

CASE REVIEW

i-FACTOR™ BIOLOGIC BONE GRAFT IN DISTAL RADIUS NON-UNION



CASE REVIEW

CAUTION: i-FACTOR Flex FR is not commercially available in the USA.

i-FACTOR BIOLOGIC BONE GRAFT IN DISTAL RADIUS NON-UNION

INTRODUCTION

A 43-year-old male presented with a fracture to the left wrist. Clinical examination revealed painful range of motion with dorsal inclination and shortening (Figure 1).

PRE-OPERATIVE HISTORY

The patient was in full-time employment.

PATIENT ADMISSION: FIRST OPERATION

The patient was admitted to hospital for surgery with reduction and internal fixation of his fracture.

PRE-OPERATIVE PATIENT STATUS

- Volar flexion: 70° right.
- Dorsal flexion: 80° right.
- Ulnar deviation: 55° right.
- Radial deviation: 15° right.
- Supination: 180° right.
- Pronation: 0° right-left.



Figure 1. Pre-operative X-ray, first operation

CASE REVIEW

CAUTION: i-FACTOR Flex FR is not commercially available in the USA.

i-FACTOR BIOLOGIC BONE GRAFT IN DISTAL RADIUS NON-UNION

SURGICAL PROCEDURE

Open Reduction Internal Fixation (ORIF) of the distal radius

Regional anaesthesia with sedation was administered, the patient was prepped and draped in a standard manner. The distal radius was exposed to the fracture site and two small bone fragments were resected. The fracture was reduced then held in place with a titanium plate using anglestable locking screws (Figure 2). The operative site was closed in a standard manner, and the patient was placed in a plaster cast and given a prescription for analgesics.

FIRST OPERATION

11 DAYS POST-OP

Cast was removed. The surgical site was inspected and healing was progressing well. A brace was applied and physiotherapy prescribed.

6 WEEKS POST-OP

Patient was still using his brace. Upon palpation, extreme pain was experienced over the fracture site. The patient had loss of mobility in all ranges of motion. Additionally, very little extension was possible. X-ray revealed no signs of fracture site consolidation with lucency noted (Figure 3). A CT scan was prescribed.

7½ WEEKS POST-OP

CT scan shows a delayed union of the distal radius (Figure 4) with the likelihood of a progressing pseudoarthrosis. After consultation with the patient, a revision procedure was discussed and was planned for the 10-week post-operative period.



Figure 2. Post-op X-ray, first operation



Figure 3. Post-op X-ray, first operation

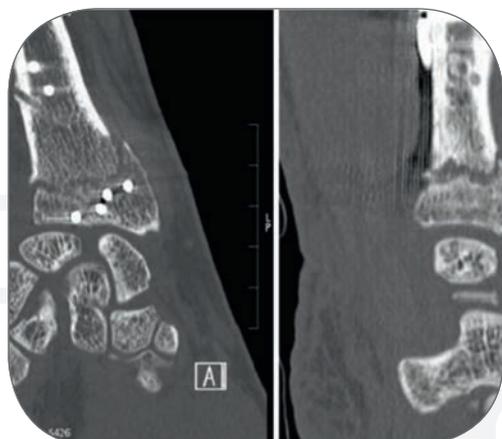


Figure 4. CT scan 7½ weeks post-op showing distal radius non-union

CASE REVIEW

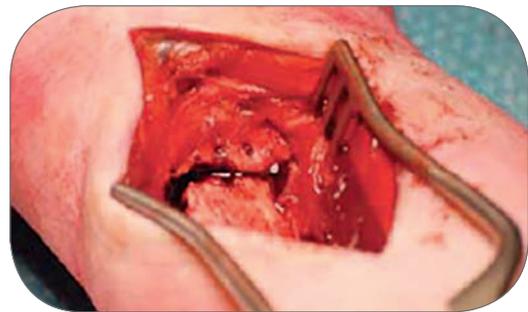
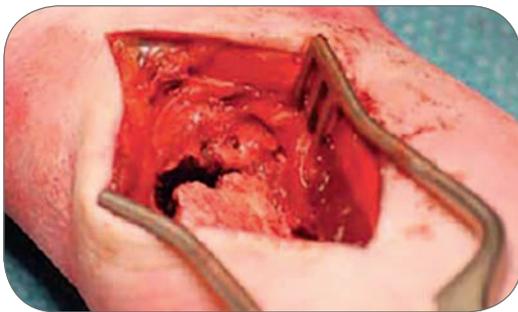
CAUTION: i-FACTOR Flex FR is not commercially available in the USA.

i-FACTOR BIOLOGIC BONE GRAFT IN DISTAL RADIUS NON-UNION

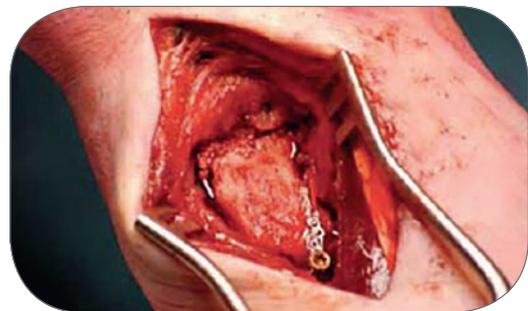
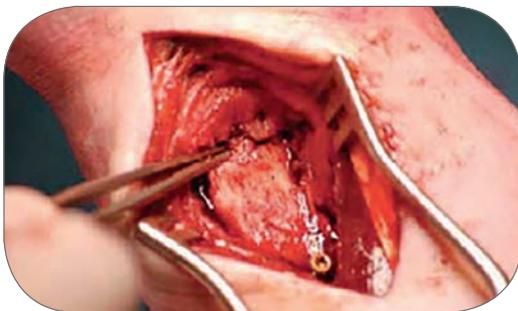
SECOND SURGICAL PROCEDURE:

Debridement of non-union fibrous tissue, ORIF revision

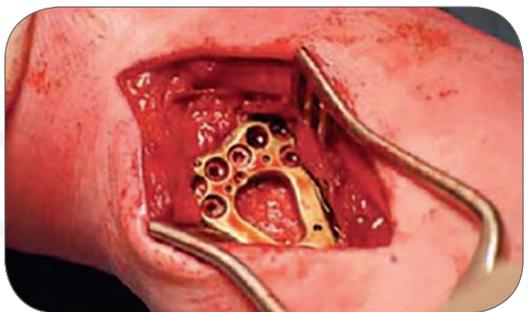
General anaesthesia was administered. The patient was prepped and draped in a standard manner.



An incision was made using the original incision site and the distal radius was exposed using Henry's Approach. The plate/screws were removed from the previous fracture/non-union site. No major cortical bone loss was observed in the region of the non-union site; however, the existence of a 'cavity' was observed within the non-union site. The non-union site was exposed, debridement of fibrous tissue was conducted and bleeding bone exposed.



i-FACTOR Flex (25mm strip) was allowed to sit in a small amount of autologous blood until the blood coagulated and it was then inserted into the prepared non-union site. The entire non-union site was filled with i-FACTOR Flex.



To facilitate containment of i-FACTOR Flex, a fragment of existing cortical bone and then a thin layer of bone wax was laid onto the surface of the bone across the non-union site to create a seal.

Reduction and internal fixation of the non-union site was performed using the same distal radius plate with new locking screws. The patient was closed in standard fashion and post-operative drain applied.

CASE REVIEW

CAUTION: i-FACTOR Flex FR is not commercially available in the USA.

i-FACTOR BIOLOGIC BONE GRAFT IN DISTAL RADIUS NON-UNION

POST-OPERATIVE COURSE: SECOND OPERATION

Patient was placed in a cast with scheduled removal of the cast set for 2 weeks post-operation. The patient was prescribed analgesics, calcium and vitamin D supplements. Post-operative X-ray confirmed reduction and fixation of the non-union site (Figure 5).

2 WEEKS POST-OP

The patient presented at his 2-week follow-up experiencing pain at the operative site but taking no analgesics for his pain. The decision was made to keep his cast on for an additional 2 weeks.

4 WEEKS POST-OP

The cast was removed from the patient and an X-ray was taken. The X-ray revealed some signs of osteoporosis due to non-use but also revealed the beginning of callus formation (Figure 6). The patient was able to achieve all ranges of motion but with some stiffness. The use of analgesics was no longer necessary and subsequently discontinued. Physiotherapy was prescribed and initiated.

8 WEEKS POST-OP

X-ray shows consolidation of the non-union site and an increase in bone mineralisation (Figure 7).

8-WEEK PATIENT STATUS

- Volar flexion: 50° left.
- Dorsal flexion: 65° left.
- Ulnar deviation: 50° left.
- Radial deviation: 15° left.
- Supination: 130° left (some loss of supination).
- Pronation: -20° left.



Figure 5. Post-op X-ray: (second operation) showing ORIF and containment of i-FACTOR



Figure 6. X-ray: 4 weeks post-op, second operation



Figure 7. X-ray: 8 weeks post-op, second operation

CASE REVIEW

CAUTION: i-FACTOR Flex FR is not commercially available in the USA.

i-FACTOR BIOLOGIC BONE GRAFT IN DISTAL RADIUS NON-UNION

In comparison to the 4-week X-ray, cortical bone consolidation is evident in the 8-week X-ray at the non-union site (Figures 8 and 9). The patient has ceased to experience pain at his non-union site.

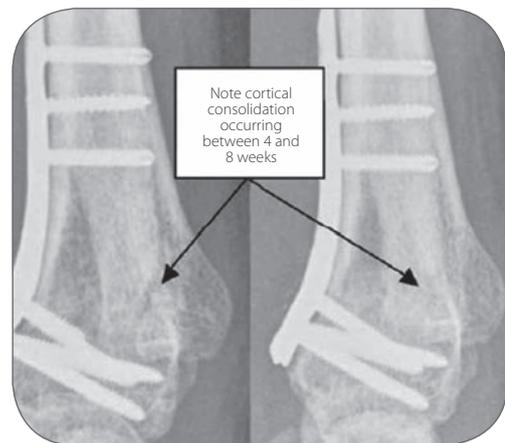


Figure 8. X-ray: 4 weeks post-op

Figure 9. X-ray: 8 weeks post-op

16 WEEKS POST-OP

CT scan shows a consolidated fracture, no heterotopic ossification and clear improvement of bone mineralisation. The patient reports no pain at his non-union site (Figure 10).

16-WEEK PATIENT STATUS

- Volar flexion: 50° left.
- Dorsal flexion: 65° left.
- Ulnar deviation: 50° left.
- Radial deviation: 15° left.
- Supination: 140° left (loss of supination).
- Pronation: 0° left.

16-WEEK PATIENT OUTCOMES

A range of motion control was carried out 4 months after a revision of the wrist because of non-union:

- Volar flexion: 50° left, 70° right.
- Dorsal flexion: 65° left, 80° right.
- Ulnar deviation: 50° left, 55° right.
- Radial deviation: 15° left, 15° right.
- Supination: 140° left (40° deficit left; end supination is painful), 180° right.
- Pronation: 0° left, 0° right.

While his mobility has increased, his power is still not as it should be. Currently this is a favourable evolution of the patient's fracture, non-union, revision and subsequent consolidation of fracture/non-union site. The patient reports being happy with his surgical outcome and has returned to productive work.

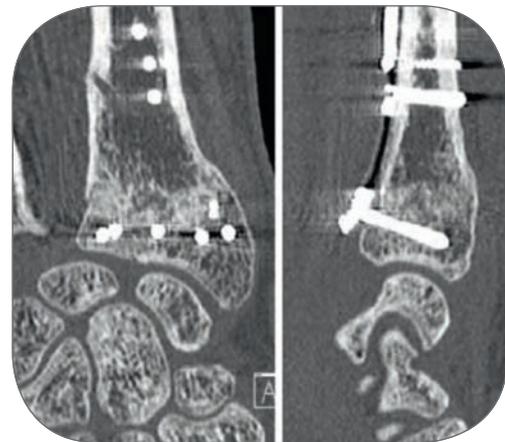


Figure 10. CT scan: 16 weeks post-op, second operation



Corporate Headquarters
11025 Dover Street, Suite 1600
Westminster, CO 80021 USA
P: (303) 974-6275
F: (303) 974-6285
E: info@cerapedics.com

www.cerapedics.com

 0086 Internationally available

CAUTION: i-FACTOR Flex FR is not commercially available in the USA.

Europe, Middle East, Africa, Asia Pacific and Canada
London, England
P: +44 (7951) 944 854
F: +1 (303) 845-9381
E: emea@cerapedics.com

Asia Pacific enquiries
Sydney, Australia
E: apac@cerapedics.com

Study provided through an educational grant from:



CERAPEDICS
Enhancing the Science of Bone Repair

© 2016 Cerapedics, Inc.
All rights reserved.

ML-0100 02/17