4. ARTIFICIAL INTELLIGENCE INVOLVEMENT IN NEUROSURGERY

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Introduction. The incorporation of Artificial Intelligence (AI) in medicine involves the application of sophisticated machine learning algorithms to examine vast datasets, encompassing medical and genetic patient data. This enables the development of customized treatment strategies, with the goal of improving health results and patient satisfaction.

Aim of study. This review seeks to examine the influence of artificial intelligence (AI) in the field of neurosurgery, including its involvement in both active and passive procedures throughout the entire range of preoperative, intra-operative, and postoperative healthcare. Additionally, it analyzes the impact of AI on several aspects of neurosurgery, such as diagnostics, clinical decision-making, surgical techniques, prognostics, data collecting, and research.

Methods and materials. An exhaustive literature review was conducted using major databases such as PubMed and NCBI. The search, targeting the terms "artificial intelligence" and "neurosurgery," produced 213 pertinent research out of a total of 2360 conducted in the last five years. These studies focused on the implementation of artificial intelligence algorithms in several areas of neurosurgical care and the process of making decisions.

Results. The application of artificial intelligence (AI) in the field of neurosurgery expands the limits of what is possible and observable, providing substantial advantages to both medical professionals and individuals receiving treatment. It enhances the ability of neurosurgeons, improving the provision of both interventional and non-interventional care. The contribution of AI in enhancing diagnostic precision, prognostic forecasting, and surgical efficiency is significant. Furthermore, the utilization of AI-assisted robotic systems in surgery serves to reduce the influence of human error, thereby highlighting the growing significance of AI as technology advances.

Conclusion. The integration of artificial intelligence into healthcare signifies a fundamental change in the field of neurosurgery. It promotes collaboration among physicians and researchers to create novel diagnostic and treatment tools and approaches. The wide-ranging uses of artificial intelligence (AI) in the area of neurosurgery, namely in improving the precision of diagnoses and predicting outcomes, are set to have a profound impact on the future of the discipline. Upcoming doctors must prioritize staying updated on these innovations and incorporating them to improve patient outcomes and rethink neurosurgical practices.