

Intraoral Blast Injury by Plastic Cap Gun Shots: A Rare Case Report

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Abstract

Burns are one of the common forms of injuries occurring in children. Firework related accidents in the children usually cause burns or even ocular injuries. These injuries frequently involve the forearms, face region, eyes, etc. The intraoral injuries due to fireworks are rare, but when present they can be dangerous. This article describes a case report of injury of the oral region in a 6-year-old child patient due to the intraoral explosion of cap gun shots.

Keywords: Burn, Cap gun shot, Child

INTRODUCTION

Fireworks are commonly used in developed and developing countries to celebrate festivals or for the mere purpose of joy. Plastic gun caps contain a small quantity of firework gunpowder and are used as a toy gun by children. Cap guns are usually given as presents to the children or it can be purchased from the market as a toy or even won at game tokens.¹⁻³

The cap used for the firearms was originally designed by Reverend Forsyth in 1805, but the word “cap gun” was afterward applied to toy guns first produced before World War II.²

These were made from cast iron when it was first manufactured, then zinc alloy was used, and subsequently plastic was used. These cap guns became popular to use as the shots are arranged in a paper strip or plastic ring and hammered, which produces a noise as well as smoke.²

These caps can explode spontaneously as a result of manufacturer’s quality issues or because of mishandling and can result in a burn injury with a possibility of scarring.²

In Jazan area, Saudi Arabia, it is seen among children to bite or chew the plastic cap gun shots to induce the explosion inside the mouth. The plastic cap gun shots blast in the kid’s mouth will usually cause no or minimal injuries. In this case report, we are presenting an incident where a child had chewed on a stalk (multiple) of plastic cap gun shots which led to a powerful intraoral explosion and an extensive laceration of the cheek.

CASE REPORT

A 6-year-old child was presented to the emergency department with a laceration on the right cheek. The family members alleged he had chewed plastic cap gun shots (Figure 1) which exploded and resulted in this injury. Brief medical history disclosed no significant findings. The child’s last meal was more than 4 h ago.

When the examination was attempted in the emergency room, the child and his parents were in severe distress. The wound was apparently through and through the right cheek, with no injuries to the oropharynx or the airway. There was no significant bleeding present. Hence,

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Figure 1: The plastic cap gun shots which caused this incidence

we decided to do a further examination and provide the treatment under general anesthesia.

A dressing was placed on the wound, and the usual investigations were done in preparation for general anesthesia. Once the results were ready, the child was brought to the theater and intubated orally. The tube was secured to the left side of the mouth.

On thorough examination, we found the wound to have the typical pattern of explosives. The cheek was torn from inside out. The lacerations radiated from the center of the explosion site (Figure 2). The intraoral laceration was slightly smaller than the extra-oral wound, which is a typical pattern in explosives. The stenson’s duct was not involved in the injury. No other intra-oral structures were traumatized except a small burn and may be a contusion on the right lateral border of the tongue.

The child was started intraoperatively on cefuroxime, metronidazole, and dexamethasone. The wound was thoroughly debrided and repeatedly washed with normal saline. Closure was started intra-orally where the buccal mucosa was closed using 3/0 Vicryl sutures. Then, we approached the wound extra-orally where we approximated and sutured the submucosa followed by remnants, or what we managed to identify, of the buccinators muscle. The subcutaneous layer was closed, and finally, the skin was sutured by 4/0 nylon sutures (Figure 3).

The wound was dressed, and the child was warded for 24 h. His antibiotics and dexamethasone were continued via an IV route until he was able to take per mouth. The antibiotics were continued for 7 days, while the dexamethasone was stopped after 3 days. He was also placed on paracetamol for pain control.



Figure 2: On examination, the wound showing a typical pattern of explosives. The cheek was torn from inside out. The lacerations radiate from the center of the explosion site



Figure 3: After wound closure

DISCUSSION

Fireworks are of ancient Chinese beginning which contains combustible chemicals that cause spectacular and explosive effects.⁴ The gunpowder for the manufacturing of the firework contains potassium nitrate, sulfur, and carbon commonly developed by the Chinese alchemists after the innovation of saltpeter around AD 900.^{1,2}

Although these fireworks including cap guns were used worldwide to celebrate festivals, they present a public health hazard.⁵ The Australian Competition and Consumer Commission cautions of the risk of burn wounds from the repetitive firing of ring caps in a cap gun with a plastic barrel in its periodical publication named “safe toys for kids.”^{2,3}

The injury may occur when these caps rub themselves against other objects or on each other and they can explode as a

result of friction.³ Cap guns should only be used outdoors. Make sure that the kids understand the instructions for the safe use and the children should be told to never fire a cap gun in the mouth, near the face or eyes. It was not advised to use these cap guns under the age of 8 years and when used should be under the supervision of an adult.^{2,3}

In this presented case, the cap gun blast injury occurred in a 6-year-old child intraorally and lacerating the right cheek, which was one of the rarest case reports. Plastic cap gun shots use should be banned to avoid these types of injuries.

CONCLUSION

Necessary actions should be taken against the use of plastic cap gun shots in this way. In addition to the age limitations, children and their parents should be well educated on their safe use. Enhanced safety and warning labels should be placed.

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