Endoscope-assisted spine surgery system

Developing new surgical instruments is challenging. While making surgical instruments could be a good field of application for 3D printers, attempts to do so have proven limited.

Yang et al. designed a new endoscope-assisted spine surgery system, and using a 3D printer, attempted to create a complex surgical instrument and to evaluate the feasibility thereof. Developing the new surgical instruments using a 3D printer consisted of two parts: one part was the creation of a prototype instrument, and the other was the production of a patient model.

They designed a new endoscope-assisted spine surgery system with a cannula for the endoscope and working instruments and extra cannula that could be easily added. Using custom-made patient-specific 3D models, they conducted discectomies for paramedian and foraminal discs with both the newly designed spine surgery system and conventional tubular surgery. The new spine surgery system had an extra portal that can be well bonded in by a magnetic connector and greatly expanded the range of access for instruments without unnecessary bone destruction. In a foraminal discectomy, the newly designed spine surgery system showed less facet resection, compared to conventional surgery.

They were able to develop and demonstrate the usefulness of a new endoscope-assisted spine surgery system relying on 3D printing technology. Using the extra portal, the usability of endoscope-assisted surgery could be greatly increased. They suggested that 3D printing technology can be very useful for the realization and evaluation of complex surgical instrument systems [1)].

1)
Yang HS, Park JY. 3D Printer Application for Endoscope-Assisted Spine Surgery Instrument Development: From Prototype Instruments to Patient-Specific 3D Models. Yonsei Med J. 2020 Jan;61(1):94-99. doi: 10.3349/ymj.2020.61.1.94. PubMed PMID: 31887805.