

World Journal of *Clinical Cases*

World J Clin Cases 2022 January 7; 10(1): 1-396



MINIREVIEWS

- 1 Omicron variant (B.1.1.529) of SARS-CoV-2: Mutation, infectivity, transmission, and vaccine resistance
Ren SY, Wang WB, Gao RD, Zhou AM
- 12 Hepatitis B virus reactivation in rheumatoid arthritis
Wu YL, Ke J, Zhang BY, Zhao D
- 23 Paradoxical role of interleukin-33/suppressor of tumorigenicity 2 in colorectal carcinogenesis: Progress and therapeutic potential
Huang F, Chen WY, Ma J, He XL, Wang JW

ORIGINAL ARTICLE

Case Control Study

- 35 Changes in rheumatoid arthritis under ultrasound before and after sinomenine injection
Huang YM, Zhuang Y, Tan ZM
- 43 Benefits of multidisciplinary collaborative care team-based nursing services in treating pressure injury wounds in cerebral infarction patients
Gu YH, Wang X, Sun SS

Retrospective Study

- 51 Outcomes and complications of open, laparoscopic, and hybrid giant ventral hernia repair
Yang S, Wang MG, Nie YS, Zhao XF, Liu J
- 62 Surgical resection of intradural extramedullary tumors in the atlantoaxial spine *via* a posterior approach
Meng DH, Wang JQ, Yang KX, Chen WY, Pan C, Jiang H
- 71 Vancomycin lavage for the incidence of acute surgical site infection following primary total hip arthroplasty and total knee arthroplasty
Duan MY, Zhang HZ
- 79 Distribution of transient receptor potential vanilloid-1 channels in gastrointestinal tract of patients with morbid obesity
Atas U, Erin N, Tazegul G, Elpek GO, Yıldırım B
- 91 Value of neutrophil-lymphocyte ratio in evaluating response to percutaneous catheter drainage in patients with acute pancreatitis
Gupta P, Das GC, Bansal A, Samanta J, Mandavdhare HS, Sharma V, Naseem S, Gupta V, Yadav TD, Dutta U, Varma N, Sandhu MS, Kochhar R

- 104** Influence of overweight and obesity on the mortality of hospitalized patients with community-acquired pneumonia
Wang N, Liu BW, Ma CM, Yan Y, Su QW, Yin FZ
- 117** Minimally invasive open reduction of greater tuberosity fractures by a modified suture bridge procedure
Kong LP, Yang JJ, Wang F, Liu FX, Yang YL
- 128** Increased levels of lactate dehydrogenase and hypertension are associated with severe illness of COVID-19
Jin ZM, Shi JC, Zheng M, Chen QL, Zhou YY, Cheng F, Cai J, Jiang XG
- 136** Age, alcohol, sex, and metabolic factors as risk factors for colonic diverticulosis
Yan Y, Wu JS, Pan S
- 143** Evaluation of right-to-left shunt on contrast-enhanced transcranial Doppler in patent foramen ovale-related cryptogenic stroke: Research based on imaging
Xiao L, Yan YH, Ding YF, Liu M, Kong LJ, Hu CH, Hui PJ
- 155** Characterization of focal hypermetabolic thyroid incidentaloma: An analysis with F-18 fluorodeoxyglucose positron emission tomography/computed tomography parameters
Lee H, Chung YS, Lee JH, Lee KY, Hwang KH

Clinical Trials Study

- 166** Low-dose intralesional injection of 5-fluorouracil and triamcinolone reduces tissue resident memory T cells in chronic eczema
Wu Y, Wang GJ, He HQ, Qin HH, Shen WT, Yu Y, Zhang X, Zhou ML, Fei JB

Observational Study

- 177** Alterations in blink and masseter reflex latencies in older adults with neurocognitive disorder and/or diabetes mellitus
Bricio-Barrios JA, Rios-Bracamontes E, Rios-Silva M, Huerta M, Serrano-Moreno W, Barrios-Navarro JE, Ortiz GG, Huerta-Trujillo M, Guzmán-Esquivel J, Trujillo X
- 189** Predicting adolescent perfectionism: The role of socio-demographic traits, personal relationships, and media
Livazović G, Kuzmanović K
- 205** Novel m.4268T>C mutation in the mitochondrial tRNA^{Leu} gene is associated with hearing loss in two Chinese families
Zhao LJ, Zhang ZL, Fu Y
- 217** Superior mesenteric venous thrombosis: Endovascular management and outcomes
Alnahhal K, Toskich BB, Nussbaum S, Li Z, Erben Y, Hakaim AG, Farres H

Randomized Controlled Trial

- 227** Zinc carnosine-based modified bismuth quadruple therapy *vs* standard triple therapy for *Helicobacter pylori* eradication: A randomized controlled study
Ibrahim N, El Said H, Choukair A

CASE REPORT

- 236 Acquired coagulation dysfunction resulting from vitamin K-dependent coagulation factor deficiency associated with rheumatoid arthritis: A case report
Huang YJ, Han L, Li J, Chen C
- 242 Intraoperative thromboelastography-guided transfusion in a patient with factor XI deficiency: A case report
Guo WJ, Chen WY, Yu XR, Shen L, Huang YG
- 249 Positron emission tomography and magnetic resonance imaging combined with computed tomography in tumor volume delineation: A case report
Zhou QP, Zhao YH, Gao L
- 254 Successful response to camrelizumab in metastatic bladder cancer: A case report
Xie C, Yuan X, Chen SH, Liu ZY, Lu DL, Xu F, Chen ZQ, Zhong XM
- 260 HER2 changes to positive after neoadjuvant chemotherapy in breast cancer: A case report and literature review
Wang L, Jiang Q, He MY, Shen P
- 268 Hyper-accuracy three-dimensional reconstruction as a tool for better planning of retroperitoneal liposarcoma resection: A case report
Ye MS, Wu HK, Qin XZ, Luo F, Li Z
- 275 Recurrent postmenopausal bleeding - just endometrial disease or ovarian sex cord-stromal tumor? A case report
Wang J, Yang Q, Zhang NN, Wang DD
- 283 Complex proximal femoral fracture in a young patient followed up for 3 years: A case report
Li ZY, Cheng WD, Qi L, Yu SS, Jing JH
- 289 Bilateral Hypertrophic Olivary Degeneration after Pontine Hemorrhage: A Case Report
Zheng B, Wang J, Huang XQ, Chen Z, Gu GF, Luo XJ
- 296 Clinical characteristics and outcomes of primary intracranial alveolar soft-part sarcoma: A case report
Chen JY, Cen B, Hu F, Qiu Y, Xiao GM, Zhou JG, Zhang FC
- 304 Removal of laparoscopic cerclage stitches *via* laparotomy and rivanol-induced labour: A case report and literature review
Na XN, Cai BS
- 309 Cerebral venous sinus thrombosis in pregnancy: A case report
Zhou B, Huang SS, Huang C, Liu SY
- 316 Eustachian tube teratoma: A case report
Li JY, Sun LX, Hu N, Song GS, Dou WQ, Gong RZ, Li CT

- 323** Protein-losing enteropathy caused by a jejunal ulcer after an internal hernia in Petersen's space: A case report
Yasuda T, Sakurazawa N, Kuge K, Omori J, Arai H, Kakinuma D, Watanabe M, Suzuki H, Iwakiri K, Yoshida H
- 331** Lunate dislocation with avulsed triquetral fracture: A case report
Li LY, Lin CJ, Ko CY
- 338** Clinical manifestations and prenatal diagnosis of Ullrich congenital muscular dystrophy: A case report
Hu J, Chen YH, Fang X, Zhou Y, Chen F
- 345** Diagnosis and guidance of treatment of breast cancer cutaneous metastases by multiple needle biopsy: A case report
Li ZH, Wang F, Zhang P, Xue P, Zhu SJ
- 353** Test of incremental respiratory endurance as home-based, stand-alone therapy in chronic obstructive pulmonary disease: A case report
Dosbaba F, Hartman M, Batalik L, Brat K, Plutinsky M, Hnatiak J, Formiga MF, Cahalin LP
- 361** Diagnostic and surgical challenges of progressive neck and upper back painless masses in Madelung's disease: A case report and review of literature
Yan YJ, Zhou SQ, Li CQ, Ruan Y
- 371** Suspected cerebrovascular air embolism during endoscopic esophageal varices ligation under sedation with fatal outcome: A case report
Zhang CMJ, Wang X
- 381** An atypical primary malignant melanoma arising from the cervical nerve root: A case report and review of literature
Shi YF, Chen YQ, Chen HF, Hu X
- 388** Epidural blood patch for spontaneous intracranial hypotension with subdural hematoma: A case report and review of literature
Choi SH, Lee YY, Kim WJ

ABOUT COVER

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Complex proximal femoral fracture in a young patient followed up for 3 years: A case report

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Abstract

BACKGROUND

Ipsilateral femoral neck and intertrochanteric fractures in young patients are extremely rare, and there is no reference for fracture classification and treatment options.

CASE SUMMARY

We report a 27-year-old male patient who sustained ipsilateral femoral neck and intertrochanteric fractures and was treated with a proximal femoral locking compression plate (PFLCP). The literature on these fractures was also reviewed. At the last follow-up three years after surgery, the patient had no obvious pain in the hip, and the range of motion in the hip joint was slightly limited, but met the normal life and work needs. There were no complications such as necrosis of the femoral head.

CONCLUSION

The PFLCP can be used to treat these complex proximal femoral fractures, and selection should be based on the patient's specific fractures.

Key Words: Young patients; Complex proximal femoral fracture; Reduction; Locking compression plate; Case report

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Core Tip: Ipsilateral femoral neck and intertrochanteric fractures in young patients are extremely rare. We report a 27-year-old patient who sustained ipsilateral femoral neck

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and intertrochanteric fractures and was treated with a proximal femoral locking compression plate. At the last follow-up three years after surgery, satisfactory outcomes were achieved. There were no complications such as necrosis of the femoral head.

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INTRODUCTION

Proximal femoral fractures (PFFs) are one of the most common orthopedic injuries, which mainly occur in the elderly and are uncommon in young people[1,2]. PFFs mainly refer to femoral head fracture, femoral neck fracture, and intertrochanteric fracture, while ipsilateral femoral neck and intertrochanteric fractures in young patients are extremely rare. PFFs in young patients are mostly caused by high-energy trauma[3,4]. The fracture mechanism, bone quality, and treatment requirements of young patients are different from those of elderly patients. Although there are a large number of reports of PFFs in elderly patients, there is no reference for the treatment of young patients, especially those with ipsilateral femoral neck and intertrochanteric fractures. Therefore, we report the case of a 27-year-old patient who sustained a complex proximal femoral fracture that involved ipsilateral femoral neck and intertrochanteric fractures. The literature on ipsilateral femoral neck and intertrochanteric fractures was also reviewed.

CASE PRESENTATION

Chief complaints

A 27-year-old male patient was admitted to the Department of Orthopedics of our hospital with left hip pain and limited mobility 5 h after a car accident.

History of present illness

The patient was involved in a car accident 5 h previously and underwent clinical and radiological examinations due to left hip pain and limited mobility.

History of past illness

The patient had no previous medical history.

Personal and family history

There was no previous medical history.

Physical examination

The patient's left lower limb showed external rotation malformation, which was shorter than that of the healthy side. The patient's peripheral sensation and blood flow were normal, and there were no clinical manifestations of vascular and nerve damage.

Laboratory examinations

No abnormalities were detected on preoperative examinations.

Imaging examinations

Radiological examinations including X-rays and three-dimensional computed tomography of bilateral hips showed that the femoral neck base fracture was accompanied by a greater trochanteric comminuted fracture, and the displacements were obvious (Figure 1).

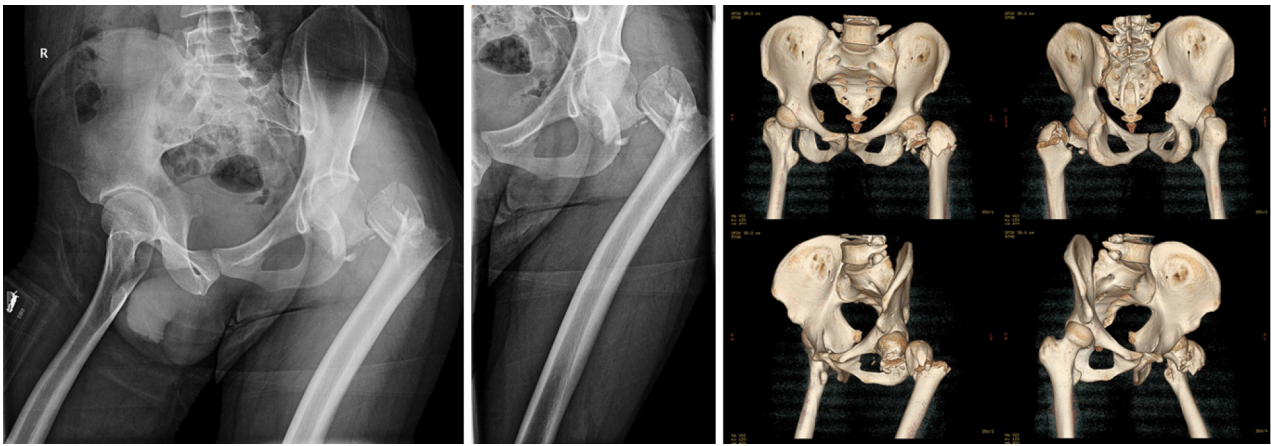


Figure 1 Radiographs before surgery. The X-rays and three-dimensional computed tomography scan of the anteroposterior and lateral hip joint showed that the femoral neck base fracture was accompanied by a greater trochanteric comminuted fracture, and the displacements were obvious.

FINAL DIAGNOSIS

Due to the lack of suitable fracture classification criteria, we defined the patient's fractures as complex proximal femoral fractures.

TREATMENT

Preoperative skeletal traction and symptomatic treatment

After confirming the patient's fractures, we immediately performed skeletal traction of the left lower extremity tibial tubercle and provided symptomatic treatment such as analgesia and elimination of swelling before surgery.

Surgical procedures

A collective discussion on the patient's condition and surgical plan was held which mainly consisted of selection of the internal fixation method. Considering the complicated fractures and obvious displacements, we planned to perform open reduction and internal fixation. The fixation methods for proximal femoral fractures mainly included intramedullary fixation such as proximal femoral nail anti-rotation (PFNA) and extramedullary fixation such as a proximal femoral locking compression plate (PFLCP). In order to ensure the success of the operation, we prepared both intramedullary and extramedullary fixation systems before surgery[5-9].

Following skin and soft tissue incision, the femoral neck base fracture and the greater trochanteric comminuted fracture were found under direct vision. We first used towel forceps and Kirschner wires to sequentially reduce and fix the proximal fractures, including the comminuted intertrochanteric fracture and femoral neck fracture. Then the distal and proximal femoral fractures were reduced by lower limb traction and temporarily fixed with Kirschner wires. The C-arm X-ray machine showed that the fracture reduction and cervico-diaphyseal angle of the femur were satisfactory. Considering that the greater trochanteric comminuted fracture was difficult to maintain by intramedullary fixation such as PFNA, the PFLCP was used. In addition, wire binding was used to strengthen fixation of the intertrochanteric comminuted fracture. Finally, the C-arm X-ray machine was used to further ensure anatomical reduction of the femoral neck and intertrochanteric fractures.

OUTCOME AND FOLLOW-UP

The patient received symptomatic treatment such as anti-infection and elimination of swelling after surgery. Postoperative X-rays showed that the fractures were well reduced, the cervico-diaphyseal angle of the femur was satisfactory, and the internal fixation position was normal (Figure 2A). The patient was discharged 1 wk after surgery and was instructed to rest in bed, raise the affected limb, strengthen lower limb muscle function by exercising and avoid weight-bearing. He was followed

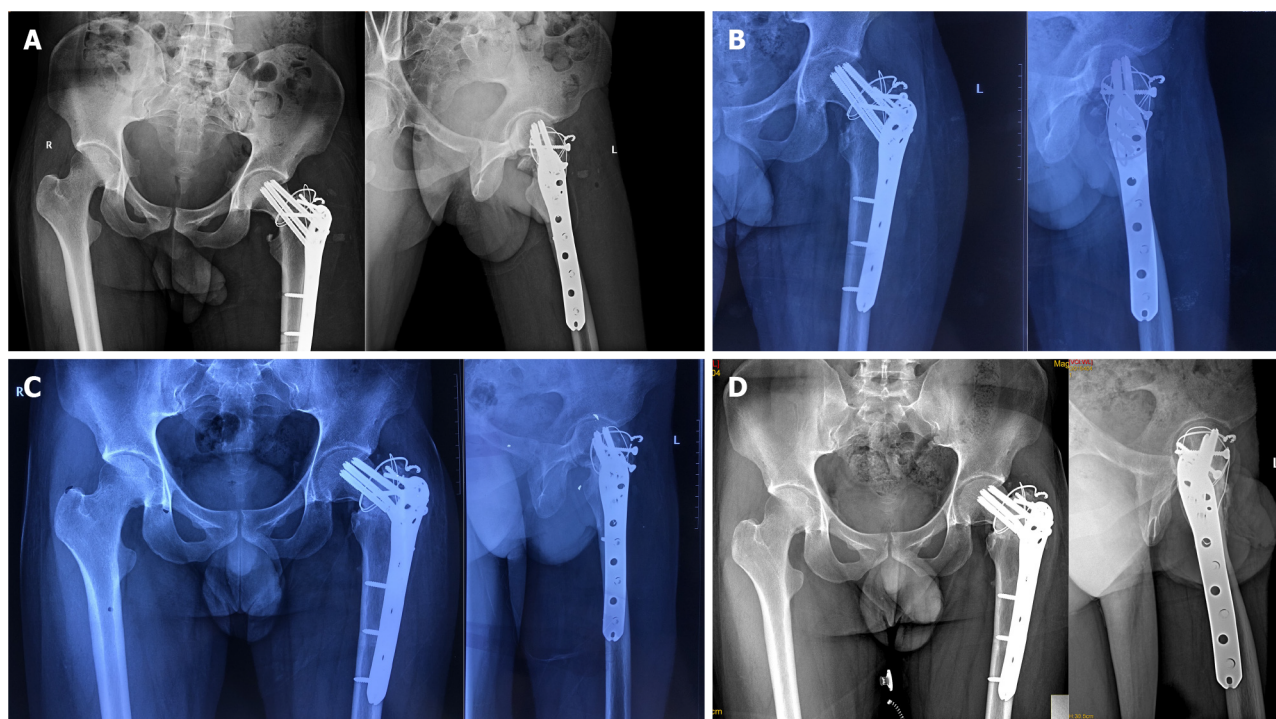


Figure 2 Radiographs after surgery. A: The postoperative X-rays showed that the fractures were well reduced, the cervico-diaphyseal angle of the femur was satisfactory, and the internal fixation position was normal; B: The X-rays of 3 mo after surgery showed that the fracture lines were blurred; C: The X-rays of 12 mo after surgery showed that the fractured end of the femoral neck had collapsed, the cervico-diaphyseal angle had reduced, and the fracture lines were blurred; D: The X-rays of 24 mo were similar to those at 12 mo postoperatively, and the hip varus deformity did not significantly worsen.

regularly, including physical and radiological examinations.

At 1 mo postoperatively, X-rays showed that a small amount of callus had formed around the greater trochanter, and the internal fixation position was normal. The Harris Hip Score (HHS) was 39. The patient was instructed to perform lower limb functional exercise without weight-bearing in bed.

At 3 mo postoperatively, X-rays showed that the fracture lines were blurred (Figure 2B). The HHS was 62. The patient was permitted to walk with partial weight-bearing using a walker, and gradually increase weight-bearing.

At 12 mo postoperatively, X-rays showed that the fractured end of the femoral neck had collapsed, the cervico-diaphyseal angle had reduced, and the fracture lines were blurred (Figure 2C). The fractures had healed completely, and complications such as hip varus deformity and slight limitation in the range of motion of the hip joint were observed. However, there were no complications such as necrosis of the femoral head and hip pain. The HHS was 91. The patient did not engage in exercise-related work, and his hip function after surgery met his life and work needs.

At 24 mo (Figure 2D) and 36 mo postoperatively, X-rays were similar to those at 12 mo postoperatively, and the hip varus deformity did not significantly worsen. The HHS was 93. No complications such as necrosis of the femoral head and hip pain were observed.

DISCUSSION

Fractures such as PFFs mainly occur in the elderly, mostly due to low-energy injury. However, high-energy injuries, such as car accidents and fall injuries, have led to an increasing number of PFFs in young patients[1,3]. PFFs mainly include femoral head fracture, femoral neck fracture, and intertrochanteric fracture. Cannulated screw internal fixation is most commonly used for femoral neck fracture in young patients [10]. Non-weight bearing is required for at least 8 wk after surgery, and weight bearing is resumed gradually when the radiological examination shows fracture healing progress[10-13]. The most common complications include nonunion, varus collapse, limb shortening, and osteonecrosis[10-13]. PFNA internal fixation is most frequently used for intertrochanteric fracture in young patients, and the patients are advised to get out of bed as soon as possible for gradual weight bearing training[8,9].

The most common complications include limb shortening and coxa vara[8,9]. Anatomical reduction, effective internal fixation, and rehabilitation exercises are the main strategies to avoid complications. The ipsilateral femoral neck and intertrochanteric fractures in young patients are extremely rare, and there is no good reference for the classification and internal fixation of this complex proximal femoral fracture.

The goal of treatment in young patients with PFFs is to preserve the femoral head and prevent osteonecrosis and pseudoarthrosis to avoid total hip replacement[14]. The early treatment and correct choice of implant to achieve anatomical reduction and effective internal fixation are essential. The fixation methods for intertrochanteric fracture in young patients mainly include PFNA and PFLCP[5-9].

In 2016, Giancola *et al*[14] reported a 39-year-old patient with a complex proximal femoral fracture that involved the neck and trochanteric region. The multifragmentary comminution of the femoral neck associated with rupture of the greater trochanteric region, without involving the lesser trochanter was treated with skeletal traction in the first stage and then implantation of an intramedullary nail. Twenty months after surgery, the fractures were healed and the patient was able to walk and run without pain. Giancola *et al*[14] suggested that early surgery and suitable internal fixation options were essential in the treatment of the patient and the transverse component of the proximal femur fracture determined the choice of intramedullary nail.

In 2018, Su *et al*[15] reported two cases of ipsilateral femoral neck and intertrochanteric fractures with posterior dislocation of the hip. A 38-year-old patient was diagnosed with femoral neck fractures, intertrochanteric fractures, and dislocation of the hip, and was finally treated with skeletal traction in the first stage and then internal fixation with a LCP. However, one year after surgery, the patient developed hip pain and osteonecrosis of the femoral head. Seven years after surgery, the patient suffered from hip pain and refused further examination and treatment. Another 29-year-old patient was diagnosed with ipsilateral femoral neck fractures and intertrochanteric fractures with posterior dislocation of the hip. Preoperative traction was not used, and the patient was treated with internal fixation using a LCP. After 3 years of follow-up, the patient had good hip function and no complications such as hip pain and necrosis of the femoral head. Su *et al*[15] suggested that internal fixation should be selected according to the specific fracture conditions of each patient. The fractures in these two patients were complicated and split vertically. A LCP is a strong structure for stable vertical shear fracture of the femoral neck. In addition, close contact with the bone surface is unnecessary and it can be bent to match the femoral shape, thus protecting the blood supply of the periosteum.

In this study, we report a 27-year-old male patient who was involved in a car accident. The radiological examinations showed that the femoral neck base fracture was accompanied by a greater trochanteric comminuted fracture, and the displacements were obvious. After confirming the patient's fractures, skeletal traction of the left lower extremity tibial tubercle was performed and he received symptomatic treatment such as analgesia and elimination of swelling before surgery. Considering that the greater trochanteric comminuted fracture was difficult to maintain by PFNA, a PFLCP was used[2,16,17]. In addition, a PFLCP can be used as a stress barrier in the lateral wall of the trochanter to prevent lateral movement of the proximal femoral fracture fragments, and has a strong antagonistic effect on the rotation and bending of the femoral neck. The multiple locking screw holes of the PFLCP provide a variety of options to overcome any complex fracture pattern and can minimize pressure on the periosteum, thereby promoting rapid biological healing[3,9,18].

Postoperative X-rays showed that the fractures were well reduced, the cervico-diaphyseal angle was satisfactory, and the internal fixation position was normal. At the last follow-up three years after surgery, the patient had no obvious pain in the hip, and the range of motion of the hip joint was slightly limited, but it met the normal life and work needs of the patient. The HHS was 91. X-ray examinations showed that the fractured end of the femoral neck had collapsed, the cervico-diaphyseal angle had reduced, and a hip varus deformity was observed. However, there were no complications such as necrosis of the femoral head. The patient was satisfied with the prognosis of the fractures.

CONCLUSION

Ipsilateral femoral neck fractures and intertrochanteric fractures in young patients are extremely rare and lack appropriate fracture classification criteria and treatment

guidelines. Therefore, this type of case report is of great significance. Early diagnosis and treatment, as well as appropriate internal fixator selection, are essential for the treatment of such complex fractures. As an important treatment before surgery, skeletal traction should be performed as soon as possible. A PFLCP can be used to treat this complex proximal femoral fracture, and selection should be based on the patient's specific fractures.

REFERENCES

- 1 Nieves JW, Bilezikian JP, Lane JM, Einhorn TA, Wang Y, Steinbuch M, Cosman F. Fragility fractures of the hip and femur: incidence and patient characteristics. *Osteoporos Int* 2010; **21**: 399-408 [PMID: 19484169 DOI: 10.1007/s00198-009-0962-6]
- 2 Robinson CM, Court-Brown CM, McQueen MM, Christie J. Hip fractures in adults younger than 50 years of age. Epidemiology and results. *Clin Orthop Relat Res* 1995; 238-246 [PMID: 7634609]
- 3 Ibrahim S, Meleppuram JJ. A retrospective analysis of surgically-treated complex proximal femur fractures with proximal femoral locking compression plate. *Rev Bras Ortop* 2017; **52**: 644-650 [PMID: 29234646 DOI: 10.1016/j.rboe.2016.12.012]
- 4 Askin SR, Bryan RS. Femoral neck fractures in young adults. *Clin Orthop Relat Res* 1976; 259-264 [PMID: 1261119]
- 5 Li AB, Zhang WJ, Wang J, Guo WJ, Wang XH, Zhao YM. Intramedullary and extramedullary fixations for the treatment of unstable femoral intertrochanteric fractures: a meta-analysis of prospective randomized controlled trials. *Int Orthop* 2017; **41**: 403-413 [PMID: 27722824 DOI: 10.1007/s00264-016-3308-y]
- 6 Griffin XL, Costa ML, Phelps E, Parsons N, Dritsaki M, Png ME, Achten J, Tutton E, Lerner R, McGibbon A, Baird J. Retrograde intramedullary nail fixation compared with fixed-angle plate fixation for fracture of the distal femur: the TrAFFix feasibility RCT. *Health Technol Assess* 2019; **23**: 1-132 [PMID: 31549959 DOI: 10.3310/hta23510]
- 7 Tazawa R, Minehara H, Matsuura T, Kawamura T, Sakai R, Yoshida K, Inoue G, Takaso M. Biomechanical evaluation of internal fixation for the treatment of comminuted subtrochanteric femur fractures. *J Orthop Sci* 2021; **26**: 261-265 [PMID: 32245694 DOI: 10.1016/j.jos.2020.03.002]
- 8 Andalib A, Etemadifar M, Yavari P. Clinical Outcomes of Intramedullary and Extramedullary Fixation in Unstable Intertrochanteric Fractures: A Randomized Clinical Trial. *Arch Bone Jt Surg* 2020; **8**: 190-197 [PMID: 32490050 DOI: 10.22038/abjs.2019.34942.1919]
- 9 Zang W, Liu PF, Han XF. A comparative study of proximal femoral locking compress plate, proximal femoral nail antirotation and dynamic hip screw in intertrochanteric fractures. *Eur Rev Med Pharmacol Sci* 2018; **22**: 119-123 [PMID: 30004556 DOI: 10.26355/eurrev_201807_15373]
- 10 Sun H, Shu LY, Sherrier MC, Zhu Y, Liu JW, Zhang W. Decreased complications but a distinctive fixation loosening mechanism of fully threaded headless cannulated screw fixation for femoral neck fractures in young adults. *J Orthop Surg Res* 2021; **16**: 234 [PMID: 33785020 DOI: 10.1186/s13018-021-02335-3]
- 11 Duffin M, Pilson HT. Technologies for Young Femoral Neck Fracture Fixation. *J Orthop Trauma* 2019; **33** Suppl 1: S20-S26 [PMID: 30540668 DOI: 10.1097/BOT.0000000000001367]
- 12 Yang Q, Chen N, Fu W. External fixation via the anterior inferior iliac spine for proximal femoral fractures in young patients. *Open Med (Wars)* 2021; **16**: 1101-1108 [PMID: 34414283 DOI: 10.1515/med-2021-0295]
- 13 Fan Z, Huang Y, Su H, Jiang T. How to choose the suitable FNS specification in young patients with femoral neck fracture: A finite element analysis. *Injury* 2021; **52**: 2116-2125 [PMID: 34154816 DOI: 10.1016/j.injury.2021.05.043]
- 14 Giancola R, Marchesi LP, Lettera MG, Antonini G. A complex proximal femoral fracture. *Injury* 2016; **47** Suppl 4: S121-S123 [PMID: 27612404 DOI: 10.1016/j.injury.2016.07.049]
- 15 Su C, Liu Y, Wu P, Yuan J, Lang J, Wu C, Zhang Y, Chen L. Ipsilateral femoral neck and intertrochanteric fractures with posterior dislocation of the hip: A report of two cases. *J Orthop Surg (Hong Kong)* 2020; **28**: 2309499019900449 [PMID: 32336196 DOI: 10.1177/2309499019900449]
- 16 Gotfried Y. The lateral trochanteric wall: a key element in the reconstruction of unstable pertrochanteric hip fractures. *Clin Orthop Relat Res* 2004; 82-86 [PMID: 15292791]
- 17 Palm H, Jacobsen S, Sonne-Holm S, Gebuhr P; Hip Fracture Study Group. Integrity of the lateral femoral wall in intertrochanteric hip fractures: an important predictor of a reoperation. *J Bone Joint Surg Am* 2007; **89**: 470-475 [PMID: 17332094 DOI: 10.2106/JBJS.F.00679]
- 18 Egol KA, Kubiak EN, Fulkerson E, Kummer FJ, Koval KJ. Biomechanics of locked plates and screws. *J Orthop Trauma* 2004; **18**: 488-493 [PMID: 15475843 DOI: 10.1097/00005131-200409000-00003]



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