Novel Spinal Surgery Method

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Medical Device

Problem

Spinal fusion procedures, including PLIF, TLIF, and LLIF, are widely performed (approx. 750,000 p.a in the U.S.), yet 20% fail to achieve adequate fusion outcomes. A major cause of postoperative complications is fusion cage subsidence, where the chosen implant sinks into the vertebral bone. Subsidence occurs in 26–50% of cases, typically within the first postoperative year.

Surgeons currently determine cage sizing using subjective haptic feedback, visual inspection, and fixed-height trial implants, no existing tool provides quantitative, objective intraoperative measurements to guide implant selection. This leads to frequent over-sizing and poor fusion outcomes, and high revision surgery costs.

Solution

This invention introduces the first instrumented spinal tool that uses intraoperative measurements and a reference database to guide optimal spinal cage sizing. This quantitative feedback enables surgeons to select implant size objectively, reducing complications and improving fusion repeatability.

Intellectual Property Status

This technology is the subject of an Australian provisional patent application.

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Potential commercial applications

— Spinal fusion procedures

— Training and simulation systems

— Robotic and navigated spinal systems

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