CELIAC PLEXUS BLOCK: USE OF A BLUNT-TIPPED NEEDLE

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Objectives: Various needles with sharp tips have been used to perform celiac plexus blocks and have resulted in such complications as puncture of abdominal organs, pneumothorax, or puncture of aorta, inferior vena cava, or both, which could result in severe hemorrhage or retroperitoneal hematoma. One of the authors (a radiologist) developed an 18-gauge blunt-tipped needle for invasive radiologic procedures (fig., from AJR 152, 1989). Because of positive results in that setting, we hypothesized that the blunt-tipped needle would decrease the risk of celiac plexus block.

Methods: In this retrospective study, the records of patients who underwent celiac plexus block with a blunt-tipped needle over 4 yr at one tertiary care institution were reviewed by one of the authors (an anesthesiologist), and information about the technique of the block and outcome from it was recorded.

Results: During the study period, 13 patients (9 men and 4 women aged 37 to 70 yr) underwent 15 diagnostic celiac plexus blocks with an 18-ga, 15-cm, blunt-tipped needle under fluoroscopic guidance. Patients were placed prone and the celiac plexus block approach was from the left side. The needle was inserted between 6 to 7.5 cm lateral to the midline, immediately caudad to the 12th rib, and was advanced 1.5 to 2 cm anterior to the end of the superior margin of the L_1 vertebral body. The blunt cannula was then removed, and no cerebral spinal fluid or blood was aspirated. Anesthesia was provided with lidocaine, 0.5%, 40 ml, alone or mixed with depomedrol in 3 cases and with 50% alcohol, 40 cc, injected 20 minutes later in 8 cases or several hours later in 2 cases in which a guidewire was placed through the needle and it was then replaced with a catheter. No neuritis, bleeding, or pneumothorax was reported in any patient. In one patient who underwent 2 blocks, although the blocks were considered to be technically done well, the patient had no pain relief.

Discussion: The developer of the blunt-tipped needle (the radiologist author) has compared it with sharp needles in dogs in which the needles were inserted by direct vision or percutaneous puncture into the kidney or liver. Because of positive results with the blunt-tipped needle, it was used clinically for nephrolithotomies (n = 18), nephrostomes (n = 8), biliary drainages (n = 12), abscess drainages (n = 12), and coaxial biopsies (n = 2). With direct vision, sharp needles resulted in a 35% incidence (n = 20) of brisk arterial bleeding from punctures of the kidney, while the blunt-tipped needle caused no bleeding after 50 direct renal punctures. The blunt needle displaced loops of bowel without laceration or entry into the intestines. With percutaneous insertion, when the blunt-tipped needle was not angled perpendicular to the kidney, the needle glanced off the renal capsule, and insertion required a forceful jab. After 20 transrenal insertions, aspiration through the blunt-tipped needle while it was withdrawn produced no arterial bleeding and only one case of venous bleeding (5%). In 4 dogs, the blunt-tipped needle could not pierce a barium-filled renal artery despite 100 direct forceful attempts. Because of these positive findings, we began to use the blunt-tipped needle to lessen the likelihood of vessel and viscous puncture during celiac plexus block. The large bore of the needle also facilitates injection into a space potentially filled with fibrosis or tumor, the use of a guidewire for catheterization if sequential diagnostic blocks are considered, and ablative therapy at a later date. Our retrospective data show that, compared with a sharp needle, the blunt-tipped needle entails lower risk and more benefits of celiac plexus block.

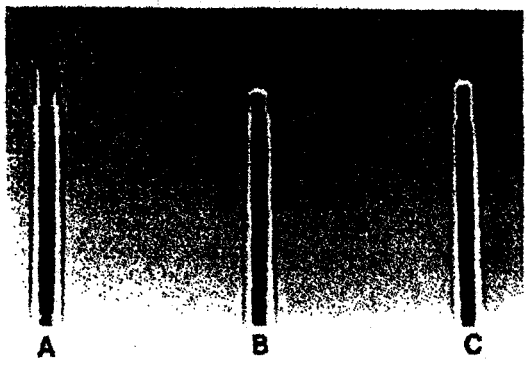

Fig. 1.—Photograph of the conventional 18-gauge splenic Cook needle with a sharp stylet (A) compared with the prototype 18-gauge blunt needle (B). The commercially available blunt needle will be made extremely smooth (C) by grinding down the tip.