



Minimally invasive surgery for management of traumatic lumbar spine fractures: A systemic review of techniques and outcomes

Doniel Drazin MD MA; Lutfi Al-Khouja; Joshua Campbell; Faris Shweikeh BS; Eli M. Baron MD; Robert S. Pashman MD; J. Patrick Johnson, MD MD; Terrence T. Kim MD

Departments of Neurosurgery and Orthopedics, Cedars-Sinai Medical Center, Los Angeles; Department of Neurosurgery,



Introduction

Traumatic spine fractures are commonly encountered by spine surgeons. The advent of minimally invasive techniques to spine surgery over the last decade has been tremendous. In this meta-analytical systemic review, we aimed to analyze the current literature on the applicability of minimally invasive spine surgery (MISS) to the management of traumatic lumbar spine fractures.

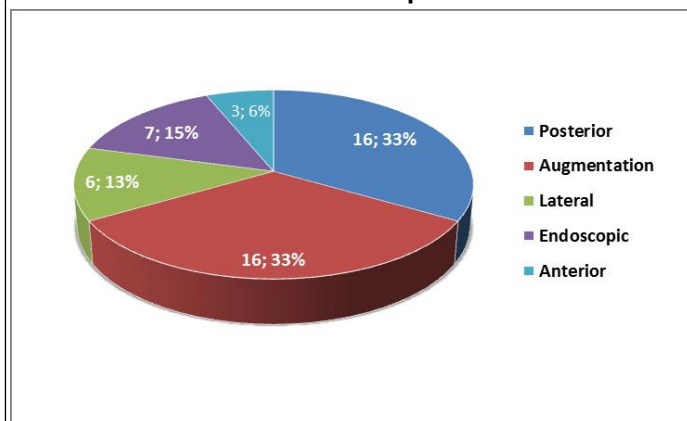
Methods

A systemic review of the PubMed and MEDLINE databases was performed. Surgical techniques, intraoperative factors, accuracy, complications, postoperative factors, and outcomes were recorded.

Results

Of the 53 articles reviewed, 3 discussed anterior approaches, 6 lateral approaches, 16 posterior approaches, 7 endoscopic techniques, 16 cement augmentation, and 5 fracture-dislocation or Chance fractures. The average duration for surgery of these cumulative reports was 228.8 minutes for lateral MISS, 270.5 minutes for anterior MISS, 212 minutes for endoscopic approach, 73.2 minutes for augmentation procedures, 99.7 minutes for a posterior approach, and 189.2 for fracture-dislocations and Chance fractures. Average blood loss was 559.5 mL for lateral MISS, 876 mL for anterior MISS, 1,058 mL for endoscopic, 89.7 mL for augmentation procedures, 93 mL for posterior MISS, and 180.5 mL for fracture-dislocation and Chance fractures. The authors further discuss each of these approaches strengths and weaknesses and applicability in lumbar spine trauma.

MIS Techniques



Number of papers on each MIS technique

Conclusions

The current literature does not allow us to ascertain the efficacy of MISS versus conventional methods in lumbar and thoracolumbar traumatic injuries, though results of some studies point towards a possible superiority in utilizing MISS. More level I data needs to be reported prior to establishing any sort of significant conclusion and applying it to clinical practice. With a plethora of surgical techniques and instrumentation available for each approach, it is difficult to determine the overall value since many of the authors utilized different techniques. Future steps should determine which technique will allow for the greatest improvement in pain and deformity while minimizing iatrogenic injury to the patient in the process.

Learning Objectives

1. Understand our search strategy and aim of determining efficacy of MISS versus conventional methods in lumbar and thoracolumbar traumatic injuries.
2. More level I data needs to be reported prior to establishing any sort of significant conclusion and applying it to clinical practice.
3. Future steps should determine which technique will allow for the greatest improvement in pain and deformity while minimizing iatrogenic injury to the patient in the process.

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