As a common type of fracture in cervical, atlas fracture is frequently unstable due to its special anatomical structure. In a previous treatment, external fixation was likely to bring low bony union rate and long-term neck pain, while occipito-cervical fusion and atlantoaxial fusion sacrifice range of motion in cervical spine. Reduction and single section fixation of atlas by anterior lateral mass screws through the transoral approach were reported by some scholars, and the retrospective study demonstrated the high healing rate, reservation of cervical ROM and less bleeding. But it also has high risks of cervical spinal cord and vertebral artery damage, as well as the post-operation infection. Moreover, the indication and fixation strength require further evidences. As a result, this surgical option provides a new way for spinal surgeons to deal with unstable atlas fractures [1].

Fusion options when surgery is indicated: [2]

1. unilateral ring or anterior C1 cervical vertebra arch fractures: C1–2 fusion

2. multiple ring fractures or posterior C1 cervical vertebra arch fractures: occipitocervical fusion

1. fusion A. unilateral ring..., B. multiple ring...

2. Surgical options that do not involve arthrodesis include: posterior C1 screw placement, anterior transoral screw/plate placement.

1)
Wang LR, Zhao LJ, Ma WH. [Research progress on reatment of unstable atlas fracture with single-segment fixation by transoral approach]. Zhongguo Gu Shang. 2017 Jan 25;30(1):93-96. Chinese. doi: 10.3969/j.issn.1003-0034.2017.01.022. PMID: 29327560.
2)
Dickman CA, Greene KA, Sonntag VK. Injuries involving the transverse atlantal ligament: classification and treatment guidelines based upon experience with 39 injuries. Neurosurgery. 1996; 38:44–50