Atlanto-occipital dislocation

Atlanto-occipital dislocation, orthopedic decapitation, or internal decapitation describes ligamentous separation of the spinal column from the skull base. It is possible for a human to survive such an injury; however, only 30% of cases do not result in immediate death. It should not be confused with atlantoaxial dislocation, which describes ligamentous separation between the first and second cervical vertebra.

AOD typically occurs as a result of high-velocity trauma, such as car accidents or falls from a significant height. Symptoms of AOD can include neck pain, loss of sensation or movement in the arms or legs, difficulty breathing, and loss of consciousness.

Diagnosis of AOD typically involves imaging studies such as X-rays, CT scans, or MRI scans. Treatment usually requires immediate immobilization of the neck and stabilization of the cervical spine. In some cases, surgery may be necessary to realign the cervical spine and decompress the spinal cord.

Overall, AOD is a very serious injury that requires prompt and effective medical care to prevent serious complications and death.

A case of Down syndrome complicated by congenital atlanto-occipital dislocation. The patient presented with severe cervical myelopathy at 13 years of age after a 10-year follow-up. Radiography and computed tomography revealed os odontoideum protruding into the foramen magnum and congenital anterior atlanto-occipital dislocation. Additionally, a bifurcated internal occipital crest with a thinned central portion of the occipital bone was noted. Magnetic resonance imaging revealed kyphotic alignment of the spinal cord with severe compression at the foramen magnum level. As the neurological impairment was partially improved by halo vest immobilization, we performed in situ O-C2 fusion with an iliac autograft and decompression of the foramen magnum and posterior arch of C1. An improvement was observed immediately after surgery. Two years after surgery, radiography and computed tomography showed solid O-C2 segment fusion. The accumulation of similar cases is essential for determining the prognosis or optimal treatment for this rare congenital condition [1)].

1)
Onodera R, Sakamoto R, Taniguchi Y, Hirai S, Matsubayashi Y, Kato S, Oshima Y, Tanaka S. Congenital atlanto-occipital dislocation in a patient with Down syndrome: a case report. Skeletal Radiol. 2023 Feb 11. doi: 10.1007/s00256-023-04297-5. Epub ahead of print. PMID: 36773086.