

# Advances in Spine Research and Related Treatments

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## Commentary

Degenerative spine diseases are a leading source of morbidity in patients and a substantial contributor to healthcare expenses in many nations. In the field of spine research, there is a growing emphasis on evidence-based medicine techniques as a means of reducing healthcare costs and improving results. It has proved challenging to determine the best therapy paradigm for many common degenerative spinal diseases, and comparative effectiveness research is increasingly being used to investigate these clinical problems. Two long-standing databases that compile data for spine patients are the Swedish Spine Registry and the Registry of the Scoliosis Research Society. Professional organisations for spine surgery have lately taken a leading role in putting together procedural and diagnosis-based registries, with a focus on therapeutic results for spine patients. Comparative effectiveness research powered by spine registries may help explain the best treatment options for individuals with these difficult conditions as healthcare systems develop.

Spine surgery is no exception to the technological improvements that are being introduced and dominating numerous disciplines. Robotics has been used in spine surgery to ensure patient safety and surgeon comfort. Spine surgery is an excellent situation for robots to establish as the standard of care due to narrow work corridors, limited opportunity for error, and lengthy and laborious operations. In 2004, the FDA granted the first approval for spine robotics. Now you may get a new generation of spine robots with integrated navigation systems. At the moment, the major function of spine robotics is to assist with pedicle screw fixation.

Its significance in improving pedicle fixation accuracy has been shown via high-quality research. Spine robotics has also been shown to reduce radiation and operating time in studies. However, just a few studies have found the opposite. In terms of both industrial perspective and surgeon familiarity, it is still in its infancy. Its broad usage will need ongoing research to address obstacles such

as high cost and a steep learning curve. Additionally, broadening the reach of spine robots beyond pedicle screw fixation to include osteotomies and dural operations would be a promising topic for future study. This will offer an overview of numerous research in the field of robotic spine surgery as well as the current state of the field. According to early studies, Cervical Spondylitis Amyotrophic (CSA) is based on cervical degeneration and is primarily characterised by segmental, asymmetric, and stable muscular atrophy of the upper extremities, with or without mild sensory abnormalities and spinal cord lesions (manifested as lower extremity symptoms and gait abnormalities). This will describe and examine the description, aetiology, clinical symptoms, diagnosis, and therapy of cervical spondylosis muscle atrophy, with an emphasis on recent research advances. During this decade, the ADS literature grew at a breakneck pace.

The United States was the most prolific country, having the greatest number of prominent authors and institutes to follow and collaborate with. The radiological parameter was a new issue that might become a hot topic in the near future. Surgical robotic systems have been around for over two decades. The earliest surgical robotic systems were created to help with laparoscopic procedures in general. The da Vinci Robotic System is the most popular robotic surgical system today. This method is frequently utilised in urology, gynaecology, and other surgical disciplines, and there have lately been preliminary reports of its application in spine surgery, namely for Trans oral access and anterior approaches for lumbar inter-body fusion procedures.

The FDA has now authorised both spine assist, which is commonly used in spine surgery, and Renaissance Robotic Systems is considered the next generation of robotic systems. These robotic systems are intended for use in spine instrumentation, cement augmentations, and biopsies as guidance systems. The goal is to improve surgical precision while limiting the patient's and operating team's exposure to hazardous radiation during the procedure. We give an overview of the literature on the use of robotic systems in spine surgery, as well as advice on how to use robotic systems.

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