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SKIN PUCKERING IN PROXIMAL HUMERUS FRACTURE IS AN EXPECTING SIGN FOR SURGICAL MANAGEMENT

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Abstract:

Fracture of the surgical proximal humerus in young patients is an uncommon injury. This is a clinical report of skin puckering caused by a proximal humerus fracture. Its importance varies depending on location, and its presence should be combined with other physical and radiological signs to aid decision making.

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INTRODUCTION:

Proximal humerus fractures are considered to be among the most frequent fractures of upper limb and the most common fracture after distal radius and femoral neck fractures in geriatric population(1). There is no dispute about the initial diagnosis of proximal humerus fracture at the initial presentation, however the evidence of skin complication raise a suspicion of an underlying soft tissue injury (2). We presented a case of skin puckering which is a rare sign of displaced proximal humerus fracture where the distal bone fragment is buttonholed through the anterior fibers of deltoid muscle. In such lesion, the soft tissue interposition may require manipulation or even open reduction.

CASE REPORT:

A 45-year-old manual worker, right-hand-dominant, presented at the Emergency Department with the complaint of left shoulder pain and swelling following an RTA and being ejected , which led to an isolated fracture of the left proximal humerus. On examination, there was ecchymosis and puckering of the skin on the anterior aspect of the left shoulder (fig1) with an intact neurovascular status. On radiological review, there was displaced fracture of the proximal humerus and comminution of the surgical neck in addition to medial translation of the distal fragment (fig 2 a,b,c). Gentle reduction maneuver in terms of traction and manipulation has been tried however, it was unsuccessful.

Fig 1 skin puckering on the anterior aspect of the left shoulder.

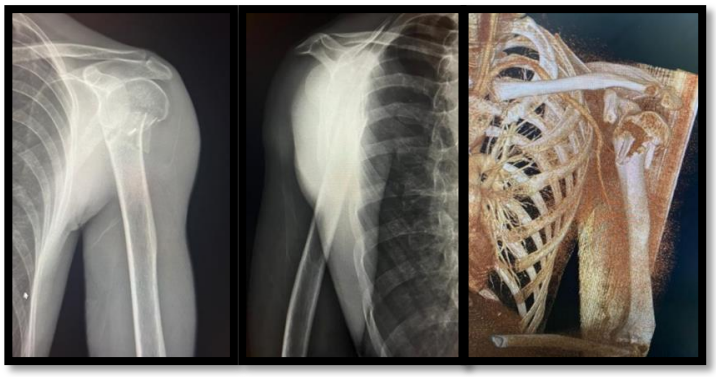

Fig 2 a, b, c radiograph and 3d CT scan showing comminution and medial translation of the distal fragment

The patient was admitted and was prepared for surgery. In theater after being sedated, trials of milking have been tried and resulted in partial relief of buttonholing and improvement of the skin condition (fig 3). Fluoroscopic images showed realignment of the fracture (fig 4 a, b), however a marked gross instability was encountered.

Fig 3 showing relief of buttonholing following a milking maneuver

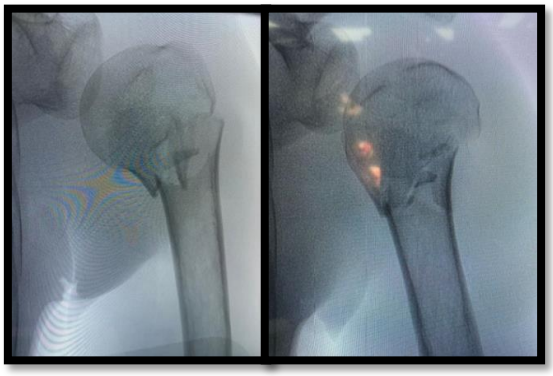

Fig 4, a,b Fluoroscopic images showed realignment of the fracture

A Deltopectoral approach was utilized in order to obtain a direct access toward the culprit soft tissue (fig5a,b,c) and the expected fixation technique. Provisional pinning of the fracture with multiple K wires (fig 6) and definitive fixation using proximal humerus locking plate system was done (fig 7 a, b).

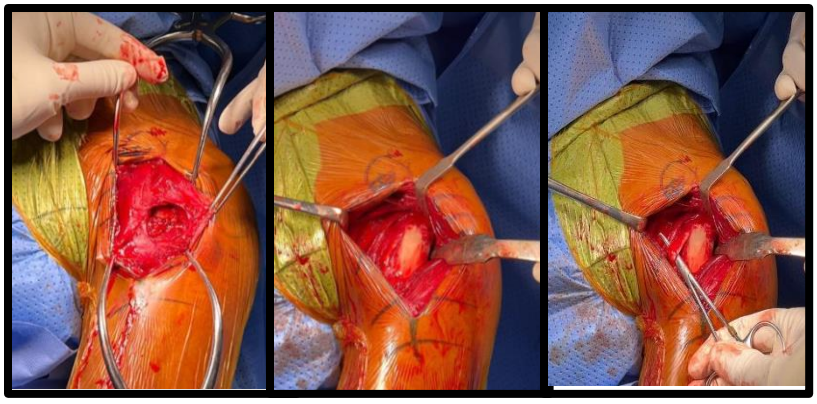

Fig 5, a,b,c showing Deltopectoral approach giving direct access to the interposed soft tissue

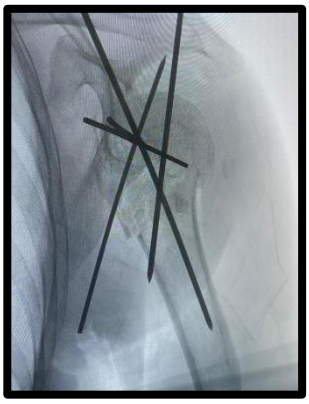

Fig 6 Provisional pinning of the fracture with multiple K wires

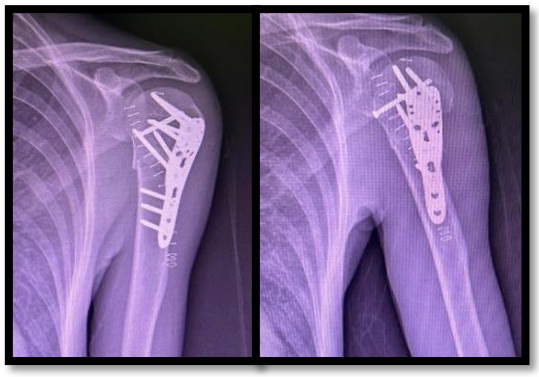

Fig 7 a,b definitive fixation using proximal humerus locking plate system

DISCUSSION:

Skin puckering is not a peculiar sign for proximal humerus fracture as it was described with some fractures such as pediatric supracondylar humerus fracture and proximal tibia fractures(3). There is paucity of literature describing the puker sign in proximal humerus fracture (4). This sign is giving hint for a background of soft tissue injury and interposition, which require open reduction and internal fixation after releasing of the distal bone fragment from the anterior fibers of the deltoid muscle. The choice of surgical versus conservative treatment in proximal humerus fracture has been dictated by Neers classification system based on degree of displacement of fracture fragment and number of fragments (5). However, there is a still controversy in type 2 and 3 part fractures as conservative treatment may lead to varus malunion and poor outcome while the operative treatment, which required extensive soft tissue dissection, may lead to avascular necrosis.

Skin puckering is a helping sign in decision-making and an important landmark of an underlying soft tissue injury and periosteum disruption, which make the conservative treatment inappropriate and not sufficient for obtaining good union and healing due to muscle interposition.

CONCLUSION:

Skin puckering is an alert sign that may guide surgeon to choose surgical treatment in terms of open reduction and internal fixation instead of going with conservative treatment.

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