Endoscopic Management of Transnasal Intracranial Penetrating Foreign Bodies

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Case Presentation

The patient was a 21 year old male who was driving intoxicated and sustained a motor vehicle accident. Patient was ejected from his vehicle and launched toward a tree. Patient presented to our institution with a tree branch which had entered the left aspect of his oral cavity piercing through his gingival labial sulcus, traveling into his left nasal cavity, penetrating through the septum into the right nasal cavity, traveling intracranially and piercing white matter. There was no evidence of a CSF leak at time of presentation.

CT Head was performed which showed the skull base defect produced by penetrating organic foreign body.

Penetrating intracranial foreign bodies were removed using endoscopic sinus equipment. The resulting CSF leak was repaired at the same time.

Discussion

In the literature there are three other patients with transnasal intracranial penetrating foreign bodies managed endoscopically. Of these patients, one had an organic substance, whereas the other two patients had metallic foreign bodies. Endoscopic removal was successful in all patients and the CSF leak was repaired in all patients with a multi-layered closure following retrieval of the foreign body. One patient had a lumbar drain placed at time of retrieval whereas one patient had endoscopic removal with assistance of Image guidance. None of the patients suffered complication including meningitis, CSF leak, brain abscess, hydrocephalus, neural/vascular injury or death, which are all associated with craniotomy.

Intracranial foreign bodies generally require a craniotomy approach which is associated with a significant risk of perioperative morbidity. Whereas the transnasal endoscopic approach is a minimally invasive technique with lower associated morbidity/mortality. One may still need to manipulate surrounding brain parenchyma although there is no added potential risk, as there is with a craniotomy where the frontal lobe is retracted.

Conclusion

As experience with endoscopic sinus surgery has grown, so have its extended applications. Endoscopic management of transnasal intracranial foreign bodies can be successfully performed in selected patients and yields an improved cosmetic outcome and a decreased risk in complications.

References