

Case Report

Bilateral patella fracture with unilateral refracture: a case report

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ABSTRACT

Patella fracture consists of approximately 1% of all skeletal fractures. However bilateral patella fracture is rare (2-3% of all patella fractures) and is seen mostly in either dash board injuries or in different pathological conditions. A 21 year old male presented with bilateral patella fracture, where right patella was fractured due to RTA and the left one got fractured due to a fall while he was being helped for an X-ray for the first one. Bilateral tension band wiring was done and patient was being regularly followed up with good range of movement recovery. But again he had a fall in bathroom 3 month post-operative and on right side suffered a re-fracture. Modified tension band wiring was done. Patient gained full range of movement on both sides and returned to his normal activities at 9 months post op of index surgery. A case of bilateral patella fracture where mechanism of fracture for each patella fracture are different is unheard of. A case of bilateral patella fracture with re-fracture has not been reported yet in literature so far we know/ searched. Here we report and discuss the challenges in management of such a case and protocol we followed.

Keywords: Bilateral patella fracture, Re-fracture

INTRODUCTION

Patella being a superficial bone frequently gets fractured. Patella fracture consists of approximately 1% of all skeletal fractures and is seen in mostly younger age group (20-50 years) with a male preponderance of 2:1.^{1,3} Patellar fracture may result from direct, indirect or combined injury patterns.⁶ Bilateral patella fracture is very much rare (2-3% of all patella fractures) and is mostly seen after high velocity direct trauma. Other causes of bilateral patella fracture are different pathological conditions.¹³ Very few bilateral patella fracture cases have been reported in healthy individuals. Bilateral patella fracture where mechanism of each patella fracture is different is technically very difficult to imagine and a re-fracture in such a case is not yet reported in literature. Displaced patella fracture is very frequently associated with retinacular tear or disruption of extensor mechanism of leg. Proper rehabilitation in the post-operative period in

such cases is very crucial in early functional recovery of the patient.

CASE REPORT

A 21 years old male was referred to our hospital with complaints of pain and swelling of both knees and inability to get up after trauma. He gave a history of direct trauma by a speeding two wheeler on the right knee following which he was taken to a nearby hospital and was advised an X-ray of the right knee, where he had a fall while he was being helped for the x-ray and sustained an indirect trauma to the left knee. X-rays of both knees were done and revealed bilateral patella fracture. Upon presentation at our hospital a thorough examination was done. There were multiple abrasions over the anterior aspect of right knee and diffuse swelling around both knee joints. Bilateral above knee POP slab was applied and thorough

systemic examination was done. Parameters of all the other systems were found to be normal.



Figure 1: Clinical picture at presentation.

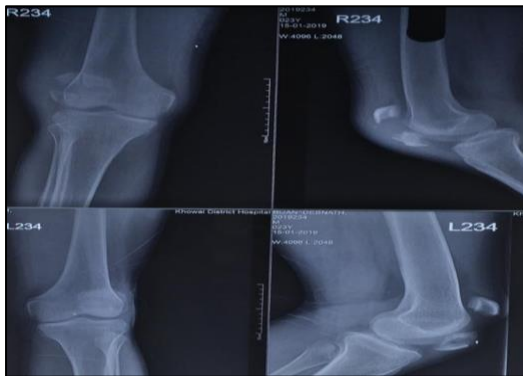


Figure 2: X-rays of both knees at presentation.



Figure 3: Flexion at 8 weeks post op (left side).

Surgery planned around 10 days after trauma. Surgery for open reduction and internal fixation on both sides was performed under spinal anaesthesia and tourniquet control. Left side was operated first then right side. 15 cm midline vertical incisions were made over both the knees centering over the fractures. The fractures were exposed and torn medial and lateral patellar retinaculum were noted on both sides. Thorough joint lavage was given, to clear the debris and haematoma. The joints were inspected for any associated intra-articular bony or soft tissue involvement and found to be normal. Tension band wiring was done for both the patella. On the first post-operative day the patient

was made to sit in the propped position. Assisted straight leg raising exercises were started. Isometric quadriceps and hamstrings strengthening exercises were taught gradually. Post operatively stitches removed on 12th post op day and gentle passive ROM exercise started. Quadriceps stretching exercises started with gradual ROM improvement. At 8 weeks post op patient had painless 120 degree flexion on left side and 110 degree flexion on right side. x-rays showed fracture union in progress.



Figure 4: Flexion at 8 weeks post-operative (right side).



Figure 5: Post-operative x-ray at 8 weeks.



Figure 6: X-ray after 2nd trauma.

Patient was gradually going back to his ADL without any discomfort. However at 3 months post operatively the patient again had a fall in bath room resulting in an indirect trauma and complained of pain and swelling of right knee. Upon x-ray it revealed a transverse fracture of the right patella with S-S wire in situ. Patient posted for surgery 1

week after trauma, under spinal anaesthesia and tourniquet control. Intra-operatively again retinacular injury, along with partial tear of quadriceps attachment to patella was noted. Through lavage of the joint done, haematoma evacuated and soft tissue repair done. This time a modified tension band wiring performed for better stability.



Figure 7: Post-operative follow-up x-ray of both knees.

At 4 months post op and 7 months from the index surgery the patient re-gained full range of movement of both knees and at 1 year post op the patient has complete functional recovery and has returned to his normal daily activities now.

DISCUSSION

Patella is the largest sesamoid bone of our body and performs important function in knee joint biomechanics.³ But as it is situated subcutaneously it is very prone to injury. Patella fracture can occur due to both direct and indirect trauma.⁶ Direct trauma usually results in comminuted fracture with or without open wound and indirect trauma usually gives rise to transverse fracture.¹⁴ A transverse fracture happens when sudden quadriceps contracture overwhelms extensor mechanism continuity. It results in disruption of the same in the form of transverse fracture of patella, quadriceps rupture or tear of patellar tendon with or without retinacular tear. Bilateral patella fracture is very much rare in literature and whenever reported its mostly due to direct trauma / dash board injury or secondary to pathological condition as complication of chronic underlying diseases such as osteoporosis, primary hyperparathyroidism and renal failure with secondary hyperparathyroidism. In all the instances of bilateral patella fracture reported in literature, the mechanism of fracture is same for fractures of both sides. Bilateral patella fracture where mechanism of fracture is different for either side is unheard of. In our case, the right patella was fractured due to direct trauma and it was a comminuted fracture. The left patella fracture was due to indirect trauma and it was a transverse fracture. The patient was recovering well after bilateral tension band wiring with progression of clinical and radiological union at 8 weeks and good range of movement recovery due to good post-operative protocol of physiotherapy. However, the patient

had a fall at bathroom and re-fractured the right patella due to indirect trauma at 3 months and this time it was a transverse fracture. As the patient had good range of movement without any pain and no local tenderness at fracture site before the 2nd trauma and x-ray showed different fracture line it was taken up as re-fracture. However modified tension band wiring was preferred this time to give better stability.⁹

CONCLUSION

In such cases good physiotherapy and protected return to daily activities is essential as repeated trauma may lead to soft tissue damage and early degenerative changes in knee. Although patients may regain full range of movement of the knee early guarded return to daily activities in a brace over a year to avoid any further injury and to gain confidence is advised. A refracture in a case of bilateral patella fracture has not been reported in literature so far. Although a single case is not enough to dictate a protocol, we advocate supervised physiotherapy post operatively to gain early full range of movement but guarded return to ADL over a longer period of time even after full range of movement recovery in cases of bilateral patella fractures or in cases of refractures of patella.

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REFERENCES

1. Esmailiejah AA, Keipourfard A, Hashemi Y. Isolated Bilateral Traumatic Patellar Fracture: A Case Report. American Journal of Medical Case Reports. 2016;4(6):186-89.
2. Madi S, Naik M, Rao S, Vijayan S. Simultaneous, Isolated Traumatic Bilateral Patella Fractures. Trauma. 2016;21(1):e20244.
3. Vinay G, Zile K, Rakesh G, Gaurav S. Bilateral traumatic patellar fracture: A case report and review of literature. Chinese Journal of Traumatology. 2012;15(3):188-91.
4. Malone A, Kiernan D, Brien TO. Bilateral sleeve fractures of the patella in a 12-year-old boy with hereditary spastic paraparesis and crouch gait. BMJ Case Rep. 2013;2013:bcr2013202217.
5. Wild M, Thelen S, Jungbluth P, Betsch M, Miersch D, Windolf J et al. Fixed-angle plates in patella fractures - a pilot cadaver study. Eur J Med Res. 2011;16(1):41-6.
6. Scolaro J, Bernstein J, Ahn J. In Brief: Patellar Fractures. Clin Orthop Relat Res. 2011;469(4):1213-15.
7. Kellersmann R, Blattner TR, Weckbach A. Bilateral Patellar Tendon Rupture Without Predisposing Systemic Disease or Steroid Use: A Case Report and Review of the Literature. Arch Orthop Trauma Surg. 2005;125(2):127-33.

8. Gardner MJ, Griffith MH, Lawrence BD, Lorich DG. Complete exposure of the articular surface for fixation of patellar fractures. *J Orthop Trauma*. 2005;19(2):118-23.
9. Yang TY, Huang TW, Chuang PY. Treatment of displaced transverse fractures of the patella: modified tension band wiring technique with or without augmented circumferential cerclage wire fixation. *BMC Musculoskelet Disord*. 2018;19:167.
10. Van Raay JJ, van Loon A, Wissing JC, van der Werken C. Partiële en totale patellectomie als behandeling van de comminutieve patellafractuur [Partial and total patellectomy as treatment of comminuted patella fracture]. *Ned Tijdschr Geneeskd*. 1990;134(27):1308-311.
11. Desault PJ. *Treatise on Fractures, Luxations and Other Affections of the Bones*. Translated by Chas. 3d ed. Caldwell. 1817;299.
12. Moretti B, Speciale D, Garofalo R, Moretti L, Patella S, Patella V. Spontaneous bilateral fracture of patella. *Geriatr Gerontol Int*. 2008;8(1):55-8.
13. Anand S, Hahnel JC, Giannoudis PV. Open patellar fractures: high energy injuries with a poor outcome? *Injury*. 2008;39(4):480-84.
14. Ali M, Kuiper J, John J. Biomechanical analysis of tension band wiring (TBW) of transverse fractures of patella. *Chin J Traumatol*. 2016;19:255-8.

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