

# Penetrating Maxillary Sinus Injury With Loss Of Vision Caused By An Impacted Dane Gun Burner: A Case Report

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## Abstract

Good visual outcome following ocular emergencies will depend on prompt presentation, recognition and assessment as well as initial management. Penetrating injury of the orbit involving paranasal sinuses with retained foreign body in the orbito-maxillary region are uncommon. Thirty to fifty percent of all ocular traumas are due to orbital trauma. Ocular trauma is one of the leading causes of monocular blindness and can even lead to the death of the patient. Removal of retained intraocular/orbital foreign bodies (IOFB) requires team approach.

We report an unusual case of transorbital penetration of a Dane gun burner that got impacted in the maxillary sinus in a 40 year old hunter who presented four days after the accident. This was radiologically located and surgically removed by combined approach of oculoplastic and maxillo-facial surgeons under general anaesthesia.

Successful removal was achieved but blindness could not be prevented due to the degree of damage. The need to establish fast and efficient referral services from primary eye centre to prevent avoidable blindness is key.

**Key Words:** Blindness, dane gun burner, orbito-maxillary sinus, eye injury

## Introduction

Eye injuries resulting from accidental gunshot are usually severe. They are usually associated with extensive intraocular tissue damage<sup>[1]</sup> and retained intraocular/orbital foreign bodies (IOFB). It often results in significant visual impairment or blindness in some instances for which enucleation may occasionally be an unavoidable procedure if the eye is traumatized beyond a state to reconstruct a useful functional eye.<sup>[2,3]</sup> Although penetrating injury of the orbit involving paranasal sinuses with retained foreign body in the orbito-maxillary region are uncommon,<sup>[4]</sup> it is one of the leading causes of monocular blindness and

death.<sup>[5]</sup> Ocular emergencies are conditions that require urgent medical attention to avert permanent visual impairment.<sup>[6]</sup> We report an unusual case of trans-orbital penetration of a dane gun burner that got impacted in the maxillary sinus which was presented in the tertiary centre 4 days after the accident. This was radiologically localised and surgically removed by combined team of oculoplastic and maxillo-facial surgeons under general anaesthesia.

## Case Report

A 40 year old subsistent hunter presented with 4 days history of injury to the right eye while trying to shoot a bat in his farm, the dane gun burner recoiled to hit the eye which was claimed to be previously normal seeing eye. He presented in a nearby primary health centre where he was managed before referral. He got to the teaching hospital 4 days after the injury. Examination revealed no light perception in the eye with ragged upper and lower lid laceration, chemosed conjunctiva and corneo-sclera laceration with prolapsed uveal tissue which precluded further view of the ocular media. The left eye was essentially normal. An assessment of right ruptured globe to rule out retained intra- orbital foreign body was made. X-ray of the orbit and paranasal sinuses showed a metallic foreign body lodged in the infero-medial portion of the right maxillary sinus (Figure 1 and 2). Computed tomography scan was not done by the patient because it was neither available in the hospital nor in the town. The patient was placed on intravenous Ciprofloxacin 200mg 12 hourly and Metronidazole 500mg 8 hourly was subsequently scheduled for surgery.

At surgery, the maxillary antrum was approached by the maxillo-facial surgeon through an upper buccal sulcus incision extending from the apex of lateral incisor tooth to an area of mucosa corresponding to the posterior part of first maxillary molar. A Caldwell-Luc anastomosis was carried out. After exposing the maxillary antrum, the lining was removed and the tip of the impacted bullet was located at the postero-medial part of the sinus. The rod-like metallic bullet measuring 4cm by 1cm by 0.5cm was dis-impacted and retrieved from the nasopharynx with the aid of a long curved Howarth elevator. The eye was then cleaned, exposed and the extent of rupture was assessed by the ophthalmic plastic surgeon. One hundred and eighty degree conjunctival peritomy was done, haemostasis was achieved after which the prolapsed uveal tissue was abscised and anterior

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Figure 1: Lateral view of the skull x-ray showing foreign body in the right maxillary sinus

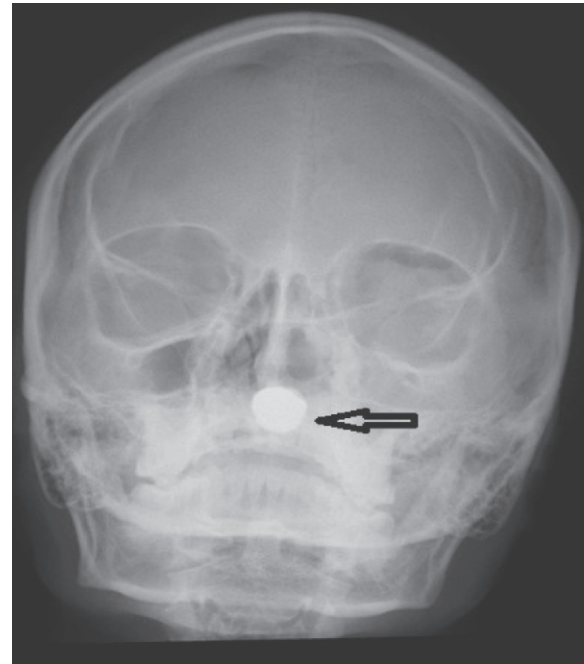


Figure 2: Antero-posterior view of the skull x-ray with the arrow showing the metallic foreign body within the maxillary sinus.

chamber irrigated. The sclera tear and exit point of the bullet from the globe were repaired. The cornea laceration was also repaired with 10/0 nylon. Laceration of eyelids were repaired with 6/0 vicryl. Patient was discharged one week after surgery.

### Discussion

Ocular injuries from low velocity bullets of locally manufactured dane guns are usually massive with resultant visual impairment and possibly blindness. However, the sophisticated high velocity guns like AK 47, usually result in perforating eye injuries with involvement of several other organs of the body.<sup>[7]</sup> The post-operative visual outcome is usually a reflection of the extent of damage, presenting visual acuity and ocular anatomical disruption and damage to the macular and or the optic nerve.<sup>[8]</sup> Localization of the foreign body was done using digital plain X-ray of the orbit and paranasal sinuses due to the fact that computed tomography scan was not available in the centre although this is the most recommended for ocular foreign bodies.<sup>[9]</sup>

Foreign bodies that traverse the orbit and the maxillary sinus can be removed transorbitally or through the maxillary sinus, either endoscopically or by opening the sinus.<sup>[4]</sup> Our patient presented four days after the injury with no light perception but the retained foreign body in the maxillary sinus was successfully removed by a team approach. The no light perception (NPL) at presentation by this patient could be due to extensive corneo-scleral laceration with uveal prolapse, damage to optic nerve and retina according to

du Toit et al who reported that delay in presentation of more than 24 hours usually affect the outcomes of corneal injuries unlike posterior injuries.<sup>[10]</sup>

Due to the usual resultant irreversible loss of vision from the accidental injury from the locally manufactured guns, it has been recommended that manufacturing, acquisition and education in the use and maintenance of such in the community should be ensured.<sup>[7]</sup> It has been reported that successful patient outcomes in the setting of ocular emergencies depends on correct recognition and assessment as well as appropriate initial management and referral.<sup>[11]</sup> Ninety six hours is unusually too long for any remaining useful vision to be salvaged.

In conclusion, successful removal of impacted foreign body in the maxillary sinus was achieved but blindness could not be prevented due to the degree of damage. The need to establish fast and efficient referral services from primary eye centres to prevent avoidable blindness is key.

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