ScientificScholar®
Knowledge is power
Publisher of Scientific Journals

www.surgicalneurologyint.com

Surgical Neurology International

Editor-in-Chief: Nancy E. Epstein, MD, Clinical Professor of Neurological Surgery, School of Medicine, State U. of NY at Stony Brook.

SNI: Spine

Editor
Nancy E. Epstein, MD
Clinical Professor of Neurological Surgery, School of Medicine, State U. of NY at Stony Brook

SNI
Open Access

Image Report

Occipital condyle fracture caused by minor head trauma

Seiya Hayashi, Michiari Umakoshi, Masatoshi Yunoki, Koji Hirashita

Department of Neurosurgery, Kagawa Rosai Hospital, Marugame City, Japan.

E-mail: Seiya Hayashi - seiyaa00024@gmail.com; Michiari Umakoshi - umakoshi1008@yahoo.co.jp; *Masatoshi Yunoki - yunomasato@me.com; Koji Hirashita - hira4113@yahoo.co.jp

Corresponding author:
Masatoshi Yunoki,
Department of Neurosurgery,
Kagawa Rosai Hospital,
Marugame City, Japan.

yunomasato@me.com

Received : 12 November 2022
Accepted : 26 November 2022
Published : 09 December 2022

DOI:
10.25259/SNI_1033_2022

Quick Response Code:

ABSTRACT

Background: Occipital condyle fractures (OCF) are commonly identified in patients suffering from severe craniocerebral trauma. Here, we present a 57-year-old male whose computed tomography (CT)-documented atlanto-occipital dislocation (AOD), due to just minor trauma was successfully managed with bracing alone.

Case Description: A 57-year-old male presented with the right upper neck pain following a motor vehicle accident. The screening cervical CT scan revealed a fracture of the right occipital condyle, while the subsequent dynamic X-rays showed no instability or AOD. The patient was treated with a hard cervical collar, and over the next 6 months, remained asymptomatic. The 6-month repeat craniocervical CT scan additionally confirmed spontaneous fusion at the fracture site.

Conclusion: Patients who have sustained even mild craniocervical trauma may develop AOD attributed to an OCF. It is critical to screen these patients early with CT and X-ray studies so they can be successfully managed with bracing alone, and avoid the need for surgery to address the delayed onset of instability.

Keywords: Computed tomography, Head trauma, Occipital condyle fracture

INTRODUCTION

Occipital condyle fractures (OCF) are rare and most typically occur following severe craniocerebral trauma [Table 1].[3] However, here, we showed that even a mild head injury may result in an OCF that should be diagnosed early on with appropriate X-ray and computed tomography (CT) studies. This allows for these patients to be successfully treated with bracing alone, thus avoiding the delayed onset of atlanto-occipital dislocation (AOD) warranting surgical stabilization.

CASE PRESENTATION

Following a motor vehicle accident, a 57-year-old male presented with the right upper neck pain, and a contusion to the forehead, but neurologically intact. Although the craniospinal CT revealed a fracture of the right occipital condyle, the dynamic cervical X-rays showed no AOD [Figures 1a-c]. The patient was, therefore, treated with a hard neck collar for 6 months. The repeat craniocervical CT scan 6 months after the accident confirmed adequate fusion at the fracture site [Figures 2a-c].

Table 1: Summary of literature review on occipital condyle fracture.

Author	No. of cases	Sex, age on average	Cause of injury	consciousness level	craniocerebral lesions	AOD	Mortality
Anderson and Montesano, 1988[1]	6	M: F=5:1, 43 yo	MVA 4	Loss of consciousne in all cases	NA	NA	1
Tuli *et al*., 1997[5]	3	M: F=1:2, 53 yo	MVA 2, fall 1	GCS=14.3 on average	1	1	0
Maserati *et al*., 2009[3]	100	M: F=69:31, 44yo	MVA 55, fall 32	GCS=11.8 on average	56	NA	12
Mueller *et al*., 2012[4]	31	M: F=20:11, 37yo	MVA 19, fall 9	GCS=11.8 on average	31	3	5

MVA: Motor vehicle accident, GCS: Glasgow coma scale, AOD: Atlanto-occipital dislocation, M: Male, F: Female, NA: Not available

Figure 1: Axial (a), reconstructed sagittal (b), and coronal (c) computed tomography images at presentation. Note the comminuted fracture of the right occipital condyle (arrow) without displacement of the fracture fragments.

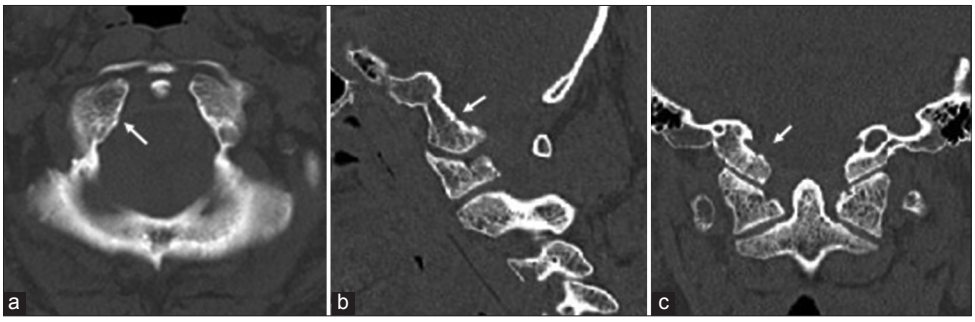

Figure 2: Computed tomography images 6 weeks after presentation. Axial image revealed that healing process had occured at the fracture site (arrow) (a). Similar findings were confirmed in l reconstructed sagital image (arrow) (b) and reconstructed coronal image (arrow) (c).

DISCUSSION

Early diagnosis of OCF essential

In patients suffering from severe craniocervical trauma, the incidence of OCF seen on CT is approximately 4.2–4.4% on CT scans.[2] However, OCF may also occur following even minor head injuries and should be diagnosed early utilizing multiplanar reformatted CT.[3] Such early treatment utilizing bracing alone may avoid the onset of AOD and the subsequent need for surgery (i.e., spinal compression due to the progression of instability and or even fatal brain stem injuries).[3]

Classification of OCF

Anderson and Montesano[1] and Tuli *et al*.[5] have described two major classifications for OCF fracture types. Mueller *et al*. further introduced a simple and more practical classification for OCF; Type 1 – unilateral OCF without AOD, Type 2 – bilateral OCF without AOD, and Type 3 – unilateral or bilateral OCF with AOD.[4] The only significant predictor for poor outcomes occurred in Type 3 cases with AOD requiring surgical stabilization.[4] They emphasized that early diagnosis of OCF allowed for treating OCF with cervical collar immobilization alone. Alternatively, those diagnosed late secondary to the onset

of AOD typically warrant surgery. Here, the patient we presented with a Type 1 Mueller OCF was adequately treated with stiff collar alone, and we thus avoided an occipital-cervical fusion.

CONCLUSION

Patients presenting with even mild craniocervical trauma should be evaluated for potential OCF utilizing both X-ray and CT studies. If diagnosed early, before the onset of AOD, most patient may be successfully managed with cervical collar immobilization alone, without the need for surgery.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Anderson PA, Montesano PX. Morphology and treatment of occipital condyle fractures. Spine (Phila Pa 1976) 1988;13:731-6.
2. Link TM, Schuierer G, Hufendiek A, Hufendiek A, Horch C, Peters PE. Substantial head trauma: Value of routine CT examination of the cervicocranium. Radiology 1995;196:741-5.
3. Maserati MB, Stephens B, Zohny Z, Lee JY, Kanter AS, Spiro RM, *et al*. Occipital condyle fractures: Clinical decision rule and surgical management. J Neurosurg Spine 2009;11:388-95.
4. Mueller FJ, Fuechtmeier B, Kinner B, Rosskopf M, Neumann C, Nerlich M, *et al*. Occipital condyle fractures. Prospective follow-up of 31 cases within 5 years at a level 1 trauma centre. Eur Spine J 2012;21:289-94.
5. Tuli S, Tator CH, Fehlings MG, Mackay M. Occipital condyle fractures. Neurosurgery 1997;41:368-77.

How to cite this article: Hayashi S, Umakoshi M, Yunoki M, Hirashita K. Occipital condyle fracture caused by minor head trauma. Surg Neurol Int 2022;13:575.