



Advances and Challenges in Spine Surgery

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Message from the Guest Editors

Spine surgery has undergone tremendous advancements, including a deeper understanding of approaching the spine while minimizing trauma to normal tissue, stabilizing the spine respecting natural biomechanics, and maintaining optimal alignment during reconstructive surgery. Technological advancements, such as segmental fixation and hardware technologies, spinal navigation, and biological material technology, have facilitated more secure and successful spine surgeries. A better understanding of the pathophysiology of back pain and molecular changes after spinal cord injury has been gained. However, challenges remain, such as decreasing disc degeneration and discogenic back pain, accurately determining the etiology of back pain, preserving spinal motion and flexibility, avoiding adjacent level disease with spinal fusion, and minimizing delayed iatrogenic spinal instability. Spinal cord injury remains a significant challenge in modern neuroscience, with no effective treatment for reversing functional loss. The Special Issue will present up-to-date advances in spine surgery, discussing the pathophysiology of the spine and spinal cord biology, and the challenges that remain in the field.





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