

Lithium ion Vape pens explode in teen's mouths; injuries resemble results of 'high-speed' crash

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A reconstructed computed tomography of the 17-year-old boy's head. (Primary Children's Hospital/The New England Journal of Medicine)

By [The Washington Post](#) |

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By Allyson Chiu | The Washington Post

When the 17-year-old arrived at Primary Children's Hospital in Salt Lake City, his entire jaw was cracked and a chunk of the bone had been completely shattered. Several of his teeth were missing and there was a hole in his chin.

"That's an injury we see in high-speed motor vehicle crashes," Katie W. Russell, a pediatric surgeon who treated the teenager in March last year, told The Washington Post. "It's a big injury."

Jonathan Skirko, a pediatric ear, nose and throat surgeon who operated on the boy, told The Post the damage looked “kind of like a close-range gunshot wound.”



But the teen, whose mother identified him as Austin, wasn't in a car crash, and he didn't get shot. He was using a vape pen when it exploded in his mouth.

The details of Austin's case were published Wednesday in the [New England Journal of Medicine](#) with the goal of raising awareness about the dangers of using e-cigarettes, Russell said.

“At that point, we had no idea that vape pens could cause such a substantial injury,” she said. “It takes a serious amount of force to break your jaw and to break it in the way that he did.”

The vape pen was supposed to improve Austin's life, his mother, Kailani Burton, told The Post. He had asked her for it last year because he thought it could help him quit smoking. Burton said her son, then 17, assured her that he had done his research and vaping was safe, so she got him the one he wanted – a device from the company VGOD. But even after buying it, Burton

couldn't shake a niggling concern: she had heard about e-cigarettes exploding.

"I told him, 'You gotta be careful, these things have happened,'" Burton said. "They get hot."

VGOD did not respond to a request for comment late Wednesday.

On March 26, 2018, about a month after Austin started vaping, Burton had just gotten home from work and was in her bedroom with her husband when the pair suddenly heard a loud pop.

Unsure of the sound's origin, Burton said, she initially thought a circuit breaker might have shorted out. Then her other son burst into the room in a panic.

"He was screaming, 'It blew up! It blew up!'" Burton said.

Moments later, Austin appeared holding his mouth, able to make only unintelligible, groaning sounds.

"I could see blood in his mouth and a hole in his chin," Burton said.

Burton leaped into action. She handed Austin a towel and bundled him into the car for the quick drive to the hospital in their hometown of Ely, Nevada, a small city about 240 miles north of Las Vegas.

That hospital, however, wasn't equipped to handle Austin's severe injuries, and Burton said she was told she would have to drive more than 200 miles to Salt Lake City, where doctors at Primary Children's Hospital could help.

Before setting off on the five-hour road trip, Austin's mouth was packed with gauze and he was given a "vomit bag," Burton said, adding that he got no pain medication.

"I was just scared for him," she said. "I was trying not to cry."

The family arrived at the hospital in Salt Lake City around 1 a.m., where they were met by Russell and her team.

"He had a very swollen lower jaw and lip, a small burn on his lip and a huge cut in his mouth" said Russell, the hospital's trauma medical director. "A two centimeter piece of his jaw was just blown to pieces."

Skirko, the other surgeon who worked on Austin, said he was shocked to learn that an e-cigarette had caused the extensive injuries.

"I've dealt with lots of facial trauma . . . and dealt with some really kind of exotic things like grizzly bear attacks and things like that, but this is one that I had never seen before," he said.

Austin needed two surgeries to repair the damage, Skirko said. During one of the procedures, titanium plates were placed in his mandible to stabilize the bone, and the other flesh injuries were fixed up. Skirko said it was unclear if the hole in Austin's chin had been caused by a piece of the vape pen or a tooth.

Burton said her son, now 18, is "doing really good" and recently graduated from high school. But it easily could have been much worse.

"I thought he could've been dead," she said. "I could've lost him."

At least two people have died as a result of e-cigarette explosions in recent years. Last year, a Florida man was killed after his vape pen blew up, sending pieces of the device flying into his head and starting a small fire in his home. In February, a 24-year-old man's vape pen exploded while he was smoking it and nicked the carotid artery in his neck, causing a fatal stroke.

Between 2015 and 2017, there were about 2,035 explosion and burn injuries caused by e-cigarettes, according to a report published last year in BMJ Journals. Researchers noted that the number was likely an underestimate given the difficulty of accurately tracking incidents.

According to the Food and Drug Administration, which regulates all tobacco products including e-cigarettes, the source of the explosions may be "battery-related issues." E-cigarettes use lithium-ion batteries, which the U.S. Fire Administration has deemed "not a safe source of energy for these devices."

"The shape and construction of electronic cigarettes can make them (more likely than other products with lithium-ion batteries) behave like 'flaming rockets' when a battery fails," the fire agency wrote in a 2017 report.

E-cigarettes are the only consumer product that "places a battery with a known explosion hazard such as this in such close proximity to the human body," the report said. "It is this intimate contact between the body and the battery that is most responsible for the severity of the injuries that have been seen."

In an statement to The Post early Thursday, an FDA spokesman said the agency "is concerned about adverse events associated with the use of e-cigarettes, including overheating and exploding

batteries.” Beyond educating consumers about how to avoid explosions, the FDA is also “exploring product standards to address battery issues,” the spokesman said.

Earlier this month, the FDA also released an industry guidance for e-cigarette manufacturers that requires companies to provide detailed information about batteries when submitting new tobacco product applications.

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As the number of young people using e-cigarettes continues to rise, Russell, the pediatric surgeon, stressed the importance of understanding the dangers associated with the devices.

According to the Centers for Disease Control and Prevention, 3.6 million middle and high school students used e-cigarettes last year – an increase of about 1.5 million from 2017. There have been several recent incidents of teenagers being blinded or burned by exploding e-cigarettes, CNN reported.

“Everyone seems to be vaping,” Russell said. “It seems like this technology has really taken off, but we didn’t really get adequately educated about the possible risks.”

Austin, however, has sworn off smoking and vaping, his mother said.

“He just quit,” Burton said. “He does tell people, ‘This is what happened to me. This is what could happen.’ ”