

Bilateral simultaneous symmetrical intertrochanteric fracture

Anish Agarwalla¹, Saumya Agarwal¹, Mukul Mohindra²

From ¹Senior Resident, ²Assistant Professor, Department of Orthopaedics, Central Institute of Orthopaedics (CIO), Vardhman Mahavir Medical College (VMMC) & Safdarjung Hospital, New Delhi, Delhi, India

Correspondence to: Dr. Saumya Agarwal, Department of Orthopaedics, 16, D Old Fatehpura, Near Seva Mandir, Udaipur - 313001, Rajasthan, India. E-mail: saumyathecalyx.agarwal@gmail.com

Received - 14 January 2019

Initial Review - 28 February 2019

Accepted - 04 March 2019

ABSTRACT

A simultaneous bilateral intertrochanteric femur fracture is an extremely rare injury and there is paucity in the literature reporting the best outcome with a bilateral surgery or a staged fixation. Here, we report the case of a 55-year-old male who sustained bilateral intertrochanteric femur fracture and operated in a staged manner with Dynamic Hip screw (DHS). After 6 months of surgery, the patient was allowed to full weight bear and return to his routine office work.

Keywords: *Bilateral, Dynamic hip screw, Femur, Fracture, Intertrochanteric.*

Bilateral intertrochanteric femur fracture is a rare injury with an incidence of 0.3 percent and a symmetrical pattern has seldom been reported [1]. In the elderly population, these fractures occur following a trivial trauma; while in younger individuals, it occurs following a high-energy trauma [2]. When compared with unilateral intertrochanteric fractures, morbidity associated with bilateral fractures is much more and management is consequently more challenging.

Hemodynamic instability, risk of fat embolism, technical difficulties in performing bilateral surgery is some of the major concerns. In addition, controversies exist in many more aspects of surgery such as simultaneous or staged fixation, choice of implant (intramedullary or extramedullary), appropriate timing of the procedure. We report a case of bilateral simultaneous symmetrical fracture managed with the same implant (Dynamic hip screw) in a staged manner. The rarity of the injury and the difficulties associated with its management propelled us to report our experience with this unique case.

CASE REPORT

A 55-years-old male presented to the emergency two hours after having sustained a road traffic accident. The patient was a pillion rider on a motorcycle and there was a head-on collision with a tree. With the patient holding the driver, with both his feet rooted to the footrest, this simulated a dashboard injury, with the impact travelling from both the feet to reach the hips. When the patient reached the emergency department, he complained of severe pain in both the hips and was unable to stand. There were no comorbidities in the form of hypertension, thyroid disorder, diabetes mellitus, or coronary artery disease. The patient had a blood pressure of 92/66 mm of Hg and the pulse rate of 114/min. He had no external injuries

but had severe tenderness in the peritrochanteric region, with both the lower limbs lying in external rotation.

The patient was immediately resuscitated according to Advanced Trauma Life Support (ATLS) protocol, and trauma series radiographs (cervical spine anteroposterior (AP) and lateral, pelvis with both hip AP and chest AP) were obtained. The radiograph of the pelvis (Figure 1) revealed bilateral type II (Boyd and Griffin) [3] intertrochanteric femur fractures. Traction via upper tibial pin was applied bilaterally. Routine pre-anaesthetic investigations were done. Patient's hemoglobin was on the lower side (8.4 g/dl), necessitating transfusion of two units of whole blood to build up the loss.

The patient was posted for fixation on the right hip on the third-day post-injury. The fracture on the right side was fixed with a dynamic hip screw with an anti-rotation screw for added stability. The patient was closely monitored in the postoperative period and after one week the other side was operated, using the same implant assembly (Figure 2). In the immediate postoperative period, the patient was mobilized on a wheelchair. After 3 weeks, walker assisted ambulation was started, which progressed to unassisted full weight by 3 months when the radiograph showed acceptable signs of union. At 6 months, full weight bearing was started and the patient started going to the office.

DISCUSSION

Bilateral intertrochanteric femur fracture is a rare entity with an incidence being 0.3% [1] that can occur in pathological conditions like multiple myeloma, chronic renal failure, osteomalacia or rarely during a tonic phase of an epileptic fit [4-7]. Leaving the pathological fractures aside, very few pure traumatic cases have been reported so far [8-10]. In most of these reports, the injury was sustained after a fall from height in a seated position.



Figure 1: Preoperative X-ray of the Pelvis with bilateral hip anteroposterior view showing bilateral intertrochanteric femur fracture of similar pattern.

However, in our case the fractures were symmetrical and exactly the mirror image of one another owing to the unique mechanism of injury that simulated a dashboard injury pattern. When the bike collided, both feet got stuck in a sitting position and the impact got transmitted to both hips.

Hemodynamic instability and fat embolism syndrome, although uncommon, are the initial challenges that need to be immediately addressed. Even mortality has been reported to occur in a few reports, hence high concern of the attending surgeon is vital to the survival of these patients [6,10]. Once the patient is stable, the next step is to rule out the pathological fracture, especially when the severity of trauma is low. The underlying pathology needs to be addressed in these cases [4-6]. Once the patient is appropriately investigated, a final treatment plan is prepared.

The timing of surgery, choice of implant, simultaneous or staged fixation is the vital decisions that rest with the operating surgeon. Since most such patients are hemodynamically compromised upon reaching the hospital, resuscitation and splinting the limbs plays a pivotal role in the early management [7,9]. Regarding definitive surgery, early total care should be avoided but on the other hand, definitive surgery should not be unduly delayed keeping in mind the complications of recumbency and immobilization. In other words, a balance should be struck. Owing to the paucity of the literature, the question of whether to fix both the fractures simultaneously or in a staged manner remains a matter of debate. Most authors have fixed the fractures in a single stage [2,7,9] but we feel that fixing two intertrochanteric fractures in the same sitting is technically difficult.

The position of the patient on a fracture table needs to be adjusted between surgeries which will need re-draping thereby increasing the operative time. In addition, re-positioning of the image intensifier will be needed which will further delay the procedure. Also, blood loss will be more and the time the patient should be under anesthesia will increase. All these factors can contribute to the dreaded complication of postoperative wound infection and one may even



Figure 2: Post-operated X-ray of the Pelvis with bilateral hip anteroposterior view showing bilateral Intertrochanteric femur fracture managed with dynamic hip screw and derotation screw

end up losing the patient. Therefore a staged procedure for fixing up the fractures is recommended. Harshvardhan *et al* [8] fixed the two fractures a week apart in the patient they managed successfully. In our case, the right side fracture was operated on the third day and the left side was operated a week later.

Choice of the implant is critical and should be kept simple. Though intramedullary implant is biomechanically better than sliding hip devices it should be used only when the morphology of the fracture demands so, because it requires more surgical time and expertise. In a patient who had undergone a major hemodynamic compromise and who has to undergo one more surgery, it is better to err on the side of a simpler implant to which the surgeon is more accustomed. Also, Dynamic hip screw (DHS) is still considered the gold standard for stable intertrochanteric fractures by many trauma surgeons. This approach is very well evident from Table 1, which clearly depicts that a dynamic hip screw has been the implant of choice for most authors.

Rehabilitation of these patients also should not be as aggressive as in unilateral cases [8,10]. But at the same time immobilization for long poses greater risks in the form of atelectasis, pneumonia, bed sores and deep venous thrombosis. So, one needs to be aggressive yet sensible. We mobilized our patient immediately, but on a wheelchair to ensure no stress on the fracture and implant. Walker assisted mobilization was started early, at around 3 weeks but full weight bearing was allowed only after the radiological union was satisfactory (at 6 months).

CONCLUSION

To conclude, we would say that simultaneous bilateral intertrochanteric fractures should ideally be managed with

Table 1 - Table depicting management of similar cases by other authors

Author	Cases	S. No.	Age/Sex/Mode of injury	No. of surgeries	Type of surgery done
Vinit Verma <i>et al</i> [10]	4	Case 1	65 y/F/ Runover by tractor	1	DHS right side, DCS left side
		Case 2	40y/M/Runover by bus	1	Died of fat embolism preoperatively
		Case 3	40y/M/ Road traffic accident	1	DHS with derotation screw bilaterally
		Case 4	60y/F/Fall on ground in seated position	1	Bilaterally DHS
Harshvardhan <i>et al</i> [8]	1	Case 1	40y/M/Dashboard injury	2 (1 week apart)	DHS Left side, DCS Right side
Andueza EN [9]	2	Case 1	67y/M/Fall on ground in seated position	1	DCS Right side, conservative Left side
		Case 2	69y/M/Fall on ground in seated position	1	DCS Right side, conservative Left side
Aysha Rajeev [2]	1	Case 1	92y/F/Spontaneous	Not specified	DHS both sides
Suh KT <i>et al</i> [5]	1	Case 1	28y/M/seizure	1	DHS Right side, conservative Left side
Copuroglu C <i>et al</i> [7]	1	Case 1	82 y/F/seizure	1	Bilateral hemiarthroplasty
Omer Akcali <i>et al</i> [6]	1	Case 1	73y/M/seizure	1	DHS Left side, Right side - died of cardiorespiratory arrest during preoperative period

DHS: Dynamic Hip Screw, DCS: Dynamic Condylar Screw

staged surgery, generally a week apart, with the simplest possible implant only after the patient is aggressively resuscitated and stabilized.

REFERENCES

1. Grisoni N, Foulk D, Sprott D. Simultaneous bilateral hip fractures in a level one trauma center. *J Trauma* 2008;65:132-5.
2. Aysha Rajeev. Bilateral spontaneous inter-trochanteric fractures of proximal femurs. *Int J Surg Case Rep* 2014;5:246-8.
3. Boyd H B, Griffin L L. Classification and treatment of Trochanteric Fractures. *Arch Surg* 1949;58:853-66.
4. Percin S, Candan F, Yilmaz A. Simultaneous bilateral trochanteric fractures during squatting in a patient with multiple myeloma. *Eur J Cancer Care(Engl)* 2005;14:185-7.
5. Suh KT, Kang DJ, Lee JS. Bilateral intertrochanteric fractures after surgical treatment of bilateral femoral neck fractures secondary to hypocalcemic convulsions with chronic renal failure: a case report and review of the literature. *Arch Orthop Trauma Surg* 2006;126:123-6.
6. Akcali O, Kosay C, Gunal I, Alici E. Bilateral trochanteric fractures of the femur in a patient with chronic renal failure. *Int Orthop* 2000;24:179-80.
7. Copuroglu C, Ozcan M, Dulger H, Yalniz E. Late-diagnosed bilateral intertrochanteric femur fracture during an epileptic seizure. *Ulus Travma Acil Cerrahi Derg* 2012;18:92.
8. Harshvardhan J, Prabhakar M. A case of bilateral simultaneous traumatic intertrochanteric fracture in a young patient due to dashboard injury. *The Internet Journal of Orthopedic Surgery* 2007; 10.
9. Edgar Nieto-Andueza: Traumatic Simultaneous Bilateral Trochanteric Fractures- Two Cases *J. Orthopaedics* 2005;2(2)e4.
10. Verma V, Kundu ZS, Batra A, Singh R, Sangwan SS, Gupta P. Simultaneous bilateral trochanteric fractures: A report of four cases. *Chinese Journal of Traumatology* 2012;15:360-3.

Funding: None; Conflict of Interest: None Stated.

How to cite this article: Agarwalla A, Agarwal S, Mohindra M. Bilateral simultaneous symmetrical intertrochanteric fracture. *Indian J Case Reports*. 2019;5(2):117-119.

Doi: 10.32677/IJCR.2019.v05.i02.008