

Gabrielle S. Stone

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LSU Health Sciences Center, New Orleans, LA

Mentor: Elizabeth F. Sutton, PhD

Woman's Hospital, Director of Scientific Research

“Systematic Review and Meta-Analysis of Perioperative Administration of Acetazolamide for Management of Postoperative Pain After Laparoscopy”

Laparoscopy (LSC) for abdominal surgery has become the standard approach for many surgical interventions to date. While there are numerous benefits to a minimally invasive technique, LSC can also be associated with postoperative referred pain to the shoulder. While several interventions have been proposed to mitigate this pain, no singular intervention has proven to be superior. Perioperative acetazolamide (ACTZ) administration is a relatively cost effective and safe option, though it is less well recognized and its efficacy is as yet unproven. This study was designed as a systematic review and meta-analysis to evaluate the efficacy of perioperative ACTZ administration with LSC for reducing postoperative referred pain. We searched the Cochrane Library, PubMed, PubMed Central, Ovid, and EMASE from inception to March 1, 2020, using the intersection of themes “Acetazolamide” and “laparoscopy, laparoscopic, celioscopy, celioscopies, peritoneoscopy, or peritoneoscopies”. We included only studies of patients who underwent abdominal LSC, had a pain assessment at approximately 24 hours postoperatively, and included a treatment with ACTZ for pain management group and a no-treatment or minimal-treatment comparison group. Five studies met inclusion criteria, with a combined total of 253 participants, 116 in the ACTZ group and 137 in the control group. A Bayesian hierarchical model was assumed for the study specific treatment effects. Posterior sampling was conducted via Markov Chain Monte Carlo methods, and posterior inference carried out on the hierarchical treatment effect. ACTZ significantly decreased average pain scores compared to control group by -0.726 points (95% Confidence Interval [CI] -1.175 – 0.264). The posterior probability that ACTZ decreases mean pain scores by ≥ 0.5 was 0.846. In summary, current available evidence demonstrates that perioperative ACTZ may provide a modest improvement in postoperative referred pain following LSC. Future studies with rigorous scientific methodology are needed to confirm these results.