Abdominal subcutaneous emphysema: an unusual complication of lumbar epidural block

To the Editor:

Subcutaneous emphysema is a rare complication of epidural anaesthesia. Laman and McLeskey first reported a case of cervical and supraclavicular subcutaneous emphysema associated with lumbar epidural block in a parturient.¹

We recently anaesthetized a healthy 20-year-old male who was admitted to the hospital after a road traffic accident. No signs of abdominal trauma were noted. The patient had an open fracture of the upper right tibia and fibula and a closed fracture of the right lateral malleolus. Pulmonary and cardiovascular examination were normal. The supine blood pressure was 120/70 mmHg and the pulse was regular at 92/min. In the Emergency Room the patient received morphine 10 mg IM for pain relief and was transferred to the Operating Room for open reduction of his fractures.

Lumbar epidural anaesthesia was initiated with the patient in the lateral position, after a "preload" of 1000 ml lactated Ringer's solution, to prevent arterial hypotension. The epidural space was identified at the L₃-L₄ level using the loss of resistance technique, with air. No blood, CSF or air was obtained on aspiration. No side effects were noted following injection of a test dose of 3 ml lidocaine one per cent. Twenty ml of bupivacaine 0.5 per cent with adrenaline 1/200,000 was injected through the needle and an epidural catheter was easily inserted cephalad, 3 cm beyond the tip of the needle.

After surgery was completed the anaesthetist palpated crepitus of the right abdominal wall, extending from right inguinal area to the upper abdomen, at the level of the 12th right rib. Physical examination of chest and abdomen was performed again. A chest x-ray confirmed absence of a pneumothorax, but free air was seen in the abdomen, in the region of the T₁₀-L₁ vertebrae. Because of suspected duodenal rupture, a CT scan was done, which confirmed subcutaneous air to be present in the epidural space around the bodies of T₁₀-L₃ and subcutaneous air predominantly in the lower abdominal wall.

With the use of the loss of resistance technique and the injection of 10-30 ml of air into the epidural space, air may possibly pass out through the patent intervertebral foramina present in young subjects, into the paravertebral spaces, along the spinal nerves, producing pockets of air around the bodies of the vertebra and the muscle inser-

tions on these bodies. The lateral limits of the epidural space, the pedicles of the vertebrae and the intervertebral foramina can be well recognized on a CT scan. This is the most probable route of spread of anaesthetic solutions and, occasionally, injected air.

Air-containing cavities of the body may initially be expanded by the entry of nitrous oxide.^{2,3} Expansion of distended gut, pneumothorax and air encephalograms will occur if nitrous oxide is used. N₂O is therefore contraindicated in these conditions.^{4,5} Appearance of subcutaneous emphysema during surgery, particularly after trauma, can produce diagnostic dilemmas. The use of N₂O to supplement epidural anaesthesia is likely best to avoid because of the danger of air expansion in the epidural space.

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"Single-shot" epidural anaesthetics

To the Editor:

In their recent review article on the epidural test dose in obstetrics,¹ Dain *et al.* discuss the safety of "single-shot" versus continuous epidurals. They state that the reported incidence of complications is the same whether an epidural catheter is used or not. This may be so, but our concern is whether there is anything to be gained from using a "single-shot" technique in the obstetric setting.

In patients undergoing Caesarean birth under epidural