



Dr. Rahul Kadam

**AVASCULAR NECROSIS OF
FEMORAL HEAD
(AVN)**

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DISCLAIMER

This presentation is solely for educational purpose. The material included in the presentation represents educational material for the patients and not intended for any treatment purpose

INTRODUCTION

Avascular Necrosis is condition in which there is loss of blood supply to the bone.



Bone is living tissue → loss of blood supply → bone death

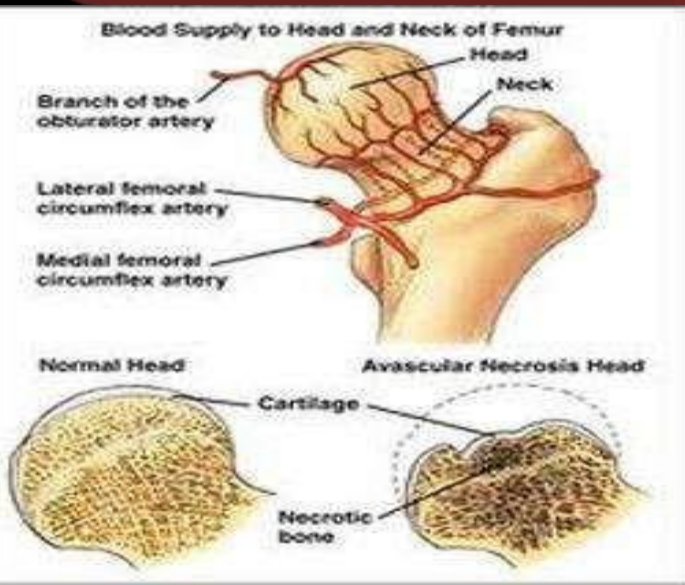


If bone death progresses → leads to bone collapse

Blood supply to femoral Head (ball of hip joint) is interrupted by

1. Traumatic
2. Nontraumatic

Femoral head:
Death of bone cells
and marrow



- Dead segment of bone
- Further collapses and loss of sphericity

CAUSES

Traumatic

Fracture neck of
Femur

Fracture
dislocations of hip
Injuries /surgeries
around hip

Nontraumatic

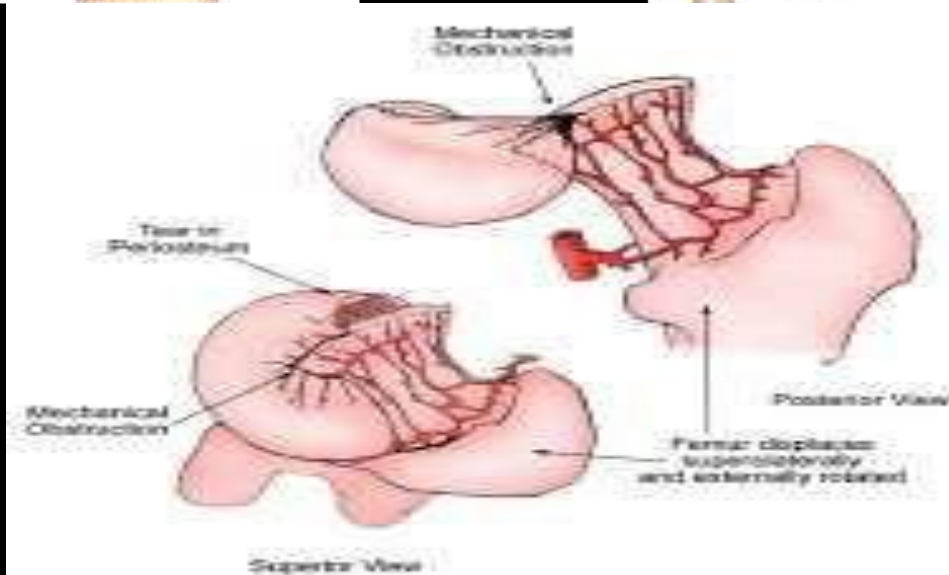
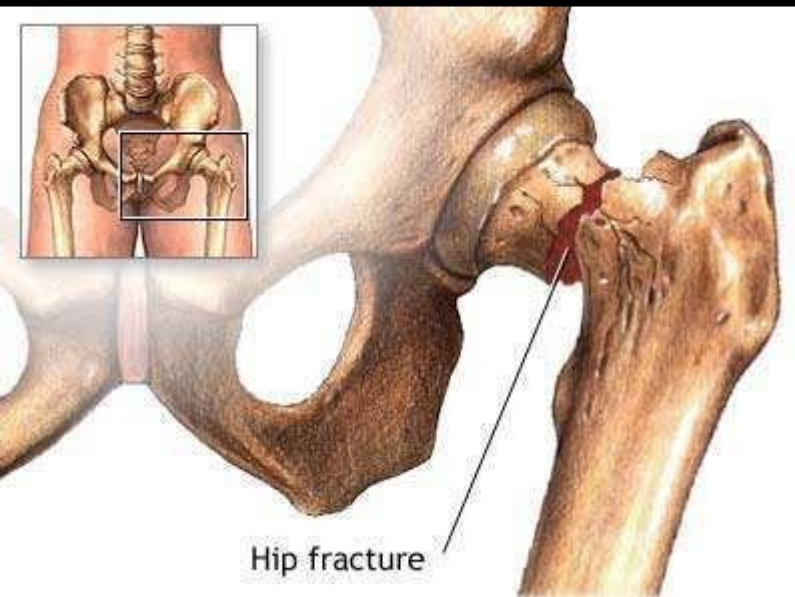
Steroid use

Excess Alcohol

intake Sickle cell disease

Other blood cell
disorders

TRAUMA



STEROID INDUCED

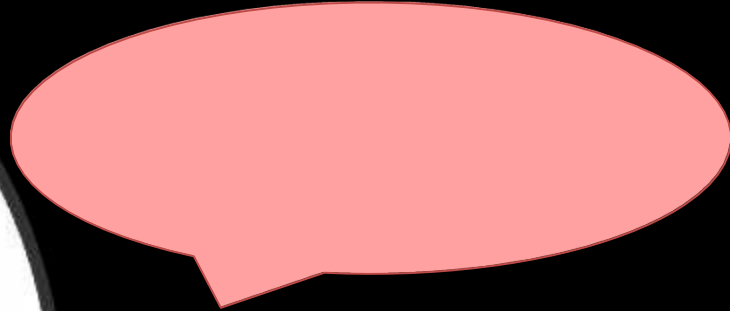
Corticosteroids: Prednislone / Methyprednislone:
used in management of Asthma Skin diseases
Immunological diseases
Renal transplant



In the above conditions there is no
choice

Steroid induced is usually Bilateral

COMPLAINTS



COMPLAINTS



Pain:groin,buttcks,
Front of thigh

Limp

Stiffness in hip

Night pain

COMPLAINTS



Pain:groin,buttcks,
Front of thigh



Stiffness



Limp

INVESTIGATIONS

X-RAYS

X-Rays

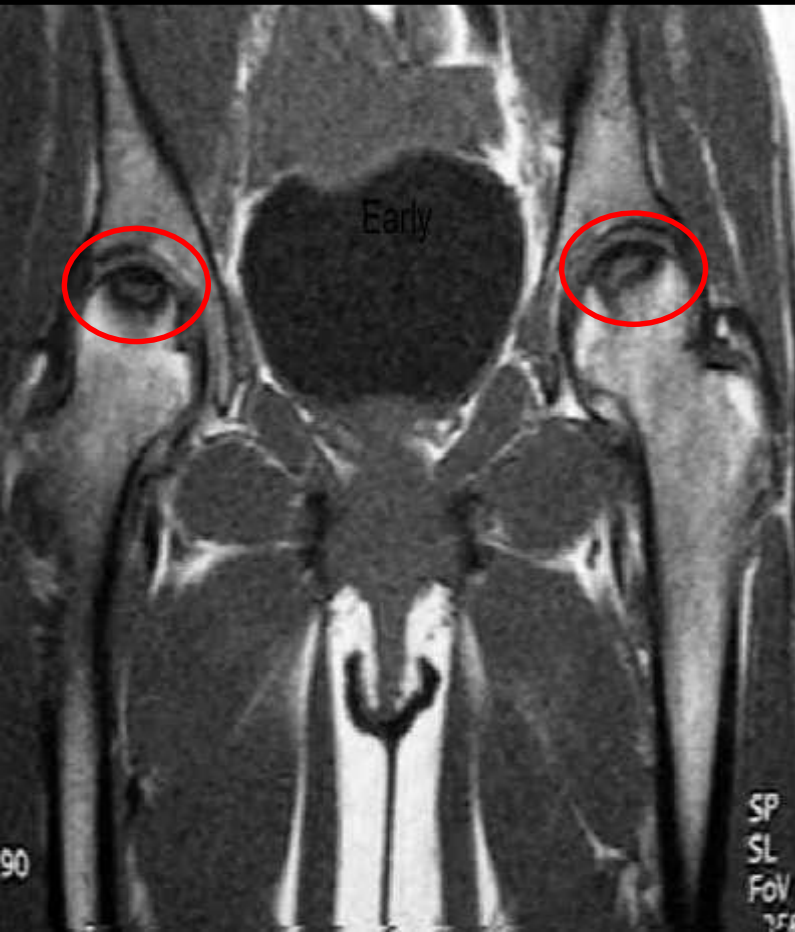
1. Early stages of AVN : X ray not useful even though there is pain
2. Advanced Stages of AVN : Bone cyst and collapse of dead bone and arthritic changes can be seen



AVN femoral head







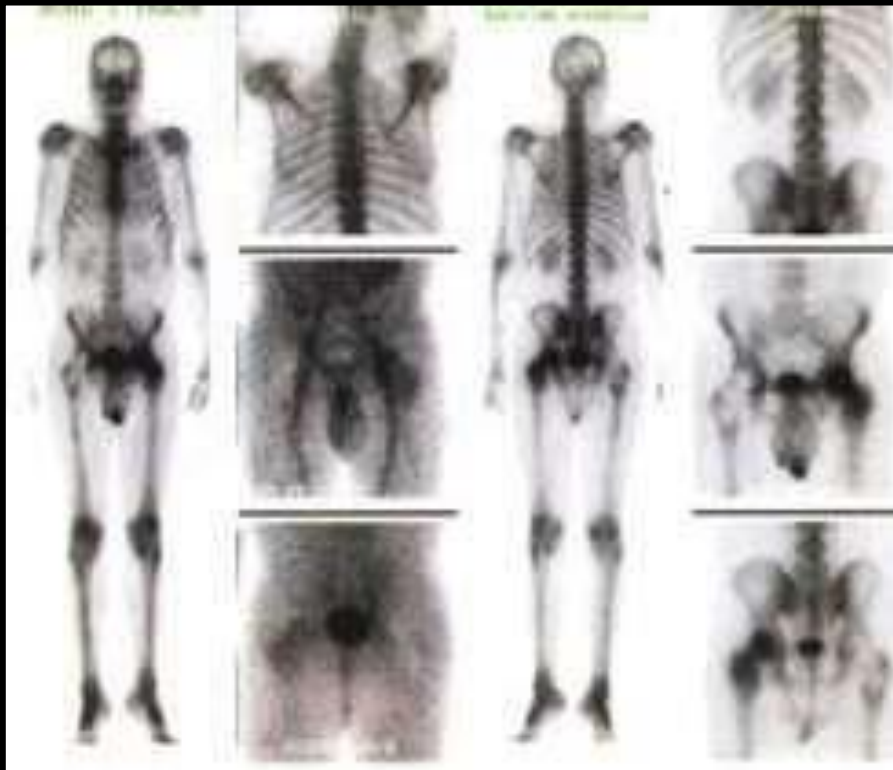
MRI



- 1.If X ray fails to show AVN.
- 2.Can detect AVN of HIP within days
- 3.Can be used for staging the disease
- 4.MRI takes multiple slices of images of hip and can show even tiny areas of damage.

Bone scan

1. A very sensitive investigation
2. Scan shows cold spot at places of AVN
3. Replaced now by MRI



Once AVN started : treatment depends on

AVN is irreversible: no drugs can restore blood supply to femoral head



Keeping weight of affected hip
Crutch walking



Bisphosphonates :Reduces risk of femoral head collapse



Blood thinning drugs
with a hope of maintaining precarious blood supply



AVN femoral head

- No Collapse → operations to increase blood supply
- Core Decompression with or without bone graft



AVN Femoral Head : Advanced stage

- Arthritic Hip
- Total Hip Replacement

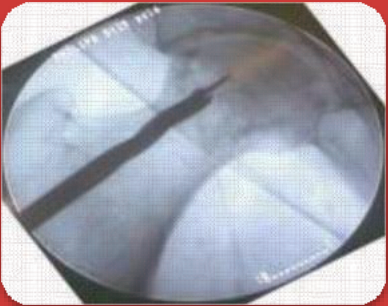


Drilling one or several holes through the neck of femur into areas of head where there is lack of blood supply

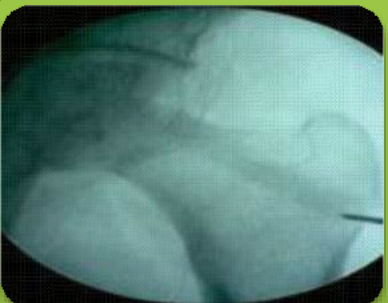
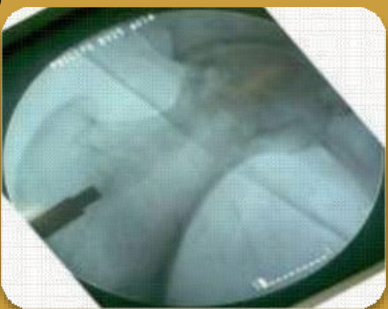
Principle:

- 1.It decreases the pressure inside the femoral head
- 2.It helps to stimulate budding of new blood vessels in affected areas

- Reliving pressure helps in reduction of pain.
- It does not cure the disease but can help to

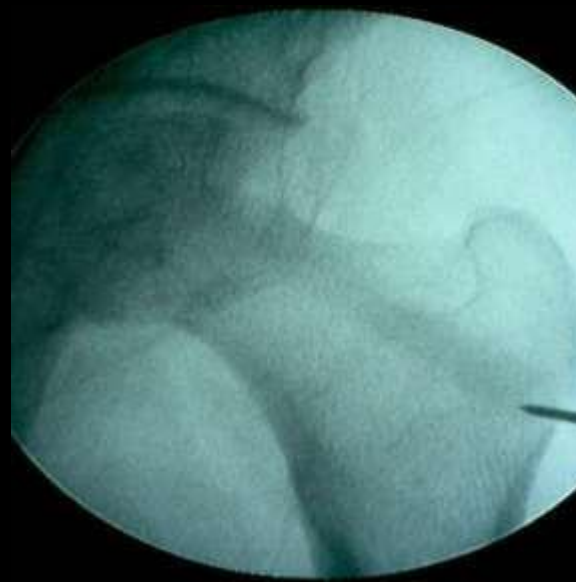
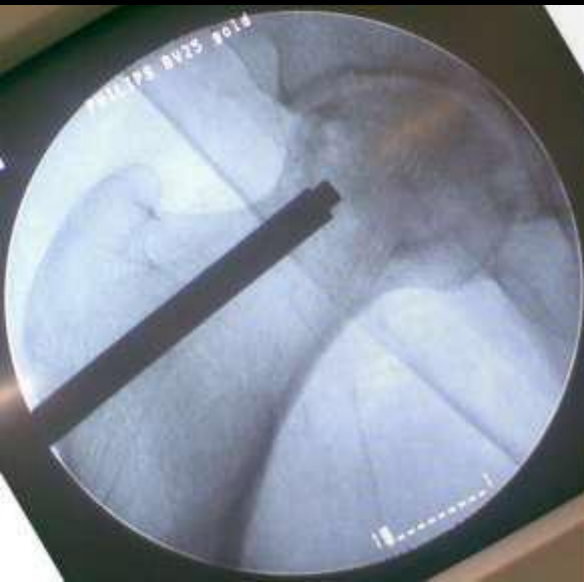
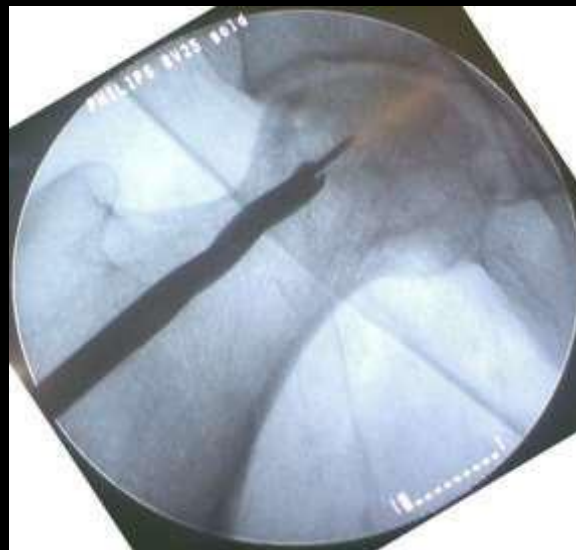


Decompression of femoral head



Pain relief due to decompression

- Graft acts as structural support preventing further collapse.





Decompression of femoral head

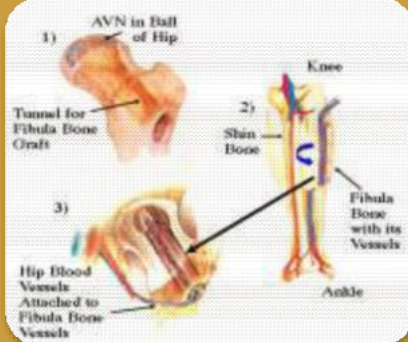
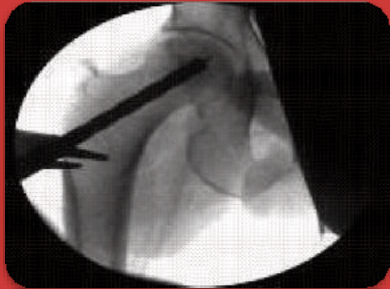


Harvesting stem cells from the patient and filling into the decompressed femoral head



Pain relief due to decompression

- Stem cells help to form new bone, which in turn can give structural support



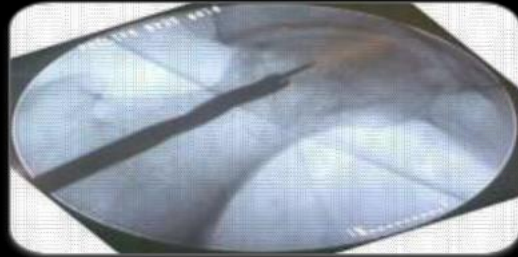
A fibular graft along with its blood vessels is removed from the leg and inserts into the hole created in femoral neck and head. Surgeon then connects the blood vessels of the fibula to the blood vessels around the hip.



It can help to restore the blood supply .

Fibular graft act as strut and help in preventing collapse of femoral head

- This procedure is complicated.
- Success rates depend on the patency of newly formed blood vessel connection between the graft and hip blood vessels.



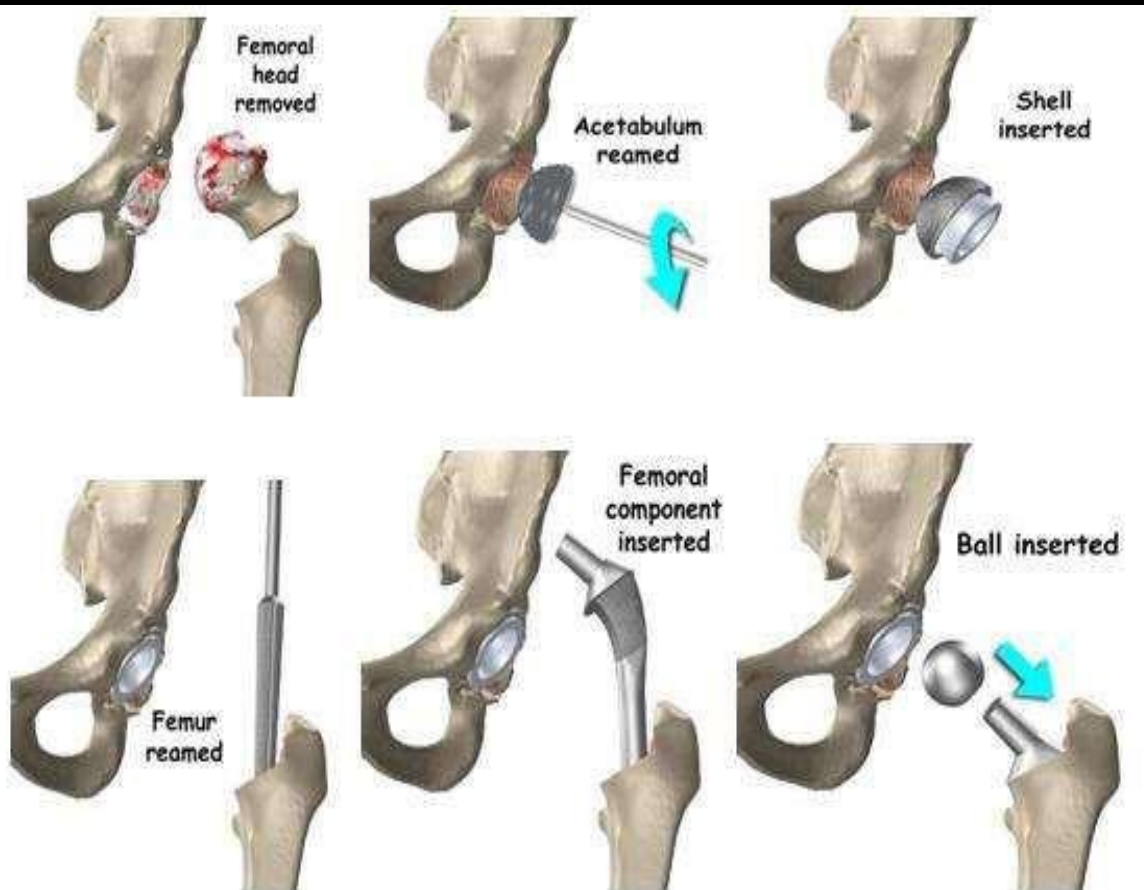
Protected weight bearing with aid
of crutches and walker for 6
weeks



Weight bearing after 6 weeks and
return to regular activities.

TOTAL HIP REPLACEMENT

Advanced Stage of AVN: Femoral head collapse
Secondary osteoarthritis of Hip joint



Total Hip Replacement



Different designs & materials in Hip replacement

- Consists 2 basic components Ball & Socket components



Ball component

- Highly polished Metal
- Ceramic material



Socket component

- . Plastic (High molecular weight polyethylene)
- . Ceramic
- . Metal

CHOICE OF MATERIAL

- ❖ Total hip replacement could be CEMENTED and CEMENTLESS.
- ❖ Decision is based on number of factors like age, quality & strength of bone and cost factor in some instances.
- ❖ Surgeon can decide and choose that meets patients needs.



Metal on Polyethylene



Metal on Metal



Ceramic on Ceramic

CONTACT



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