

# Transoral atlantoaxial reduction plate (TARP)

First initiated in 2005, transoral atlantoaxial reduction plate (TARP) works as an internal fixation for the treatment of [basilar invagination](#) with irreducible [atlantoaxial dislocation](#) <sup>1)</sup>.



<http://www.scielo.br/img/revistas/clin/v69n11/1807-5932-clin-69-11-750-gf07.jpg>

## Case series

### 2016

The TARP operation is effective and safe for treating patients with [basilar invagination](#) (BI) with [Klippel-Feil syndrome](#) (KFS). The midterm clinical results were satisfactory <sup>2)</sup>.

### 2014

The TARP operation and intra-operative traction could reduce the odontoid process superiorly migrating into the foramen magnum, directly ease the ventral compression of spinal cord, and fix the reduced atlantoaxial joints through a single transoral approach without the need of a posterior operation. In 21 patients, 20 did well with TARP operation. The preliminary clinical result was satisfactory <sup>3)</sup>.

### 2010

From April 2003 to April 2005, 31 patients with irreducible atlantoaxial dislocation were treated with TARP internal fixation. The average age was 37.9 years (range, 15-69 years). The subjective symptoms, objective signs, and neurological function of the patients were assessed. Radiography and magnetic resonance imaging (MRI) were performed and the results analyzed according to the Symon and Lavender clinical standard, Japanese Orthopaedic Association (JOA) score for spinal cord function and imaging standard for spinal cord decompression.

Complete or almost complete anatomical reduction was obtained in all 31 patients. No screw-loosening or atlantoaxial redislocation was found in 29 cases. According to the Symon and Lavender clinical standard, 14 cases had recovered completely, 7 to mild, 6 to moderate, and 4 to severe type by final follow-up, compared to the preoperative classifications of 4 as moderate, 15 as severe, and 12 as extra severe type. The outcome for 26 patients was evaluated as excellent and in 5 as adequate. The average postoperative improvement in spinal cord function was 73.3% and of decompression of the cervical cord 92.6%. The only complication was loosening of screws in two cases with senile osteoporosis. One case underwent TARP revision surgery and the other posterior occipitocervical internal fixation. Both of them were eventually cured.

The TARP operation is a good choice for patients with irreducible atlantoaxial dislocation and has valuable clinical application <sup>4)</sup>.

1)

Yin Q, Ai F, Zhang K, Chang Y, Xia H, Wu Z, Quan R, Mai X, Liu J. Irreducible anterior atlantoaxial dislocation: one-stage treatment with a transoral atlantoaxial reduction plate fixation and fusion. Report of 5 cases and review of the literature. *Spine (Phila Pa 1976)*. 2005 Jul 1;30(13):E375-81. Review. PubMed PMID: 15990655.

2)

Wei G, Wang Z, Ai F, Yin Q, Wu Z, Ma XY, Xu J, Shi C, Xia H. Treatment of Basilar Invagination With Klippel-Feil Syndrome: Atlantoaxial Joint Distraction and Fixation With Transoral Atlantoaxial Reduction Plate. *Neurosurgery*. 2016 Apr;78(4):492-8. doi: 10.1227/NEU.0000000000001094. PubMed PMID: 26990409.

3)

Xia H, Yin Q, Ai F, Ma X, Wang J, Wu Z, Zhang K, Liu J, Xu J. Treatment of basilar invagination with atlantoaxial dislocation: atlantoaxial joint distraction and fixation with transoral atlantoaxial reduction plate (TARP) without odontoidectomy. *Eur Spine J*. 2014 Aug;23(8):1648-55. doi: 10.1007/s00586-014-3378-8. Epub 2014 May 18. PubMed PMID: 24838509.

4)

Yin QS, Ai FZ, Zhang K, Mai XH, Xia H, Wu ZH. Transoral atlantoaxial reduction plate internal fixation for the treatment of irreducible atlantoaxial dislocation: a 2- to 4-year follow-up. *Orthop Surg*. 2010 May;2(2):149-55. doi: 10.1111/j.1757-7861.2010.00077.x. PubMed PMID: 22009930.

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