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Pressurized-Bag Irrigation Versus Hand-Operated Irrigation Pumps During Ureteroscopic Laser Lithotripsy: Comparison of Infectious Complications

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Introduction and objectives

A variety of irrigation systems are available during ureteroscopy. We sought to compare gravity-driven pressure bags with hand-operated irrigation pumps in terms of postoperative complications after ureteroscopy with lithotripsy.

Methods

A retrospective analysis of 234 patients undergoing flexible ureteropyeloscopy with laser lithotripsy by 24 supervised trainees over 4 years at a single teaching institution. Patients were divided into those who had procedures performed by using gravity-driven pressure bags fixed at 60 to 204 cm H₂O, vs those who had procedures performed by using a hand-operated irrigation pump capable of delivering 1 to 10 mL per flush. Variables including surgical duration, hypotension, fever, sepsis, and hematuria were extracted from the charts, along with the surgical techniques utilized. Statistical analyses included chi-squared tests and Student's t-tests.

Results

There were no differences in gender, age, indication, or stone size in the two groups. Postoperative systemic inflammatory response syndrome was significantly greater in the hand-assisted $n = 11/144$ (7.6%) compared with the fixed irrigation group $n = 1/90$ (1.1%); $p = 0.032$. Emergency room presentations were greater in the hand irrigation group, $n = 46/144$ (32%) vs $n = 12/90$ (13%) in the pressure-bag irrigation, $p = 0.002$. Postoperative fever was also greater in the hand pump irrigation cohort compared with the continuous pressure cohort (13/144 [9%] vs 1/90 [1%], $p = 0.011$). No statistical difference was found between the two groups with respect to stone clearance and subsequent procedures required ($p = 0.123$).

Conclusion

This analysis suggests that using continuous flow irrigation at a fixed maximum pressure of 150 mmHg (204 cm H₂O) or less may result in decreased pain, infection, and sepsis compared with handheld pressure irrigation.



[Link to abstract](#)