Are articular surfaces malleable ? A new intraarticular osteotomy technique with osteo-chondral bending & shaping

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Purpose: Healed articular impression zones cannot be corrected with linear single cut osteotomies so far.

Methods: A new osteotomy technique was developed in order to correct cylindrically shaped healed impression zones after articular fractures. The technique uses one parallel cut to the joint surface and multiple small cuts with a reciprocating saw in a distance of about 3-4 mm. The cuts reach the subchondral bone leaving a small bridge of approximately 1mm remaining bone. The osteochondral segment can now be shaped within certain limits, since each of the multiple osteotomies contributes to the overall total bend (Fig. 1b to f)

Results: The surgical technique is video demonstrated in a 50 years old female patient with a missed lateral tibia plateau impression fx. She presents 9 months after trauma with severe pain (VAS 7), is dependent on crutches, shows lateral joint instability and valgus deformity. Fig 1 shows a) plane ap film and g) sagittal CT view of the lateral plateau preop and postop (h and i). MRI pre- and 2y postop are shown in Fig. 1j and k. At 2y follow up her pain is improved (VAS 1-2) and a Lysholm Score of 82/100. A second patient is also presented with a 4y follow up with a VAS of 0-1 and a Lysholm Score of 96/100.

Conclusion: Articular deformities with curved cylindrical shapes can be corrected with this new intraarticular osteotomy technique using multiple bone cuts. Further studies are needed to evaluate further details in geometry and biology.