## **Intraoperative Doppler ultrasound**

1/1

Vertebral artery injury (VAI) is a potential catastrophic complication of Goel and Harms C1-C2 posterior arthrodesis. Meticulous study of preoperative spinal CT angiography together with neuronavigation plays a fundamental role in avoiding VAI. Doppler ultrasonography may be an additional intraoperative tool, providing real-time identification of the vertebral artery (VA) and thus helping its preservation. Thirty-three consecutive patients with unstable odontoid fractures underwent Goel and Harms C1-C2 posterior arthrodesis. Surgery was performed with the aid of lateral fluoroscopic control in 16 cases (control group) that was supplemented by Doppler ultrasonography in 17 cases (Doppler group). Two patients in each group had a C1 ponticulus posticus. In the Doppler group, Doppler probing was performed during lateral subperiosteal muscle dissection, stepwise drilling, and tapping. Blood flow velocity in the V3 segment of the VA was recorded before and after posterior arthrodesis. All patients had a 12-month outpatient follow-up, and outcome was assessed using the Smiley-Webster Pain Scale. Neither VAI nor postoperative neurological impairments were observed in the Doppler group. In the control group, VAIs occurred in the 2 patients with C1 ponticulus posticus. In the Doppler group, 1 patient needed intra- and postoperative blood transfusions, and no difference in terms of Doppler signal or VA blood flow velocity was detected before and after C1-C2 posterior arthrodesis. In the control group, 3 patients needed intra- and postoperative blood transfusions. Useful in supporting fluoroscopy-assisted procedures, intraoperative Doppler may play a significant role even during surgeries in which neuronavigation is used, reducing the chance of a mismatch between the view on the neuronavigation screen and the actual course of the VA in the operative field and supplying the additional data of blood flow velocity<sup>1)</sup>.

## 1)

Lofrese G, Cultrera F, Visani J, Nicassio N, Essayed W, Donati R, Cavallo MA, De Bonis P. Intraoperative Doppler ultrasound as a means of preventing vertebral artery injury during Goel and Harms C1-C2 posterior arthrodesis: technical note. J Neurosurg Spine. 2019 Aug 16:1-7. doi: 10.3171/2019.5.SPINE1959. [Epub ahead of print] PubMed PMID: 31419805.

From: https://neurosurgerywiki.com/wiki/ - **Neurosurgery Wiki** 

Permanent link: https://neurosurgerywiki.com/wiki/doku.php?id=intraoperative\_doppler\_ultrasound



Last update: 2024/06/07 02:55