

Occipital Condylar Fracture with Isolated Unilateral Hypoglossal Nerve Injury: A Case Report

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Abstract

Keywords

- ▶ head injury
- ▶ craniocervical joints
- ▶ condylar fracture
- ▶ hypoglossal nerve palsy

Occipital condylar fractures (OCFs) are rare fractures encountered after trauma. Most of these get missed on plain radiographs. A high degree of suspicion prompts one to diagnose it with computed tomographic scan. Isolated hypoglossal nerve palsy is one of the manifestations. Management depends on the type of fracture. Overall prognosis is good.

Introduction

Occipital condylar fractures (OCFs) were first described by Bell in 1817 after the postmortem examination of a trauma victim.¹ The patient had sustained fracture after falling backward off a wall. OCF were rare till computed tomographic (CT) scan came into existence because of diagnostic difficulties. In this case, diagnosis and management of unilateral OCF presenting with severe high cervical pain and unilateral hypoglossal nerve injury is reported and relevant literature reviewed.

Case Report

A 24-year-old male patient was involved in a side-impact motor vehicle collision in which he was the driver. He had no particular underlying diseases in the past. He lost consciousness for 10 minutes. By the time he visited the emergency department, he had a Glasgow Coma Score of 15 and normal vital signs. He complained of severe neck pain with limitations of active and passive range of motion in all directions. Conventional axial CT of the brain and cervical spine revealed no abnormal lesions. He had tongue deviation to the left side on protrusion (▶**Fig. 1**). A CT of the

craniovertebral junction revealed fracture of left basioccipital and left occipital condyle with medial displacement of the fragment (▶**Fig. 2**). As CT scan showed no structural instability of the craniocervical joints (▶**Figs. 3 and 4**), we applied a Philadelphia collar for 8 weeks to prohibit excess neck motion. On follow-up, neck pain had completely improved. Deviation of tongue to the left side improved significantly (▶**Fig. 5**). A follow-up CT scan and dynamic cervical radiographs 12 weeks after the injury revealed no further changes.

Discussion

The major cause of an OCF is high energy trauma.² An OCF associated with minor head trauma is very rare. OCF are diagnosed twice as often in males than in females, with mean age at presentation between 32 and 33 years.³ Our patient was a 24-year-old male. The clinical presentation of OCF is varied and can be easily missed. Neck pain may be the only presenting symptom. Neurological deficits may, however, be present in some cases,³ as it was presented in our patient. Because of the close proximity of occipital condyles with the hypoglossal canal and jugular foramen, lower cranial nerves can be affected.³ The symptoms may

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Fig. 1 Tongue deviation on left side on protrusion.

not be present immediately and may develop months after trauma. Injury to the hypoglossal nerve, however, may be presented immediately³ as was seen in our patient. The nerve deficits can be attributed to the bone fragment pressing on nerves, or yielding of nerve injury or damage to the nerve.³ In fact, OCF should be in the differential diagnosis for patients with lower cranial injuries caused by trauma. A CT scan is recommended in patients with suspicion of injury to the craniocervical region in presence of enduring neck pain, even with normal plain radiographs of the cervical spine.

In 1988, Anderson and Montesano⁴ proposed a classification system and divided OCFs into three types depending on their morphology and mechanism of injury. Type 1 OCFs are impaction type fractures resulting from axial loading of the skull onto the atlas. Type 2 OCFs are more extensive basioccipital fractures caused by a direct blow to the skull. Type 3 OCFs are avulsion fractures because of a rotator force combined with a lateral bending force. Tuli et al⁵ proposed a new classification system for managing



Fig. 3 No structural instability of craniocervical junction on neck extension.

OCFs in 1997 based on fragment displacement and stability of the atlanto-occipital and atlantoaxial joints. They divided OCFs into three types. Type 1 OCF has no fragment displacement. Type 2 OCFs have fragment displacement and are subdivided into type 2a OCFs and type 2b OCFs. The treatment of stable OCT (Andersons and Montesano's types 1 and 2) is conservative with a cervical collar. The role of surgical therapy is controversial and may be indicated to release neurovascular compression or stabilize the craniocervical region.³

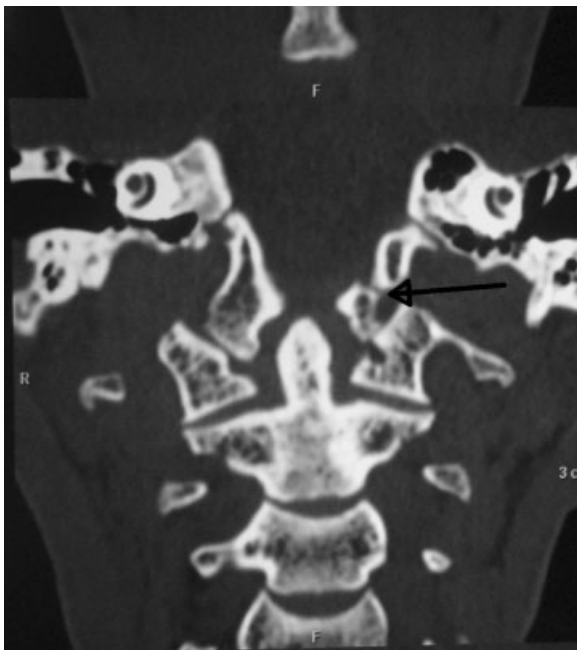


Fig. 2 CT craniocervical junction: Fracture of left basioccipital and two left occipital condyle.



Fig. 4 No structural instability of craniocervical junction: on neck flexion.

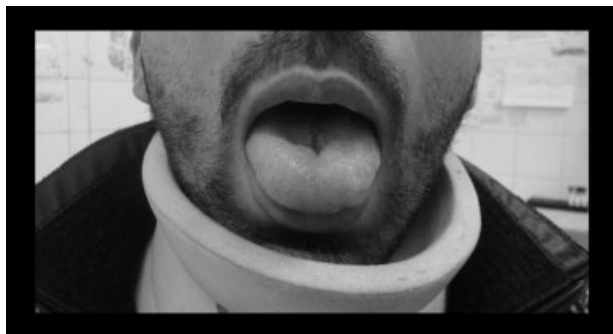


Fig. 5 At 8 weeks, deviation of tongue to the left side improved significantly.

In our case, initial plane radiography, conventional axial CT revealed no abnormal findings. We proceeded with further evaluation to find the cause of the tongue deviation to the left side. A CT of the CCJ demonstrated a left type 3 OCF without an unstable CCJ involved in the hypoglossal canal. We treated the patient conservatively with a Philadelphia collar for 12 weeks to limit the mobility of neck.

In summary, early detection of OCFs and an evaluation of structural stability of CCJ is important.² As in our case, OCFs are typically not visible on plain radiographs of the skull and cervical spine or conventional brain CT. Continuous neck

pain or neurological symptoms caused by lower cranial nerve injury can be clinical clues of OCFs. A thorough radiographic evaluation of the CCJ, such as, thin slice CT with sagittal and coronal reconstruction should be considered for such cases.

Conflict of Interest

No potential conflict of interest relevant to this article was reported.

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