

Migrating Souvenir Bullet: The Management Dilemma? Rajnish Kumar Arora MCh [ALL INDIA INSTITUTE OF MEDICAL SCIENCES, RISHIKESH, INDIA]

Introduction

The cranio cerebral trauma following gunshot injuries is having high mortality and morbidity with 66–90 % of victims dying before they reach hospital and up to 51 % of those treated in hospital surviving[1]. However in case of most salvageable patients, the question which poses dilemma to treating physicians is the decision so as to when and why remove the retained missile? [2] Patients can present in good neurological status and may continue to do well on long term basis.

Methods

A 21 year old man presented with headache and dizziness following somthing hit his forhead with small amount of bleeding, about 7 days ago, while he was observing a gunfight. Cranial radiology in form of CT head and X ray skull which showed a retained metallic bullet in left inferior parieto occipital region without any significant hemorrhage (Image 1). As there was no neurological deficit or meningeal signs, he was managed conservatively. His symptoms improved gradually within next week and he was discharged. He returned for follow up after more than 20 months later when the repeat radiology showed that the retained bullet has migrated to right temporal region (image 2). Patient had remained totally asymptomatic throughout. So no intervention was offered. His most recent follow up was eight months later (total of 28 months since injury) which showed the same position of bullet at right inferior temporal region (Image 3). He is without any symptoms or deficit.

Results: Current indications for removal of an intracranial retained bullet/s , although controversial , may be summarized to the following [3,4,5] - (i) patients who undergo surgery for evacuation of hematoma or significant cerebral swelling and bullet is easily accessible or superficial ; (ii) If bullet fragments cause development of an abscess; (iii) when the retained bullet causes neurological deterioration due to its migration; (iv) bullets within the ventricular system due to their propensity of causing hydrocephalus, (v) heavy metal toxicity or (vi) if bullet is reasonably accessible and can be removed without causing additional neurological deficit. The above person was having probably bullet into the occipital horn of left lateral ventricle which then migrated to the right temporal horn which is a more anatomically dependent position, followed by its marginalization stopping its further migration, as indicated by last two follow ups. However a long term follow up for potential complications of migration, hydrocephalus and abscess formation is advisable. A brain abscess has been known to occur as late as 30 years after injury in relation to a deep-seated retained metallic fragment [6]. This should underscore the importance of adequate follow-up in such souvenir bullets.

Conclusions: A migrating retained intracranial bullet can pose management dilemma to treating neurosurgeons. A long term follow up is indicated in individuals with retained bullet/s following cranial gun shot injury even though they may be neurologically intact.



Axial CT and AP X rays images demonstrating the retained bullet in left parieto occipital region, seven days following injury.



Axial CT images at 20 month post injury revealing migration of retained bullet to right temporal horn.

Image 3



CT images (bone windows with metal artifact reduction and reconstructions) at last follow up of 28 months since injury showing same position of bullet as in last scan.

References

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4.Kumar R, Garg P, Maurya V, Sahu RN, Mahapatra AK. Spontaneous bullet migrationuncommon sequelae of firearm injury to the brain. Ind J Neurotrauma 2008;5:119-121 5.Arslan M, Eseoglu M, Güdü Bo, Demir I, Kozan Ab [Spontaneous migration of a retained bullet within the brain: a case report] Ulus Travma Acil Cerrahi Derg 2012;18 :449-452 6.Drew JH, Fager CA. Delayed brain abscess in relation to retained intracranial foreign bodies. J Neurosurg 1954;11: 386-393

Learning Objectives

By the conclusion of presentation participants should be able to 1) know the management guidelines of retained intracranial bullet/s; 2)realise the importance of long term follow up even in neurologically intact patients.