Modern lumbar fusion surgery….. ~ Biomechanical and Clinical point of view

Tetsuo Ohwada
Chief of Spine Surgery Unit,
Dep. Of Orthopedic Surg. Kansai Rousai Hospital ,Amagasaki, Japan

In this lecture, I will talk about modern lumbar fusion surgery from its biomechanical and clinical point of view, especially about PLIF operation with special emphasis on cortical bone trajectory screw method and intervertebral cages.

Recently several method of lumbar fusion surgery are applicable for various degenerative conditions of lumbar spine, including PLIF, ALIF, and LLIF. Minimal invasive method should be better with less invasiveness to back muscles and soft tissues, and various type of screws and cages are applicable in these days. As for pedicle screws, percutaneous pedicle screw insertion is widely accepted as less invasive method, otherwise cortical bone trajectory method (CBT) is less popular among European spine surgeons. CBT method can be applied through small skin incision without excessive exploration of facet joint or back muscles, and easily applied without fluoroscopy. I will talk about its biomechanical superiority and show how it works without fluoroscopic guide. Clinical outcome is also discussed.

About intervertebral cages, I will talk about efficacy of PEEK cages with titanium coating. To avoid subsidence of the cages and cyst formation at the endplate of vertebral bodies, initial stability of the cages are very important, and it may also lead to sound bone union, and clinical outcome. Titanium coated PEEK cages have an initial stability with its porous coatings, and are very beneficial for its radiolucency to see how the bony union glows during post-op. periods.

Recognition of the efficacy and feature of these innovative new method is essential for modern lumbar fusion surgery, especially their biomechanical feature and ingenuity for application is important.