



## Shared Learning

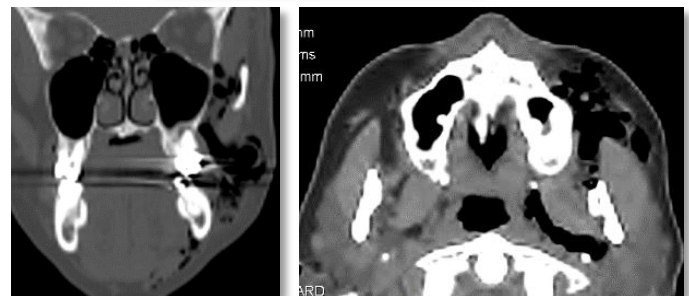
from the Dental Patient Safety Foundation Reporting Tool

“What gets measured gets managed” is the DPSF philosophy to encourage reporting. All received information about patient safety events (unsafe conditions, near misses or adverse events) are de-identified contextually (confidentiality is fully protected under federal law), aggregated, analyzed and abstracted by selected experts from our DPSF committees. Reports are generated and disseminated as the only means to learn from our errors. The information in these peer-reviewed reports is provided for its educational value only, and does not purport to establish any legally binding standard of care. Feedback is encouraged.

### Case 2021.7: Iatrogenic Subcutaneous Emphysema

**Situation:** A 38 y/o female presented to the emergency department with a complaint of sudden onset of left sided facial swelling, difficulty in swallowing and blurry vision. Her PMH is only positive for mild hypertension and an allergy to penicillin. Her history is that earlier that day she was at her dental office where a root canal was started on the lower left side. The dentist advised her that she noted a crack in the tooth and they agreed to extract the tooth at that time. She reported there was difficulty in removing the tooth, with drilling and a “lot of forcing” to remove it. The treatment time was over 90 minutes per the patient. She immediately felt swelling on that side of her face and was advised to go home and ice the region. As the day progressed her swelling increased, she noted her voice had changed and the visual changes worsened.

Examination revealed left sided infratemporal, buccal, canine space and submandibular fullness with tenderness and crepitus on palpation. A CT scan noted significant subcutaneous air extending along the fascial planes of the left side (see below). A diagnosis of subcutaneous emphysema due to the use of a conventional dental handpiece with air/water spray that had dissected the tissue planes. She was admitted for observation of the airway, antibiotics and fluids. She improved and was discharged 2 days later.



**What we Learned:** Most dental handpieces are not designed or intended for surgical procedures unless the doctor can verify that no air being exhausted into the surgical field. In addition to the risk of the subcutaneous emphysema air can be forced into the bone marrow spaces which can contribute to an intravascular air embolism. The use of in-line tap water for irrigation can also lead to infection as opposed to using a sterile irrigating system with sterile water.

**Recommendations:** Use appropriately designed surgical handpieces for sectioning of teeth and bone removal. Be sure that all air and water sprays are not utilized in these cases.



Safety is measured by the number and intensity of safety behaviors that a individual or group routinely participates in. It is not measured by outcomes.

The DPSF encourages frequent reporting of unsafe conditions, near misses and adverse events as the only means to close the gap between knowing how to prevent these occurrences and taking the necessary action to do so. Please visit our website.

**Additional reading:**

Nishimura, T, et. al. Iatrogenic subcutaneous emphysema and pneumomediastinum following a high-speed drill dental treatment procedure. *Acute Med Surg* 2:253-6, 2015.