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New Insights Into the Early Applications of Caudal Route in Clinical Therapy

To the Editor:

In early 1901, 2 French clinicians, Cathelin,¹ a surgeon, and Sicard,² a neurologist, separately described the caudal approach to infuse cocaine into the epidural space in dogs. Cathelin applied this research to man on April 27, 1901. Epidural injections via the caudal route were thus published in the French medical literature and brought new information. In fact, this route was immediately used to treat severe acute or chronic pain or even spinal tuberculosis.³

In the same year, Cathelin described dural puncture via this route in neonates and infants.⁴ In 1902, he reported 51 ambulatory epidural injections of cocaine or saline in 11 young teens to treat enuresis.⁵ No complications were reported. It is of interest to note that in the latter article,⁵ Cathelin considered Bier's block⁶ only as a development of the spinal injection previously reported by Corning.⁷

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Ultrasound Phantom for Hands-On Practice

To the Editor:

The technique of ultrasound-guided nerve block requires good eye/hand coordination to align the block needle with the ultrasound beam and visually track the block needle as it is advanced toward the target nerve in real time. Such skill is acquired through hands-on practice. To shorten the learning curve, this task should be first performed on a phantom before an actual procedure on patients.¹ At the present time, phantoms available include (1) home-made, olive-embedded, turkey breast model for biopsy practice² and (2) commercially available gelatin-based phantoms for nerve block and vascular access practice (e.g., Blue Phantoms [Advanced Medical Technologies]). Unfortunately, some of these phantoms do not show "nerve" structures, and some are quite costly.

We designed a new, economical, tendon-embedded porcine phantom for ultrasound imaging and hands-on practice. Tendon is used instead of nerve because nerves are generally not available for purchase. A piece of pork shoulder, preferably with the humerus attached, is carved to approximately 20 cm × 12 cm × 8 cm (length × width × height) in dimension. After removing the skin, the pork specimen is deodorized by soaking it in 20 to 30 mL of 70% alcohol inside a plastic bag for 8 to 10 hours at 4°C. A solid metal or plastic rod approximately 1.5 cm in diameter is used to pierce through the muscle layers and create a 10 cm long tunnel approximately 3 cm from the surface. A bovine tendon approximately 8 cm long and 1 cm in diameter is then pulled inside the tunnel. The whole phantom is then wrapped up in a transparent para film, reinforced exteriorly by a surgical paper towel, and stored at 4°C until use.

In this phantom, one can appreciate ultrasonographic appearance of muscles and bone, and the embedded tendon appears predominantly hyperechoic, round to oval in short axis (Fig 1A), and tubular in long axis (Fig 1B). The "fibrillar pattern" seen on ultrasound resembles nerve fascicles. One may vary the tendon diameter: 2 cm for the novice and as small as 0.5 cm for the experienced practitioner. This porcine phantom has the following advantages: (1) low cost, (2) needle-track artifact is less likely to show after repeated needle punctures than a gelatin-based phantom, and (3) saline injection around the target simulates a local anesthetic injection (Fig 1C).

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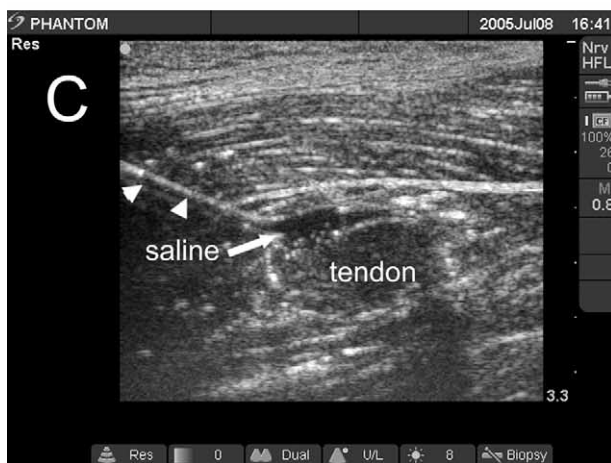
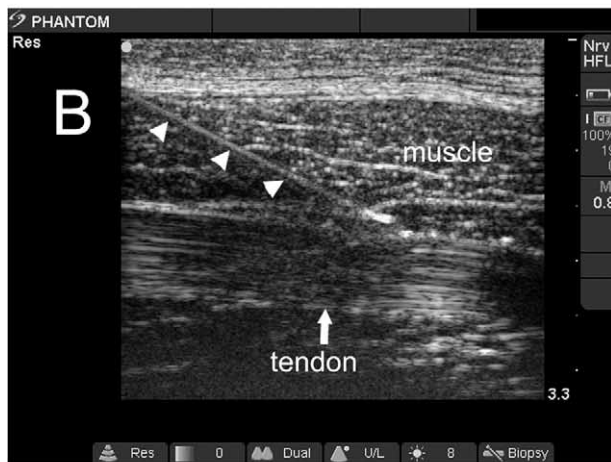
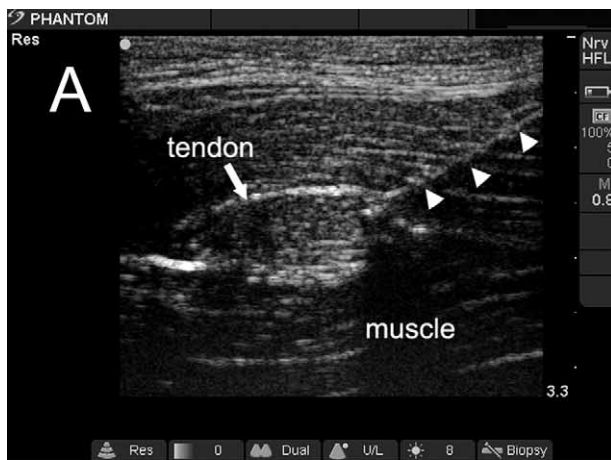


Fig 1. (A) Transverse sonogram of a tendon with a needle (arrowhead) in contact. (B) Longitudinal sonogram of a tendon with a needle (arrowhead) in contact. (C) Transverse sonogram of a hypoechoic collection after saline injection.

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Posterior Approach to the Brachial Plexus

To The Editor:

It was good to see the posterior approach receiving attention in the English literature.¹ The authors are to be congratulated on making a good case for this technique. Their article is, however, not as they state “the first clinical report on the single-injection nerve-stimulation technique for brachial plexus block via the posterior approach for shoulder surgery.”¹ It is understandable that they should have missed the previous articles, which were published in the Dutch language by my coauthors and me in 1998 and 2002.^{2,3} Our clinical experience was also described in a letter to the editor in this journal in 2003.⁴

In the Netherlands, the posterior approach has been widely used in the past 10 years since its introduction in a regional anesthesia course given by the St. Maarten’s clinic in Nijmegen. It is disappointing to see that the technique is almost unused in most countries, whereas its advantages are clear. It is to be hoped that after the publication of the article by Sandefo et al.,¹ the technique will start to grow in popularity. I should like to take this opportunity to reinforce a few points.

As the authors rightly state, it is difficult to compare the safety of the different approaches in clinical studies. However, as they also state, there are good theoretical reasons for choosing the posterior approach. The anatomic landmarks are easier, especially in obese patients. The needle direction is potentially safer; introducing the needle too deeply will simply result in the embarrassing fact that the needle exits at the front of the neck. The vertebral artery is well protected by the vertebral column against inadvertent injection from the back. Less 3-dimensional feeling is necessary. The technique is well suited to catheter placement, and fixation on the back of the neck is in our opinion inherently more stable than with the interscalene approaches. The technique has the disadvantage of the sitting position, which occasionally causes vagal reactions, but the injection point is for many patients less threatening than with the interscalene approach.

Our experience confirms the finding that the injection is not more often experienced as painful than with other approaches; administration of 0.5 mg alfentanil before the block is worth considering.

Experience in the St Maarten’s clinic shows that a unilateral Horner’s syndrome is present in a large percentage of patients, although they often do not notice this themselves. Involvement of the phrenic nerve probably also occurs much more often than is shown by the results in this publication. Severely reduced lung function is a