Review Neurochirurgie. 2025 Jan 3;71(2):101632. doi: 10.1016/j.neuchi.2025.101632.

Online ahead of print.

Skull base meningiomas: A bibliometric analysis and comprehensive overview of clinical reports

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PMID: 39756613 DOI: 10.1016/j.neuchi.2025.101632

Abstract

Background: Skull-base surgery, including skull-base meningiomas (SBMs), is among the most challenging medical fields which has witnessed leaps in advancement, owing to ever evolving technological and scientific progress. We performed a comprehensive bibliometric analysis and analysis of clinical reports on SBMs to describe the evolution and identify trends and relationships between basic and applied research in the field.

Methods: The study was a qualitative and quantitative bibliometric analysis of SBM research and review of SBM clinical series via a systematic search of the Web of Science for SBM topics and SBM case series. Quantitative analysis included the most cited publications, most productive authors, most cited journals, and number of publications per country. Keyword co-occurrence and co-authorship maps were produced to visualize research hotspots. Data output from the visualization analysis was analyzed qualitatively to identify themes within separate clusters and delineate evolution of clusters across time. Publications were screened to extract clinical reports of at least ten SBM cases to analyze year, type of treatment, country, and sample size in order to use the data to investigate the lag period between research and clinical adaptation of individual treatment modalities.

Results: We identified 3258 publications and 451 series reporting on 33559 cases of SBMs. The United States of America is the leading country in publications and reported number of SBM cases. The most productive authors are active neurosurgeons in their 40s, or older. Among the top cited publications, most are related to endoscopic surgery, followed by research on genomics. Open surgery is the most common treatment modality being reported for SBM cases, however it's prevalence has been on the decrease as more recently there has been a substantial increase in other types of treatment.

Conclusions: Complexity of the field is reflected in the delayed age of peak scientific productivity. Over the past fifty years the SBM research has undergone a rapid expansion and can currently be seen as developing in four separate areas and the efforts are being led by three broadly collaborating research groups. The research-to-clinical routine lag of less than ten years speaks of the dynamic nature of SBM research and treatment.

Keywords: Bibliometric; Meningioma; Overview; Research.