



INSTRUCTIONAL LECTURES & PANEL PRESENTATIONS

**Traumatic Atlanto-Axial Instability Treated by Magerl Technique.  
-Transarticular Screw Fixation-**

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A lot of techniques for posterior fusion of the atlanto-axial joint, such as Gallie or Brooks, have been reported. Transarticular screw fixation with posterior atlanto-axial fusion is good and reliable procedure reported by Magerl in Switzerland. However, the technique seemed dangerous and difficult. We have done this method using cannulated screws under fluoroscopic control without opening the lateral joints. I will show some cases of traumatic atlanto-axial instability treated by Magerl's technique and to confirm the safety of the technique.

There are various types of traumatic atlanto-axial instability. We have experienced 6 cases of Jefferson fracture, 5 odontoid fracture, 2 vertebral body fracture of the axis, one anterior atlanto-axial subluxation and one atlanto-axial rotatory fixation. Among these cases, one case of Jefferson fracture, 3 delayed union of the odontoid process, one vertebral body fracture of the axis and one atlanto-axial rotatory fixation were by Magerl's technique. Bony union was achieved in all cases without any complication.

This posterior atlantoaxial transarticular screw fixation (Magerl's technique) has been reported to be biomechanical superior to posterior

wiring techniques. However, in some reports, the risk of screw insertion in this technique has been pointed out. I will also demonstrate the accuracy of screw insertion during atlantoaxial transarticular screw fixation.

Fifty-six consecutive cases with atlantoaxial instability were treated by atlantoaxial transarticular screw fixation under fluoroscopic monitoring without opening the lateral atlantoaxial joint. Screw insertion of these 112 screws was assessed by CT examination. One screw could not be inserted. There were 77 screws out of 111 screws, which perforate the atlantoaxial joint. Therefore, successful insertion of atlantoaxial transarticular screw fixation was 95.5%. There were 2 screws inserted at outside the joint, 2 at medial and 1 at anteroinferior of the joint.

Atlantoaxial transarticular screw insertion using image intensifier without opening the lateral atlantoaxial joint can be done accurately in most clinical cases. However, preoperative evaluation of unusual condition of screw path in CT examination and careful screw insertion to avoid disoriented perforation of the cortical bone are mandatory especially in patients with rheumatoid arthritis.