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Assessment of surgical options for spinal tumors; A systematic review of outcomes and complications

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Corresponding author:
Jaya Shanker Tedla

jtedla@kku.edu.sa

Author Affiliation:
King Khalid University.

Alshehri, SH[1]; Alqahtani, MH[2]; Alqhtani, AA[3]; Assiri, AH[4]; Motlag, DS[5]; Tedla, JS[6]; Alwadai, SA[7].

ADMINISTRATIVE INFORMATION

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Review Stage at time of this submission - Completed but not published.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 25 January 2024 and was last updated on 25 January 2024.

INTRODUCTION

Review question / Objective The study aims to assess the outcomes and complications of laminectomy and hemilaminectomy for the treatment of intradural extramedullary spinal tumors by reviewing previous studies on this subject.

Rationale Spinal tumors can be classified based on their location into external and intradural. Intradural tumors include intradural extramedullary. Intradural extramedullary tumors are generally benign neoplasms in the spinal canal. This type of tumor has no specific treatment guidelines. However, the complete resection results in a radical cure in most cases. Currently, unilateral hemilaminectomy and total laminectomy are commonly used operative interventions.

Condition being studied Laminectomy or hemilaminectomy surgical procedures for intradural extramedullary tumors.

METHODS

Search strategy For searching purposes, a set of various keywords was used, including "laminectomy, hemilaminectomy, spinal tumor, intradural extramedullary tumor, comparison, outcomes, and complications."

Participant or population Patients with Laminectomy or hemilaminectomy surgical procedures for intradural extramedullary tumors.

Intervention Laminectomy or hemilaminectomy surgical procedures for intradural extramedullary tumors.

Comparator None.

Study designs to be included Cross- sectional studies, Observational studies, Cohort studies, Experimental studies.

Eligibility criteria Determination of articles that would be included in the final analysis; this was done by exploring the abstracts and the full article to include only articles available for full-text and exclude those unavailable for full-text. Also, the articles containing incomplete or over-lapped data were excluded.

Information sources Scopus, Springer, Elsevier, PubMed, and Science Direct.

Main outcome(s) Regarding outcomes, improvements were noted in pain symptoms and improved neurological function. Another study reported a reduction of disability grades postoperatively, an improved score of pain, and improved motor weakness. Spasticity had improved in 80% of cases, and back pain or radiculopathy had also improved.

Additional outcome(s) Surgical complications such as postoperative cerebrospinal fluid leak, fever, mean blood loss during surgery, spinal deformities or instability, or any neurological deficits.

Data management The first step was reviewing the abstracts to determine the data of interest for ex-traction; then, the full-text article was reviewed for more details. The data was extracted in an Excel sheet and underwent revision again then transferred to a pre-designed table for summarization.

Quality assessment / Risk of bias analysis NIH scales were used for risk of bias assessment.

Strategy of data synthesis The collected data included the author and the year of publication, the research design, the technique used for treatment, the characteristics of the population, and finally, the results and the main findings.

Subgroup analysis Not performed.

Sensitivity analysis There was no requirement for sensitivity analysis in our review.

Language restriction Full text articles published in English language only will be considered for this review.

Country(ies) involved Saudi Arabia.

Other relevant information In our analysis, Laminectomy and HL resulted in several improvements and were safe and effective in surgically removing IDEM with improved neurological function and pain symptoms. The comparison between the two interventions revealed conflicting findings; however, the total resection rate was higher for HL, with a lower rate and number of complications compared to laminectomy.

Keywords laminectomy; hemi-laminectomy; outcomes; complications.

Contributions of each author

Author 1 - Shaker Hassan S Alshehri.
Email: shhshehri@kku.edu.sa
Author 2 - Mohammed Hassan Alqahtani.
Email: altalah2030@gmail.com
Author 3 - Abdulrhman Abdullh Alqhtani.
Email: drdabeel@gmail.com
Author 4 - Abdullah Hassan Assiri.
Author 5 - Dhuha Saeed Motlag.
Email: d.motlaq@hotmail.com
Author 6 - Jaya Shanker Tedla.
Email: jtedla@kku.edu.sa
Author 7 - Saad Ali Alwadai.
Email: saaalwadai@moh.gov.sa