

Trends in Spine Surgery

Professor Wen-Jer Chen

As technology goes, remarkable advances have been made in spine surgery. Although surgical indications have generally not changed, many changes in surgical methods and implant design providing patients better a prognosis have taken place.

Spine flexibility

To stabilize vertebra is the most common goal in cases of spine lesions, and rigid devices have been the major implants of choice in spinal surgery to achieve solid fusion. The rigid devices, however, may limit daily activities, accelerate degeneration in the adjacent levels, and can even lead to spinal canal compromise. To rebuild spinal flexibility, total disk replacement and a dynamic stabilization system have been designed. We have obtained good clinical results by selecting the proper technique and utilizing the most suitable methods.

Minimally invasive spine surgery (MISS)

Due to the advancement of surgical instruments, endoscopes, laser, fluoroscope, and navigation system, MISS is the current trend. Whether percutaneous endoscopic discectomy or percutaneous pedicle screw fixation, MISS can reduce the surgical wound size, minimize tissue damage, and hasten the recovery, and at the same time help to adequately decompress and fix the vertebra.

Bone substitute

Harvesting autologous bone graft has been the major bone source for spine fusion surgery. However donor site complications, including persistent pain, infection, fracture, or neurovascular injury, are a concern. Moreover, autologous bone is deficient in osteoporotic bone or patients undergoing revision surgery. A bone substitute has been developed in recent years and has been widely and successfully applied in clinical practice.

Correction of spinal deformity

Pedicle screw instrumentation has been the most common correction method for scoliosis and kyphosis. Pedicle screws offer better stability and more correction. For severe deformities, osteotomy or vertebral column resection should be considered.

Regardless of how technology has changed, the basic principles of spine surgery have not changed. Establishing a definite diagnosis, correct indications, and appropriate treatment options will provide patients with more favorable outcomes.