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C2 TRANSLAMINAR SCREW REPLACED BY RIGHT PEDİCLE SCREW IN CASE OF SUSPECTED VERTEBRAL ARTERY INJURY DURING LEFT C2 TRANSPEDICULAR SCREW PLACEMENT

Ferhat HARMAN MD [1, 2, 3], Fatih AKBULUT MD [1, 2], Efecan ÇEKİÇ MD [1, 2], Can KIVRAK MD [1, 2], Adnan DAĞÇINAR MD [1, 2]

[1]Marmara University Faculty of Medicine, Department of Neurosurgery, Istanbul, Türkiye
[2]Marmara University Institute of Neurological Sciences, Department of Neurosurgery, Istanbul, Turkey
[3]Marmara University Institute of Health and Sciences, Department of Neurosurgery, Division of Microneurosurgery

Introduction-Purpose: Instrumentation of the upper cervical vertebrae is characterized as a complex surgical procedure, mainly due to its proximity to the vertebral artery. The prevalence of vertebral artery injury during C2 transpedicular screw placement has been reported between 5.3% and 21% in various sources1,2. Anatomical variations of the vertebral artery in these injuries, like high-riding vertebral artery, put these patients at risk of serious injury.

In our case, translaminar C2 instrumentation was preferred on the contralateral side after the suspicion of vertebral artery injury during C2 transpedicular screw placement in a high-riding vertebral artery case.

Case : A 73-year-old male patient was admitted to our outpatient clinic with the complaint of numbness in the left arm that had been going on for two years. mJOA score was 13.

Materials and Methods: A cervical MRI revealed that the spinal cord diameter narrowed between C3-C7 levels. Surgery was planned with the diagnosis of cervical stenosis. During surgery, the bilateral C3-C4-C5 lateral mass, bilateral C7 transpedicular, and the left C2 transpedicular screw placement was performed. While drilling the left C2 transpedicular screw hole, a light-colored pulsatile bleeding was observed. We suspected an vertebral artery injury and a C2 pedicle screw was inserted into this hole and because of this the bleeding stopped. A C2 translaminar screw was preferred, instead of a C2 transpedicular screw due to the high risk of vertebral artery injury on the right C2 pedicle. Then, C3-C4-C5-C6 total laminectomy, C2 inferior, and C7 superior partial laminectomy was performed. In the postoperative period, numbness and neurogenic claudication complaints disappeared. Cervical CT angiography was performed postoperatively, and vertebral artery continuity was verified on both sides.

Conclusion: Determining vertebral artery location by radiological imaging (Cervical CT-Angio, DSA) will enable a safe surgery by reducing the risk of possible vascular injury. In case of high-riding vertebral artery more medial and superior entry point may help in avoiding the vertebral artery injury during C2 pedicle screw placement. If there is a suspected vertebral artery injury during this procedure, a translaminar screw may be preferred instead of C2 pedicle screw for the contralateral side, since injury on both vertebral arteries can have catastrophic results.

Figure 1

a) Preoperative Sagittal CT scan shows high-riding vertebral artery b) Postoperative AP X-ray shows left C2 transpedicular screw and right C2 translaminar screw c) Postoperative sagittal CT scan shows left C2 pedicle screw disturbing vertebral artery groove d) Postoperative axial CT scan shows right C2 translaminar screw

Keywords: High-riding vertebral artery, Cervical translaminar screw placement, C2 pedicle screw placement, cervical trauma

KAYNAKÇA:

1. Yeom JS, Buchowski JM, Park KW, Chang BS, Lee CK, Riew KD. Undetected vertebral artery groove and foramen violations during C1 lateral mass and C2 pedicle screw placement. Spine (Phila Pa 1976) 2008;33:E942-9.

2. Ondra SL, Marzouk S, Ganju A, Morrison T, Koski T. Safety and efficacy of C2 pedicle screws placed with anatomic and lateral C-arm guidance. Spine (Phila Pa 1976) 2006;31:E263-7.

3. Neo M, Sakamoto T, Fujibayashi S, Nakamura T (2005) A safe screw trajectory for atlantoaxial transarticular fixation achieved using an aiming device. Spine (Phila Pa 1976) 30:E236–E242.

4. Klepinowski T, Pala B, Cembik J, Sagan L (2020) Prevalence of highriding vertebral artery: a meta-analysis of the anatomical variant affecting choice of craniocervical fusion method and its outcome. World Neurosurg.

5. Klepinowski, T., Cembik, J. & Sagan, L. Risk of the high-riding variant of vertebral arteries at C2 is increased over twofold in rheumatoid arthritis: a meta-analysis. *Neurosurg Rev* **44,** 2041–2046 (2021).