

## Adolescent Tibial Tubercle Avulsion Fracture In Osteogenesis Imperfecta

<sup>1</sup>Terence MD; <sup>1</sup>Jagjoth S <sup>1</sup>Hanif CM ; <sup>1</sup>Hazimin MS; <sup>1</sup>Munajat I

<sup>1</sup>Department of Orthopaedics, Hospital Universiti Sains Malaysia, Kubang Kerian, Kelantan.

### Introduction

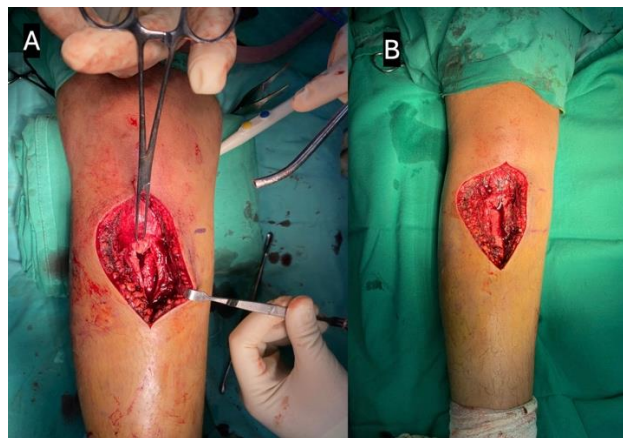
Tibial tuberosity avulsion fractures are rare fracture patterns accounting for less than 1% of all pediatric fractures.<sup>1</sup> Osteogenesis imperfecta (OI), an inherited disorder that affects the density and integrity of bone, may also be a predisposing factor to tibial tubercle fractures.<sup>1</sup> We are presenting a case of tibial tubercle avulsion fracture with concurrent proximal tibia metaphyseal fracture in an adolescent with underlying OI Type 1.

### Report

This 12-year-old boy, had a fall in kneeling position. He lost his extensor mechanism and was unable to bear weight over his right lower limb. Based on the x-rays (Figure 1 A, B), we cannot fulfill the Ogden or Ryu and Debenham classification as the fracture extends to the proximal tibia metaphyseal region. We proceeded with open tibial tubercle fragment reduction, and screw fixation augmented by a pull through suture of patella tendon with Ethibond suture to proximal tibia. (Figure 1 C, D and Figure 2) Post operatively, patient was immobilized with a cast.



**Figure 1** A, B: Pre-operative x-ray; Figure 1 C, D: Post-operative x-ray



**Figure 2:** A: Fracture site identified; B: Screw fix of tibia tubercle and patella tendon pull through suture done.

### Conclusion

In this case, the importance of OI lies in the well-established understanding that milder forms of the condition often diminish by adolescence.<sup>2</sup> However, until the patient reaches skeletal maturity, the vulnerability remains evident, particularly when subjected to traumatic force. In this instance, the avulsion of the tuberosity occurred due to a forceful pull at a potentially weakened area, leading to tractional apophysis.<sup>2</sup>

### References

1. Yotsuya K, et.al Osteogenesis imperfecta with repeated simultaneous bilateral proximal tibial epiphyseal injuries caused by minor trauma; 2023
2. Mehta R et al; Tibial-tubercle avulsion and patellar-tendon rupture in pre-pubertal child with osteogenesis imperfecta(OI J Clin Orthop Trauma. 2020