

Incidence of Position Related Neuropraxia in 4489 Consecutive Patients Undergoing Spine Surgery. What is the Role of SSEP Monitoring?

Gurpreet Surinder Gandhoke MD; Jaspreet Kaur; Parthasarthy Thirumala; Jeffrey Balzer PhD; Donald Crammond; David O. Okonkwo MD, PhD; Adam S. Kanter MD

University of Pittsburgh Medical Center, Pittsburgh



Introduction

No large database study exists looking at the incidence of peripheral nerve injury from positioning during spine surgery.

Methods

Records of 4489 consecutive patients undergoing spine surgery at a university hospital were reviewed. Incidence of peripheral nerve injury from positioning among these patients is reported. IOM changes related to arm and leg positioning and their sensitivity and specificity predicting the development of a new position related peripheral nerve injury is calculated. Impact of length of surgery & of variables including age, sex, BMI, DM, HTN, CAD, CVD & history of smoking, on the development of a new peripheral nerve injury was defined.

Results

Positions were, arms abducted and flexed at the elbow, n=2904 (64.7%), arms tucked at the side, n=1570 (35%), and the Lateral position, n=15 (0.3%). Thirteen out of 4489 (0.29 %, CI95% 0.15-0.49%) patients developed a new positioning related peripheral nerve deficit. Seven (54%) developed meralgia paresthetica, 6 (46%) developed ulnar neuropathy. Seventy-two (1.6%) patients developed IOM changes from positioning and all these patients underwent a repositioning maneuver. One of these 72 (1.3%) developed a new position related nerve deficit. Of the 4417 (98.4%) patients who did not develop position related IOM changes 12 (0.3%) developed a new position related nerve deficit. Sensitivity of IOM to detect a new position related nerve deficit was 7.69% and, the specificity was 98.41%. The positive predictive value was 1.39% (CI95% 0.04-7.5%) and the negative predictive value 99.73% (CI95% 99.53-99.86%). Neither the length of surgery nor did any analyzed patient related variable have a statistically significant impact on the development of a new neuropraxia.

Conclusions

The incidence of a new position related nerve deficit in spine surgery was 0.29%. IOM has high specificity and poor sensitivity in detecting a positioning related nerve deficit.

Learning Objectives

By the conclusion of this session participants should be able to define the incidence of position related neuropraxia in spine surgery, and be able to define the role of intraoperative monitoring in diagnosing position related nerve injuries