

Atlas fracture diagnosis

Advancements has increased our diagnostic abilities to identify and manage patients with C1 fractures and other upper cervical spine trauma ¹⁾.

Radiographs

lateral radiographs [atlantodental interval](#) (ADI)

< 3 mm = normal in adult (< 5mm normal in child)

3-5 mm = injury to transverse ligament with intact alar and apical ligaments

> 5 mm = injury to transverse, alar ligament, and tectorial membrane

open-mouth odontoid

open-mouth odontoid view important to identify atlas fractures sum of lateral mass displacement

if sum of lateral mass displacement is > 7 mm (8.1mm with radiographic magnification) then a transverse ligament rupture is assured and the injury pattern is considered unstable

CT

study of choice to delineate fracture pattern and identify associated injuries in the cervical spine

MRI

more sensitive at detecting injury to transverse ligament.

Associated conditions

C2 spine fracture

50% have an associated spine injury

40% associated with [axis fracture](#)

¹⁾

Smith RM, Bhandutia AK, Jauregui JJ, Shasti M, Ludwig SC. Atlas Fractures: Diagnosis, Current Treatment Recommendations, and Implications for Elderly Patients. Clin Spine Surg. 2018 Aug;31(7):278-284. doi: 10.1097/BSD.0000000000000631. PMID: 29620588.

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