

## Intracranial Glass

### Kafa İçinde Cam Parçası

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**Abstract:** A case of intracranial glass following an orbitocranial trauma is presented. During a car crash, glass fragments from shattered windshield passed through the orbital plate and penetrated into the ventral portion of the frontal lobe. No injury to the globe was observed and the patient did not show any demonstrable signs of neurological deficit. Intracranial glass was surgically removed.

**Key Words:** Glass, intracranial foreign body, orbitocranial trauma

**Özet:** Orbitokraniyal travmadan sonra kafa içinde cam parçası saptanan bir olgu sunulmuştur. Trafik kazası esnasında, patlayan ön camdan çıkan cam parçaları orbita tavanını delerek kafa içine girmiş ve frontal lobun ventral kısmına batmıştır. Göz küresinde yaralanma gözlenmemiş ve hastada nörolojik bulgu saptanmamıştır. Kafa içindeki cam parçası cerrahi olarak çıkarılmıştır.

**Anahtar Sözcükler:** Cam, kafa içinde yabancı cisim, orbitokraniyal travma

#### INTRODUCTION

Intracranial foreign body following penetrating orbitocranial trauma is not common. In most of the intracranial foreign body case reports, foreign objects usually involves wood fragments (3, 6, 9).

Penetration of foreign bodies into the cranium is often via the supraorbital plate, superior orbital fissure, and/or cribriform plate. In most of the cases reviewed by Miller et al. (6) orbital, and/or cerebral damage, and intracranial suppuration following such injuries are reported.

#### CASE REPORT

An 18 year old female patient was referred to our neurosurgery department from a local hospital with the suspicion of presence of intracranial foreign bodies. This patient was involved in a car crash two

weeks before she came to our hospital. During the accident, glass fragments from the shattered windshield penetrated the skin around her right eye lid. Glass pieces were removed by an ophtalmologist. During ophtalmological examination, patient's ocular movements, direct and indirect light reactions and visual acuity were noted as normal. There was no sign of neurological deficit. Cranial x-rays demonstrated a hyperdense foreign object extending from the medial orbit to right frontal lobe (Figure 1). A cranial computerized tomography (CT) scan showed fractures associated with the superior-medial wall of right orbital cavity, ethmoid and frontal sinuses (Figure 2). An intracerebral hyperdense body and bone fragments were also observed in the CT scan. Four pieces of glass (Figure 3) which were found to be buried into the cortex were removed from the anterior portion of the frontal lobe by right frontal craniotomy. Dural defect was repaired with fascia. The patient was given 2 grams



Figure 1: Cranial X ray showing a hyperdense foreign object.

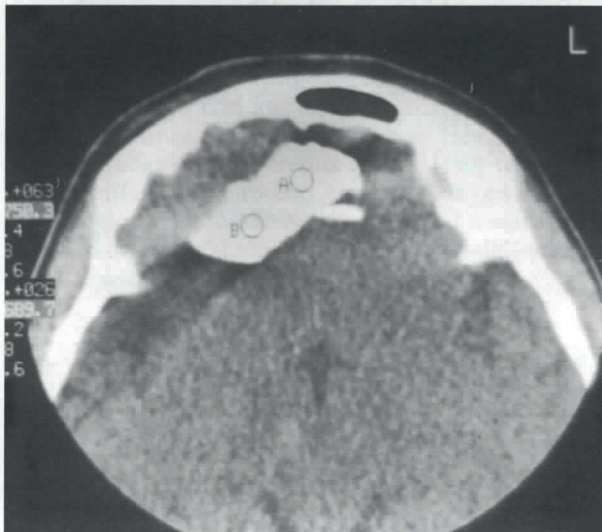


Figure 2: CT demonstrating intracerebral hyperdense foreign body and bone fragments.

of ceftriaxone during the operation and antibiotic treatment was continued for 10 days following the operation. There were no complications during the postoperative period.

### DISCUSSION

Cases with transorbital penetration of foreign bodies into the cranium rarely occur in the literature.

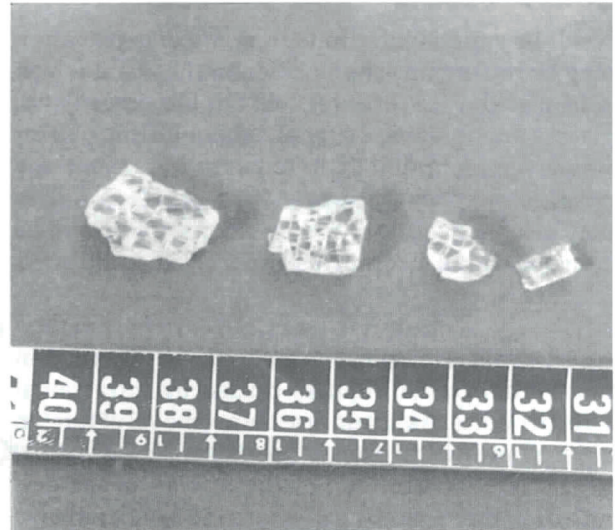


Figure 3: Photograph of surgically removed glass pieces.

Most of the reported foreign bodies associated with orbitocranial traumas involve wooden pieces, such as pencil (3, 6, 9). In our case, glass fragments were found to penetrate into the cranium via the supraorbital plate. Due to the papyraceous structure of the frontal bone, supraorbital plate exhibits little resistance against penetrating traumas. However orbital penetration of foreign bodies into cranium most often occurs through the supraorbital plate, as well as the superior orbital fissure and the cribriform plate (6).

In the present case, although the glass pieces followed the orbitocranial path to penetrate into the cranium, ophthalmological examination revealed an intact bulbus oculi. Furthermore, no evidence of neurological deficit was found. Similar observations have also been reported (5, 6, 9). No globe rupture were reported in any of 42 intracranial foreign body cases reviewed by Clinton et al (6). Direct craniograms and CT scans are very practical and highly efficient tools in identifying intracranial glass pieces (1, 3, 7, 8). Presence of glass in the cranium revealed a hyperdense appearance on the x-ray film and the CT scan made it fairly easy to identify glass. Whereas wooden objects often appear as hypodense patches on x-ray films and in CT scans wood is difficult to evaluate (2, 4, 6).

Intracranial suppuration are known as the most common complications associated with intracranial foreign bodies (6, 8). They are also regarded as the most common cause for increased risk of mortality. Most, if not all, injuries caused by wooden fragments

result in various infections. A possible explanation may be the organic composition of the wood which increases the risk of infection. On the other hand, glass is an inorganic material. Although the patient was given an antibiotic in our case to prevent any possible infection, inorganic characteristic of glass may also be a factor to reduce the risk of infectious complications in injuries associated with glass fragments.

Dural and cortical lacerations are observed in most orbitocranial injuries caused by intracranial foreign bodies. As in our case both removal of foreign objects and dural repair are necessary. Cortical debridement, removing of the foreign object and repairing dura are critical factors in reducing risk of complications.

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