

CORRESPONDENCE

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In Reply:—The issues of potency, baricity, epinephrine, and glucose addition raised by Drasner are all important considerations, as we acknowledged in the discussion section of our publication.¹ We believe that Drasner has missed the point of our clinical investigation. The specific etiology of transient radicular irritation will, no doubt, best be discovered in a carefully standardized laboratory model that controls for many variables. The purpose of our study was simply to provide clinically useful information to practicing anesthesiologists. Our goals were to determine the incidence of transient radicular irritation in clinical situations and to learn whether there are readily available reliable alternatives for clinicians who choose not to use 5% hyperbaric lidocaine. We believe that our study is a useful preliminary step in that regard. We will anxiously await the results of Drasner's and other investigators' laboratory work and the clinical confirmation of these studies as we all attempt to put together the important pieces of this puzzle.

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Needle Stick Injury Using a Needleless System

To the Editor:—Prevention of needle stick injury is a major issue in the operating room. Various needleless systems are available to avoid this risk.^{1,2} We have been using a needleless intravenous access system (InterLink Injection Site; Baxter Healthcare, Deerfield, Ill, and

Table 1. Force Required to Penetrate

Combination	Force Required (kg · m · s ⁻²)
Syringe cannula and injection site	1.62 ± 0.07
18-gauge needle* and injection site	0.33 ± 0.12
23-gauge needle* and injection site	0.15 ± 0.02
26-gauge needle* and injection site	0.11 ± 0.01
Metal spike† and infusion container§	2.46 ± 0.08
Plastic spike‡ and infusion container§	4.79 ± 0.33
	Mean ± SD (n = 5)

The force (kg · m · s⁻²) required to penetrate injection site with syringe cannula, with 18-, 21-, 23-, and 26-gauge stainless steel needles and the force required to penetrate a plastic intravenous container with a metal or plastic infusion set spike were measured 5 times each. Data shown are mean ± SD. Syringe cannulae, needles, and spikes were attached to a force meter (Metran, Ohmiya, Japan), and measurements of the force needed to penetrate were made at the speed appropriate for the procedure (1 cm/s).

Syringe cannula (InterLink Syringe Cannula; Becton Dickinson & Co., Franklin Lakes, NJ)

Injection site (InterLink Injection Site; Baxter Healthcare Corp., Deerfield, Ill)

* A stainless steel needle (Hypoderm, Terumo Co., Tokyo, Japan)

† A metal spike IV set (Terumo Co., Tokyo, Japan)

‡ A plastic spike IV set (Terumo Co., Tokyo, Japan)

§ A plastic IV container (Nikken Chem. & Pharm. Co., Tokyo, Japan)

InterLink Syringe Cannula, Becton Dickinson, Franklin Lakes, NJ) in our pediatric intensive care unit and operating room for the past year, and are satisfied, in general. We did however, experience a single incident of skin injury caused by this system.

This incident occurred when a nurse tried to insert a blunt end plastic cannula into the injection site, which currently requires a significantly greater force than that for steel needles. The force cause the tip of the cannula to slip, the momentum causing the tip to scrape the skin on the nurse's finger, causing bleeding.

The blunt end cannula requires only $1/2$ to $1/3$ of the force needed to insert the spikes of infusion sets into infusion containers, but still requires 5-10 times more force to penetrate the injection site than conventional steel needles (table 1). The working surface of the injection site with the blunt end cannula is relatively small and tends to become slippery after disinfection with wet materials.

The reduced force required to insert a blunt end plastic cannula into the injection site is also desirable to decrease the possibility of accidental dislodging or kinking of catheters. Though the risk of extrinsic blood exposure was small in this case, the potential hazard of needleless systems exists. We encourage manufactures to make the system less slippery and to work with less force required for penetration while keeping the safety advantages.

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In Reply:—We regret any injury, however minor, that occurs with a Becton Dickinson product, especially one designed for greater safety. The evidence demonstrates that InterLink, by substituting a blunt plastic cannula for a sharp steel needle, reduces the risk of spreading bloodborne pathogens by needlestick injury. In our 5 yr of selling InterLink in the United States, we have no similar report of a cut from the blunt cannula before Dr. Miyaska's. Japanese hospitals typically use iodophors rather than alcohol to disinfect injection sites. Iodophors dry slowly and may make the site more slippery. Health professionals in the United States and Australia who use InterLink

extensively swab the site most commonly with alcohol. We have an active project improving the InterLink cannula and we will investigate the implications of iodophor usage more extensively as a consequence of this report.

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Linear Reverberation in the Ascending Aorta: A Cause of Multiplane Transesophageal Echocardiographic Artifact

To the Editor:—Reverberations are important potential echocardiographic artifacts commonly encountered during imaging of the thoracic aorta because of the presence of smooth, highly reflective tissue-fluid and tissue-air interfaces. Linear artifacts in the ascending aorta, which may mimic intimal flaps, were seen in 44% of patients with a monoplane transesophageal echocardiography (TEE) and in 35% of patients with a biplane TEE in series published by Appelbe and co-workers.¹ These artifacts were associated mainly with dilation of the ascending aorta. It was proposed that multiplane TEE might be useful to provide additional views and improved diagnostic accuracy of aortic dissection.² We present a case of reverberation artifact mimicking an aortic root dissection with a multiplane TEE probe. A 55-year-old man was admitted after a road accident. Initial evaluation demonstrated intracranial trauma and multiple extremity and rib fractures. In the emergency unit, hemodynamic stabilization required volume loading and initiation of inotropic support. The patient was transferred to the operating room for treatment of his extremity fractures. Because of hemodynamic instability, it was decided to initiate intraoperative TEE monitoring. Systematic examination performed with a multiplane 5-MHz probe revealed the presence of a linear structure in the proximal ascending aorta in the transverse and longitudinal planes (fig. 1) resembling an intimal flap and suggesting an aortic root dissection. Diagnosis was critical in the context of chest trauma but obvious after careful echocardiographic examination by ob-

taining images from different incidences. The linear structure had indistinct borders, did not display rapid oscillatory motion, was parallel to the posterior aortic wall (PAW), and was located at twice the distance from the right pulmonary artery posterior wall (RPPAW) as from the PAW. This artifact could be generated when the echo of the PAW is bounced back from the transducer or could correspond to a reverberation from a moving target, the RPPAW, and a moving mirror, the PAW, as recently described by Evangelista and coworkers.³ In addition, color Doppler did not show interruption of the flow pattern and assisted the differential diagnosis between an artifact and an intimal flap. This case illustrates the possibility of artifact in the ascending aorta with multiplane TEE and the necessity of defined echocardiographic training to avoid erroneous diagnosis and recognize pitfalls with TEE.

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