

Supplementary Table 1 The details of the included studies

| | Cause of injury | Fracture characteristics | Surgical details/indications | Medial plate type | Bone graft | complications |
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| Sun <i>et al.</i> (1) | Heavy object falling: n=7; Traffic accidents: n=15; Injury by fall: n=10; | SPG: A2/3 (n = 13), C2/3 (n = 8);2 open fractures (all Gustilo type I). DPG: A2/3 (n = 6), C2/3 (n = 5);1 open fracture (all Gustilo type I). | Lateral approach for type A fractures, a lateral patellar approach for type C fractures, DPG with additional medial incision; Both groups MIPO implanted plates; if a medial defect appears in the fracture end, the use of single lateral fixation may make it difficult to obtain adequate stability, and the medial support plate can then be augmented | PHILOS plate (n = 6), reconstruction plate (n = 5). | None | SPG:2 Nonunion; DPG:1 superficial infection(open fracture); |
| Zhang <i>et al.</i> (2) | NA | comminuted supracondylar femoral fractures SPG: A2(n=6), A3(n=9) DPG: A2(n=5), A3(n=9) | SPG: lateral approach; DPG: lateral and medial approach; Both groups MIPO implanted plates | NA | NA | SPG:1 superficial infection, 1 death because of pneumonia six months postoperatively,1 pain and implant prominence; DPG:1 deep vein thrombosis, 1 pain and implant prominence; |
| Zhou <i>et al.</i> (3) | SPG: heavy object impact: n=6; falling from height: n=3; car accidents: n=16; falling off electric bikes: n=4; DPG: heavy object impact: n=3; | SPG: A3(n=19), C2(n=10) 3 open fractures (all Gustilo type I). DPG: A3(n=17), C2(n=7) 3 open fractures (all Gustilo type I). | SPG: Lateral approach or anterolateral approach; DPG: anterolateral approach; Double plate fixation in the presence of fragmentary or comminuted fractures of the medial cortex of the bone | Small Locking titanium plate, 2 ~ 3 bone screws for distal and proximal fracture. | For those with significant bone loss, comminuted fractures, and medial fracture fragments, allograft bone grafting is | SPG:2 knee varus deformity;1 knee valgus deformity;1 plate fracture DPG: None |

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| Zhang <i>et al.</i> (4) | <p>falling from height: n=2; car accidents: n=15; falling off electric bikes: n=4;</p> | <p>Comminuted distal femur fracture SPG:5 open fractures DPG:6 open fractures</p> | <p>SPG: Open implantation(n=27), lateral approach for type A fractures, anterolateral approach for type C fractures; MIPO(n=8), lateral parapatellar approach for type A fractures, Anterolateral patella approach for type C fractures; DPG: Open implantation(n=27), lateral or anterolateral approach +Medial approach; MIPO(n=8) lateral or anterolateral parapatellar approach, Insertion of medial plate through the intermuscular space;</p> | <p>reconstruction plate</p> | <p>performed. SPG:7 cases of artificial bone grafting DPG:12 cases of artificial bone grafting</p> | <p>NA</p> |
| Zhang <i>et al.</i> (5) | <p>SPG: heavy object impact: n=2; car accidents: n=12; injury by fall: n=18; DPG: heavy object impact: n=2; falling from height: n=1; car accidents: n=15; injury by fall: n=21;</p> | <p>SPG:A2(n=3),A3(n=17),C2(n=12)) DPG:A2(n=5),A3(n=24),C2(n=1) 1) A total of four open fractures (all Gustilo I) were recorded in both groups.</p> | <p>SPG: Open implantation(n=26), lateral approach for type A fractures, anterolateral approach for type C fractures; MIPO(n=6), lateral parapatellar approach for type A fractures, Anterolateral patella approach for type C fractures; DPG: Open implantation(n=31), lateral or anterolateral approach +Medial approach; MIPO(n=9) lateral or anterolateral parapatellar approach, Insertion of medial plate through the</p> | <p>reconstruction plate</p> | <p>SPG:7 cases of artificial bone grafting DPG:13 cases of artificial bone grafting</p> | <p>SPG:2 delayed union, 2 knee valgus deformity; DPG:3 delayed union, 2 knee valgus deformity,1 Knee stiffness;</p> |

intermuscular space;

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| Ma <i>et al.</i> (6) | <p>SPG: heavy object impact: n=3; falling from height: n=1; car accidents: n=10; injury by fall: n=6; DPG: heavy object impact :n=2; falling from height: n=1; car accidents: n=7; injury by fall: n=3;</p> | <p>SPG: A3(n=12), C2(n=8) DPG: A3(n=7), C2(n=6) A total of four open fractures (all Gustilo I) were recorded in both groups.</p> | <p>SPG: lateral approach; DPG: lateral and medial approach; Fracture distal appropriate locking screw fixation, proximal cortical bone screw fixation</p> | reconstruction plate | <p>SPG: None DPG:3 cases of autologous iliac bone grafting</p> | <p>SPG:6 knee varus and valgus deformity; DPG: None</p> |
| Lu <i>et al.</i> (7) | <p>falling from height: n=10; other: n=15; DPG: traffic on the road: n=13; falling from height: n=16; other: n=11;</p> | <p>SPG:C2(n=26), C3(n=14) DPG:C2(n=22), C3(n=18)</p> | <p>SPG: lateral approach; DPG: lateral and medial approach; Open implantation of medial and lateral plates. After the lateral locking plate fixation was completed, the varus and valgus stress test of the knee joint was positive, the rupture of the lateral collateral ligament was excluded, and the medial plate fixation was added</p> | reconstruction plate | NA | <p>SPG:2 incision infection , 2 deformed healing , 3 delayed healing , 1 loose internal fixation DPG:2 incision infection , 1 deformed healing , 1 delayed healing , 1 loose internal fixation</p> |
| Li <i>et al.</i> (8) | <p>SPG: heavy object impact: n=5; falling from height: n=3; car accidents: n=26;</p> | <p>SPG: A3(n=29), C2(n=11) 4 open fractures. DPG: A3(n=28), C2(n=12) 5 open fractures.</p> | <p>SPG: lateral approach; DPG: anterolateral approach; If the medial bone is damaged, it can be treated with double plate internal fixation.</p> | Small Locking titanium plate | <p>For those with significant bone loss, comminuted fractures, and</p> | <p>SPG:2 knee varus deformity;1 knee valgus deformity;1 plate fracture DPG: None</p> |

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| | <p>falling off electric bikes: n=6; DPG: heavy object impact: n=6; falling from height: n=2; car accidents: n=27; falling off electric bikes: n=5;</p> | | | | <p>medial fracture fragments, allograft bone grafting is performed.</p> | |
| Li <i>et al.</i> (9) | <p>Heavy object impact: n=10; Falling from height: n=20; Car accidents: n=23;</p> | <p>SPG:C2(n=14), C3(n=9) DPG:C2(n=20), C3(n=10) Both groups of patients have closed fractures.</p> | <p>SPG: lateral approach; DPG: lateral and medial approach; Appropriate locking screw and cortical bone screw fixation; Exploration and repair of knee ligament and meniscus injuries</p> | <p>reconstruction plate</p> | <p>SPG: The severity of the intraoperative fracture bone defect determines whether an autologous iliac bone graft is to be taken. DPG: autologous iliac bone graft</p> | <p>SPG:2 knee varus and valgus deformity;1 plate fracture DPG: None</p> |
| Gou <i>et al.</i> (210) | <p>SPG: traffic on the road: n=15; falling from height: n=2; Injury by fall: n=10; DPG: traffic on the road: n=19; falling from height: n=3; Injury by fall: n=12;</p> | <p>SPG: A2(n=10), A3(n=17) DPG: A2(n=14), A3(n=20) Distal medial femoral comminuted fracture with poor medial cortical continuity or support after repositioning or internal fixation</p> | <p>SPG: anterolateral approach , MIPO(n=23),mini open implantation (n=4); DPG: anterolateral approach , MIPO for both plates(n=34);</p> | <p>3.5mm reconstruction plate</p> | <p>NA</p> | <p>SPG:7 Malunion healing, 2 Nonunion; DPG:4 Malunion healing;</p> |

All fracture typing according to AO Foundation/Society of Orthopaedic Trauma classification; MIPO, minimally invasive plate osteosynthesis; PHILOS proximal Humerus Internal Locking System SPG, single plate group; DPG, double plate group

References

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