

Individualized anatomical lateral plate for oblique lumbar interbody fusion: concerns required to be addressed

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We have read the recently published paper entitled “*Biomechanical evaluation of a novel anatomical plate for oblique lumbar interbody fusion compared with various fixations: a finite element analysis*” by Huang and colleagues (1), in which a novel fixation option was presented for the oblique lumbar interbody fusion (OLIF) technique, namely anatomical lateral plate (ALP). Huang and colleagues’ new idea is much appreciated and several concrete suggestions for future researches regarding clinical application of ALP are being discussed here.

First, in clinical practice, it is difficult to accurately determine the distance between the cortical screw holes (“h” in *Figure 1*) in the ALP preoperatively. The main reason is that the cage height is determined by the intraoperative model test. Different cage height will result in different intervertebral space height. Therefore, the cortical screw holes are suggested to be manufactured after implanting the cage. Alternatively, ALP of different sizes is needed to be designed according to the anatomical parameters and clinical experience.

Second, the endplate morphology should be taken into consideration in designing the distance between the cortical screw holes (“h” in *Figure 1*) in the ALP. The shape of the endplate is defined as the concave endplate if the endplate demonstrates a smooth concave curvature (the inferior endplate of L4 in *Figure 1*) and the concave endplate accounts for 58.2% in lumbar spine (2). The height of ALP is 6 mm, so it is nearly impossible to change the direction of the cortical screws once the location of the ALP is

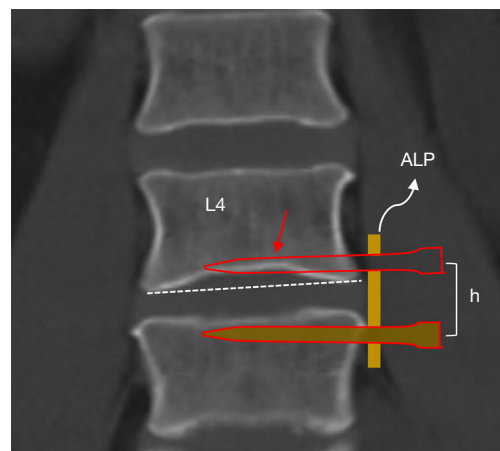


Figure 1 The schematic diagram of ALP. The red arrow means the iatrogenic endplate injury. ALP, anatomical lateral plate; h, the distance between the cortical screw holes.

determined. If the shape of the endplate is neglected, the cortical screw will cause iatrogenic endplate injury as is evident at L4 inferior endplate from *Figure 1*. And the endplate injury is one of the major factors causing cage subsidence (3).

Third, to improve the biomechanical property, the ALP is fixed by six screws in the vertebral body. Three screws are implanted in the same vertebral body from the left side. Whether or not those screws would damage the structure of the vertebral body or cause the vertebral fracture under

stressed conditions would still need further investigation, especially for osteoporosis patients.

In conclusion, Dr. Huang *et al.* has presented a novel fixation option for the OLIF technique and it is much appreciated. We hope the aforementioned three suggestions here would be constructive to the article.

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