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The long-term Clinical Outcomes of Magerl Technique Combined with Single Laminar Clamp Internal Fixation in treatment of Reducible Atlantoaxial Dislocation

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Title: The long-term Clinical Outcomes of Magerl Technique Combined with Single Laminar Clamp Internal Fixation in treatment of Reducible Atlantoaxial Dislocation

Background: We proposed Magerl technique combined with single laminar clamp internal fixation as an alternative treatment for atlantoaxial dislocation and this technique showed satisfactory short-term clinical outcomes.

Research question: To evaluate the long-term clinical outcomes of the technique above.

Design: Retrospective study.

Methods: Data of 11 patients diagnosed with reducible atlantoaxial dislocation underwent Magerl technique combined with single laminar clamp internal fixation and fusion were retrospectively reviewed. The clinical and radiological outcomes were investigated according to the Symon and Lavender standard, the score of Japanese Orthopaedic Association (JOA), and the imaging index space available for the cord (SAC), the atlas-dens interval (ADI).

Results: The mean follow-up time was 67.8±65.3 months. The ADI and SAC was corrected significantly postoperative ($P<0.05$). The clinical recovery rate according to the Symon and Lavender standard and JOA were 90.5% and 81.2% ($P<0.05$).

Discussion: Magerl technique combined with single laminar clamp internal fixation is effective and reliable in management of reducible atlantoaxial dislocation, which can simplify the operative manipulation and decrease the risk of spinal cord injury.

Figure 1. The schema of Magerl technique combined with single laminar clamp internal fixation in management of atlantoaxial dislocation.

Figure 2. A 56-year-old female with congenital odontoid dysplasia combined with atlantoaxial dislocation. a, b, c, d Preoperative X-ray, CT and MRI. e CT after skull traction for one week. f, g, h Fluoroscopy and photo during operation. i X-ray 2 weeks postoperatively. j CT 3 months postoperatively. k, l X-ray and MRI 36 months postoperatively.

Table 1. The pre and postoperative clinical outcomes.

Fig. 1

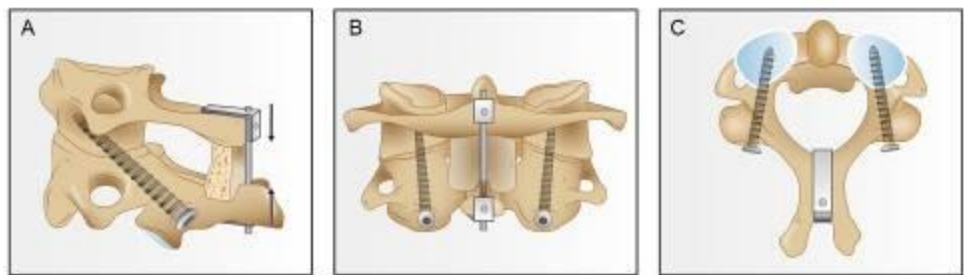


Fig. 2

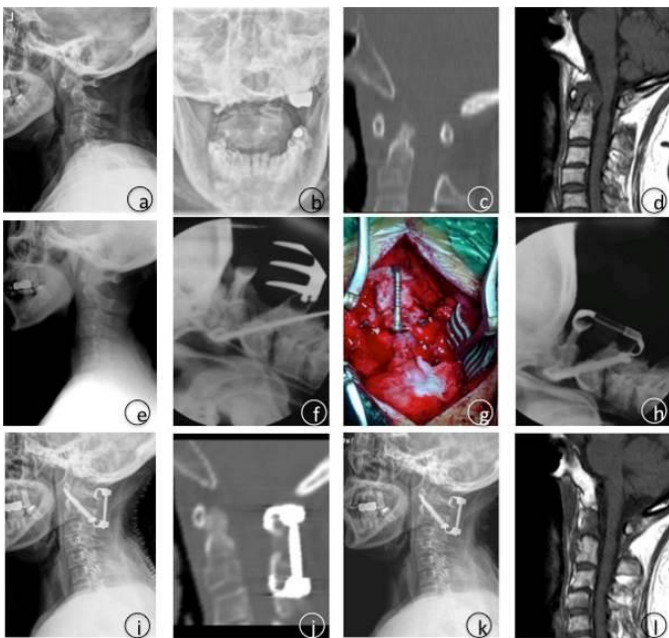


Fig. 3

Table 1. The pre and postoperative clinical outcomes

	Preoperative	Postoperative 1-month	Final follow-up
JOA score ($\bar{x} \pm s$)	8.9 $\pm$ 3.5	13.1 $\pm$ 5.4*	15.9 $\pm$ 4.7*
Symon and Lavender standard			
Normal	0	4	7
Mild	3	2	1
Moderate	4	3	2
Severe	3	1	1
Extremely severe	1	1	0

*. Compared with preoperative data, $P<0.05$