

Because of her poor preoperative condition including severe anaemia, eclampsia and the possible progression of airway oedema over the next few days, elective ventilation in the intensive care unit was organised. In view of the contained area of neck emphysema, a flexible fibreoptic bronchoscope was used to view the airway and a linear laceration over the posterior wall (membranous) of the trachea, approximately 3 cm in length at 6 cm proximal to the carinal spur, was seen. The inflated cuff of the tracheal tube was located such that it was just sealing the laceration.

We believe the subcutaneous emphysema was 'contained' in this case because initially the tip of the tracheal tube, which had delivered gas into the subcutaneous plane during the initial positive pressure inflation, had been incidentally repositioned distally 1 to 2 cm, as warranted by the initial low compliance. This may have stopped subcutaneous insufflation, improving compliance and incidentally sealing the laceration, which limited further extension of the subcutaneous emphysema. Cessation of nitrous oxide may also have limited extension.

The patient deteriorated progressively following the operation, developing ventilator-associated pneumonia, urinary tract infection, disseminated intravascular coagulation and sepsis and she died on the fifth postoperative day.

This case raises some unanswered questions, including—are patients with pre-eclampsia or eclampsia prone to this type of airway injury? This disease is associated with low oncotic pressure and soft tissue oedema and fragility, and this injury occurred despite gentle direct laryngoscopy and intubation at the first attempt. There are reports of tracheal rupture and pneumomediastinum in non-obstetric cases¹⁻³, but not to our knowledge in pregnancy or pre-eclampsia. We have not found any similar reports of subcutaneous emphysema confined to the neck, which in this patient appears to have been due to the cuff of the tracheal tube approximating the length of the laceration and thus containing any further escape of inflated gas.

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Anaphylactic reaction during general anaesthesia associated with positive skin test to fentanyl

We describe a case of anaphylaxis during anaesthesia that was associated with a postoperative positive skin test to fentanyl.

An otherwise healthy 11-year-old boy was scheduled for surgical repair of his right arm contracture as a sequel of burns. He had had two previous anaesthetics several years prior to this admission, one for debridement of burns and the other for an appendectomy. Both were uncomplicated. His parents denied any allergies.

After standard monitoring was established, anaesthesia was induced with thiopental 5 mg/kg and succinylcholine 1 mg/kg and tracheal intubation was performed. He was ventilated with a mixture of oxygen and nitrous oxide. Then he received vecuronium 1 mg/kg and fentanyl 1 µg/kg. His vital signs were stable for 15 minutes before a sudden increase in his peak airway pressure. We changed to manual ventilation with 100% oxygen, but his airway pressures remained high. His blood pressure and SpO₂ decreased rapidly. His ECG showed supraventricular tachycardia of 160 bpm. We uncovered the patient and saw urticarial rash and angio-oedema. Anaphylactic shock was diagnosed. Adrenaline, three intravenous boluses of 0, 2 mg, aminophyllin 250 mg and methylprednisolone 80 mg were given. He received 1000 ml of crystalloids. Ease of ventilation as well as blood pressure improved. He was transferred to our intensive care unit and was haemodynamically stable and extubated one hour later. There were no apparent adverse sequelae.

Six weeks later, skin testing, both prick and intradermal, for thiopentone, succinylcholine, vecuronium, fentanyl, povidone-iodine and latex were performed. The only positive test was to fentanyl. We then performed intradermal testing for fentanyl in another three children with other allergies. None of them responded to any dilution of fentanyl, although all had positive reactions to histamine.

A subsequent anaesthetic was planned without fentanyl. The night before surgery, the patient received methylprednisolone, after which he again developed bronchospasm and was treated with aminophylline. His procedure was again cancelled. Six weeks later, skin testing was positive for methylprednisolone but not for prednisolone or dexametasone. Skin tests for both remifentanyl and tramadol were also negative at this time.

In the meantime, since the patient's parents refused regional anaesthesia, we performed general anaesthesia with thiopentone, vecuronium and a continuous infusion of remifentanyl. This was uneventful. Postoperatively he received tramadol for analgesia.

Intra-operative anaphylaxis has an incidence of about one in 3500 to one in 20,000¹. Muscle relaxants, latex and then antibiotics account for most cases of anaphylaxis in the perioperative period^{2,3}. Opioid-induced anaphylaxis is extremely rare. In the literature we have found only three published cases of allergy to fentanyl^{1,4,5} and this would be the first in a child, although allergies to other opioids have been reported³. Our case was also unusual due to the 15 minute gap between the administration of fentanyl and the anaphylactic reaction.

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