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**CASE REPORT**

## **An isolated anterior compartment syndrome after a Bimalleolar fracture - Open Reduction and Internal Fixation in a patient with underlying non-compliant Parkinson's disease - A case Report**

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### **Abstract:**

An extremely rare and unusual complication following isolated ankle fracture is compartment syndrome. It has been reported with both closed and open treatment of this injury however an isolated anterior compartment syndrome is not that common as compared to lateral compartment syndrome of lower limb.

In our tertiary care setup; we report the delayed development of an isolated anterior compartment syndrome after operative treatment of a bimalleolar equivalent ankle fracture in an elderly lady with an underlying (non-compliant) Parkinson's disease.

**Keywords:** Compartment syndrome, ankle fracture, bimalleolar open reduction and internal fixation, Parkinson's disease, non-compliance

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### **Introduction:**

Compartment syndrome and moreover an isolated anterior compartment syndrome is an interesting and equally rare complication post-surgery for an incidence of an isolated lateral compartment syndrome of lower extremity is far more seen. In our tertiary care setup in Karachi, Pakistan, we report an isolated anterior compartment syndrome on 7<sup>th</sup> post-op day after a bimalleolar fracture repair.

### **Case presentation:**

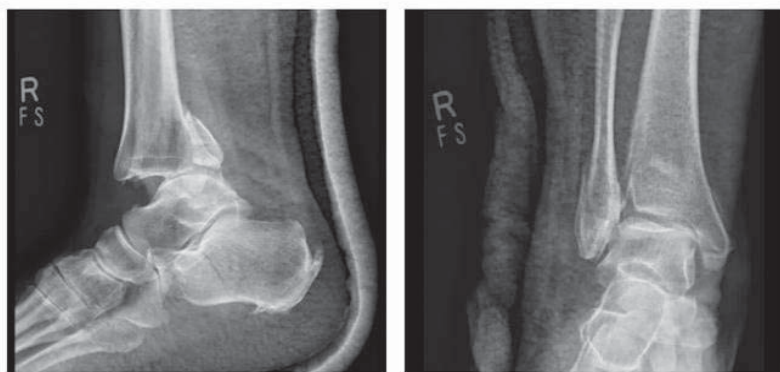
65 years old lady, with known case of Parkinson's disease (not on any medications), electively admitted with the presenting complaint of right ankle pain and swelling from ten days. Upon workup was diagnosed with right ankle posterior and lateral malleoli fracture admitted for surgical management, considering the patient's age and comorbid, cardiology and neurology were taken on board for risk stratification neurology advised regular followup as an outpatient (as the patient was not on any medications) and cardiology stratified mild to moderate risk. The patient's pre-op was done, she was vitally and

hemodynamically stable. After all initial workup and approval by general anesthesia underwent Open Reduction and Internal fixation of bilateral malleolar fracture of the right side.

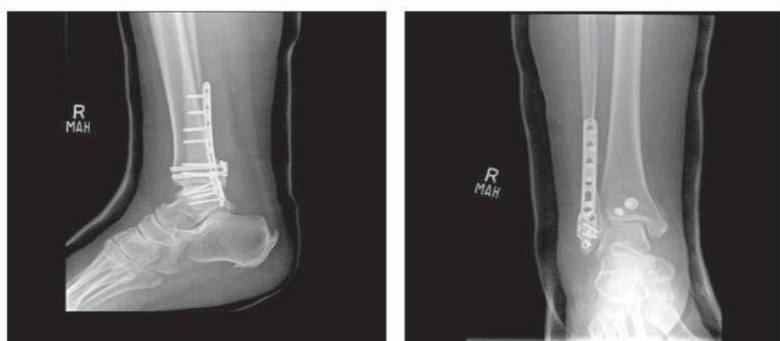
Post-operative evaluation was done which revealed normal sensation, good and intact capillary refill, and a normal dorsalis pedis pulse. Her pain was equally well controlled on mild-moderate analgesics and occasional morphine sulphate. She remained in hospital for observation, physiotherapy and she was monitored and mobilized non-weight bearing bed to chair only and was instructed the same upon discharge, otherwise remained vitally and hemodynamically stable and thus was discharged on third post-op day safely.

Later on a followup visit on 7<sup>th</sup> post-op day presented with pain and numbness in anterior compartment of leg - leading to isolated anterior compartment syndrome - the patient responded to NSAIDs and physiotherapy and intravenous analgesics.

After which she was followed up and evaluated



**Figure 1: The above are pre procedure: Right ankle posterior and lateral malleolus fracture**



**Figure 2: The above are post-procedure: Open Reduction and Internal Fixation of Bimalleolar fracture of Right side**

between 10-15<sup>th</sup> post-operative following physiotherapy.

Our study focuses on the surgical stress along with the non-compliance of Parkinson's being a trigger to anterior compartment syndrome and its rare presentation on 7<sup>th</sup> post-operative day.

#### **Discussion:**

Compartment syndrome is an increase in pressure inside a muscle compartment, which can reduce or halt blood flow and lead to permanent damage of neural bundles and muscles. In human body the muscles, together with nerves and blood vessels, are contained in spaces known as compartments which then are separated by thick tissues called as fascia. The patients presents with any of the symptoms which are classified as The "5 P's" : pain, pallor, paresthesia, pulselessness and paralysis.

An acute compartment syndrome is a surgical emergency and resolves with fasciotomy however; for delayed presentations other mode of treatments may subsides the symptoms such as analgesics. NSAIDS, physiotherapy and rest with mandatory regular follow-up post-surgery.

Compartment syndrome as per literature usually presents on 3-5<sup>th</sup> post-op days following open reduction and internal fixation of a lateral malleolar fracture (usually). The patient develops severe pain, pain with passive range of motion, anterior compartment swelling, dorsiflexion weakness, and sensory loss about the dorsum of the foot however; some studies have reported an isolated anterior compartment inconclusive on examination as a few reported pain-free.

Very few data has been reported on isolated anterior compartment syndrome following ankle fracture and the ones which are reported have presented with not typical symptoms favoring for compartment syndrome.

As per studies compartment syndrome has been reported as late as 5 days and that's called delayed presentation. In our case the patient presented on 7<sup>th</sup> post-op day which is quite unusual one such possibility could be an underlying Parkinson's disease (non-compliant) which added a trigger. However; not much of the data is provided on the effects of anti-parkinson's drugs and their role play with compartment syndrome or probably the patient may remained pain-free till 5<sup>th</sup> post-operative day, upon history we concluded that patient remained pain-free with no other complaints such as numbness which presented on 7<sup>th</sup> post-operative day, the patient's pulses however on examination were intact.

#### **Conclusion:**

People with neurological or neurovascular comorbids must be compliant if they are electively undergoing a surgical procedure especially people with bimalleolar fracture or patients with open or closed injuries both along with non-compliance the evaluation for compartment syndrome must be keenly assessed and followed considering the possibility of delayed compart-

ment syndrome as late as upto 7<sup>th</sup> post-operative day.

A high degree of vigilance must be exercised when managing these fractures in order to avoid complications, failure rate and morbidity.

**Conflict of interest:** None

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**Role and contribution of authors:**

Shazaf Masood Sidhu, collected the data, references and wrote the article.

Haroon Kasi, critically review the article and made final changes.

Sidra Naem Siddiqui, analysis and interpretation of data

Sawera Kolachi, collected the data, helped in interpretation.

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