



Future directions—development of a new technology

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Discovering a new era in the field of surgery can be challenging. Any advances in the field should not cause a disadvantage to the patients. In the very least, any new procedure should not have an operative outcome inferior to that of the previous standard procedures. Several investigators have already published the outcomes of full-endoscopic lumbar interbody fusion (FELIF) (1-5). However, at the moment FELIF seems to be a premature procedure for several reasons. First, full-endoscopic curettage of disc material and bone grafting tend to be insufficient. Thereby, there is a high probability to occur non-fusion or delay of fusion. Second, in some cases, insertion of an appropriately sized cage is difficult. As the FELIF mechanism is more similar to lateral interbody fusion than to posterior/transforaminal lumbar interbody fusion in terms of less destruction of the facet joint and less decompression of posterior elements, a larger cage is required to obtain an indirect decompression effect for the treatment of patients with lumbar canal stenosis. Third, FELIF is more invasive than the established full-endoscopic spine surgery (FESS) procedures. Surgeons should attempt to solve a patient's problem by using FESS without fusion. To achieve this, precise preoperative diagnosis is the most important factor. For example, discogenic low back pain should first be treated with annuloplasty. If a patient's leg pain is due to nerve root compression, surgeons should attempt to decompress the nerve root by using FESS without fusion. Fusion operation should only be applied for patients whose symptoms originate from instability.

To solve the first problem, the development of new equipment for speedy and sufficient curettage of disc material will be key to the application of FELIF. Although an expandable cage (1) or a mesh implant (e.g., OptiMesh) (5) seems to be a possible solution for the second problem,

such equipments have potential drawbacks of endplate damage and subsequent cage subsidence. In any case, the development of new equipment must precede that of new operative procedures. It should not be forgotten that the development of FESS was made possible by the introduction of new equipment such as bipolar coagulators and high-speed drills. I expect that equipment manufacturers will partake in further developments of these new FESS procedures.

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