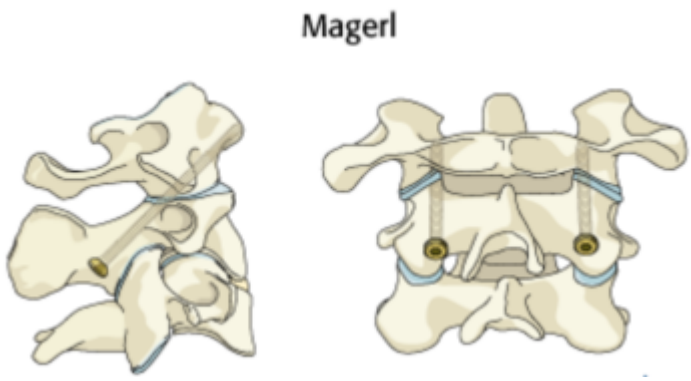
Magerl technique

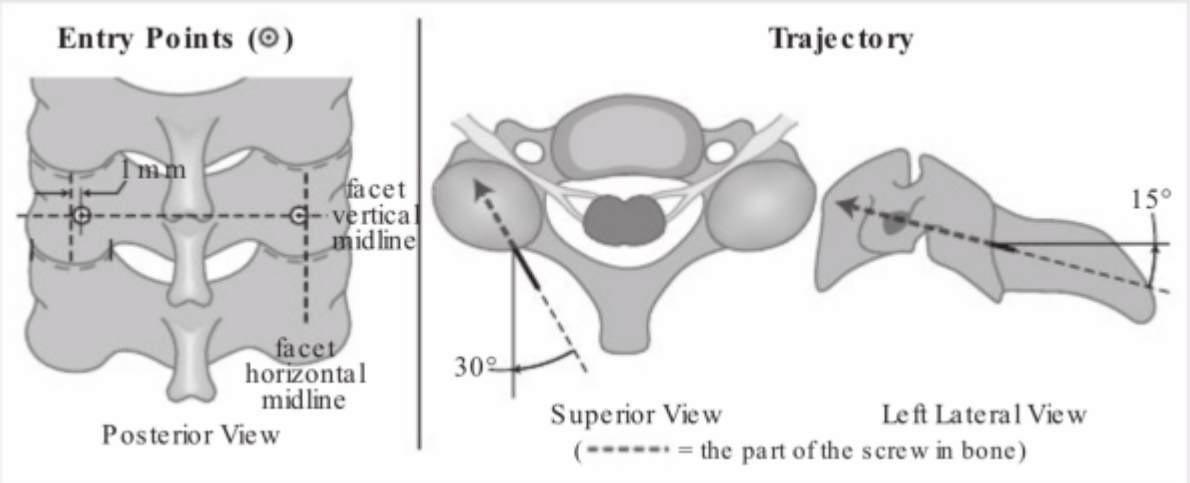
Wright's Technique (C1-C2 Transarticular Screws – Magerl)

1. Requires preoperative CT angiography to assess the vertebral artery course.
2. Involves placing screws across the C1-C2 articulation.
3. High fusion rates but has risks of vertebral artery injury.



Method	Entry point		Trajectory angle	
	Medio-lateral	Cranio-caudal	Medio-lateral	Cranio-caudal
An	1 mm medial to mid-point	midpoint	30° lateral	15° cephalad
Magerl	2 mm medial to midpoint	2 mm cranial to midpoint	20–25° lateral	parallel to facet joint[a]
Roy-Camille	midpoint	midpoint	0–10° lateral	0°

[a]angle can be determined by inserting probe into the joint



An alternative to lateral mass fusion. First described in 1972 by Roy Camille. May be used alone or as an anchor point.

Clinically or radiographically significant atlanto-axial subluxation is best treated by reduction and fusion of the C1-C2 joint. Posterior C1-C2 fusion using transarticular screw (TAS), introduced by

Magerl et al in 1979 [1] is the gold standard for atlantoaxial arthrodesis. It has the advantage of a more rigid fixation with higher rates of fusion, avoiding need for postoperative halo, no placement of implant in the spinal canal, and possibility of its use in anomalies of odontoid process or the posterior arch.

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1)
Magerl F, Seemann PS. In: Cervical spine I. Kehr P, Weidner A, editor. Vol. 1. New York: Springer; 1987. Stable posterior fusion of the atlas and axis by transarticular screw fixation; pp. 322–327.
2)
Stillerman CB, Wilson JA. Altanto-axial stabilization with posterior transarticular screw fixation: technical description and report of 22 cases. Neurosurgery. 1993;32:948–955. doi: 10.1227/00006123-199306000-00011.
3)
Blauth M, Richter M, Lange U. Transarticular screw fixation C1/2 in traumatic atlantoaxial instabilities. Comparison between percutaneous and open procedures. Orthopade. 1999;28:651–661.
4)
Wang C, Yan M, Zhou H, Wang S, Dang G. Atlantoaxial transarticular screw fixation with morselized autograft and without additional internal fixation: technical description and report of 57 cases. Spine. 2007;32(6):643–646. doi: 10.1097/01.brs.0000257539.75693.cc.
5)
Jeanneret B, Magerl F. Primary Posterior Fusions C1-2 in Odontoid Fractures: Indications, Technique, and Results of Transarticular Screw Fixation. J Spinal Disord. 1992;5:464–475. doi: 10.1097/00002517-199212000-00012.
6)
Grob D, Jeanneret B, Aebi M, Aebi M, Markwalder TM. Atlanto.-axial fusion with transarticular screw fixation. J Bone Joint Surg Br. 1991;73(6):972–6.
7)
Taggard DA, Kraut MA, Clark CR, Traynelis VC. Case-control study comparing the efficacy of surgical techniques for C1-C2 arthrodesis. J Spinal Disord Tech. 2004;17(3):189–94. doi: 10.1097/00024720-200406000-00005.