General Anesthesia

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Background: Osteoarthritis is an irreversible degeneration of joints that can be repaired with total joint arthroplasty. Currently, there are 2 types of anesthetic modalities used for these procedures, general and neuraxial. There is no definitive evidence supporting the use of general over neuraxial anesthesia; therefore, the decision is made primarily by the surgeon and the patient's preference. The primary population receiving total hip or total knee arthroplasty are older and have a higher risk of complications due to comorbidities. Perioperative complications with these anesthetic methods have been researched, but there is limited data on postoperative impacts.

Purpose: Currently, there is no guideline directing the use of one anesthetic method over another. A gap in research exists involving postoperative complications with correlation to the anesthetic used. This research aimed to determine if there is a greater occurrence of long-term postoperative complications with general anesthesia or neuraxial anesthesia following total hip and total knee arthroplasty.

Methodology: Three researchers developed a research question and conducted an evidencebased clinical review to identify studies of high quality, meeting predetermined inclusion and exclusion criteria. The selected studies were reviewed and determined to meet all criteria. Each remaining study was then assessed for quality using the National Heart, Lung, and Blood Institute's "Study Quality Assessment Tools," and only studies of "good" quality were advanced to data extraction and analysis. Researchers used a data extraction tool to reduce bias and assess internal validity. Resulting data was synthesized and collectively analyzed to answer the research question.

Results: The analysis of 3 studies revealed that neuraxial anesthesia has less risk of postoperative deep vein thrombosis (RR 0.51; 95% CI 0.41–0.62, total hip arthroplasty: OR: 0.52 and CI: 0.42- v 0.65; total knee arthroplasty: OR 0.77 and CI 0.64-0.93), pulmonary embolism (RR 0.36; 95% CI 0.22–0.60, total hip arthroplasty: OR 0.63 and CI 0.50-0.81; total knee arthroplasty: OR 0.79 and CI 0.67-0.94), and cognitive dysfunction (total hip arthroplasty: OR 0.73 and CI 0.67-0.79; total knee arthroplasty: OR 0.70 and CI 0.49-1.01) when compared to general anesthesia in total knee and total hip arthroplasty patients. There is no statistically significant difference in persistent pain between the anesthetic modalities (total hip arthroplasty: OR 0.81 and CI 0.56- 1.18; total knee arthroplasty: OR 1.16 and CI 0.58-2.32).

Conclusion: Evidence supports fewer postoperative complications with neuraxial anesthesia over general anesthesia regarding thromboembolic events (DVT and PE) as well as lower incidence of cognitive dysfunction. There was no statistical difference in postoperative pain between anesthesia type following surgery. The data collected determined neuraxial anesthesia is associated with overall less risk of postoperative complications; however, the results are not strong enough to warrant a change in current surgical practice.