

Risk factors of traumatic dorsal dural sac tears in spinal burst fractures: A Meta-analysis.

INPLASY202490017

doi: 10.37766/inplasy2024.9.0017

Received: 4 September 2024

Published: 4 September 2024

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ADMINISTRATIVE INFORMATION**Support** - None.**Review Stage at time of this submission** - Preliminary searches.**Conflicts of interest** - None declared.**INPLASY registration number:** INPLASY202490017**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 4 September 2024 and was last updated on 4 September 2024.**INTRODUCTION**

Review question / Objective The aim of this study was to identify and analyze the risk factors for traumatic dorsal dural sac tears and assess their contribution to traumatic dorsal dural sac tears in patients with spinal fractures.

Condition being studied Spinal fractures is one of the common diseases in spinal surgery. 90% of spinal fractures occur in the thoracic or lumbar spine, and spinal burst fractures account for about 15% of all spinal fractures. Burst fractures of the spine may cause traumatic dorsal dural sac tears, resulting in severe neurological deficit. The family and society need to invest a lot of human, material and financial resources, resulting in a heavy burden on families and society. Spinal burst fractures often require surgical treatment. Spinal burst fractures often require surgical treatment. For traumatic dorsal dural sac tear, it cannot be directly diagnosed before surgery, but can only be directly confirmed by intraoperative exploration. Once the dural sac rupture is missed, it will lead to serious

complications such as pseudodural bulging, cerebrospinal fluid leakage, meningitis, epidural abscess and so on. Although accurate preoperative prediction of traumatic dorsal dural sac tears is particularly important for the determination of treatment decisions, there is no consensus in the current study on the preoperative prediction of traumatic dorsal dural sac tear in patients with spinal burst fractures.

METHODS

Search strategy Terms: "Spinal Fractures" , "Dura Mater". electronic databases: Pubmed, Web of science, Embase, MEDLINE, CNKI, Wanfang Database, China Biomedical Literature Database and the full text database of VIP Chinese journal full-text database.

Participant or population Spinal burst fractures patients with traumatic dorsal dural sac tears.

Intervention Preoperative prediction of traumatic dorsal dural sac tear in patients with spinal burst fractures.

Comparator Compared with the dural sac intact group.

Study designs to be included Randomized controlled studies and quasi-experimental studies.

Eligibility criteria Inclusion criteria:① The subjects of the study are traumatic dorsal dural sac tears patients with a clear diagnosis;②The research design types are randomized controlled studies and quasi-experimental studies;③ The outcome index is the risk factors of traumatic dorsal dural sac tears patients;

Exclusion criteria: ①The original research data is incomplete or the effect indicators cannot be converted or combined;②The original documents cannot be obtained;③ Repeated publications;④ The quality evaluation of the literature is low.

Information sources We searched Pubmed, Web of science, Embase, MEDLINE, CNKI, Wanfang Database, China Biomedical Literature Database and the full text database of VIP Chinese journal full-text database for literature related to traumatic dorsal dural sac tears in patients with spinal fractures. The search is conducted by combining subject terms and free terms, and the time limit was from the establishment of the database to September 2024. The published systematic reviews and their references was followed up to ensure the comprehensiveness of the research results.

Main outcome(s) Parameters to predict Risk factors for predicting traumatic dorsal dural sac tears in patients with spinal burst fractures will be identified.

Quality assessment / Risk of bias analysis Assessment of the quality of randomized controlled studies using the Cochrane Risk of Bias Assessment tool and the quality of quasi-experimental studies using the JBI evidence-based Health Care Center assessment tool. Literature quality was assessed simultaneously by two researchers.

Strategy of data synthesis The meta-analysis was performed using the Review Manager 5.3 software. Heterogeneity between included studies was analyzed by χ^2 test, and the magnitude of heterogeneity was quantified using I^2 .

Subgroup analysis We will perform a subgroup analysis based on the sample status of the included studies.

Sensitivity analysis Sensitivity analyses were performed by using the leave-one-out method, which iteratively removed one study from the meta-analysis to assess changes in overall effects.

Country(ies) involved China.

Keywords Spinal burst Fractures, dural tears, Meta-analysis.

Contributions of each author

Author 1 - Wang Hufei - Hufei Wang is responsible for the design and implementation of the study, including data collection, experimental implementation and preliminary data analysis. Hufei Wang also participated in the writing and revision of the paper, especially in the introduction and results.

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Author 2 - Xue Jiali - Jiali Xue focused on data analysis and used advanced statistical methods to interpret the data in depth, which provided strong support for the research results.

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Author 3 - Jiao Wenyong - Wenyong Jiao played a key role in literature review and theoretical framework construction, providing a solid theoretical basis for research. He was also responsible for writing the method part of the paper and participated in the revision of the discussion part.

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Author 4 - Qin Hailin - Hailin Qin made important contributions in data collection and experimental design, ensuring the accuracy and reliability of the data.

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Author 5 - Yang Kui - Kui Yang is responsible for the overall structure and logical coherence of the paper, and has revised and improved the full text for many times.

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Author 6 - Li Kedian - Kedian Li provided key support during the writing and revision of the paper, especially in the selection and refinement of abstracts and keywords.

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