

is that many patients with carcinoma of the pancreas are inoperable because the tumor encases the superior mesenteric and celiac arteries, so that the potential "space" is obliterated by tumor. Therefore, attempts to place needles so that the neurolytic agent bathes the celiac neural axis may be technically and physically impossible. Although primary localization of the neurolytic agent in the classical technique is in the retrocrural space and about the splanchnic nerves, some of the agent is noted to escape anteriorly, and so the classical method allows not only for a splanchnic neurolysis but also, as anatomy permits, some bathing at the celiac neural axis.

We are concerned about the description of figure 3 in Singler's article.<sup>1</sup> The needle tips are indicated by two asterisks and are stated to lie anterior to the cura of the diaphragm. Yet these seem to project into the retrocrural space; the appearance is that of a classical celiac block as described by Moore, Bush, and Burnett.<sup>2</sup> With CT, actual placement of the needles' bevels can be shown, and it would seem the appropriate way of confirming their location prior to injecting the neurolytic material. Furthermore, we have placed single needles anterior to (below) the diaphragm at L1, and have not found spread of the neurolytic material to be as described by Singler or as illustrated by figure 3 of his article.<sup>1</sup> As would be expected at L1, it spread anterior to the cura only and not around the aorta (see fig. 1).

The last statement of Singler's article, "... the classic technique has worked well and is still used for surgery and diagnostic blockade prior to neurolysis," raises a fundamental question about altering this technique for neurolysis. Naturally, no technique should be "inscribed

in stone" and unalterable in its application. However, it seems to us that to do a diagnostic block via the classical method in an effort to determine if a block will help the patient, to find that the diagnostic block by the classical method is helpful, and then to alter the technique to that of the transcrural method of needle placement, begs the question of common sense.

Finally, the number of cases Singler offers is small; the failure rate with the transcrural technique (two of six) is certainly not less than that when he uses the classical technique (one of five).

In summary, then, we feel that the article offers an advantage in theory only, failing to provide any practical improvement over an established classical technique for celiac neurolysis.

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*In reply:*—I am pleased that Dr. Moore admits that "in theory [the transcrural approach] would seem optimal." In practice, we have found it technically feasible to use this approach even in patients in whom metastases markedly displace the aorta and nearby structures. Unfortunately, I cannot agree that with the retrocrural technique, anatomy may permit bathing of the celiac neural axis, especially in patients with distorted anatomy.

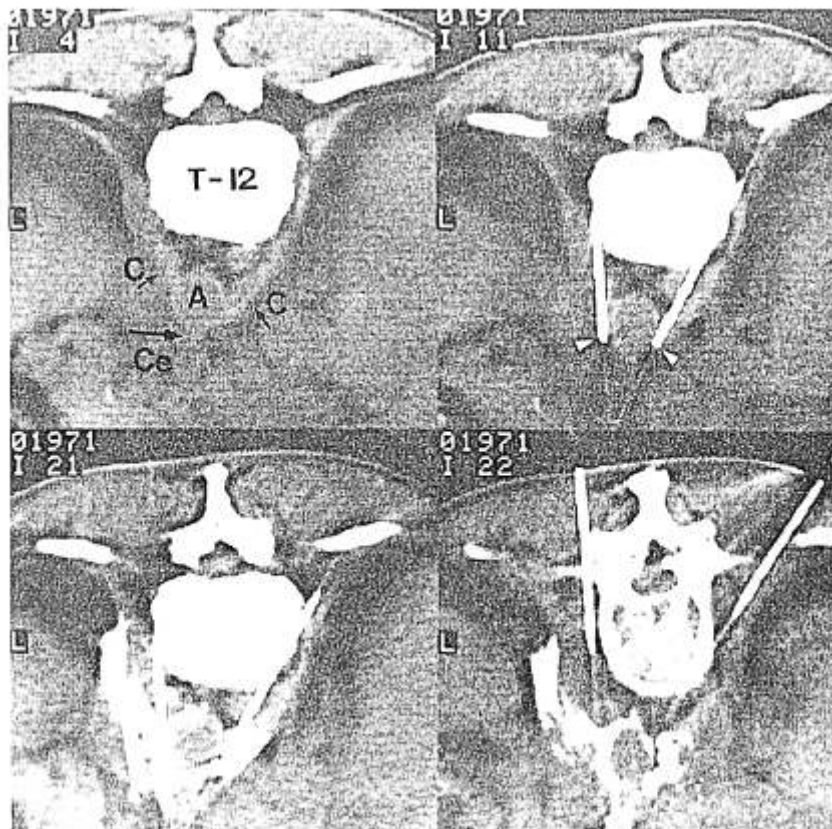
I would like to provide the accompanying photographs of needle placement using the transcrural technique. As with Dr. Moore's placement, it is simple to demonstrate the actual position of the needle bevels *prior* to the injection of alcohol. Figure 1 shows needle position at the T12 level, and the subsequent outlining of the celiac artery by contrast material at that level and one centimeter lower.

Dr. Moore has nicely demonstrated the spread of contrast anterior to the aorta in his figure as well. Encircling

of the aorta is not necessary, as the destruction of the ganglia obviates the need for retroaortic splanchnic neurolysis. It should be noted that he might have avoided spread of contrast to the renal pelvis if he had used bilateral needles and a smaller volume. Fifty or more milliliters of neurolytic solution are not necessary with the transcrural approach. Finally, the choice of T12 or L1 for the level of injection is determined solely by the CT-assisted location of the celiac axis. As performed routinely using the retrocrural approach, I direct my needle tips to rest at the T12 level (though transcrural) when the celiac artery cannot be located.

I readily admit to being instructed in the original technique by Dr. Moore, himself. Unfortunately, Dr. Moore apparently feels his technique *should* be "inscribed in stone," as he ignores in his paper,<sup>1</sup> and in the above letter, the primary impetus for my subsequent alteration of his technique: the alarming observation of frequent

FIG. 1. CT scans taken at the T12 level, showing (#4, upper left) anatomy at the level of the celiac artery, (#11, upper right) transcrural needle position prior to injection, (#21, lower left) spread of contrast anterior to the aorta at the level of the celiac artery, and (#22, lower right) spread one centimeter lower. This patient had excellent relief of pain from metastatic adenocarcinoma. A = aorta; C = diaphragmatic crus; Ce = celiac artery. The faint white lines which appear to proceed from the axis of the two needles and cross at the bottoms of the scans are scan artifact, and do not represent the tips. The correct location of the needle tips is indicated by the white arrowheads.



spread of alcohol posteriorly along the diaphragm, toward the lumbar plexus. This observation alone justifies my alteration of the classic technique.

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## Preventing Air Embolism While Inserting Central Catheters

*To the Editor:*—In their recent report,<sup>1</sup> Horrow *et al.* have stated that: "Despite several precautions which would minimize the likelihood of air entrainment into the circulation, air embolism occurred."

We would appreciate their comments on several points concerning their approach: 1) Why was a large introducer used to insert a 16-gauge ordinary iv catheter? 2) Why was a diaphragm-occluded introducer not used? 3) Was there any reason not to insert a CVP line after induction of anesthesia under positive pressure ventilation?

We believe that either a diaphragm-occluded<sup>2</sup> intro-

ducer or the other measures mentioned above would probably prevent this complication.

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