

## Abstract # 13

### Can Intrathecal Opioids Benefit Adolescent Patients with Idiopathic Scoliosis Undergoing Posterior Spinal Fusion (PSF)?

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**Introduction:** Intrathecal (IT) morphine administered to adolescents undergoing PSF for idiopathic scoliosis has been shown to provide prolonged analgesia,<sup>1-4</sup> spare postoperative intravenous use of morphine,<sup>4,5</sup> and decrease intraoperative blood loss<sup>3,4</sup>. This study was undertaken to compare the use of intrathecal opioid plus patient controlled analgesia (IT/PCA) with PCA alone for managing postoperative pain in adolescents undergoing PSF for idiopathic scoliosis.

**Methods:** Following IRB approval, a retrospective chart review was performed at one institution from 1997-2005. A total of 55 patients received between 3.2 and 11.8 mcg/kg of intrathecal morphine with a subset of 7 patients also receiving between 5 and 50 mcg of intrathecal sufentanil followed by PCA (IT/PCA group). Forty-two patients received PCA alone (PCA group). Patients with a history of prior surgery, receiving other pain methods or having harvest of an iliac crest autograft were excluded. Postoperatively, pain scores were recorded using a 10 point verbal analogue scale hourly for the first 12 hours then every other hour until oral analgesics were used. Total dose of morphine used via PCA, hours before eating solid food and side effects were recorded. Statistical significance was set at  $p < 0.05$ .

**Results:** Age, gender, magnitude of curve and number of levels fused did not differ between the IT/PCA and PCA groups. Total morphine (mg/kg) was significantly lower in the IT/PCA group vs. the PCA group at 12 and 24 hours. Pain scores in the first 12 hours postoperatively were also lower in the IT/PCA group. Intraoperative blood loss for the IT/PCA group (12.5 ml/kg) was lower but not statistically different than in the PCA group (15.9 ml/kg). Bowel function returned more quickly in the IT/PCA vs. PCA group (2.4 vs. 3.2 days respectively). A higher incidence of nausea/vomiting and pruritis were found in the IT/PCA group, and one case of over-sedation and two cases of respiratory depression occurred in the IT/PCA group, none of which required naloxone or intensive care unit treatment. No intraoperative changes of somatosensory evoked potentials or postoperative neurological changes were seen in either group.

**Discussion:** Intrathecal morphine ( $\pm$  IT sufentanil) provided lower pain scores for 12 hours and spared morphine use via PCA for up to 24 hours postoperatively. The addition of intrathecal opioid was associated with a trend toward reduced intraoperative blood loss, an earlier return of bowel function and no adverse sequelae in idiopathic scoliosis patients undergoing PSF.

**References:** 1. Dalens B. and Tanguy A. *Spine* 13: 494-8, 1988. 2. Blackman R.G. et al. *Orthopedics* 14: 555-7, 1991. 3. Goodarzi M. *Paediatr Anaesth* 8: 131-4, 1998. 4. Gall O. et al. *Anesthesiology* 94: 447-52, 2001. 5. Montgomery C.L. et al. 7th World Pain Congress, Paris, France, Aug 1993.