

TRADITIONAL TECHNIQUE

- Approaches**
1. Hardinge approach common
 2. Posterior approach common
 3. Trochanteric approach rarely done for primary hips

1. Prophylactic Antibiotics

Cephazole or cephmandole for 24 hours.
Should be given at the time of induction
Antibiotic Vs No antibiotic : Infection 4% to 0.9%

2. **Anaesthesia:** Usually General anaesthesia and epidural anaesthesia

3. **Catherise** pre-operatively

4. Lateral position

Make sure pelvis and chest perpendicular to the floor
2 support one at ASIS and other at the lower lumbar [at level of the natal cleft]
Secure the patient to the table well

5. Important to position the unaffected leg in 60° flexion

6. Aseptic precaution: expose from iliac crest

7. Limb length gadget: optional

8. Posterior approach

12 cm incision straight centering on the trochanter
[slightly posterior on the trochanter]

No inter-nervous space [Split ITB and Gluteus proximally]
Divide the Trochanteric bursa and fat and retract medially
with Charnley retractor.

This layer will protect sciatic nerve

Identify: Gluteus medius and Howman's to retract it

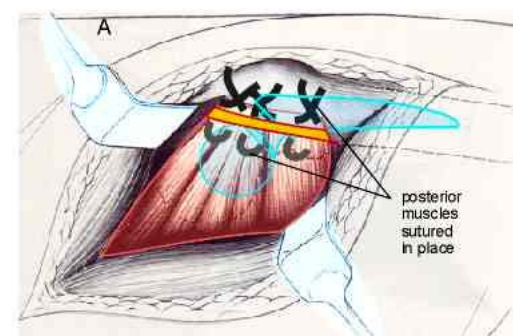
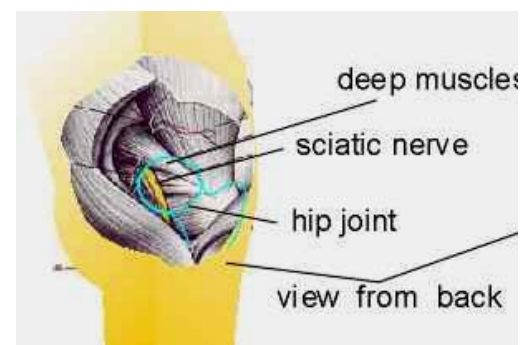
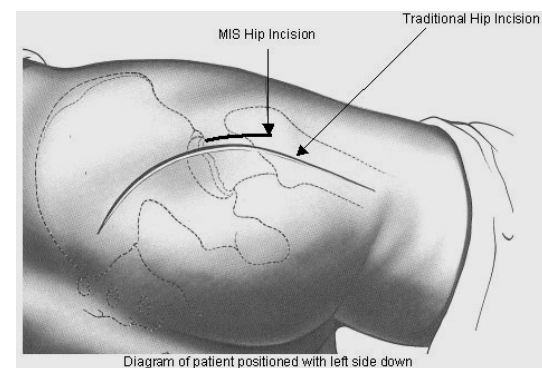
Now internally rotate the leg and identify short external rotators.

Piriformis need a stay stitch and divide it with superior and inferior

Gamelli and obturator internus close to the trochanter
and raise aponeurosis

Identify the bleeder at the upper border of the Quadratus Femoris

Now divide the capsule from the acetabulum to the trochanter
and from superior to inferior.



In revision: Longer incision
Divide Quadratus femoris
Release Gluteus maximus from Gluteal tuberosity
Anterior capsulotomy
Posterior capsulectomy
Dislocate the hip with curved hook
Excise the tissue or cement at the shoulder of the prosthesis
Six samples to the lab

Now dislocate the head by traction, flexion and internal rotation of the hip

Divide the neck as planned

Preparation of the acetabulum

Howman's anteriorly under Psoas [just anterior to the anterior wall]

Second Howman's at the inferior margin of the acetabulum

Self retaining retractor for the capsule

Excise the limbus

Curette the Fovea and excise the ligamentum teres and assess depth of the fovea for reaming

44mm deepen up to the floor

Then sequential increase till all cartilage is removed [avoid double radii]

Multiple drill holes: with 3 main ones for cemented cup

Cemented or Cementless cup with 30° anteversion

[Presently antibiotic cement is commonly used even in primary hips

1.2 g tobramycin and 1 g of Vancomycin /400 g of powder]

Feel for any extra cement or osteophyte

Small swab in the acetabulum

Preparation of the Femoral stem

Leg flexed and internal rotation

Box chisel and open the medullary cavity

Use tapered reamer

Rasp

Trial reduction and note the tension, limb length and offset

Limb length check

1. Shuck Test

Traction in a distal direction: pull the leg axially.

Determination of the overall soft-tissue tension around the hip joint.

2. Dropkick Test

The hip is held in extension and knee in 90°

If the extremity has been over lengthened, the extensor mechanism becomes excessively taut

3. Leg-to-Leg Comparison

Compare with opposite leg

Lateral approach

Skin incision; slightly anterior Centering on the trochanter an the junction of anterior 1/3 and posterior 2/3 of the trochanter

Split the gluteus medius proximally [posterior 2/3 and anterior 1/3rd]

Distally split the vastus lateralis a with the coagulation diathermy

Gluteus minimus detached anteriorly from the capsule and Inner aspect of the trochanter

Capsule with Bigelow's is divided T fashion with a longitudinal

Incision along the neck and the transverse at the base of the trochanter

Do not split gluteus medius proximally by more than 3 cm

Acetabular alignment: 10° anteverted and 45 ° inclination and stem in neutral alignment

Wound Drain

Parker conducted a meta-analysis evaluating the efficacy of using and not using wound drains following total hip and total knee arthroplasty. There was no difference between patients who had been managed with a drain and those who had not with respect to the occurrence of wound infection, hematoma, or re-operation for wound complications.

IN CEMENTLESS HIPS

A. Young man: Line to line and screw fixation
Or Press fit 1-2mm under ream

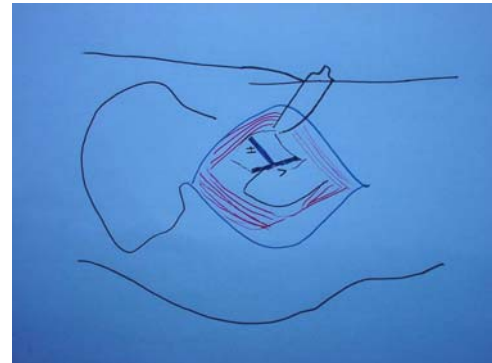
Woman: if cancellous bone: 2mm

B. Hemispherical under ream 2mm
: Rim fit socket

C. Iatrogenic fracture acetabulum

Stable: use screw

Unstable: Fix the fracture



SAFE ZONE FOR SCREW PLACEMENT

3.5 in the Posterosuperior quadrant

2.5 in the Posteroinferior quadrant

Technique of optimal fixation of the cup

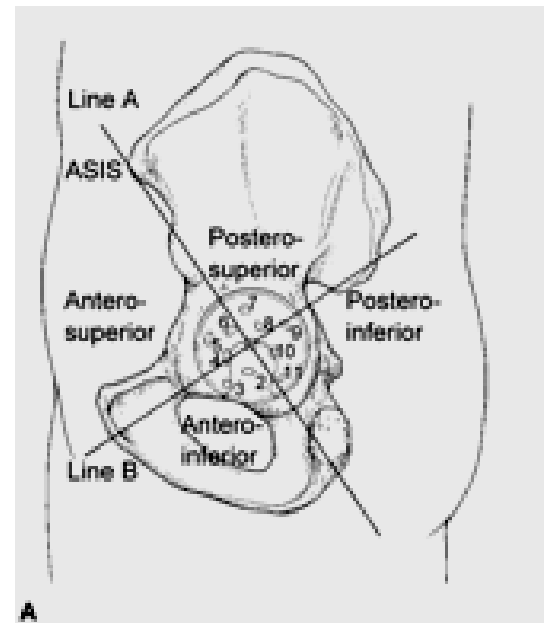
Reaming

First reamer is to centralise

Last reamer is to optimize the final component position

Position of the cup: Inclination 45°

Anteversion $10-30^{\circ}$



Always check the stability of the cup. If cup is not firm, then deepen with the reamer. If instability still exists, then fix with screws.

OPTIMAL FIXATION OF THE STEM

Should be neutral varus and valgus

Should be $5-15^{\circ}$ anteverted

Optimal offset [template]

Proper limb length

POST OPERATIVE

1. Weight bearing as tolerated for cemented and cementless
2. Hip care: Avoid activities causing excessive flexion at the hip
3. Restrictions rehabilitation

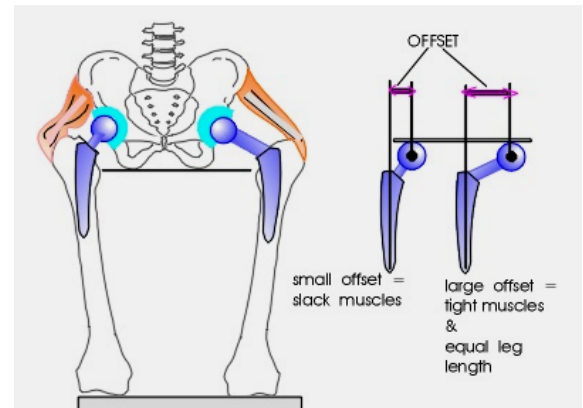
The role of postoperative functional restrictions [Hardinge approach]

THR a Hardinge approach is associated with a low dislocation rate. Recent study shows that removal of several restrictions did not increase the prevalence of dislocation. Rehabilitation is more cost efficient and patients achieved a faster return to daily functions in the early postoperative period..

OPTIMAL OFFSET

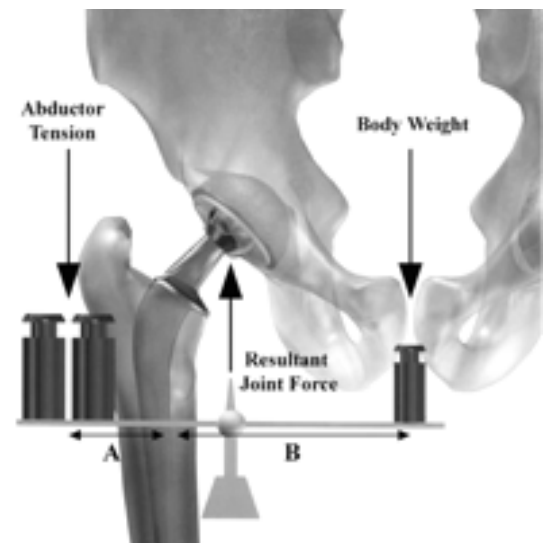
Femoral offset is the perpendicular distance between the centre of the femoral head and a line drawn down the centre of the femoral shaft.

The average offset was 44 mm



What happens when offset is not restored?

1. With decreased offset, the abductor is compromised
2. With decreased offset there is increased resultant forces across the hip joint and increase wear
3. With decreased offset, there is increased hip instability
4. With decreased offset, there is increased impingement.



A number of factors determine the amount of offset of the femur.

1. Large femur tends to have more offset than smaller ones.
2. Varus neck tends to have greater femoral offset.
3. Length of the femoral neck: longer the neck, offset is increased

How to increase offset

1. Increasing the length of the femoral neck or head increases the offset.

Unfortunately, an increase in the neck length also increases the limb length



2. The greater varus neck-shaft angle results

in increased offset. However, this also increases torsional force that tends to rotate the femoral component.

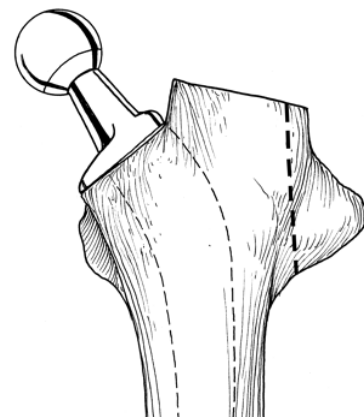
3. Medializing the femoral Neck



4. Trochanteric Osteotomy.

By lateralising abductor moment arm.

Charnley used this concept



5. Acetabular Component

Modular "offset" or "lateralized" liners



HOW TO ACHIEVE PROPER OFFSET?

Template

If no limb-length discrepancy is present, the surgeon should align the centre of the appropriate femoral head template with the anticipated centre of rotation previously marked on the radiograph.

If the affected hip is short, then the head centred should be positioned above the anticipated centre of rotation by a distance that is equal to the measured limb-length discrepancy ("A" – "B").

If the centre of the trial femoral head is positioned medial to the planned centre of rotation, femoral offset will necessarily be increased and the joint reactive forces acting at the hip will be correspondingly reduced.

Conversely, if the femoral head centre lies lateral to the centre of rotation, offset will be reduced, resulting in lower abductor strength and these patients need offset prosthesis.

WHICH PROSTHESIS

Murray NHS study, the long term and best results available for:

Exeter and Charnley > Stanmore and Muller > PCA and HGA

Scandinavian study: Spectron is better

Although newer cementless prosthesis appears to be better: CLS, AML. These prosthesis are three times expensive and possibly better used in younger patients