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Case Report

Scaphoid Nonunion Following Primary Operation: A Case Report

Yasushi Morisawa*

Department of Orthopaedics Surgery, Saitama National Hospital, Japan

***Corresponding Author**: Yasushi Morisawa, Department of Orthopaedics Surgery, Saitama National Hospital, 2-1 Suwa, Wako-city, Saitama prefecture,351-0102, Japan.

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Abstract

Scaphoid nonunion surgery involves a complicated procedure and highly invasiveness. Moreover, in nonunion following an initial operation, a large hole is left in the bone after removal of the screw, and a lack of bone stock makes fixation difficult. In this case, bone stock improved with the use of a bone peg and good result was obtained.

Keywords: *Scaphoid; Nonunion; Bone Peg*

Introduction

Scaphoid nonunion surgery involves a complicated procedure and highly invasiveness. Moreover, in nonunion following an initial operation, a large hole is left in the bone after removal of the screw, and a lack of bone stock makes fixation difficult. In this case, bone stock [1] improved with the use of a bone peg and good result was obtained.

Case report

The patient was a 24-year-old man with scaphoid nonunion following surgery of the left hand, which injured in a fall while playing soccer. Two days after the injury, fixation was done with an Acutrak screw from the dorsal side at another hospital. A repeat operation was done one month after the injury. After this, he was examined for the first time at our hospital. Two months after the initial examination, on CT, the screw had slipped out from the distal bone fragment.

Figure 1: *CT, the screw has slipped out from the distal bone fragment.*

On MRI, the proximal bone fragment was T1 low, T2 high, and STIR high, and no obvious bone necrosis of the proximal fragment was seen.

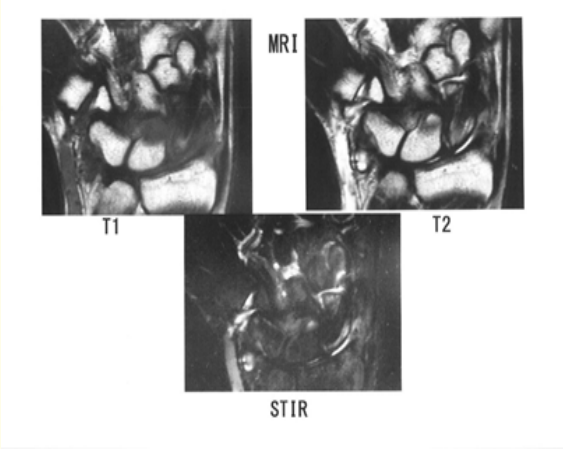

Figure 2: *MRI, the proximal bone fragment has T1 low intensity, T2 high intensity, and STIR high intensity, and no obvious bone necrosis is seen.*

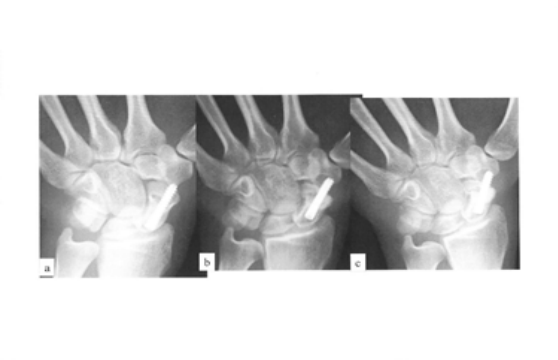

Figure 3: *X-ray.*

Figure 3a: *one month after first operation;* ***3b*****:** *4 months after first operation;* ***3c*****:** *5 months after first operation.*

Figure 3 shows that the screw was seen to be gradually protruding distally on an X-ray. Afterward, pain increased in the snuff box. He could not place his hand with wrist extension because of pain. Bone union was not seen, so second repeat operation was done six months after the initial operation. The Acutrak screw was removed with a dorsal approach. To expose the nonunion area easily, a palmar approach was used in combination. Since there was no screw hole in the distal bone fragment, a bone peg from the ilium was inserted from the dorsal screw hole of the proximal bone fragment. With this, the bone stock of the scaphoid also improved. A cancellous bone graft from the ilium was inserted in the nonunion portion, and cortical bone from the ilium was inserted in the palmar side of the nonunion. A 1-mm K-W and a DTJ mini screw were inserted in a different direction from that of the bone peg.

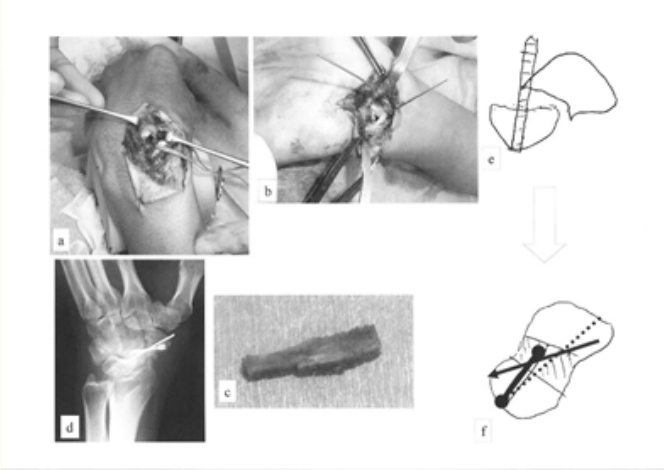

Figure 4a: *After removal the Acutrak screw, large hole was seen at the proximal fragment;*

4b: *Two K-W used temporary reduction and bone peg was inserted;*

4c: *A bone peg;*

4d: *X-ray after operation;*

4e: *The Acutrak screw was slipped out from the distal fragment;*

4f: *: Bone peg was used to maintain the repositioning and to correct the shortening (•–•) K-W (a dotted line), DTJ mini screw (an arrow).*

Since bleeding from the proximal bone fragment was seen intraoperatively, vascularized bone graft1 was nod adopted. One year after the surgery, bone union was obtained on X-ray.

Figure 5: *X-ray, one year after the second repeat operation, bone union is obtained.*

Wrist range of motion and grip strength had improved, the Mayo score was good, and the patient returned to his former work.

Discussion

In surgery for nonunion following scaphoid fracture surgery, improving the bone stock after removal of the screw is important Baba., *et al*. [2] and Tanaka [3] reported good results with insertion of a bone peg and fixation with a screw alongside of it or in parallel. Since, in the present case, the distal bone fragment was significantly displaced, and there was no hole in the distal bone fragment, we used a bone peg to increase the bone stock, to maintain the repositioning and to prevent shortening of the scaphoid. Also, not to break the bone peg, a K-W and a screw were inserted in a different direction.

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