STRESS FRACTURE NECK OF FEMUR AN ORTHOPAEDIC EMERGENCY

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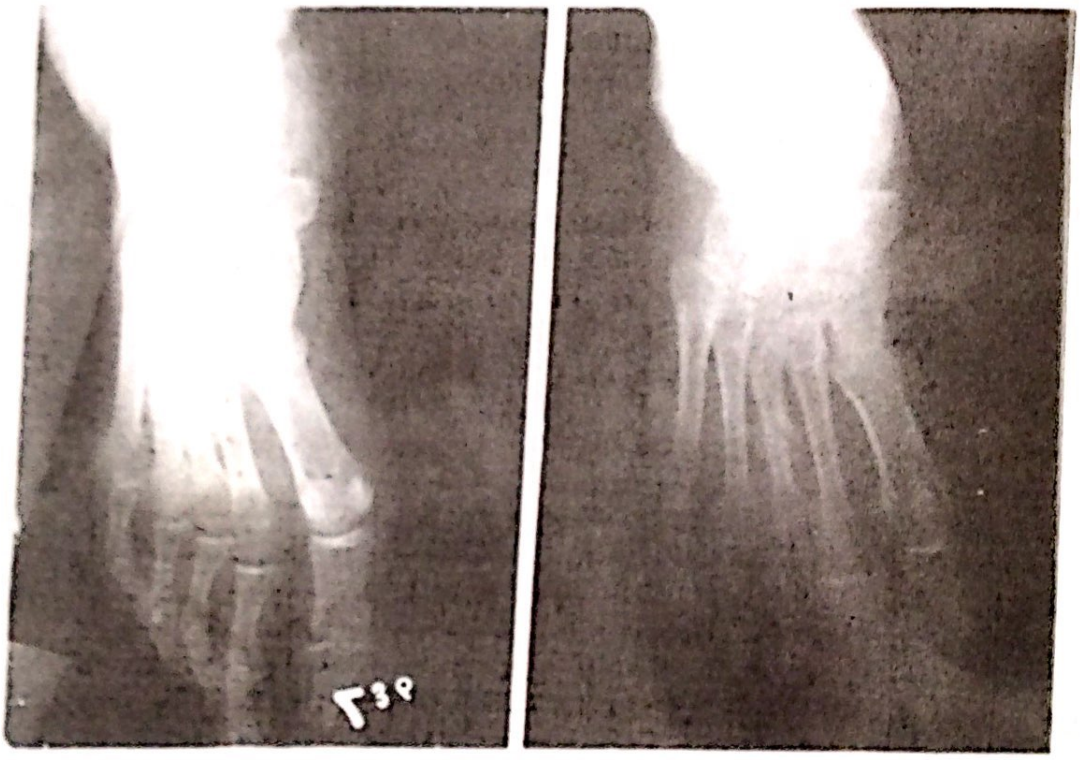
What is stress fracture: Stress fracture is defined as fracture of a normal healthy bone caused by the summation of stresses to the bone which if applied once is not enough to cause the fracture. Fracture caused by a Sub optimal force especially that of a diseased b one is called Pathological Fracture.

Stress fracture is seen mostly in Military recruit who are exposed to severe, repeated physical exertions.

Skeleton of the lower extremities are more prone to stress fracture, As per the literature shaft of 2nd metatarsal is the most commonly involved bone in stress fracture. In our experience stress fracture shaft of tibia and fibula and neck of femur are more commonly involved.



In our experience, patients having stress fracture shaft of tibia are more lucky. None of the patients had displacements of the fragments and all the fractures united well with conservative treatment.

The story is not the same with patients having stress fracture neck of femur. More than 50% of the patients of stress fracture neck of femur have come with complete displacements of the fragments and have developed various complication inspite of the prompt(After they report to hospital) treatment.

Treating stress fracture neck of femur as an orthopedic emergency is our protocol. Because of the associated complications of stress fracture neck of femur like:-

(a) High incidences of non union as compared to traumatic fracture neck of femur.
(b) High incidences of Avascular necrosis of femoral head.
(c) The management of the sequel of above complication in young patient is very difficult with high morbidity.

Poor Result following stress fracture neck of femur is due to :-

(a) Delayed reporting of the patients to the Hospital because of subtlety of symptoms.
(b) Poor quality X-Ray, and misinterpretations of the X-Ray by the clinician.
(c) Missed diagnosis and delayed treatment.

CAUTION:

Persons, subjected to repeated severe physical exertions, especially recruits and officer cadets if complain of pain over hip or knee region, limitations of hip movement or localised anterior tenderness should be treated as a case of stress fracture neck of femur unless proved otherwise.

DISCUSSION:

Stress fracture neck of femur was first reported by Blecher in 1905 and in 1944 Branch reported two cases of displaced stress fracture neck of femur. Since then, many authors have reported stress fracture neck of femur. The occurrence of a stress fracture depends on two factors.

- The degree of force applied and the strength of bone involved. Stress fracture can occur in normal bone undergoing repeated submaximal stress or in diseased bone undergoing repeated minimal stresses. Individuals with malaleigment of the bone eg. Coxa Vora have increased risk of femoral neck stress fracture. Bilateral involvement is also reported, we confirm the occurrence of bilateral involvement in an officer Cadet.

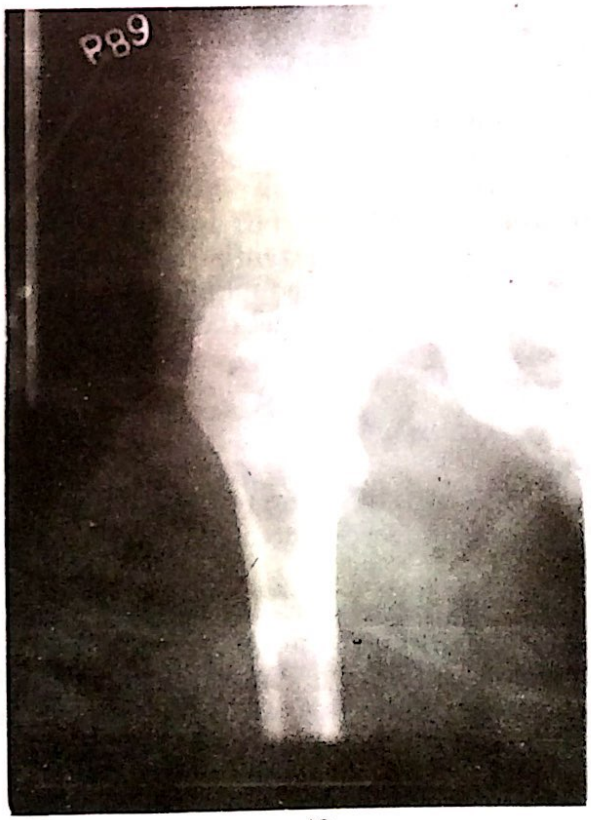
CLASSIFICATION:

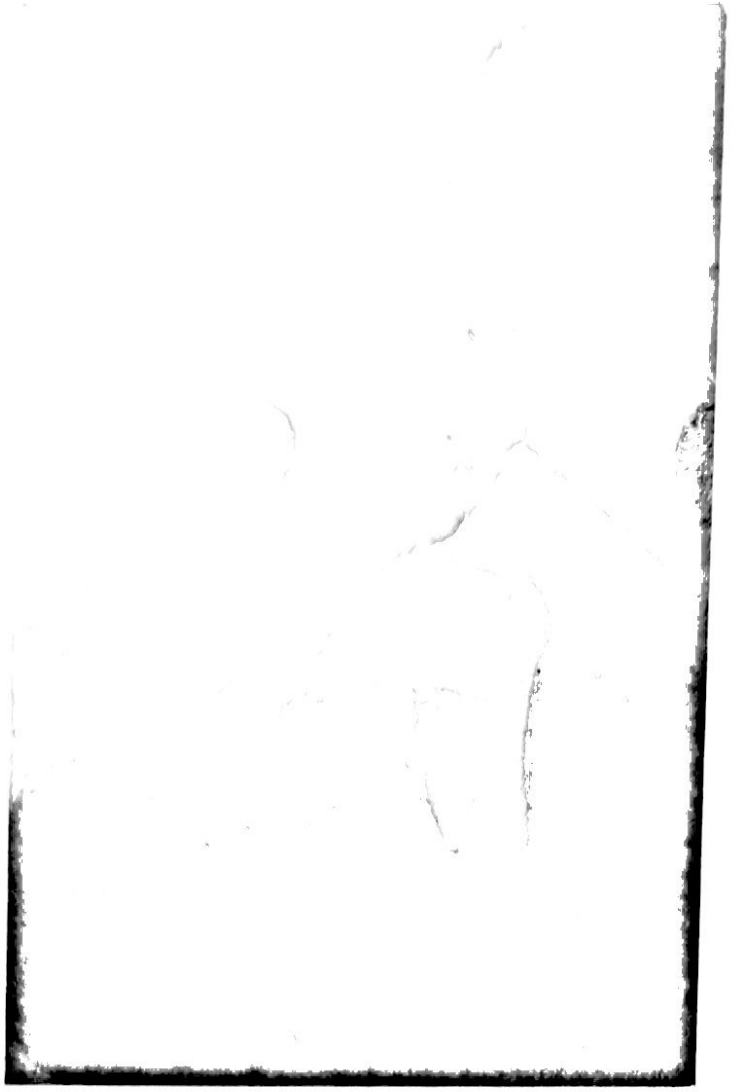
Devas classified stress fracture neck of femur in two groups:-

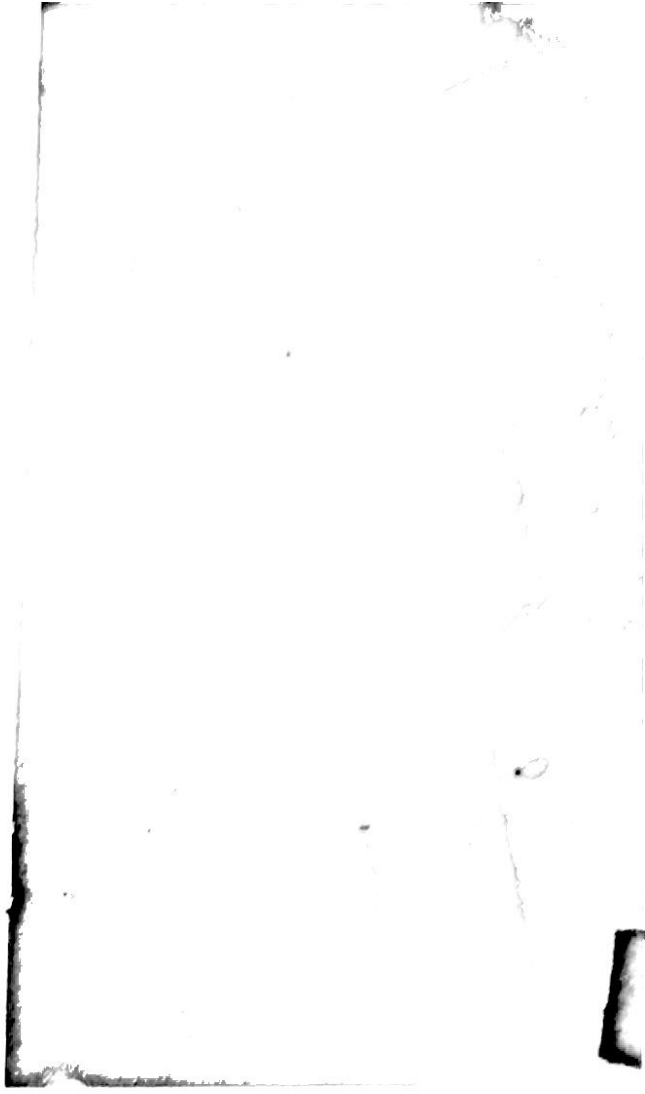
i. Distraction or Transverse fracture :- Fracture line is perpendicular to the axis of femoral neck. Almost all stress fracture in patients more than 60 yrs.of age are of this type.
ii. Compression fracture:- It begins as a haze of internal callus in the inferior part of femoral neck. This type accounts for more than half of the stress fracture in patients under the age of 60.

Blickenstaff and Morris reported extensive experiences with femoral neck stress fracture in young Military recruits and divided these fractures into 3 types:

Type-I: Patient with endosteal or periosteal calluses without a definite fracture line.
Type-II: Patients in whom a fracture line is present but without displacement
Type-III: Displaced stress fracture.







Investigation:

- Detail history and thorough clinical examination.
- High index of Suspicion.
- X-Ray
- Bone scan-confirms the diagnosis in cases where X-Ray is normal.

Treatment Protocol;

Owing to the great disability resulting from displaced femoral neck fractures young individuals, early diagnosis and treatment before displacement occurs is of prime importance.

We follow the treatment protocol of Blickenstaff and Morris which is as follows.

Type-I: Hospitalisation - Absulate bed rest till pain subsides and full range of hip motion.

Type-II: Treatment is internal fixation with multiple pins.

Type-III: Close or open reduction and internal fixation with compression hip Screws. Bone grafting if necessary.

COMPLICATION:

- Non-union
- Avascular necrosis of femoral head
- Posterior collapse leading to malaleignment

CONCLUSION:

Stress fracture neck of femur, since occurs in young individual and associate with severe complications like non union and avascular necrosis of femoralhead if not treated promptly and efficiently, results in the long disability. Therefore instructors in the Military Academy and Recruit Training Centres must be made aware of the illness so that timely care of the highly stressed femoral neck can be taken properly.