Retrograde Nail-Locking Plate Constructs in the Treatment of Distal Femoral Native and Periprosthetic Fractures

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INTRODUCTION:

Traditionally, treatment of distal femur fractures includes constructs ranging from lateral locked plating, dual plating, or retrograde intramedullary nailing. More recently, a combination of retrograde intramedullary nail and laterally or medially based plating (nail-plate constructs, NPCs) have been increasingly utilized. Herein, we describe outcomes as it relates to the treatment of native and periprosthetic distal femur fractures with NPCs.

METHODS:

A retrospective chart review was conducted at our level 1 trauma center for all cases of NPC use from 2017-2022. Both native femoral and peri-implant fracture fixation were included. Data included patient demographics, fracture classification/characteristics, follow up, time to union, and need/reasons for reoperation. Subset analysis was performed to include only patients with sufficient follow up to determine rates of union.

RESULTS:

In total, 56 patients (33 female, 23 male, age 67 years +/- 16) underwent fixation using an NPC. Of these, 44% (n=25) were native distal femur fractures and 56% (n=33) were peri-implant fractures. Of the native distal femurs, the most common patterns were AO/OTA 33A2 (29%) and 33C2 (29%). The mean total follow-up time was 12 months. When excluding 19 patients who were lost to follow up or did not reach 5 months follow up, this average increased to 17 months. In patients with sufficient follow up, 89% (n=33) went on to union at an average of 7.5 months (SD +/- 3.4). Four patients required reoperation (1 symptomatic hardware, 2 atrophic nonunions, 1 deep infection). Seven patients from the cohort underwent conversion to an NPC from another construct (1 dual plate, 3 lateral locking plate, 3 retrograde IMNs) for atrophic nonunion (n=5), infectious nonunion (n=1) or recalcitrant nonunion (n=1), 6/7 (86%) of which went on to union at an average of 11.1 months.

DISCUSSION AND CONCLUSION:

The use of nail plate constructs in the treatment of native and peri-implant distal femur fractures continues to grow in popularity. In this series, early term outcomes show promising rates of union and a low revision rate in native and periprosthetic femur fractures, regardless of fracture severity. Further, nail plates constructs have high union rates when treating distal femoral nonunions.