

An Interesting Case Of Knee Cap Non Union Treated With Two Stage Compression Technique

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I. BACKGROUND:

Nonunion of patella fractures is a rare conditions that are fraught with challenges. There isn't much information in the literature to help clinicians manage this complication. Consequently, the goal of this study was to study the functional outcomes of various modalities of the treatment of nonunion patella fractures. The patient's functional needs, the causes of the nonunion, the possible biomechanical consequences of a total patellectomy, and the existence of an intact knee extensor mechanism for a future reconstructive operation all play a role in the decision-making process regarding the treatment of this condition. Patients with low functional demands may be managed with nonoperative methods; however, those who perform heavy physical work or participate in sports usually require open reduction and internal fixation.

II. INTRODUCTION

In developing nations, non union patella is not that uncommon. The incidence of nonunion or delayed union of patella fractures is rare and ranges from 2.7–12.5%¹. The causes being financial limitations, geographical barriers to care, and delayed care. There could be formation of some fibrosis in between the fracture fragments. Even with a weak quadriceps mechanism, a patient can function normally and never seek medical treatment. However, there are instances when the gap left by the pull of the quadriceps above in the transverse fracture is large enough for any fibrous union, necessitating surgical intervention^{2,3}.

When the patient gets to the surgeon, the soft tissue, including the quadriceps, retinaculæ, and other knee ligaments, has been grossly displaced. Joint stiffness and extension lag causes limp and make daily living activities difficult.

III. CASE REPORT

A 45-year-old male with complaint of pain while walking and bending his left knee. History of fall 8 months back and underwent native treatment for 2 months. Then, he developed limping & knee stiffness. Patient able to walk with help of stick. On examination, Skin condition was normal. Palpable gap of 4.5 cm in flexion and 3cm in extension between the fracture surfaces. Flexion present till 70° and associated with pain . No distal NV deficit.

EXTENSION – 3 CM



FLEXION – 4.5 CM



Radiograph showed 4.5 cm gap between fractured fragments without any associated injury to femoralcondyles

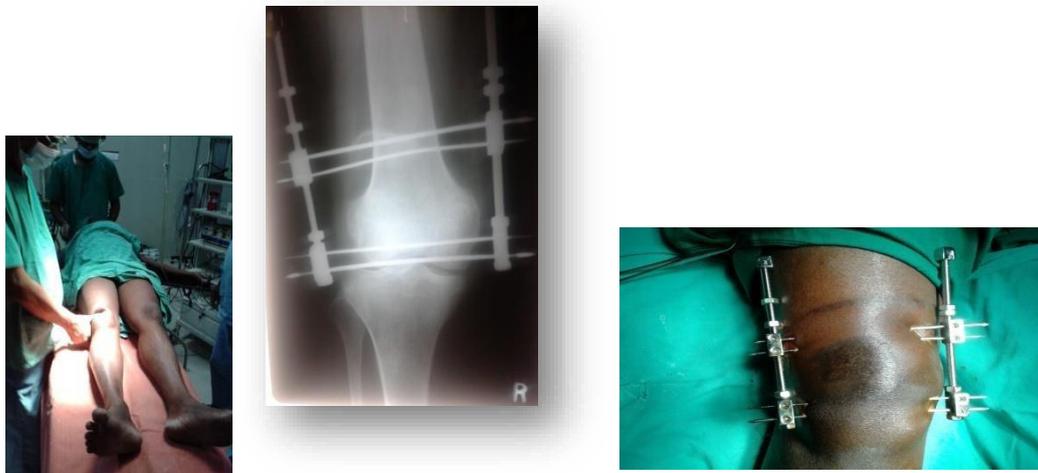


IV. DISCUSSION

Among the various management modalities are: i) **conservative**⁴, which in this instance means to skillful neglect - due to the lack of an effort to restore the quadriceps mechanism. ii) A **single stage of surgery**⁵ that uses fractional lengthening and V-Y/Z plasty to mobilize and fix the proximal fragment with the lower fragment/patellar tendon. In this endeavor, soft tissue undergoes severe trauma. iii) The **two-stage procedure**, which involves applying preoperative traction using any compression tool or the Ilizarov^{6,7} method to the proximal fragment in order to approximate the fragments. Tension band wiring⁸ is the second stage. The two-stage method has been objectively compiled and applied in this instance.

STAGE I – Compression device

Each segment had two K wires (2 mm) inserted transversely before being joined to the compressive rod assembly via an adjustable external fixator system. On the operation table, the first approximation of 2.5 cm was achieved.



After that, a 2-week sequential compression was performed at a pace of 1 mm per day until the desired overall approximation was reached. ROM exercises are suggested as tolerated.

Stage –II – Tension band wiring

Fracture ends freshened. Fracture reduced & TBW done.



Post op X-ray (AP and LATERAL VIEWS)



Six month follow up:

100° of ROM without any pain, no extensor lag, and no infection. The patient joined his job and was able to walk without limping and able to do his daily activities comfortably.



FLEXION



EXTENSION

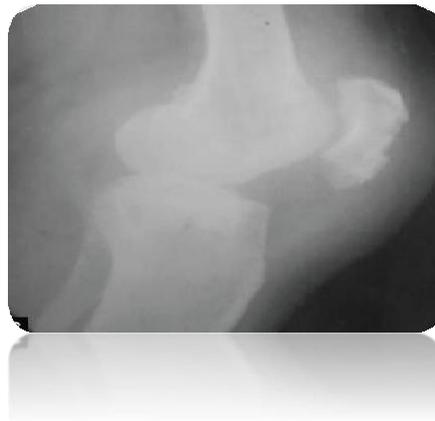


SQUATTING



SITTING CROSS LEGGED

After implant removal



V. CONCLUSION

The orthopaedic surgeon faces challenges in restoring the extensor mechanism through bone-to-bone or bone-to-tendon union, as well as in bringing down the proximal fragment in extension.

Gaining length in the contracted tissues is crucial in order to allow for further flexion of the knee. Most of us would concur that trying to estimate the gap in one step in such a situation could get us into trouble. Even if it is feasible, the outcome might not be promising because additional joint fibrosis and stiffness are likely to arise from further dissection, release, and immobilization⁸. The two-stage method has been objectively compiled and applied in this instance. The outcomes are advantageous and beneficial.

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