

Technology Opportunity, Ref. No. UA-18/042

## Device for advanced and minimal-invasive bone cutting geometries

The invention consists of a device for advanced, minimal-invasive and arbitrary bone cutting geometries. With the help of the new device a much greater precision and complexity of osteotomies can be safely achieved. In contrast to any rigid cutting guide the new device allows using not only an oscillating saw, but all kind of mechanical tools, lasers and piezoelectric devices etc. With the unique active sliding element the device can be used for manual osteotomies as well as for computer or robot-assisted osteotomies.

**Keywords** Osteotomy, Bone Cutting, Minimal Invasive

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**Reference** in preparation

**Background** Special and complex osteotomies are nowadays often done with the help of a patient-specific cutting guide. The guide allows for cutting bone by a predefined slot in which in most cases an oscillating saw can be placed. Such templates allow only straight cuts due to the functionality of the saw and the geometry of the template. Thus also minimally invasive interventions are hardly feasible as placement of the guide and saw application require a comprehensive soft tissue preparation.

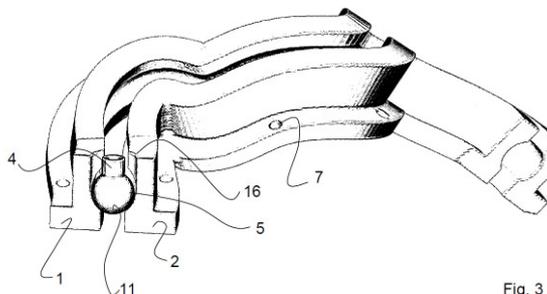


Fig. 3 Invented surgical device

**Invention** The current invention allows for making straight and curved cuts in a minimally invasive way: A (multi-part), patient-specific bone processing guide rail has a track for guiding the surgical instrument along a predetermined path. The surgical instrument can be a laser, a drill or a saw etc. Thereby, not only any random osteotomy line can be followed, but also a differing angulation of the actual cutting tool can be chosen. Thus unprecedented three-dimensional cuts are possible, which otherwise could be only performed by a complex and highly expensive robot system.

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