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Case report

Femoral lock plant alone for ipsilateral subtrochanteric, supracondylar, and intercondylar fracture

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1. Introduction

Complex femoral fractures pose considerable therapeutic challenges to orthopaedic surgeons. Ipsilateral femoral neck and shaft fractures have been described by several of authors.[11,13,7,12] Ipsilateral fractures of the femoral shaft and distal part of the femur has also been described.[3,14] Management of these multifocal fractures should be early fracture stabilisation. The choice of ideal fixation method becomes increasingly complex, however. Frequently, combination of fixation was used for these patients.[7,4,8,1] However, there is less frequent report that ipsilateral subtrochanteric, supracondylar, and intercondylar fractures are treated by femoral lock plant alone. The purposes of this case study report femoral lock plant alone was used for ipsilateral subtrochanteric, supracondylar, and intercondylar fracture.

2. Case report

A 26-year-old male presented to our institution after a motorcycle accident, the X-ray indicated that a right subtrochanteric fractures, a right comminuted intercondylar fracture, and a Gustilo Anderson grade I open comminuted supracondylar fracture on the same side. Using the AO/OTA guidelines, the subtrochanteric fracture was classified as 32B3 fracture and intercondylar fracture is 33C2-3 fracture on X-ray (Fig. 1). CT scan showed the intercondylar fracture involving both sagittal and coronal plane (Fig. 2). Tibial tubercle bone traction was performed after irrigation and debridement of the open wound of the distal thigh. Continuous intravenous Cephalosporin was used for 6 days, preoperative. Then, osteosynthesis of the fractures was done using a femoral lock plant alone (Depuy) and bone graft after careful preoperative preparation. Images of the contralateral femur were performed before operation. Contralateral femur radiographs were used as a template to choice a suitable plate. The patient is placed on a radiolucent operating table in a supine position. A cushion was placed under the hip to elevate the affected limb by 20–40°. In considering the order of operation, supracondylar and intercondylar fracture is addressed first. A 20-cm incision was made on lateral parapatellar arthrotomy. Under adequate visualisation of the alignment of the articular cartilage, intercondylar fracture was preliminarily fixed by Kirschner wires. Then, care was taken to insert the plate into the affected limb from the incision of the lateral parapatellar arthrotomy. To maintain the length of the affected limb, longitudinal traction was performed by 2 assistant. Preoperative, the fluoroscopy was performed to examine the alignment of the fumer and the length of the plate. The femoral condyles were reduced and fixed on the plate using locked screws. Then, supracondylar fracture was reduced and fixed on the plate. The supracondylar bone defects were filled with cancellous bone graft harvested from the iliac crest. A 5-cm incision was made to reduce the subtrochanteric fractures. Subsequence, locked screws were used to fix the fracture.

Postoperatively, isometric quadriceps strengthening exercises were started as early as possible. Continuous passive motion of

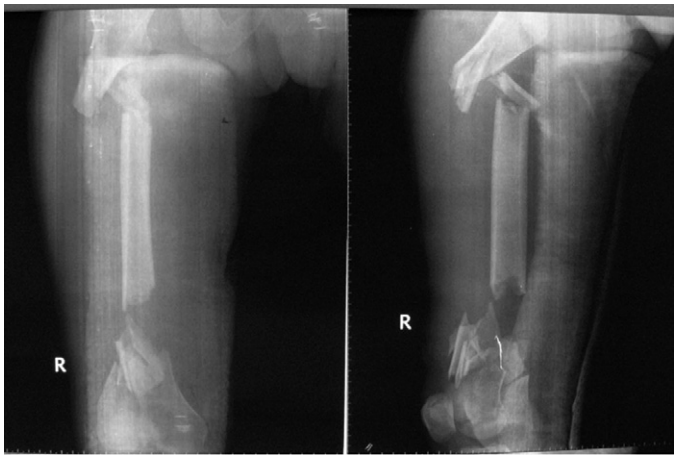

Fig. 1. The X-ray show a subtrochanteric fracture, supracondylar fracture (32C3) and intercondylar fracture (33C2-3) on the same side.

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Fig. 2. CT scan indicated the intercondylar fracture.

knee joint was started from the second day postoperatively. The patient was encouraged to active range-of-motion exercises 2 weeks postoperative. Weight-bearing was not allowed until bridging callus was visible in supracondylar area on radiographs. The length of follow-up was 20 months. All fractures subsequently united within 8 months (Fig. 3). At the final follow-up examination revealed that the patient the knee motion was at least 80% of that of the opposite side. There were no complications, such vascular injury, deep venous thromboses, postoperative infections, or failure of internal fixation. No complications occurred at the bone graft donor site.

3. Discussion

The multiple femoral fractures are not common and challenging. The majority of the patients are encountered in high-energy trauma.[10,9] Without doubt these fractures are best managed by surgical stabilisation. Although many methods of fixation have been tried to manage this injury, there is often more than one internal fixations system were needed for these fractures.[14,2] The choice of internal fixation based on the type of proximal or distal femur fracture. In the area of the proximal femur, femoral neck fracture could be fixed by cannulated screws, dynamic hip screws (DHS) and reconstruction nail.[2,5] In cases involving a pertrochanteric or subtrochanteric fracture, DHS and reconstruction nail could be used.[12,5] For the type A and B distal femoral fractures, cancellous screws are sufficient for stabilisation.[6] Plate was used for stabilisation of type C fractures of the distal femur.[5] The femoral shaft and supracondylar fracture had been successfully treated with interlocking nailing without supplemental fixation.[3] In the case of the femoral shaft accompany with distal intraarticular femoral fracture, the fractures were stabilised with nailing and supplemental screw fixation or Plate.[3,8] The above literatures indicated that two internal fixations system are often required for these fractures. Frequently, the femoral shaft fracture is fixed together with either the proximal or distal fracture, using the same internal fixation. Then, a second internal fixation was used for the third fracture.

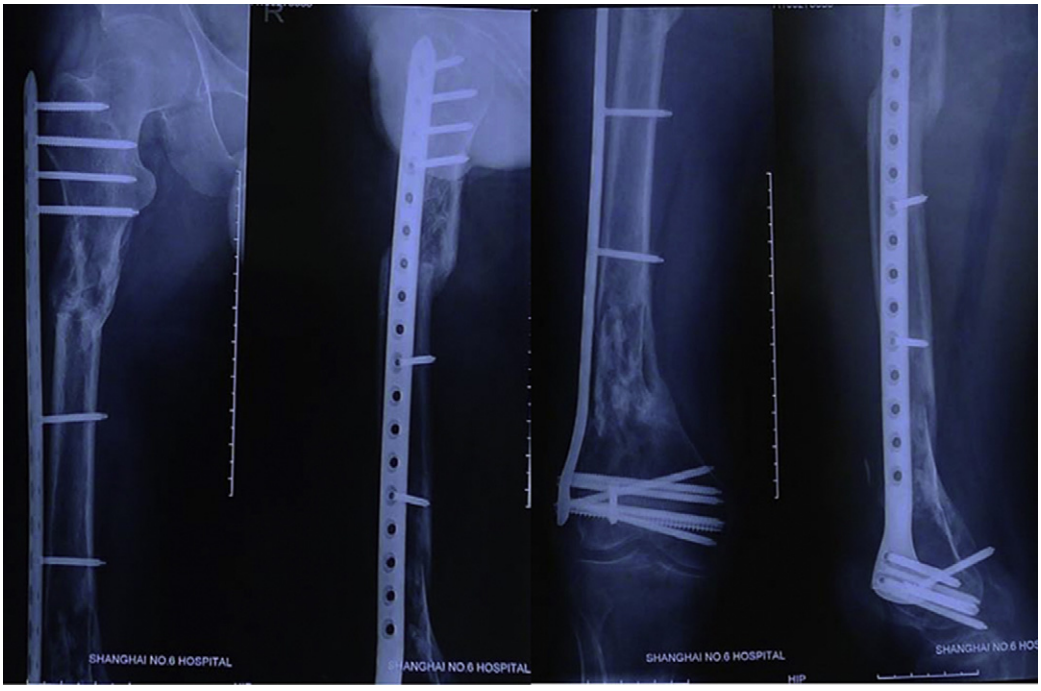

Fig. 3. The X-ray indicated all fractures united within 8 months.

Here, we reported a case of patient with ipsilateral subtrochanteric, supracondylar, and intercondylar fracture. It posed a dilemma concerning the ideal fixation method for this case. Obviously, nailing and supplemental screw fixation may not achieve suitable fixation for this patient. Nailing and supplemental plate or two plates may be a good option for subtrochanteric and distal femoral fractures. However, the middle shaft of the femur may not provided adequate space for nailing and supplemental plate or two plates in this patient. In this case, femoral lock plant alone may provided more stable fixation for the fractures than two internal fixations system. Additionally, the plate was inserted through incision into the epiperiosteal space. And the locked screws were placed by means of an aiming device. Therefore, this procedure does not damage both the periosteal and endosteal blood supply. The reduction and fixation sequence of this procedure is intercondylar fracture, then supracondylar fracture, and then subtrochanteric fractures. Following the step reduction and fixation, the complex fractures become several relative simple fractures and satisfactory solutions may be easier obtained. And all the fractures united within 8 months without complications Therefore, we believe that femoral lock plant alone may be sufficient for ipsilateral subtrochanteric and distal femoral fractures.

4. Conclusion

This procedure may be an ideal fixation method for ipsilateral subtrochanteric and distal femoral fractures, especially, when nailing and supplemental fixation or two plates are not suitable. Femoral lock plant alone may provide more stabilisation than two internal fixations system.

References

1. Abalo A, Dossim A, Ouro BA, Tomta K, Assiobo A, Walla A. Dynamic hip screw and compression plate fixation of ipsilateral femoral neck and shaft fractures. Journal of Orthopaedic Surgery (Hong Kong) 2008;16(1):35–8.
2. Barei DP, Schildhauer TA, Nork SE. Noncontiguous fractures of the femoral neck, femoral shaft, and distal femur. Journal of Trauma 2003;55(1):80–6.
3. Butler MS, Brumback RJ, Ellison TS, Poka A, Bathon GH, Burgess AR. Interlocking intramedullary nailing for ipsilateral fractures of the femoral shaft and distal part of the femur. Journal of Bone and Joint Surgery 1991;73(10):1492–502.
4. Chen CH, Chen TB, Cheng YM, Chang JK, Lin SY, Hung SH. Ipsilateral fractures of the femoral neck and shaft. Injury 2000;31(9):719–22.
5. Dousa P, Bartonicek J, Lunacek L, Pavelka T, Kusikova E. Ipsilateral fractures of the femoral neck, shaft and distal end: long-term outcome of five cases. International Orthopaedics 2010;35(7):1083–8. International Orthopaedics; 2011.
6. Lambiris E, Giannikas D, Galanopoulos G, Tyllianakis M, Megas P. A new classification and treatment protocol for combined fractures of the femoral shaft with the proximal or distal femur with closed locked intramedullary nailing: clinical experience of 63 fractures. Orthopedics 2003;26(3):305–8.
7. Oh CW, Oh JK, Park BC, Jeon IH, Kyung HS, Kim SY, et al. Retrograde nailing with subsequent screw fixation for ipsilateral femoral shaft and neck fractures. Archives of Orthopaedic and Trauma Surgery 2006;126(7):448–53.
8. Okcu G, Aktuglu K. Antegrade nailing of femoral shaft fractures combined with neck or distal femur fractures. A retrospective review of 25 cases, with a follow-up of 36-150 months. Archives of Orthopaedic and Trauma Surgery 2003;123(10):544–50.
9. Singh R, Rohilla R, Magu NK, Siwach R, Kadian V, Sangwan SS. Ipsilateral femoral neck and shaft fractures: a retrospective analysis of two treatment methods. Journal of Orthopaedic Traumatology 2008;9(3):141–7.
10. Tsai CH, Hsu HC, Fong YC, Lin CJ, Chen YH, Hsu CJ. Treatment for ipsilateral fractures of femoral neck and shaft. Injury 2009;40(7):778–82.
11. Wang HQ, Han YS, Li XK, Li MQ, Wei YY, Wu ZX. Treatment of ipsilateral femoral neck and shaft fractures. Chinese Journal of Traumatology 2008;11(3):171–4.
12. Watson JT, Moed BR. Ipsilateral femoral neck and shaft fractures: complications and their treatment. Clinical Orthopaedics and Related Research 2002;399:78–86.
13. Wojcik K, Nowak R, Chmielewski L, Ochenduszka ST. Concomitant ipsilateral femoral neck and shaft fractures—analysis of cases. Ortopedia Traumatologia Rehabilitacja 2009;11(3):271–9.
14. Wood EG, Savoie FH, Vander GR. Treatment of ipsilateral fractures of the distal femur and femoral shaft. Journal of Orthopaedic Trauma 1991;5(2):177–83.