THORACOSCOPIC DISCECTOMIES IN A PORCINE MODEL: OVER-ESTIMATION OF DISC REMOVED. RM Schwend, E Stazzone, J Bonz, RC Pate, Dept of Orthopaedics, UNM, Albuquerque, NM.

Study Design: Seventeen discectomies were performed on four live pigs using the video-assisted thoracic surgery (VATS) discectomy procedure. Objectives: To determine the accuracy of an inexperienced surgeon’s estimation of thoracic disc removal using the VATS discectomy procedure in a porcine model.

Summary of Background Data: Mack et al first described VATS in 1993 which resulted in less morbidity than traditional open techniques. Since then, various researchers have shown that this procedure can be used for pediatric spinal deformity, disc decompression, spinal fusion, and various other spinal pathologies. VATS discectomies was shown to be equivalent to open discectomies and that the procedure performed prone is a viable alternative to the lateral position. Bunnell, using a live canine model for spinal fusion in 1982, demonstrated that at least 50% of the disc space must be resected to achieve acceptable fusion rates.

Methods: 17 discectomies were performed on 4 pigs using VATS in the prone position. The surgeon performing the discectomies had no previous hands-on experience with this technique. The surgeon estimated the percentage of disc removed after each discectomy. The pigs were euthanized and the thoracic spines were removed. The spines were then dissected and digital photos were taken of the endplates. The photos were analyzed by a computer imaging program to determine the percentage of disc that had been removed.

Results: Analysis found that the estimated percentage of disc removed was consistently higher than the measured percentage of disc removed. The mean of the predicted percentage of disc removed was 69.7% (range, 30.0%-90.0%) while the mean of the measured percentage of disc removed was 41.2% (range, 10.5%-69.7%) The difference in these means was statistically significant (t’=4.959, t critical = 2.037, alpha = 0.05, p = 2.24E-05). 94.1% of discectomies were estimated to have removed greater than 50% of the disc while only 47.1% of discectomies were measured to have removed 50% or more of the disc.

Conclusions: The VATS discectomy procedure is a challenging procedure that requires practice to learn. This study has demonstrated that an inexperienced surgeon performing this procedure consistently over-estimates the amount of disc removed. This over-estimation may contribute to poor surgical outcomes, namely poor fusion rates, in the patients of inexperienced surgeons. It is for this reason that the authors recommend practice with animal or cadaveric models to become more familiar with the procedure.