



Shared Learning

from the Dental Patient Safety Foundation Reporting Tool

P0198

Case 2026.10A: Patient Fire, Again (and again, and again)

Situations:

CASE 1 – A 54 y/o patient was prepped and draped for removal of a 4cm presumed lipoma on his lateral neck, with IV sedation and supplemental O₂ via a non-rebreather (NRB) mask. 10 minutes into the case, electrocautery was used to manage bleeding from adipose tissue, at which point surgical drapes, surgeon gown and plastic mask ignited. The CRNA monitoring sedation immediately removed the IV line from the liter bag and sprayed the fire with IV fluids. Unfortunately, the mask and bag had also ignited, and caused additional 1st and 2nd degree burns to the face. Here is the sobering picture of the NRB mask, now black with soot.

CASE 2 – a 42 y/o patient was prepped and draped for removal of a 2.2cm pigmented lesion just posterior to the oral commissure. IV sedation was supplemented with a 50:50 mixture of N₂O:O₂. 15 minutes into the face, again during cautery of vessels in adipose tissue, patient exhaled triggered a “fire puff” not dissimilar to what might occur during the dangerous practice of spraying lighter fluid on hot charcoals. The patient was unharmed.

CASE 3 – 4 years later, same surgeon as case 2, IV sedation, N₂O:O₂ via nasal hood, 7 minutes into the case using cautery after removal of a lower lip mucocoele, the patient exhales O₂ enriched gas, ignites, and THEN INHALES fire, burning nasal hairs and mucosa. The incident was reported as not be dissimilar to spraying hairspray into a flame to create a “torch.”



What we learned:

1. None of these cases were litigated, hence blinded from medico-legal documentation.
2. In all 3 cases, the involved practitioners were reticent to report for fear of discovery, shame, legal or disciplinary action.
3. When a source of fuel cannot be removed from the immediate area, soaked with water, or covered with a water-soluble jelly, the dentist should stop the flow of O₂ or O₂:N₂O mixtures for 1 minute prior to the use of any potential ignition source (electrocautery, laser, bur sparks, “battery burners”). In addition, intraoral suction should be continuously used to clear the ambient atmosphere of oxidizer-enriched gas as it is exhaled.
4. Fire safety has traditionally not been taught in dental schools, a knowledge gap which persists in many institutions to this day.
5. A significant percentage of licensed dental practitioners who use N₂O or treat patients who require constant O₂ supplementation remain unaware of fire hazards in an oxidizer enriched atmosphere.
6. The DPSF strongly encourages organized dentistry, including the American Dental Association to assist in disseminating this life-saving information.
7. These cases continue to occur despite reporting.

Case 2017.12A: Patient Fire during Dental Care

Situation: An otherwise healthy 72 y/o female underwent intraoral preparation of a titanium post with a high-speed irrigated drill while breathing N₂O/O₂ (30:70 mixture) via nasal hood. An unnoticed spark ignited the oxidizer-enriched environment under the nitrous hood, triggering fire, burning vellus hair and skin. The mask was quickly removed and the fire was smothered. Patient was immediately transported by EMS to the local emergency department for definitive management of the second degree facial burns and monitoring of possible delayed pulmonary injury.

What we learned: Although rarely reported in any literature, one member of the authoring team of this report became aware of at least 4 other similar events! Fire is heat and light energy resulting from the rapid combination of an **oxidizer** (N₂O or O₂) + **ignition source** (spark or heat) + **fuel** (skin, hair, plastic, cotton, rubber, paper, alcohol preps, etc.), the **fire triangle**. Fire extinguishes if any one leg of this triangle is removed.



Summary:

The DPSF is your only **tangible safe harbor for collective learning**. Meager support from organized dentistry are opportunities (and lives) forever lost. Being human is a team sport and we must recognize and respond to our collective will to foster collaborative efforts to improve patient safety.

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:

Bosack RC, Bruley ME, Van Cleave AM, Weaver J. Patient Fire During Dental Care: A case report and call for safety. JADA 2016;147(8):661-666.