Arthroscopic mid-carpal partial wrist arthrodesis.
Our experience with twelve cases.

Objective
The technique of arthroscopic partial wrist arthrodesis has already been described in the literature, but a very limited number of studies are published. We present our experience of arthroscopic midcarpal arthrodesis.

Patients and methods
From January 2015 to October 2017, we performed 12 cases of arthroscopic midcarpal wrist fusion, including 7 cases of 3-corner fusion and 5 cases of lunocapitate fusion. The indication was mid-carpal arthritis related to post-traumatic carpal instability with SNAC or SLAC Wrist Grade II-III or to degenerative systemic diseases. In all cases the scaphoid was excised through a small palmar approach. The triquetrum was left in situ. Cancellous bone was harvested from the excised scaphoid and was inserted arthroscopically to the arthrodesis site before placing the K-wires. In all cases we used cannulated headless screws to fix the bones, inserted percutaneously through small incisions. We assessed the union rate, the complications and the range of motion and force after index surgery. Pre- and postoperative wrist assessments were systematically recorded through our hand therapy team.

Results
The mean follow-up is 8 months (range 1.5-16). The union rate was 83% (ten out of twelve). The first signs of union were recorded in 1.7 month (1-2.5), while total union (concerning the ten cases) was achieved in 6.1 months (3-11.5). The wrist total range of motion was reduced 25% and the strength 27%. We observed complications in two cases; these concerned the distal migration of one screw in the carpometacarpal joint in both cases; we removed the screw 8 weeks and 12 weeks after fusion respectively. In one case, a total wrist fusion was necessary because of rapidly progressed arthritis in the lunate fossa. All patients reported important pain relief in active motion (post-op range VAS 0-3, pre-op 7-9) after surgery and all but one returned to work and usual daily activity in a mean time of 4.5 months (1.5-7).

Conclusion
Dry arthroscopic mid-carpal arthrodesis seems to be a safe and efficient mini-invasive surgical option in cases of mid-carpal arthritis. The technique is reliable and in our study with an operative time comparable to the open technique. Moreover, the arthroscopic technique potentially is related to low risk of infections and to small surgical scars. The use of endomedullary compression screws reduces the complications related to the hardware. Long-term follow-up and bigger series are needed in order to draw a safe conclusion through quantitative research results.

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58yrs old, female patient with SLAC Wrist Stadium II, preoperative X-rays of the right wrist

X-rays 4 months after arthroscopic lunocapitate fusion and scaphoid excision. Complete union is achieved.