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Design and development of spinal fusion instrumentation (Protocols and Concepts)

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Some 30 years+ ago advent of pedicle screw-based fusion-augmenting devices suitable for open surgical approaches gained popularity. The devices did enhance the fusion across the spinal segments but success rate in terms of pain was not satisfactory. Surgeons and engineers-initiated use of dynamic systems, including total disc replacements under the hypotheses that these devices will restore spinal alignment and reduce the adjacent segment degeneration. However, clinical data did not support these hypotheses, at least in the USA. As a result, fusion augmentation devices suitable for minimal surgical procedure are gaining momentum. This talk will address the design and development of several such devices, highlighting the need for collaboration among surgeons and engineers for innovation.

Speaker Biography

Vijay K Goel received his doctorate in engineering from the University of New South Wales, Australia in 1978. At present, he is the distinguished University professor, Endowed Chair & McMaster-Gardner professor of Orthopaedic Bioengineering, Co-Director, Engineering Center for Orthopaedic Research Excellence (E-CORE), Departments of Bioengineering and Orthopaedic Surgery, University of Toledo. Dr. Goel is known worldwide for his pioneering research in the field of spinal disorders with multiple publications and peer-recognitions, including four life-time achievement awards from four professional societies. He is also a very experienced entrepreneur. He carries out various FDA required testing for most multinational and start-up companies and is a consultant to various spine companies. He is involved with the design and development of several spinal devices (cages, interspinous spacers, facet screws, for example). As Co-Director of E-CORE, he sets the directions for research and works with other staff to bring companies to the Center. He has served as Chair of the Department of Bioengineering at the University of Iowa, and at the University of Toledo.

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