with the aortic pressure. The patient did well and was discharged home within 10 days.

As a result of the detection of a marked difference in blood pressure between the two arms, use of the internal mammary artery was avoided, thus preventing potentially life-threatening complications due to myocardial ischemia caused by subclavian–coronary artery steal.[2] Of interest is an identical case[3] in which similar findings were noted. We believe that the best way to avoid the use of the internal mammary artery in a patient with unsuspected subclavian steal is to have blood pressure measurements in both arms routinely measured prior to anesthesia.

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Symptoms Following Lumbar Puncture May Be Related to Decreased Cerebrospinal Fluid Pressure and/or Venous Dilation

To the Editor:—Kelly *et al.* described an occurrence of shooting pains down both arms into the hands of a patient following lumbar puncture (LP).[1] They are correct in stating that this is a novel development since extensive reviews of the subject have revealed no similar occurrence.[2,3] Furthermore, as Marshall[4] and Page[5] found, major decreases in cerebrospinal fluid (CSF) pressure can exist without development of posturally induced headache. This is one of several reasons why data on the incidence of post-LP headache vary so much from one source to another.

Insofar as post–lumbar puncture nerve palsies are concerned (not actually demonstrated in the Kelly[1] account), those most frequent involve the Abducens nerve, bilaterally on rare occasions.[2] The usual explanation for this selectivity of the sixth cranial nerve relates to the relatively long intracranial course of this purely motor nerve rendering it susceptible to both pressure and stretch. Some ophthalmologists, however, attribute the palsy to an increased venous pressure as the nerve courses through the cavernous sinus. Venous dilation, to be sure, does occur in the central nervous system in compensation for a decrease in CSF pressure, also accounting for development of headache.

That the spinal cord may sag (as may the brain) may be a fanciful explanation for the temporary paresthesias noted by Kelly *et al.*[1] One should not overlook the possibility of prior cervical pathology temporarily revealed by a decrease in CSF pressure and the ensuing venous congestion: disc protrusion, spondylosis, pachymeningitis, and vascular malformation. The presence of a spinal cord tumor has been revealed for the first time after LP, most likely due to venous congestion. Post-LP headache is relieved by blood patch because of a considerable and abrupt increase in CSF pressure, which persists for some time. Pari passu venous pressure must also decline.

It would be interesting to learn the physical characteristics of the patient described—highly muscular or asthenic—as might relate to pressure on the brachial plexus from cervical ribs. It would also seem cogent to extend the posthospital observation period and, if necessary, perform magnetic resonance imaging studies of the cervical spinal cord and column if symptoms reoccur.

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In Reply:—Vandam raises several pertinent points. Our patient was not highly muscular. While it is certainly possible that pressure from cervical ribs may present symptoms described in our case, we do not believe that an epidural blood patch would dramatically resolve the symptoms if they were caused by pressure from cervical ribs. The possibility of preexisting cervical pathology (revealed by a decrease in

intraspinal pressure) certainly must be considered. Our patient had no further diagnostic work-up (*i.e.*, magnetic resonance imaging, computed tomography–myelogram, cerebral-spine x-ray) because his symptoms never returned. We would concur with Vandam that if the patient's symptoms recurred, further diagnostic work-up would be indicated.

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Airway Management with a Special Tube in an Infant with Bronchial Obstruction

To the Editor:—In the case of increased pulmonary blood flow associated with congenital cardiac defects, dilation of pulmonary artery may compress the airway, causing airway stenosis.[1–3] In such a case, positive pressure ventilation may lead to hyperinflation of the lung beyond the stenosis.[1] We present a case of an infant in whom bronchial stenosis was successfully managed by use of a specially configured tube that served as a stent for a segment of collapsed bronchi.

Our male patient was delivered vaginally at 39 weeks gestational age, with a birth weight of 3,000 g. Immediately after delivery, he presented with severe respiratory distress and cyanosis, and his trachea was intubated. Echocardiography resulted in a diagnosis of corrected transposition of the great arteries, pulmonary atresia, ventricular septal defect, patent ductus arteriosus, and right aortic arch. Fiberoptic bronchoscopy (FB) indicated stenosis of the right main bronchus (RMB), with compression by the dilated aorta possibly contributing to the stenosis.

When the child was 8 days old, aortosternopexy and left modified Blalock-Taussig shunt were performed, but they failed to relieve stenosis of RMB and hyperinflation of the right lung. An endotracheal tube tried as a stent[4] was unsatisfactory because it did not permit ventilation of the left lung and obstructed the orifice of the right upper lobe bronchus. We therefore created two elliptical openings in the lateral wall of a 3-mm tube. The orifice for ventilating the left lung was located 1.5–4 cm from the distal tip of the endotracheal tube. A second orifice for ventilation of the right upper lobe bronchus was created on the contralateral side of wall of the tube. It was at the distal tip of the tube with a long axis of 1 cm and short axis of 2 mm. This modified tube was positioned with the distal tip within the RMB. Correct positioning was confirmed with FB and chest x-ray.[5] Hyperinflation of the right lung was reduced and Pa_{CO_2} could be maintained within normal range with lower inspiratory pressures than possible with tracheal intubation.

The risk of using a customized tube included the possibility of airway damage due to roughened surface of the tube where the added orifices were located. We smoothed the cut area using very fine sand paper and then tetrahydrofuran.

In conclusion, we treated a case of bronchial compression caused by a dilated aorta. The airway management was difficult and positive inspiratory pressure led to hyperinflation of the distal lung. Various therapies failed to improve the condition, and a customized tube, which could stent the compression, enabled us to manage ventilation successfully.

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Spontaneous Ventilation Through Transtracheal Access

To the Editor:—We read with interest the article by Dallen *et al.*[1] We encountered a similar case more than 27 yr ago that was successfully treated by using two 14-G thin-wall intravenous needles. Subsequently we constructed two types of trocar (9- and 12-G) (fig. 1), which remain