

Treatment Of Nonunion In Osteogenesis Imperfecta Patient

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INTRODUCTIONS:

Treatment of nonunion in OI patient is challenging due to a problem in getting suitable intramedullary fixation in a small and short bone. Source of bone graft would be an additional problem. We report a successful outcome of nonunion treatment in OI patient using an ante-rotational technique.

CASE REPORT:

This 19-year-old type II osteogenesis imperfecta patient had a history of fracture in 2014 which was treated with an intramedullary rush rod. She had been walking with aid since then. In October 2017, she represented with difficulty in ambulation without pain. She walked with a walking-aid and had short stance phase on the affected leg. The left leg was short by 6 cm. There were excessive external rotation and internal rotation indicating mobility at the fracture site in rotational plane. The radiograph showed the presence of rush rod and discontinuity of the fracture site in the shaft of left femur (Figure 1).

We operated through lateral exposure to reach the nonunion site without disturbing the rush rod. Two Kirchner wires were inserted at each proximal and distal to the nonunion site using missed nail technique. Cerclage wires were passed connecting proximal and distal K-wires (Figure 2a and 2b) to provide rotational control. Tricortical bone graft harvested from left iliac crest was divided into 2 pieces of 2 cm length size and was held bridging the nonunion site.

Postoperatively, she was put on above ankle POP both lower limb with connecting bar as an ante-rotational immobiliser for 3 weeks which was later converted to affected limb boot POP with transverse bar immobilizer (Figure 2c) for additional 3 weeks.

Radiograph at 3-month postoperative showed the union of the fracture site.

Figure 1



Figure 2

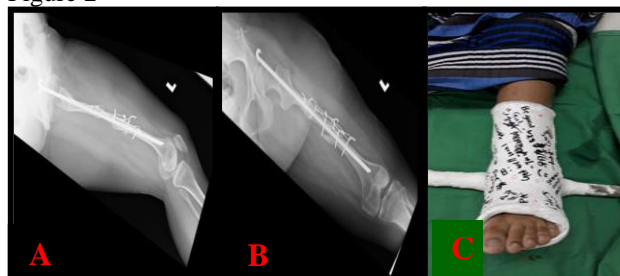


Figure 1: Preoperative radiographs showing nonunion over shaft of left femur with Rush rod in situ.

Figure 2: Postoperative radiographs after 3 months showing union of previous osteotomy site (A & B). Rotational immobilizer was applied postoperatively till 6 weeks (C).

DISCUSSION AND CONCLUSION:

Nonunion is known to occur over osteotomy site with the presence of nail.¹ We think the cause of nonunion in this case was inadequate rotational stability which was not provided by Rush rod.

We could not find a suitable intramedullary locking nail due to a femoral diameter of 7 mm and length of 24 cm in this patient. Therefore, the present rush rod was kept in situ to provide bending stability. We used the Kirchner wires and cerclage wires as described to control the rotation. We thought the success of this rotational control was also contributed by additional external immobiliser. The role of bone graft was to ensure union in this diseased bone. We had a problem in getting good bone graft in this patient. One of the options would be using allograft as proposed by Puvanesarajah et al.²