

NAVIGATING RENAL STONES: FLUOROSCOPY VERSUS ULTRASOUND IN LITHOTRIPSY

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Keywords: Shockwave Lithotripsy (SWL); Ultrasound (US) vs. Fluoroscopy (FS); Renal Stones.

Introduction

Currently, shockwave lithotripsy (SWL) continues to be a well-established treatment modality for renal stones. For better accuracy of the shock waves, SWL is performed by ultrasound (US) or fluoroscopy (FS) to focus shock waves on stones. Therefore, we aimed to conduct a systematic review and meta-analysis comparing US versus FL in terms of efficacy and safety outcomes in patients with renal stones.

Methods

We searched Pubmed, Embase and Cochrane for studies comparing US and FL in shock wave lithotripsy for renal stones. Outcomes of interest were stone-free rate, complications, number of sessions and additional treatment. Subgroup analysis was performed with pediatric population and adult population. Statistical analysis was performed using RevMan 5.4. Heterogeneity was assessed with I² statistics.

Results

US significantly improved stone-free rate between groups (OR 1.67; 95% CI 1.09, 2.55; $p = 0.02$; $I^2 = 42\%$). Otherwise, there was no significantly difference between groups in terms of complications (OR 0.65; 95% CI 0.21, 1.95; $p = 0.44$; $I^2 = 72\%$), mean number of sessions (MD -0.20; 95% CI -0.57, 0.17; $p = 0.28$; $I^2 = 87\%$) and additional treatment (OR 0.70; 95% CI 0.34, 1.45; $p = 0.34$; $I^2 = 17\%$). In subgroup analysis of adult patients, US increased stone-free rate (OD 1.89; 95% CI 1.35, 2.63; $p = 0.0002$; $I^2 = 0\%$). But in subgroupanalysis of pediatric patientes, there was not significantly difference between groups (OR 1.63; 95% CI 0.45, 5.89; $p = 0.46$; $I^2 = 72\%$).

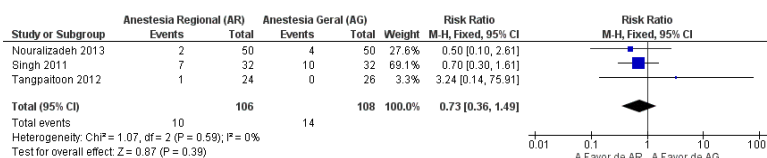


Figure 1. Forest plot comparing major complications in AR vs AG

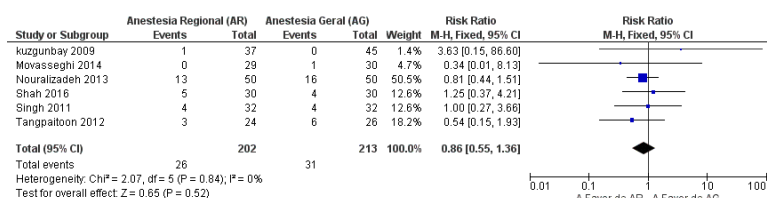


Figure 2. Forest plot comparing minor complications in AR vs AG

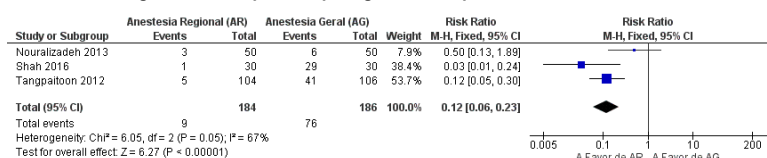


Figure 3. Forest plot comparing nausea and vomiting in AR vs AG

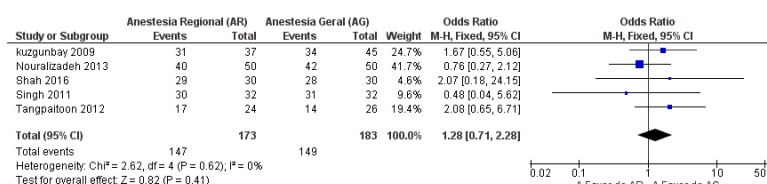


Figure 4. Forest plot comparing stone-free rate in AR vs AG

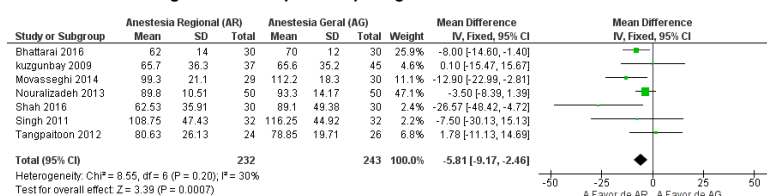


Figure 5. Forest plot comparing operative time in AR vs AG

Conclusions

In patients undergoing SWL for renal stones, US improved stone-free rate in pooled analysis and in adult patients subgroup.

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