Severe subcutaneous emphysema and pneumothoraces following transcutaneous fistula repair
Anupama Gopinath MBChB, Jennifer Lau MD

INTRODUCTION

- We present an interesting case of a 5 year old boy who developed significant subcutaneous emphysema and pneumothoraces in the post-operative anesthesia care unit (PACU) following the repair of a transcutaneous fistula.
- Subcutaneous emphysema is a perioperative complication of transcutaneous fistula closure that can mimic other emergent conditions such as anaphylaxis.
- Although a rare occurrence its recognition is important for the pediatric anesthesia provider given the increasing number of tracheostomy children.

CASE HISTORY

- Our patient was a former gestation 27 week baby with history significant for chronic lung disease requiring a ventilator-dependent tracheostomy presenting for an elective laryngoscopy and bronchoscopy.
- He had been de-cannulated 9 months prior following improvement in lung function but a tracheocutaneous fistula remained that was to be repaired too.
- The intra-operative course was uneventful and following a deep extubation, the child was transported to PACU.

POST-OPERATIVE COURSE

- Forty five minutes into his arrival the patient woke and upon seeing his intravenous line became agitated. He was noted to develop left-sided peri-orbital swelling and the anesthesia attending was contacted. Within minutes, swelling had spread significantly to the neck and upper chest.
- There was immediate concern for anaphylaxis and the child was treated with epinephrine. ENT were consulted and a chest x-ray was conducted. On closer examination, palpation of the swelling revealed crepitus.
- Whilst crying, inspired air had been entrained in to the tissues surrounding the tracheostomy site. Within hours the patient developed bilateral pneumothoraces from subcutaneous emphysema requiring bilateral chest tube placement and admission. He was discharged 8 days later following improvement in symptoms.
- Mechanism of action: Air entered oropharynx + tracheocutaneous fistula → large volumes of air entered during crying → air entrained into surrounding tissues compounded by extreme neck flexion → air unable to leave airway → absorption of air into pleura → pneumothoraces

CONCLUSIONS

- Tracheocutaneous fistulas occur in approximately 1 in 4 children with tracheostomies for one year or more [1] increasing the likelihood anesthesia providers will encounter such patients in the operating room (OR). It is important to recognize the possible peri-operative complications associated with fistula repair and manage them appropriately.
- Agitation, coughing and thrashing increases the risk of this complication from occurring, consider deep extubation as a method to reduce this risk. Also consider maintaining head in extended position.
- Our case illustrates a major complication that can be seen in this condition and is an excellent exercise in differential diagnosis that the Pediatric Anesthesiologists may encounter in the OR or PACU.

REFERENCES