SMOKING AND DEGENERATIVE SPINAL DISEASE

Implications for Pain and Clinical Outcomes - A Systematic Review

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WHY IT MATTERS

Degenerative spinal disease (DSD) is a major contributor to chronic pain, functional impairment, and healthcare utilization. Identifying modifiable factors associated with spinal degeneration may therefore have important implications for pain prevention and management. Tobacco smoking has been associated with intervertebral disc degeneration, impaired bone metabolism, and poorer postoperative outcomes. This systematic review evaluated the relationship between tobacco smoking and degenerative spinal pathology, with particular attention to pain, disease progression, and clinical outcomes.

OBJECTIVE

Evaluate the relationship between tobacco smoking and degenerative spinal pathology, with particular attention to pain, disease progression, and clinical outcomes.

METHODS

Systematic searches were conducted in PubMed, Embase, Web of Science, and Google Scholar.

Search strategies combined tobacco-smoking terms with degenerative spinal conditions including degenerative disc disease, spinal stenosis, disc herniation, spondylosis, spondylolisthesis, and cervical myelopathy.

Duplicate and non-relevant studies were excluded. Included literature was evaluated by methodology, sample size, results, and reported limitations.

IRB approval was not required; no patient information was utilized.

Smoking was most consistently associated with lumbar degenerative disease, increased pain, impaired function, and poorer clinical outcomes.

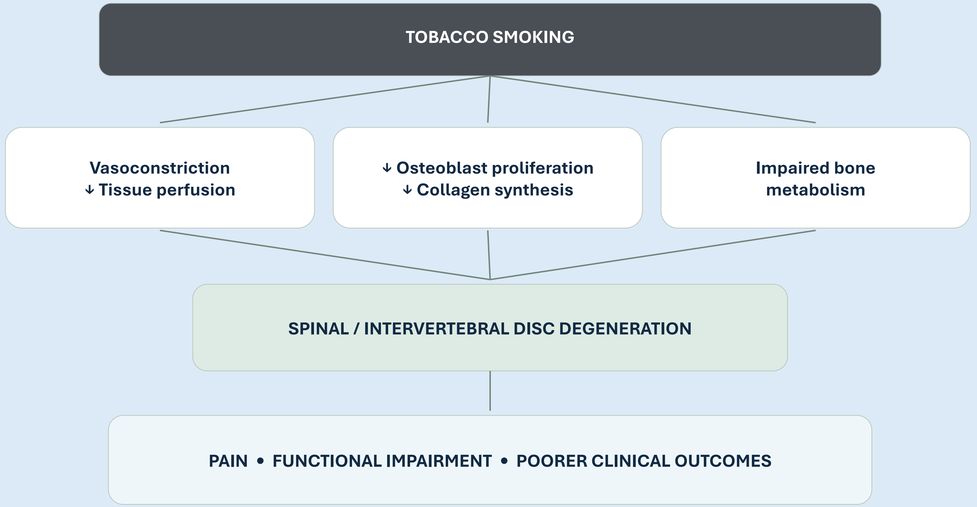


Fig 1. Mechanistic pathway synthesized from findings discussed in the review; schematic is original for this poster.

KEY FINDINGS

LUMBAR - STRONGEST EVIDENCE

- Lumbar spinal stenosis
- Intervertebral disc degeneration
- Earlier development of lumbar degenerative disease
- Dose-dependent associations reported in several studies

CERVICAL

Evidence was less consistent.

THORACIC

Insufficient literature to establish a clear relationship.

CLINICAL ASSOCIATIONS

- ↑ Pain perception ->
- Worse baseline function ->
- Poorer patient-reported outcomes ->
- Delayed recovery / impaired wound healing / ↑ complications ->
- ↑ Repeat surgery
- **Ultimately: ↓ patient satisfaction**

CLINICAL IMPLICATIONS

- Tobacco smoking appears to represent an important modifiable factor associated with degenerative spinal pathology, particularly lumbar disease, as well as increased pain and poorer clinical and postoperative outcomes.
- These findings are relevant to pain medicine because smoking status may influence both the development and clinical burden of chronic spinal pain and outcomes following intervention.
- Recognizing tobacco exposure as part of the assessment of patients with degenerative spinal pain may provide an opportunity for risk modification and multidisciplinary counseling.

LIMITATIONS

- Heterogeneity among available studies, limited sample sizes in portions of the literature, and comparatively sparse evidence regarding cervical and thoracic disease limit causal conclusions.
- Further prospective research is needed to characterize the relationship between smoking exposure, spinal degeneration, pain severity, and response to treatment.

CONCLUSION

The literature demonstrated the most consistent relationship between smoking, pain, and degenerative pathology within the lumbar spine.

REFERENCES / DISCLOSURES

Rajesh N, Moudgil-Joshi J, Kaliaperumal C. Brain & Spine. 2022;2:100916.

Add selected primary references, ASRA meeting logo, and required disclosures before submission.