Reducing the immobilization period after DIP arthroplasty through a new dorsal approach

Introduction
Degenerative changes of the distal interphalangeal (DIP) joints can be painful, disabling and disfiguring. Swanson spacers are primarily used in PIP and MP joints, but there are also many reports about their use at the DIP as an alternative to arthrodesis especially in high demand patients. The standard approach for Swanson spacer implantation at the DIP joint involves transecting the extensor tendon close to its insertion. This necessitates a six weeks period of postoperative immobilization, which comes with the risk of losing some joint motion. A second possible DIP approach involves sparing the extensor tendons as already published. This approach has the potential risk of an extra anatomical implantation of the prosthesis and is technically demanding. Interestingly both techniques lead to a similar range of motion of the replaced DIP joints of approximately 30° with a mean extensor lag of 12.
We present a novel approach for DIP joint arthroplasty with division of the extensor tendon in zone 2 with only two weeks of postoperative immobilization.

Methods
From 2015-2017 we implanted 8 Swanson Spacers in DIP joints in 4 patients with the described approach: After an H-shaped skin incision with proximal slightly longer legs over the DIP joint the extensor tendon is incised in zone 2 just distal to the central slip insertion and the extensor tendon is flipped distally. The Swanson spacer is afterwards implanted as it is standard. After implantation the extensor tendon is sutured with two crossed sutures, one per slip. Postoperatively patient received a DIP splint in slight hyperextension for two weeks and started mobilizing the joint without protective casting after 2 weeks. The DIP joint range of motion was measured at 2, 6 and 12 weeks postoperatively.

Results
We reviewed all our patients with a follow up of at least 3 months. At 12 months postoperative we measured extension lags between 0° and 20°. Median DIP flexion was 51°.

Conclusion
Degenerative alterations in the hand including the DIP joint are a common problem with advanced age. Nowadays these patients tend to have a high demand for hand function for example for playing musical instruments or just using computers. Many patients will thus opt against DIP arthrodesis. Optimizing the motion preserving operative approaches is thus of value. Our postoperative results do not differ from the postoperative range of motion published in the literature for both tendon sparing and standard approach. But our approach is technically easy and requires only a significantly shorter time of immobilization.

Practical illustration