantitative section scans of patients, animals, and phantoms of various configurations. Even though OTC is more sensitive to noise, we consider the results clearly superior to what we accomplished using DSA or SSA processing. To our knowledge, no one has performed similar comparisons of OTC with alternative methods of reconstruction.

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RIB ABNORMALITY HIDDEN BY BREAST PROSTHESIS

The half-value thickness for ^{99m}Tc in water is 5 cm and in denser tissues considerably less. It is well recognized that a breast prosthesis or even a large pendulous breast can produce a defect on a ^{99m}Tc-sulfur colloid liver scan (*1*). Buchignani and Rockett pointed out that a similar area of decreased uptake may be produced on a bone scan when ^{99m}Tc-labeled radiopharmaceuticals are used and such an artifact could possibly conceal a bone lesion (*2*). The following case report confirms this.

The patient, a 52-year-old woman, underwent an extended right, simple mastectomy in October 1971 because of a breast mass. Histologically, the lesion was an infiltrating ductal carcinoma confined to the breast; no metastases were found in nine axillary nodes examined. In July 1972, she noted pain in her left upper arm which in the succeeding months increased in severity. Radiological examination of the

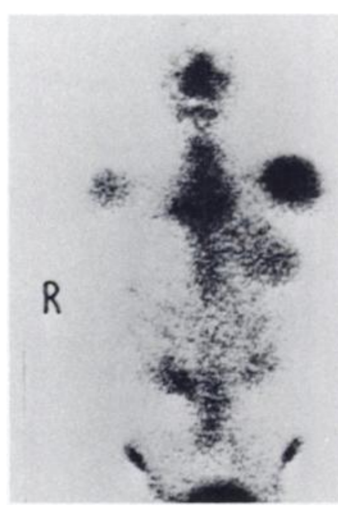

FIG. 1. Bone scan of head and trunk showing no activity in region of right breast.

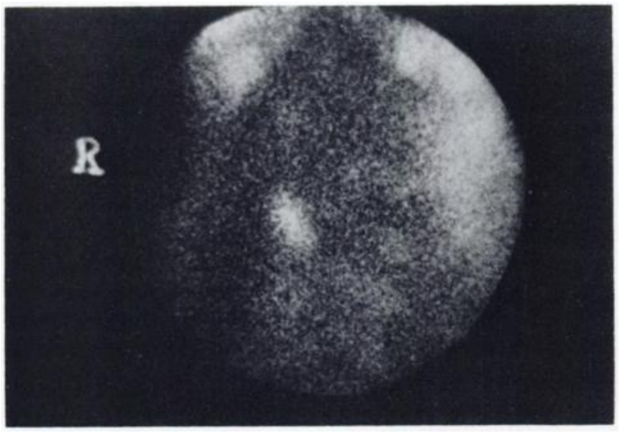

FIG. 2. Gamma camera view of ribs with breast prosthesis removed showing abnormal uptake in rib.

shoulder in March 1973 showed changes consistent with a metastatic lesion in the left scapula. A total skeletal scan was ordered prior to a decision about her subsequent management.

The scan was obtained 3 hr after an intravenous dose of 10 mCi ^{99m}Tc-ethane-1-hydroxy-1,1-diphosphonate (EHDP) using an Ohio-Nuclear dual probe. Figure 1 is the anterior projection of the head, neck, and trunk showing extremely intense uptake of the agent in the left shoulder, moderate accumulation in the left breast and chest wall, and a total absence of activity over the right anterior chest wall in the region of the right breast. This last finding was due to a silicone breast prosthesis. Spot views of the area with the prosthesis removed were made with a gamma camera (Nuclear-Chicago Pho/Gamma), revealing an area of increased uptake in the ribs which was previously hidden by the prosthesis (Fig. 2).

We have observed abnormal bone scans due to urine dribbling on clothes and believe that this case report further strengthens the impression that changing into a hospital gown for each procedure will minimize the need for additional views to evaluate artifacts.

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"CLEAR PLATE" TECHNIQUE FOR LOCALIZATION AND ORIENTATION IN RECTILINEAR SCANNING

To localize lesions and to orientate anatomic structures are very important in rectilinear scanning. Various techniques, such as the so-called photodot technique, x-ray technique (*1,2*), transmission scintigraphy (*3*), and radiophotoscan (*4*), have been used. Some techniques are very time consuming, and some lack accuracy. None of them is completely satisfactory. By extending the use of "clear plate" technique, we have devised and utilized another more effective method.

The procedure is as follows: the physician examines the patient, draws anatomic outlines and clinically noticeable lesions on the patient's skin, and puts two or three cross marks at anatomic landmarks with a felt-tip marker. He then traces the drawings and cross marks with a china marker pencil directly onto the clear x-ray film which is placed on top of a Lucite panel over the area to be scanned. Being guided by the cross marks at the anatomic landmarks, the technician marks two or three photodots on the scan film through a scanner and does the scan. After the scan is completed and processed, the scan and the marked clear x-ray film are superimposed according to the cross marks on the clear x-ray film and photodots on the scan, and then unilaterally fixed together with a piece of Scotch

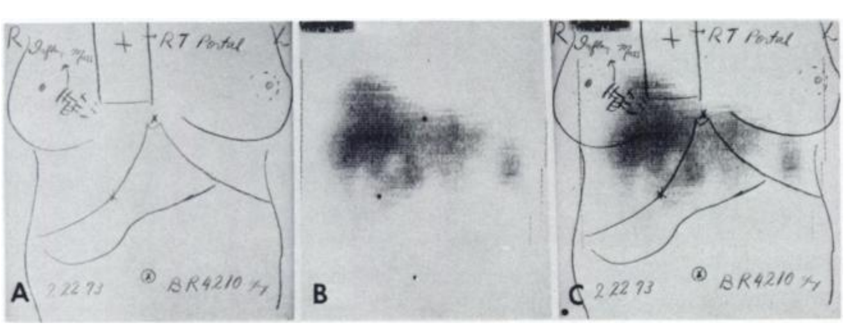

FIG. 1. Liver scan (^{99m}Tc-sulfur colloid) using "clear plate" technique. Forty-seven-year-old female patient had inflammatory carcinoma of right breast with metastases to liver. (A) Drawings on clear x-ray film, traced from patient's skin by supervising physician. Note patient's anatomic outlines, inflammatory mass on right breast, parasternal radiotherapy portal, palpable liver and cross marks at xyphoid process, umbilicus and right costal margin. (B) Liver scan with three photodots. (C) Superimposition of marked clear x-ray film and scan.