Accidental radiographic finding of a maxillofacial gunshot injury. A case report

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Abstract: Shotgun wounds may result in calamitous functional and aesthetic effects for patients. There is no concord in terms of removing or retaining shot gun pellets. In this article, we are reporting a case of an unusual radiographic finding of gunshot wound of a 65 year old female patient who came for the routine dental checkup. Incidentally, a panoramic radiograph revealed a metallic foreign body in the left maxillofacial complex. Anamnestic data revealed that a shot from the air gun hit her left cheek almost 35 years back. Pellets were still present in the maxillofacial region without the patient experiencing any pathological signs or symptoms.

Key Words: air gun, pellets, ballistics, foreign body.

In rural areas, shotguns are mainly used for hunting purposes which can also cause accidental wounds [1]. The type and severity of injuries depends on the type of air gun used, the distance at which it is fired, and the anatomic site at which the pellet hits [2]. Here is an interesting case of accidental radiographic finding of a gunshot injury, which was noticed approximately 35 years after the incidence.

CASE REPORT

A 65-year-old female patient visited to the Oral and Maxillofacial Radiology unit for a routine review of her dental health. There was no complaint of trauma, pain or any complications related to the oral cavity. The patient was conscious, co-operative and well oriented to time place and person. She was moderately built and nourished with normal gait and normal vital signs.

Extra orally no abnormality was detected and intra orally, root stump with tooth number 24 (FDI tooth numbering system) and multiple missing teeth were seen. Tooth mobility with respect to lower anteriors was also noted with poor oral hygiene. There were no signs of swelling or ecchymosis present. Patient was advised to take a panoramic radiograph for the assessment of periodontal status.

A panoramic radiograph showed generalized bone loss and root canal filling materials with respect to 44 and 45. But very interestingly it revealed assembling of many radiopaque foreign objects in the left side of the maxillofacial complex. Multiple pellets were seen which are spread around the articular eminence and the condylar region on the left side with different size. Some pellets were bigger in size and some were small tiny fragments. Few pellets were scattered themselves in the mandibular left molar region and one pellet had lodged in the area between 25 and 26, close proximity to the inferior border of the maxillary sinus (Fig. 1).

Detailed anamnestic data was taken which revealed that she had suffered from accidental gunshot injury to the left cheek when she was at the age of 30. She was taken to

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the hospital at that time, basic resuscitation was done and pellets which are accessible were removed and other distant pellets were left in situ. Although panoramic radiograph showed many pellets lodged unilaterally in the maxillofacial complex, there was no functional deficit appreciated.

**DISCUSSION**

Ballistics is a branch of science that deals with natural laws governing projectiles and their predictable performance. Wound ballistics is the study of a missile's effect on living tissue [3]. Ballistics is divided into internal, external and terminal ballistics. Wound ballistics is a sub group of terminal ballistics. Bones can slow and alter the course of the bullet thereby increasing the deformity and fragmentation. Fragmentation of the bullet is affected by its construction. Full metal jacket bullets do not leave lead fragments. Semi jacketed, hollow-point, nonjacketed and soft point bullets will break out and leave the trail of lead fragments. Hollow point hand guns bullets deform with minimal fragmentation. High velocity soft point rifle bullets go through marked considerable fragmentation creating a lead snow storm radiographic appearance [4].

There are two types of gunshot injuries namely high velocity and low velocity bullet injuries. High velocity bullet injuries are fatal and low velocity bullet injuries are nonfatal mostly encountered by maxillofacial radiologists in routine dental practice. Bullet injuries differ from trauma related injuries. Bullet, as it enters the body it splits into splinters which will increase the damage in the direction of the bullet. The minimum velocity required to fracture a bone is 65m/s. It has a different impact on different types of bone. Impact with cancellous bone will result in drill-hole type defect and impact with cortical bone or teeth it will shatter [5].

Missile velocity can be classified into low (350 m/s), medium (350-600 m/s) and high (600m/s). The factors responsible to cause a woundng potential of a fire arm are: Missile velocity, target distance and size of the pellets [6]. Missile will inter-react with the tissue causing the wound. According to Hollerman et al. (1995) tissue stretch is tolerated differently by different tissues [7]. Maxilla, mandible, and zygomatic arch are the most common site for the bony injury occurring to the face associated with gunshot wounds. Nature of the wound is mainly influenced by the shape and consistency of the bullet [8].

Removal of the foreign body in the head and neck region is a challenge because of difficult access as the bullet fragments may be closely connected to vital structures. Due to the depletion of the kinetic energy, embedded lead particles are considered to be inert. But the retained bullet fragments can produce foreign body reaction, destructive arthritis and also systemic lead absorption [9]. Lead fragments from the gun shot injuries to the maxillofacial region can cause significant increase in blood lead level [10]. Sclafani et al. (1985) stated that bullets in the joints are not physiologically inhert and they can cause lead arthropathy [11]. Heat labile organism is fired through sterile nutrient enriched gelatin which is injected in to the bullets will produce bacterial growth along the bullet track. But there are many case reports suggested that bullets which are penetrating to the deep tissues remain constant without causing any symptoms for the life time [1]. So, there are many controversies regarding whether to remove the bullet particles or to leave them in situ without any intervention.

In conclusion, inspite of many literatures and case reports of gun shot injuries which highlighted that retained bullet fragments can cause elevated blood lead level and complications like lead arthropathy, our case of ingrained pellets in maxillofacial region did not result in any foreign body reaction, secondary infections, plumbism or any associated symptoms of plumbism even after 35 years of incidence.

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**References**