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Does Anesthesia Type Matter in Shockwave Lithotripsy?

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INTRODUCTION AND OBJECTIVE:

Prior studies have shown a benefit for general anesthesia (GA) in shockwave lithotripsy (SWL) however there are no specific anesthesia recommendations in the AUA guidelines. We evaluated statewide practice patterns and predictors for use of GA over sedation in SWL and compared whether anesthesia type affected outcome and patient-reported outcomes (PRO).

METHODS:

Adult patients undergoing SWL between 2016-2023 were identified using the Michigan Urological Surgery Improvement Collaborative's Reducing Operative Complications from Kidney Stones prospectively collected clinical registry. Outcome measures included stone-free rates (SFR), complications and emergency department (ED) visits. PRO data, available beginning in 2020, included patient pain scores (PROMIS Pain Intensity and Pain Interference) and overall treatment satisfaction (ICIQ-S) assessed pre- and post-operatively (7-10 days and 4-6 weeks). A logistic mixed model was used to assess anesthesia type by patient and pre-surgery factors with a random effect for provider within practice and report the Intra-class correlation (ICC).

RESULTS:

Among 13,182 cases identified from 36 practices, wide variation in GA utilization was noted (Figure 1). During this study period, numbers in receipt of SWL declined but GA rates increased (22% to 55%). Preoperative mean stone diameter was the only clinical predictor for GA use (OR 1.04, 95%CI 1.02-1.06, $p < 0.001$). ICC was 79% indicating very strong within practice patterns for GA utilization highlighting the influence of provider choice in this model. There were no significant differences in outcomes between patients receiving general anesthesia and sedation: complication rates (0.13% vs 0.22%, $p = 0.3$), ED visits (3.6% vs 3.4%, $p = 0.5$), or 60-day SFR (40% vs 39%, $p = 0.09$). PRO data from 273 SWL surgeries showed no significant difference in pre- or post-operative pain intensity or interference between those receiving GA or sedation and no evidence of a difference in treatment satisfaction.

CONCLUSIONS:

Wide variation in GA use over sedation at SWL was identified, primarily driven by the provider, with increasing rates over time. Anesthesia type did not significantly affect patient safety, outcome or patient experience questioning the role of GA in SWL patients.

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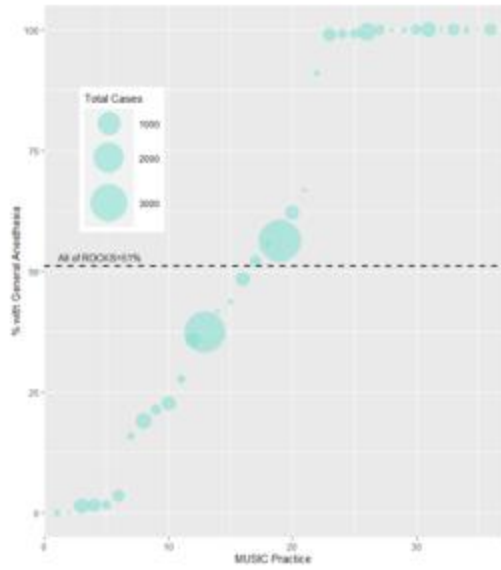


Figure 1: Variation in rates of General anesthesia at the time of SWL in MUSIC practices. Total SWL case volume indicated by bubble size. Practice variation p-value <0.001

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