Perfusion pressure management in the perioperative treatment of spinal cord pathology

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Ischemia of the spinal cord is an important contributor to neuronal injury and neurologic deficit due to spinal cord pathology. Both extrinsic and intrinsic spinal cord lesions interfere with local and regional spinal cord blood flow. Reductions in spinal cord perfusion in these patients can exacerbate and extend the principal spinal cord insult.

Most investigators believe direct vascular compromise at the site of the primary cord lesion is the earliest component of the ischemic injury process. Reduction in blood flow at this site leads to white and gray matter ischemia at the insult site and proximal and distal to it. The autoregulation of spinal cord blood flow is often lost at these sites of injury. This is analogous to that which often occurs in regional cerebral vasculature due to focal brain lesions or focal traumatic brain injury.

Investigators have studied spinal cord blood flow and spinal cord ischemia following acute traumatic spinal cord injury. In circumstances of reduced blood supply to the spinal cord and apparent loss of local autoregulation, maintenance of mean arterial blood pressure (MAP) at high normal levels (85 mmHg) appears to improve spinal cord perfusion.

We have used perfusion pressure therapy as an adjunct in the surgical treatment of patients with spinal cord pathology of all types with good result. We believe improved spinal cord perfusion during surgical manipulation and in the post-operative setting can optimize the patient’s potential for a favorable neurological outcome.