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Air versus Saline and Analgesic Efficacy for Labor

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Objective: Air and saline are commonly used for the loss-of-resistance during identification of the epidural space. However, the overall analgesic efficacy of air versus saline for use during the loss-of-resistance during identification of the epidural space is unclear. We have performed a meta-analysis to further examine this issue.

Method: This study qualified for exemption from the Johns Hopkins IRB. Systematic literature searches of the National Library of Medicine’s PubMed and EMBASE databases were conducted using terms related to air, saline, epidural, and loss of resistance. Only randomized controlled trials comparing air with saline or local anesthetic were included for analysis. Data on pertinent study characteristics and relevant outcomes were extracted from accepted articles. There was no restriction on language for inclusion. Meta-analysis was performed using the Review Manager 4.2.10 (The Cochrane Collaboration, 2004). A random effects model was used.

Results: The literature search yielded 6 articles which met all inclusion criteria. There were a total of 185 subjects for the air group and 188 for the saline group. We were able to obtain pooled estimates for unblocked segments, need for additional medications, and replaced catheters. We found use of air was associated with an increased risk for unblocked segments [Relative risk (RR): 2.12 (1.07, 4.21)] but there was no difference with regard to replaced catheters [odds ratio (OR): 0.68 (0.25, 1.87)] or additional medication [OR: 1.59 (0.78, 3.24)].

Conclusions: Our pooled analysis examining the analgesic efficacy of air versus saline/local anesthetic for loss-of-resistance for abdominal surgery during identification of the epidural space revealed that use of air results in decreased analgesia in one parameter (unblocked segments) but not others (additional medications, replaced catheters). The results should be interpreted with caution and certainly further examination with larger RCT is warranted as the overall number of subjects is relatively small.