



## Visual Case Discussion

## Thermal blast injuries from an exploding e-cigarette

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## ARTICLE INFO

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A 28-year-old male presents as an emergent transfer to a Level 1 Trauma/Burn Center due to blast and thermal injuries sustained from an exploding electronic cigarette. Upon arrival, his vital signs were HR 60, BP 135/95, RR 25, and SpO<sub>2</sub> 100%. He was protecting his own airway. Physical exam revealed extensive soot on his face, two fractured teeth, a tongue laceration, and a stellate upper lip laceration (Fig 1). Soot was also present in his nasal passages, but there were no singed hairs. He complained of pain in his left neck. CT of his neck revealed foreign bodies in his lower lip (Fig 2). No fractures were present. ENT consultants repaired the lacerations and determined the foreign bodies in his lip to be teeth fragments. He was discharged from the ED on oral antibiotics.

## Supplementary material

Supplementary material associated with this article can be found, in the online version, at doi:[10.1016/j.visj.2018.11.004](https://doi.org/10.1016/j.visj.2018.11.004).

## Questions

- The patient depicted above meets criteria for referral to a designated burn center?
  - True
  - False
- Healthcare providers are required to report e-cigarette thermal injuries to the FDA.
  - True
  - False

- 15 minutes after your initial evaluation, the patient described above develops stridor and begins drooling. You decide to intubate this patient using RSI. The paralytic succinylcholine is contra-indicated in this burn patient.
  - True
  - False
- Based on the mechanism described above, this individual may have suffered from a tertiary blast injury.
  - True
  - False

## Answers

- True. Explanation: The patient described above meets criteria based on the location of the burn. According to the American Burn Association and ABLS guidelines, any patient who sustains a burn to the “face, hands, feet, genitalia, perineum, or major joints” should be transferred to a designated burn facility. Additional criteria include TBSA > 10% and/or full-thickness among other things (see reference). Reference: Burn Center Referral Criteria – American Burn Association. <https://ameriburn.org/public-resources/burn-center-referral-criteria/>. Accessed October 1, 2018.
- False. Explanation: According to the FDA, “healthcare providers, public health officials, and other professionals, as well as consumers and concerned citizens, may voluntarily submit reports if they encounter safety issues with a product and/or unanticipated harmful effects.” A report can be submitted at <https://www.safetyreporting.hhs.gov/>.

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**Fig. 1.** Facial wounds after the e-cigarette explosion. The arrows demonstrate nasal soot (1), a stellate upper lip laceration (2), and significant left lower lip edema (3).



**Fig. 2.** CT neck/soft tissue revealed a hyperdense lesion in the left lower lip. ENT found this to be a tooth fragment.

- 3. False. Explanation: Succinylcholine is contra-indicated in burn patients 5 days following the burn. Reference: Vissers RJ, Danzl DF, Serrano K. Intubation and Mechanical Ventilation. In: Tintinalli JE, Stapczynski JS, Ma OJ, Yealy DM, Meckler GD, Cline DM, eds. *Tintinalli's Emergency Medicine: A Comprehensive Study Guide*. 8th ed. New York, NY: McGraw-Hill Education; 2016. [accessmedicine.mhmedical.com/content.aspx?aid=1149449](https://accessmedicine.mhmedical.com/content.aspx?aid=1149449).
- 4. False. Explanation: Tertiary injuries are sustained when an individual is propelled by the force of the blast against an object. No such injuries are described above. Rather, the individual described above is at risk for Primary (blast wave injuries), Secondary (injuries from objects propelled from the exploding object), and Quaternary (thermal or chemical burns, infections, or other delayed effects).

Reference: Bono MJ, Halpern P. Bomb, Blast, and Crush Injuries. In: Tintinalli JE, Stapczynski JS, Ma OJ, Yealy DM, Meckler GD, Cline DM, eds. *Tintinalli's Emergency Medicine: A Comprehensive Study Guide*, 8e. New York, NY: McGraw-Hill Education; 2016. [accessmedicine.mhmedical.com/content.aspx?aid=1121492398](https://accessmedicine.mhmedical.com/content.aspx?aid=1121492398). Accessed October 1.