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Comparative Outcomes of Spinal vs. General Anesthesia across Various Urological Procedures

Introduction

Due to the anatomical location and short duration of many urological procedures, spinal anesthesia (SA) is a viable alternative to general anesthesia (GA). While GA is often preferred for its controlled airway management and stable surgical conditions, SA has potential benefits, including reduced postoperative pain, fewer complications, and faster recovery. This study aims to compare surgical efficiency, complication rates, and postoperative recovery between the two anesthetic methods.

Methods

We conducted a comprehensive literature search using PubMed from 2015 to 2025 to compare SA and GA across multiple urological procedures. A total of 177 articles were screened, with 20 selected based on an inclusion of spinal anesthesia, general anesthesia, and outcomes data.

Results

SA demonstrated several similarities and advantages over GA in various perioperative metrics. Complication rates were similar, as seen in RIRS (14.5% vs. 19%, $p=0.15$) and HoLEP (17.7% vs. 16.4%, $p=0.749$). Procedure duration varied slightly, with SA offering significantly shorter times in HoLEP (89 min vs. 101 min, $p<0.001$), while RIRS showed no meaningful difference (54.3 vs. 57.65 min, $p=0.29$). A major advantage of SA was its impact on postoperative recovery, with reduced pain scores and fewer analgesic requirements. Patients receiving SA experienced faster PACU discharge and lower ICU admission rates, particularly in high-risk populations. Lastly, SA provided superior hemodynamic stability and minimized postoperative complications associated with prolonged anesthesia exposure.

Conclusion

This study highlights spinal anesthesia as a strong alternative to general anesthesia in urological procedures. SA has comparable surgical outcomes while providing better hemodynamic stability, less postoperative pain, and quicker recovery, making it an especially attractive option for high-risk patients.