Quan-Yang Duh, MD, San Francisco, Calif: Although I agree with your hypothesis that some of these multiple-gland diseases are missed, my belief is that the results actually come from patient-selection bias by preoperative localization studies. The problem is that most studies do not take into account the principle of intent to treat. What happened is this: The limited exploration approach is usually done only after a positive localization study. Because sestamibi and other localization studies are less accurate for multiglandular disease, positive localization studies select out a group of patients less likely to have multiple-gland disease.

To put it another way, a scan-directed operation is performed in a scan-selected group of patients. This selection can lower the apparent percentage of multiglandular disease. I will give you an example. If you take 100 patients and 80 of them have single-gland disease and 20 of them have multiple-gland disease, as in our series, the sestamibi is 80% sensitive for the single-gland disease, so you have 64 positive patients (true-positive). Of the other 20 patients who have multigland disease, one third will show nothing, one third will show multigland disease, and one third (let us say 7 patients) will have a positive scan that shows only 1 gland. So now you have 7 plus 64 patients for a total of 71 patients (out of the initial 100 patients) who will have a positive scan showing only 1 gland. So the percentage of multiglandular disease becomes 7 divided by 71, which is slightly less than 10%, instead of 20% in the original 100 patients. In fact, this is not very different than what Dr Norton showed in the literature.

Ronald G. Latimer, MD, Santa Barbara, Calif: From the southern part of the United States, Dr Irvin and Dr Norman tell us that we need to not talk about morphologically enlarged glands but physiologic-functioning glands and that intraoperative parathyroid hormone and the nuclear sestamibi localization with the 20% rule measure the glands that are actually functioning and producing the disease. So we are discussing multigland enlargement in this situation vs multigland disease. The last observation is that we have heard about modern parathyroid surgery and modern gallbladder surgery. There may be hope for some of us who are retired being recalled to do an open gallbladder and occasionally a bilateral neck exploration.

Dr Norton: In response to Dr Dainko, the typical weight of the parathyroid glands in the patients with hyperplasia is 500 mg. The patients with multiple-gland disease were older than those with adenoma. We tried to perform biopsies of 4 parathyroid glands in every patient at the time of surgery. However, if you look at our ability to find and perform biopsies of 4 glands, it was only 86%. So although we tried, we didn’t successfully perform biopsies of all the glands. We did have an interest in multiple endocrine neoplasia type 1. The incidence of it may be greater in our patient group than the literature.

In response to Dr Duh, I agree wholeheartedly that this may be a patient-selection phenomenon. Your point is well taken. However, I ask you the question, where are the patients with hyperplasia going? There is currently no evidence that patients with negative imaging are being referred to a special surgeon for bilateral neck exploration.

In response to Dr Latimer, I agree with you that there is a need for surgeons who can still do bilateral neck exploration.