Percutaneous bone graft and screw fixation for early scaphoid nonunion.

Kahhaleh Edward 1, El Kazzi Wissam 2
1 Charleroi University Hospital, Charleroi, Belgium; 2 Erasme University Hospital, Brussels, Belgium

Objective:
Scaphoid nonunion treatment options remain a debatable subject among hand surgeons. Some use open techniques, while others, aiming to minimize morbidity, perform minimally invasive surgeries. Authors also compared the use of vascularized to non-vascularized bone grafts. Our present study aims to detail a new curative operative procedure for early nonunion, assess its feasibility, success rate and challenges.

Methods:
So far, 8 patients have been enrolled into the study. The only selection criterion was no previous surgery on the scaphoid. They all presented scaphoid nonunion without substantial bone loss and maintained alignment. Cysts and sclerosis were apparent on preoperative bone scans and the nonunion surface did not exceed 5mm.
We standardized a surgical technique using the same steps for each patient. Nonvascularized bone graft from the distal radius was collected using a bone biopsy needle. Through a small volar incision, and using fluoroscopy, a tunnel was made along the long axis of the scaphoid using the cannulated drill bit for the headless screw. Drilling was stopped until reaching the nonunion site. The collected graft was inserted and impacted into the nonunion site. Drilling was then continued to the scaphoid proximal pole through the newly filled zone. Finally, a headless compression screw (3mm) was used for fixation. A wrist cast was applied for 6 weeks.

Results:
So far, all patients presented with scaphoid union on CT scan at three-month follow-up. The technique is easy to reproduce. The main challenge is the positioning of the screw. Pain at the donor site is not as concern as before.

Conclusions:
Despite optimal therapy for scaphoid fractures, nonunion may appear and poses a real surgical challenge. Our percutaneous minimally invasive technique seems to be a good curative option for addressing early nonunion. We aim to enroll more patients into the study in order to enlarge the technique on delayed nonunion.