

Indocyanine green videoangiography for spinal vascular malformation

ICG video-angiography is a time-efficient and safe alternative to intra-operative spinal angiography. It provided useful information on haemodynamic changes intraoperatively and completeness of treatment ¹⁾.

Has the potential to shorten operating times, gives additional reassurance of completeness of surgical treatment and preservation of normal spinal vasculature ²⁾.

Spinal dural arteriovenous fistulas (AVFs) have been categorized on the basis of the Anson and Spetzler classification into 4 types. Type I is the most common type and describes an abnormal connection between a radicular artery at the nerve root sleeve and an intradural draining vein. This communication results in progressive dilatation and mass effect from the draining vein experiencing arterial pressures without intervening arterioles. In this patient, preoperative angiography showed a type I dural AVF. A laminoplasty was performed to provide dural exposure, and a midline durotomy was performed. Indocyanine green (ICG) angiography was used to visualize flow within the fistula. This dorsal dural AVF demonstrated the characteristic slow venous flow. Pressure recordings were obtained and confirmed the elevated venous pressure observed in these lesions. Bipolar coagulation of the fistulous point was performed, and the vessel was removed at the site of the root entry zone to permit pathologic confirmation of the arteriovenous interface. Intraoperative ICG angiography findings confirmed disconnection ³⁾.

Serves an important role in the microsurgical treatment of [spinal dural arteriovenous fistula](#) DAVF. It is simple and provides real-time information about the precise location of spinal DAVF and result after obliteration of spinal DAVF ⁴⁾.

Two patients had spinal arteriovenous fistula (perimedullary, n = 1; dural, n = 1), and 1 patient had spinal cord hemangioblastoma at the thoracic or thoracolumbar level. The surgical microscope was an OPMI Pentero (Carl Zeiss, Oberkochen, Germany). After laminectomy and opening of the dura, ICG (5 mg) was injected intravenously. The ICG angiography clearly demonstrated feeding and draining vessels. The ICG findings greatly helped successful interruption of arteriovenous fistula and total removal of the tumor.

Intraoperative ICG videoangiography for spinal vascular lesions was useful by providing information on vascular dynamics directly. However, the diagnostic area is limited to the field of the surgical microscope. Although intraoperative digital subtraction angiography is still needed in cases of complex spinal vascular lesions, ICG videoangiography will be an important diagnostic modality in the field of spinal vascular surgeries ⁵⁾.

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