

Original Article

Surgical treatment of trochanteric fractures: An Ivorian experience

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Abstract

Background: Trochanteric fractures have become a major focus of orthopaedic interest. Surgical management is the best option for treating such fractures.

Objective: To present our experience with the surgical treatment of trochanteric fractures with special attention to short-term results.

Design: A retrospective study performed between 1993 and 2002.

Setting: Department of orthopaedics surgery, Yopougon teaching hospital, Abidjan, Côte d'Ivoire.

Patients and methods: There were 48 men and 17 women with a mean age of 44 years at the moment of the injury. Road traffic accident was the main cause of fractures accounting for 42 cases. Mean preoperative delay was 22 days.

Surgical implants used were the Judet screw plate and Küntscher nail.

Results: Postoperative death occurred in three cases. Fracture healing was achieved in 57 patients at an average of four months. Malunion and displacement into varus was noticed in 11.7% of patients. Infection occurred in seven patients, wound hematoma in eight and decubital ulcer in five.

Conclusions: Trochanteric fractures in our environment are caused by severe trauma. These injuries could be managed surgically with simple methods that are readily available with immediate satisfactory outcome.

Keywords: Trochanteric fractures , surgical care Judet Screw plate, Küntscher nail, Complications.

Introduction

Surgery is important in the management of trochanteric fractures (TFs) because it speeds up rehabilitation and reduces morbidity with early discharge of the patient reducing the complications of prolonged bed rest associated with traction. Since hip fractures most commonly occur in the elderly¹, reports on results of operative treatment deal in general with complications, mortality and fracture healing.¹⁻⁵ In most underdeveloped countries, the follow-up of patients after discharge from the hospital is neither scrupulous nor scheduled at regular intervals so that long-term results assessment in any retrospective study is difficult due to the limited number of patients. This situation stands out because of socioeconomic conditions such as poverty, transportation of patients from remote areas, and influence of traditional practitioners. This retrospective study is set out to

present our experience with the surgical treatment of TFs, by focusing on short-term results.

Patients And Methods

A retrospective study of adult patients with TFs referred to and treated surgically at our institution was conducted. Patients presented between 1993 and 2002. Pathological fractures and fractures treated with orthopaedic means were excluded. A minimum of three months of follow-up from the time of operation was the criterion for inclusion in this study. 65 patients were suitable for inclusion in this study. There were 48 (73.8%) men and 17 (26.2%) women. The age range was 16 - 88 years (mean 44 years). Fractures were the result of a

Imp	B/c	Petro	Troch/dia	Subtroch
Nail	0	0	0	25
plat	4	22	11	2
Scre	1	0	0	0

Table 1 Implant and fracture location

Key: **Imp**: implants Scr:screw **Plat**:plating üntscher nailing (Retrograde), **B/c**: Basicervical, **Petroc**: Pertrochanteric, **Troch/diaph**: Trochanterodiaphyseal, **S/troch**: Subtrochanteric

road traffic accident in 42 cases (64.6%) ,fall from standing position in 11 (16.9%), fall from a height in seven (10.8%), sports-related accident in two (3.1%), an assault in one (1.5%), and an attack in two (3.1%). They were able to ambulate alone out of doors mostly without walking aids. There were existing medical comorbidities including cardiovascular diseases in eight patients, diabetes in four, and chronic lung diseases in two. Fractures were classified according to the site of the fracture line. .The mean interval between injury and presentation was two weeks. Thirty-three (50.8%) patients presented within the first 24 hours after the injury; eight (12.3%) on referral from private clinics, while twenty-four (36.9%) had an initial treatment by traditional practitioners before electing to seek orthodox specialist advice. Twenty-four (36.9%) of these patients had other skeletal injuries in addition to the TF, thus reflecting the high-energy type of the trauma All associated injuries were managed as needed and appropriately. Patients underwent surgery once they were deemed medically stable. All patients received subcutaneous low molecular weight heparin as prophylaxis against thromboembolism. Antibiotic prophylaxis for 72 hours starting at induction of anaesthesia was used routinely in all cases. The average duration to operation upon admission was 22 days. Open reduction was performed in all cases under general anesthesia on a standard operating table. Patients were placed in a lateral position when treating subtrochanteric fractures, using a lateral approach. Other fractures were accessed either through the Watson-Jones approach in the supine position or a lateral approach, patients in the lateral recumbent position. Choice of the type of position depended on the preferences of the surgeon. Surgical options are summarised in Table 1. At the completion

Discussion

This study aimed at evaluating mainly the short-term results when treating surgically TFs. As TFs generally heal by three months, the minimum length of follow-up of three months that seems to be too short for clinical data to be evaluated is sufficient to assess the occurrence of main mechanical postoperative

of the surgical procedure for subtrochanteric fractures, a below knee plaster cast with an anti- rotation bar was routinely placed for a duration of forty-five days. Patients with associated hip fractures wore a hip spica cast for a duration of three weeks .Unless the associated injuries or the medical conditions contraindicated it, the patients were allowed to get out of bed on the third postoperative day. After discharge usually two to three weeks after fixation, non-weight-bearing with walking aids was prescribed until the fracture showed radiological evidence of healing. Only then was full weight-bearing encouraged.

Results

Intraoperatively, comminution of the proximal fragment occurred in three patients with subtrochanteric fractures treated by intramedullary nailing. This complication was ascribed to an unnoticed longitudinal crack of the proximal fragment. Reoperation was necessary for a patient since the femoral head was penetrated intraoperatively by screws. Decubital ulcers occurred in five patients post operative. Superficial wound infection encountered in five patients resolved uneventfully with dressing and antibiotics. Two patients had a deep infection which was managed by surgical débridement. Eight patients developed wound haematoma which required evacuation and débridement under general anesthesia in six patients. Two patients aged respectively 65 and 70 years died 24 hours after the surgery. They had comorbid factors and death was probably due to pulmonary embolism. One patient died during the first week after operation. The cause of death was pneumonia. The follow-up of the remaining 62 patients was at least five months. Fracture healing was achieved in 57 patients at an average of four months (range three to five months). Malunion in varus was seen in six of these patients whose fractures united. Five patients with subtrochanteric fractures developed a pseudo-arthritis as a result of breakage of the nail with displacement into varus . Two patients could be re-operated on using Judet screw-plate with fracture healing . All eleven patients with varus had associated limb shortening with limping. At that time, thirty patients were able to mobilise fully with walking aids. Eighteen could mobilised without support. No patient needed change of housing on account of his condition

complications that usually occur between the third and the tenth month after the surgical procedure.

One must take into account the fact that patients customarily do not visit the surgeon once fracture healing is obtained. On the other hand, with a longer follow-up the number of patients would have most likely decreased significantly in our environment

mostly for socio-economic reasons. The patients age appear as to be important in the overall outcome. Patients in the current study were most often young males, sustaining a traffic road accident. The 30-59 years age group constituted 63.1% of those with TFs. This is different from Western reports which describe hip fractures in general as a disease of the elderly female victim usually as a result of fall.^{1,5} In Africa, observations are not consistent and there is no uniform pattern of in most reports⁶⁻⁸. There may be an influence of several factors in Africa including, socioeconomic, cultural, degree of urbanisation and other population characteristics.⁹ Most TFs are unstable and difficult to manage because of enormous mechanical stresses at the proximal femur.¹⁰ The diversity of fixation devices illustrates the difficulties encountered in the actual treatment.¹¹ Two main surgical implants were available when treating such fractures in our service, namely the Küntscher nail and the Judet screw-plate. The major concern with the latter device arises while inserting the lower oblique epiphyseal screw. The hurdles are the proximal screws which are horizontal. However, it had the advantage of being used in all cases of TFs and when faced with a patient who sustained a basicervical fracture associated with a fracture of the proximal part of the femoral diaphysis.¹² As open reduction was carried out in all patients, satisfactory anatomical results could be achieved in most of them. Malunion was the consequence of delaying the surgical management. Indeed, fracture healing has begun. Thus, the surgical procedure is technically demanding resulting often in a poor reduction. Malunion and displacement into varus are frequent complications of treatment. In our series 11 out of the 62 (17.7%) fractures displaced into varus causing shortening of the leg with limping. All implant failures occurred in subtrochanteric fractures and these fractures were stabilised by Küntscher nail. In most cases, there was a comminution of the medial cortex. Unfortunately we had failed to perform bone graft as recommended by Sheta.⁸ It seems therefore that Küntscher nail is

suitable in the fixation of fractures in this region as this area is subject to high torque and shear stresses resulting in high rates of implant failure. If intramedullary nailing is chosen, locked nail that overcomes the tendency of the proximal fragment to drift into varus, controls the rotation of the distal fragment, and prevents the shortening should be preferred.¹³ The problem with the interlocking nail is that its proximal locking is not strong enough for fixation of complex subtrochanteric fractures with extension to the trochanteric region.¹⁴ Because follow-up was limited, we could not be absolutely certain that no other mechanical problems arose subsequently and were taken care of by other hospitals. The problem of death is one that will crop up during any discussion of hip fracture management. It is widely recognised that age and associated medical conditions have a significant relationship with mortality in patients with hip fractures. Death was noticed in old patients. We cannot speculate about its rate since other cases had probably occurred at home after the last consultation. The relationship between an operative delay and outcome is still debated.^{1,2,5} The prospective study by Parker and Pryor¹ suggested that delaying the operation beyond 48 hours did not increase the mortality, but associated with significant morbidities such as pressure sores. Late presentation was one significant feature in our practice causing undue delay in correcting any medical condition. Our centre is not adequately staffed equipped with state of the art equipment and the outcome may be related. Patients relation are seen supporting in some of the duties assigned to the nursing staff because the wards are usually understaffed It can be concluded from this study that TFs in our environment are caused by severe trauma involving the young and active individual looking for a livelihood. It presents a formidable challenge to the orthopaedic surgeons. Many complications are related to technical errors, meticulous surgical intervention accompanied by a good reduction with the simple methods available can produce promising and encouraging results.

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