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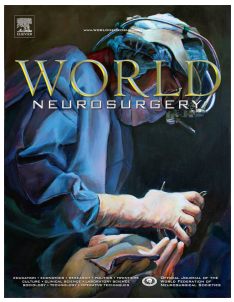

Application of unilateral C2 translaminar screw in the treatment for atlantoaxial instability as an alternative or salvage of pedicle screw fixation

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PII: S1878-8750(16)30943-3

DOI: 10.1016/j.wneu.2016.09.090

Reference: WNEU 4630

To appear in: *World Neurosurgery*

Received Date: 15 July 2016

Revised Date: 20 September 2016

Accepted Date: 23 September 2016

Please cite this article as: Shiyao D, Ni B, Lu X, Xie N, Guo X, Guo Q, Yang J, Chen F, Application of unilateral C2 translaminar screw in the treatment for atlantoaxial instability as an alternative or salvage of pedicle screw fixation, *World Neurosurgery* (2016), doi: 10.1016/j.wneu.2016.09.090.

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Introduction

Posterior fixations of C1 and C2 for instabilities, transarticular screw technique introduced by Magerl and Seemann in 1987 and technique invented by Goel et al. and with modifications by Harms et al. have been seen as the "gold standard" widely. However, the two techniques carry some drawbacks, such as high technical demanding and significant risk of vertebral artery injury especially in patients with a high-riding transverse foramen and a narrow C2 pedicle. To address these issues, Wright[1] described a novel technique of C2 rigid screw fixation using bilateral, crossing C2 laminar screws, eliminating of the potential pitfall of arterial injury in the process of screws insertion. However, the disadvantages and limitations have been successively reported. The present study describes our experience with unilateral TLS combined with contralateral C2 pedicle screw(PS) and bilateral C1 lateral mass screws(LMS) fixation, to our knowledge, this is the largest series till date.

Materials and methods

Patients

We identified eleven consecutive adult patients who underwent hybrid fixation techniques with unilateral translaminar screw(TLS) combined with contralateral C2 PS and bilateral C1 LMS from January 2010 to December 2013, the total number of C1-2 cases we had done due to the atlantoaxial instability during this time period was about two hundred. Age, sex, smoking status, mechanism of