

Primary molar shattered by a BB: clinical report

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Pellet and BB guns usually are not included in gun control laws and too often are marketed as toys. Christoffel et al. reported that nonpowder firearm injuries are almost as prevalent as those from powder firearms, and more than 25% of airgun injuries involve the eyes, face, or other areas of the head and neck.¹

There are many reports in the literature of injuries from air gun-propelled projectiles. Injuries to eyes, vital organs, large blood vessels, and fatal brain trauma have been reported,¹⁻⁷ along with serious medical complications arising from such trauma.⁸⁻¹² Projectile wounds to teeth and associated structures also have been reported.¹³⁻¹⁵

Severe traumatic fracture of a single posterior tooth is uncommon. Most minor blows to the sides of the face are cushioned by cheek musculature so that an individual molar rarely sustains the complex enamel and dentin fractures often seen in anterior teeth. This report is of a patient who suffered severe fracture of a primary molar by an air gun-propelled projectile resulting in loss of the tooth. Some diagnostic detective work was necessary to determine what had occurred.

Clinical Report

A 7-year-old boy referred by another dentist presented with the chief complaint that he had been "hit in the face with a rock last night, and my tooth hurts." The boy's mother related that she had not witnessed the accident, but had been told that her son had been playing outside with neighborhood children, and that one had thrown a rock that hit her son.

The patient was alert and cooperative for examination, but quite anxious. Neurologic assessment was unremarkable.¹⁶ Medical history was noncontribu-

tory and the boy's tetanus toxoid immunization was up-to-date.

An irregular-shaped lesion, about 1 cm in diameter was evident in the middle of the left cheek (Fig 1). Its center was encrusted with dried blood. A 1-1.5 cm round lesion, surrounded by petechiae was noted in the left buccal mucosa, suggesting a through-and-through cheek perforation which was confirmed with blunt probing (Fig 2). The left mandibular primary second molar was shattered into numerous fragments (Fig 3). The fractures included enamel and dentin and perforated deeply into the pulp spaces. No adjacent teeth were injured.

A radiograph taken by the referring dentist revealed deep fractures of the primary second molar and taurodontism of the primary molars (Fig 4A). A 4 mm circular radiopaque area was seen between the dental arches with no neighboring anatomic landmarks (Fig 4A). A new periapical film showed a small



FIG 1. A blood-encrusted lesion was observed on the left cheek.



FIG 2. A white lesion surrounded by petechiae was present in the left buccal mucosa. Blunt probing revealed a complete cheek perforation.

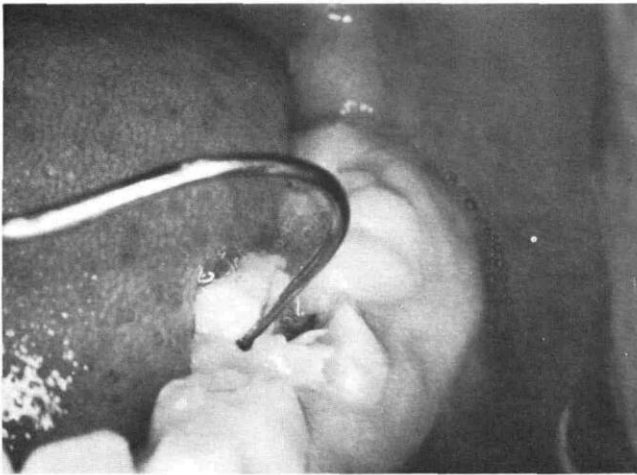


FIG 3. The primary second molar suffered complex fractures exposing the pulp tissues.

portion of the radiopaque object just above the mesial cusps of the second primary molar (Fig 4B). The radiopacity appeared again on a bite-wing radiograph (Fig 4C).

A small movable mass was palpable in the left cheek. The patient was questioned about being struck with a pellet or BB-type projectile, but denied such an occurrence, claiming that he did not know anybody with a BB gun or other similar weapon.

With local infiltration of Xylocaine 2% with 1/100,000 parts epinephrine, a small incision was made through the mucosal lesion. Gentle manipulation expelled a BB through the incision (Fig 5). The wound was closed with 4-0 gut sutures. After left alveolar block and long buccal anesthetic injections, the fractured molar was extracted. The tooth had to be removed in many fragments due to multiple vertical and transverse frac-

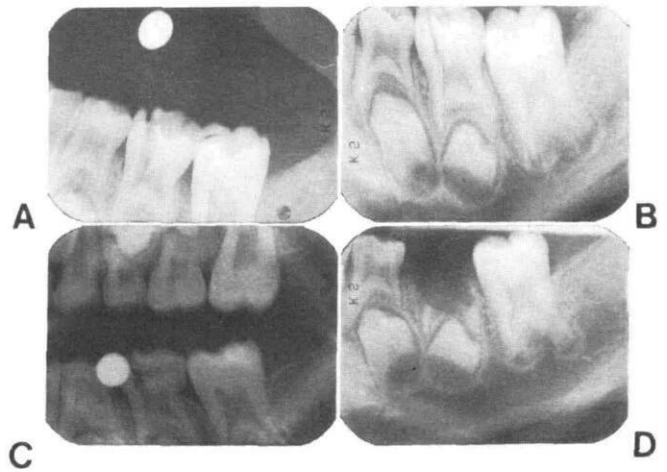


FIG 4. A. A radiograph provided by the referring dentist showed a round, radiopaque object and fracture of the second molar. B. A periapical film showed deep fracture of the primary second molar and a small portion of the radiopaque object just above the mesial cusps. C. A bite-wing radiograph showed the object superimposed upon the fractured mesial cusps. D. In consideration of possible surgical damage to the developing premolar, apical segments of the primary molar roots were left in place.

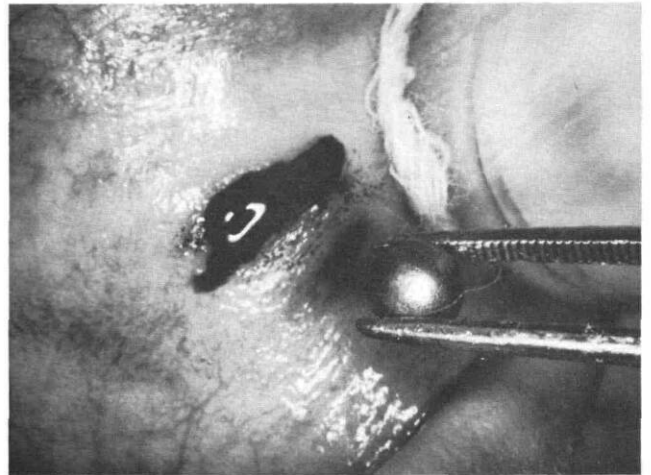


FIG 5. The BB was expressed through a small incision in the mucosa.

tures. Because of considerable surgical risk to the developing second premolar, small apical segments of the primary molar roots were left in the alveolus (Fig 4D). The extraction area healed uneventfully.

The patient was sent back to the referring dentist for follow-up evaluation and immediate fabrication of a band-and-loop space maintainer. The boy will be followed continually for space maintenance considerations and observation of the retained root tips. It is expected that the root segments either will resorb in time or be available for safe surgical removal after further development of the second premolar. The pa-

tient's mother was encouraged to seek out the parents of the boy with the BB gun to advise them about the incident.

Discussion

After review of all diagnostic information, the bite-wing radiograph gave the important clue as to how the injury had occurred. When recording a bite-wing film, the cheek musculature and mandible are relatively static, with the mandible close to rest position. If a BB hit the patient while his mandible and cheek muscles were not moving or distorted, such as in mandibular rest position, a bite-wing radiograph closely would approximate, in 2 dimensions, the soft tissue point of impact in relation to the teeth and osseous structures. In this patient, 2 periapical films showed great disparity in position of the BB, because the cheek is usually somewhat distorted while taking such films. That is especially true if stainless steel x-ray aligning instruments are used. However, the bite-wing film showed the projectile directly over the mesiobuccal cusp of the fractured molar — precisely the point of impact on the tooth. Apparently, the missile pierced the patient's cheek, and the energy of impact compressed the buccinator muscle and buccal mucosa against the primary molar. The BB met resistance against the tooth and had sufficient kinetic energy to shatter the crown. The "exit" wound probably was due to tissue perforation as the mucosa was compressed against the enamel surface. The BB finally lodged in the deep connective tissue of the cheek.

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