



# Subcutaneous Emphysema without Pneumothorax: A Rare Complication following Ventriculoperitoneal Shunt Surgery

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Subcutaneous emphysema is a known complication associated with ventriculoperitoneal shunt surgery. Awareness about this potential complication can help in prevention of its occurrence as well as early diagnosis and timely management.

Subcutaneous emphysema (SE) with or without pneumothorax is a rare complication of ventriculoperitoneal (VP) shunt surgery, which every anesthesiologist should be aware of. Awareness about this potential complication can help in the prevention of its occurrence as well as early diagnosis and timely management. A written informed consent was taken from patient for publication. We report a case of a 25-year-old male patient diagnosed with left cerebellopontine angle tumor with hydrocephalus. The patient was posted for right-side VP shunt surgery under general anesthesia prior to definitive tumor resection. After attaching all routine monitors, anesthesia was induced with fentanyl 2 µg/kg, propofol 2 mg/kg, and rocuronium 0.6 mg/kg. His trachea was intubated with 8.5 cuffed polyvinylchloride endotracheal tube. Intraoperative course remained uneventful. At the end of surgery, a small swelling was noticed on the right side of the neck. On palpation, we could feel crackling or popping sensation under the skin. Subsequently, crepitus all over the chest on the right side was noticed. Keeping in mind the association of pneumothorax with SE, the patient was shifted without reversal from anesthesia with endotracheal tube in situ to intensive care unit for further management. Airway pressures remained in normal range throughout (13–15 cmH<sub>2</sub>O). An urgent chest X-ray was done that did not show any evidence of pneumothorax. Patient was gradually weaned off and was extubated next day after confirming repeat chest X-ray that was again normal. The neck swelling and emphysema subsided by the third day.

Though benign, SE can cause respiratory distress, anxiety, airway compromise, air embolism, and sometimes even

death.<sup>1</sup> Other than VP shunt surgeries, SE has been reported with other procedures such as percutaneous tracheostomy, chest drain insertion, and brachial plexus block.<sup>2–4</sup> Often SE is found to be associated with underlying pneumothorax. However, if the pleural puncture is small, it may get sealed off before it becomes symptomatic.<sup>4</sup> In such cases, a pneumothorax may be localized rather than spreading throughout the pleural space.<sup>5</sup> In our case, sole SE occurred without pneumothorax following VP shunt surgery, which is a common procedure done in neurosurgical patients. Through our case report, we would like to remind clinicians about this possible rare complication during VP shunt surgery, which can simply be avoided by proper surgical steps followed by neurosurgeon while maintaining the depth of anesthesia along with complete neuromuscular blockade provided by the anesthesiologist.

## Conflict of Interest

None declared.

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