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Foot & Ankle, Hip and Knee Surgery

Anterior Approach to the Hip

Dr George Konidaris – Orthopaedic
surgeon



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What's the fuss all about this NEW surgery?

- **Not** a new approach or surgery
- The approach was described back in 1881
- A French surgeon, Robert Judet introduced the procedure using a form of hip replacement in the 50's.
- What is new, is the development of minimally invasive equipment, that makes the approach easier.



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Aren't Hip Replacements already very good?

- Yes.
- Survival rates are in the order of 80-90% at 20years
- So the benefits are only small, and only in the early recovery phase.
- Aim of surgery is to provide the patient with a pain free joint that allows an improvement in their quality of life.



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Advantages – This is what is usually quoted.

- Muscles usually not cut, but hip approached through intermuscular planes
- Shorter hospitalisation and rehab.
- Possible capsule preservation.
- Immediate post-operative muscle tone preservation.
- Reduced risk of dislocation.
- Decreased postoperative pain.
- Less blood loss.
- Faster return to daily activities.
- Supine position allows easier check of limb lengths.
- Table attachment allows for easier XR intraoperatively.



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Short Term Benefits of Anterior Approach

- Recovery after an anterior hip replacement is a little **faster** than after the traditional approaches (Posterior and Anterolateral) in the **first 2-3 months** after the operation.
- Hip precautions, such as an abduction pillow, low chairs, crossing of legs do not need to be strictly followed.



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Short Term Benefits of Anterior Approach

- Spares gluteus maximus muscle, an important muscle for many activities of daily living e.g. rising from a chair or toilet seat, walking, getting in & out of cars, and climbing stairs.



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Short Term Benefits

- Patients can sleep on their side as well as their back in the early stages of surgery.
 - Patients may lie or sleep in any position they find comfortable after anterior hip replacement.
 - After a posterior approach, patients are generally required to sleep only on their back for 6 weeks.
- Return to usual everyday activities and independence more quickly



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Long Term Benefits?

- The most critical factors in the long term success of a hip replacement are related to-
 - choice of the type of prosthesis
 - the surgical technique (i.e. the components are placed in the correct position and secured well)
- Rather than the surgical approach.
 - Anterior, Posterior or anterolateral



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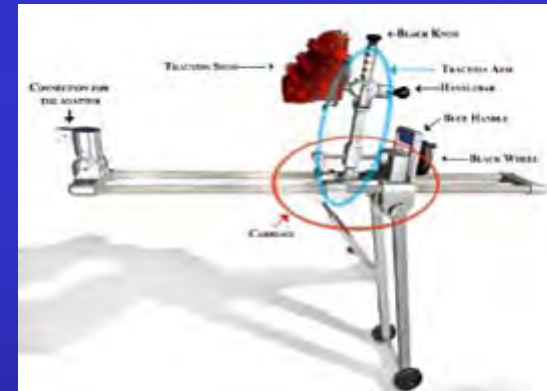
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Disadvantages



- Special instrumentation (retractors) needed
- Often done with specific table (although can be done on regular OT table), which can be expensive.
 - The table does allow for XRs to be taken.



- Learning curve (as with any procedure)
 - Higher complication rate during the learning curve
- Femoral exposure can be more difficult, especially in muscular or obese patients, patients with abnormally shaped femoral necks.



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Disadvantages

- Nerve injury is possible (LFCT), which decreases sensation to the outside of the thigh.
 - This generally does not cause significant problems to the patient.
 - The posterior approach does carry a small risk to the Sciatic nerve.



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Disadvantages of the Anterior Approach

- There is an increased risk of complication on the femoral side, due to increased difficulty in exposing and visualizing the femur.
 - GT fractures, shaft fractures
- It can be difficult to see enough of the femur to fix a fracture, hence it may be necessary to expose the femur through a separate incision (lateral thigh)
 - During the posterior approach, if this was to occur then the incision would simply be extended down the lateral aspect of the thigh



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What factors would I consider when deciding upon the approach.

- Obese or muscular patients
- Abnormal anatomy (DDH, previous fractures, abnormal bone alignment)
- Bone quality (severe osteoporosis)
- Large leg length discrepancies (which would require releases or osteotomies)
- Revision hip surgery



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Special Table (attachment)

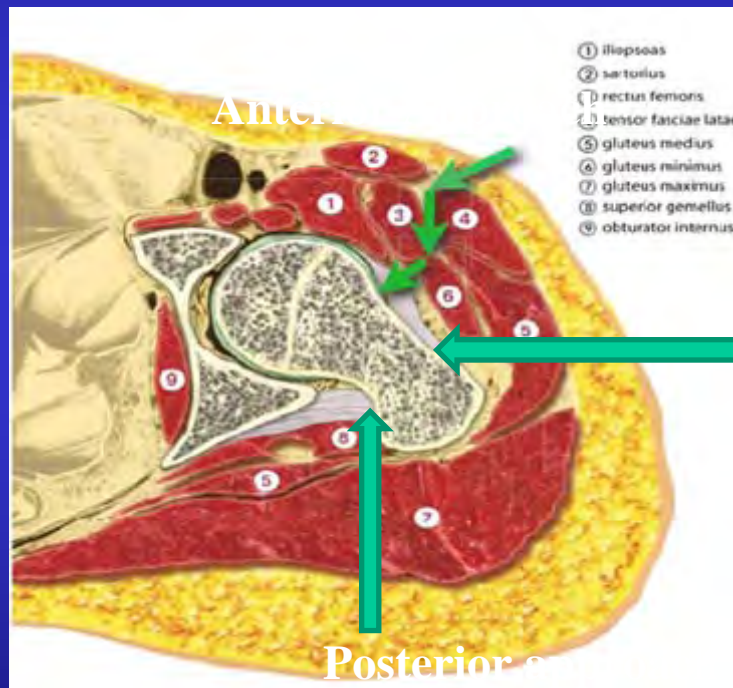


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Various Approaches



Anterolateral approach

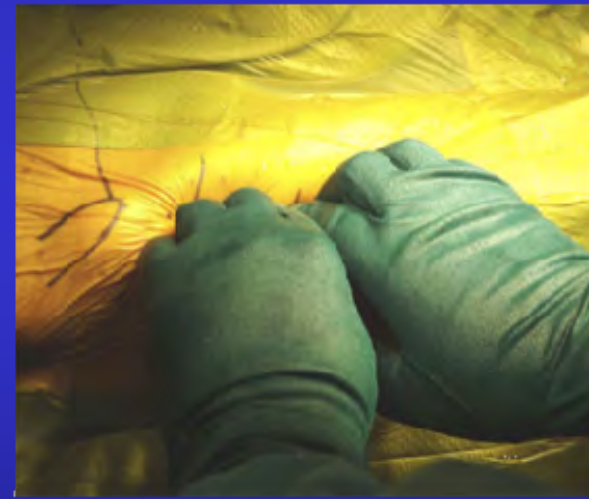
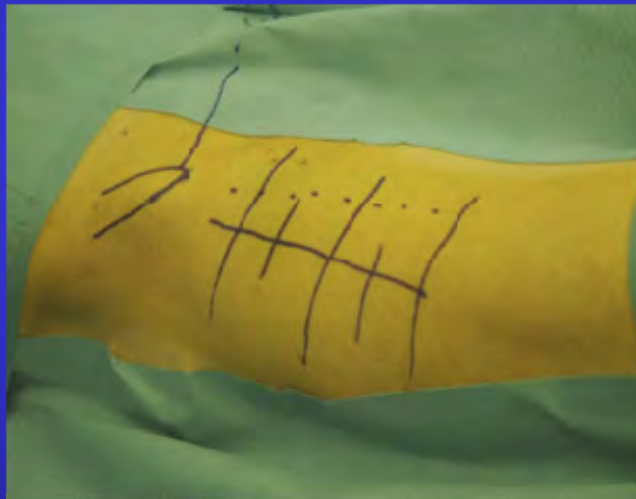


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Surgical Technique



AVOID THE LATERAL FEMORAL CUTANEOUS NERVE

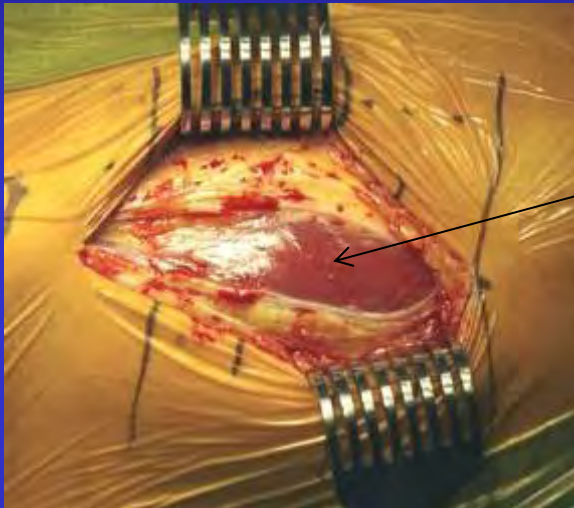


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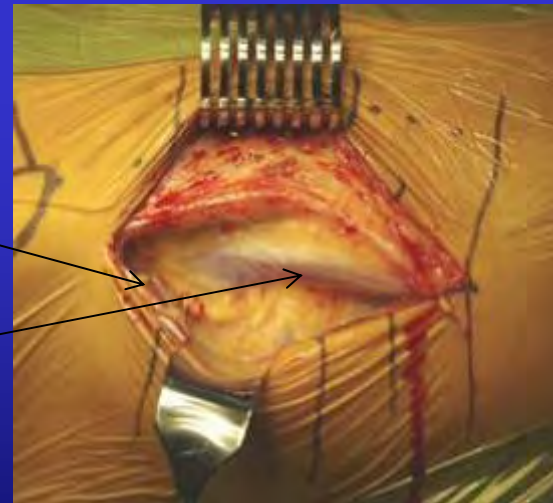
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SURGICAL TECHNIQUE



After the initial incision, the **tensor fascia lata** is separated from its aponeurosis.

The **tensor fascia lata** is then retracted laterally exposing the aponeurosis covering the **rectus femoris**

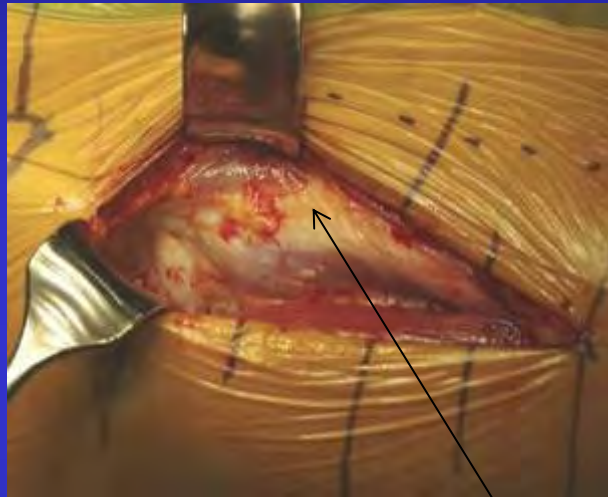


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SURGICAL TECHNIQUE



After separating **rectus femoris** from its aponeurosis, it is then retracted medially along with the **tensor fascia lata** which remains retracted laterally, exposing the fatty bundle which contains the arterio-venous circumflex bundle

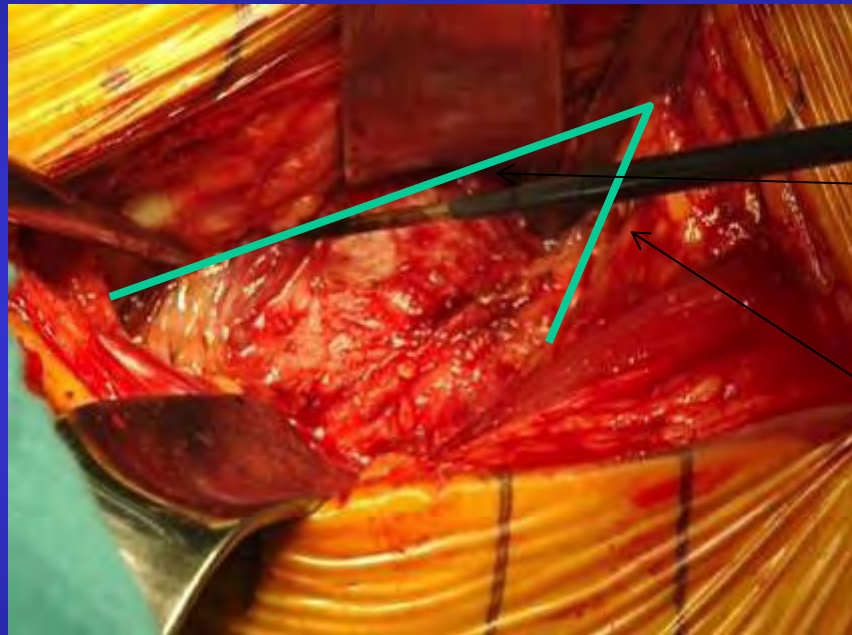


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SURGICAL TECHNIQUE



The capsule is opened by following the **ilio capsularis** muscle edge and a flap is formed by making a lateral incision along the edge of the **gluteus minimus**



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SURGICAL TECHNIQUE

The labrum and round ligament are excised to expose the Acetabular fossa. Acetabular Reaming is then initiated using the Offset Reamers



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SURGICAL TECHNIQUE

Once the Acetabular stage has been completed, the patients leg must be repositioned in order for the femoral stage to be initiated. The Extension table is adjusted



1 - Traction



2 - External Rotation



3 - Traction Release

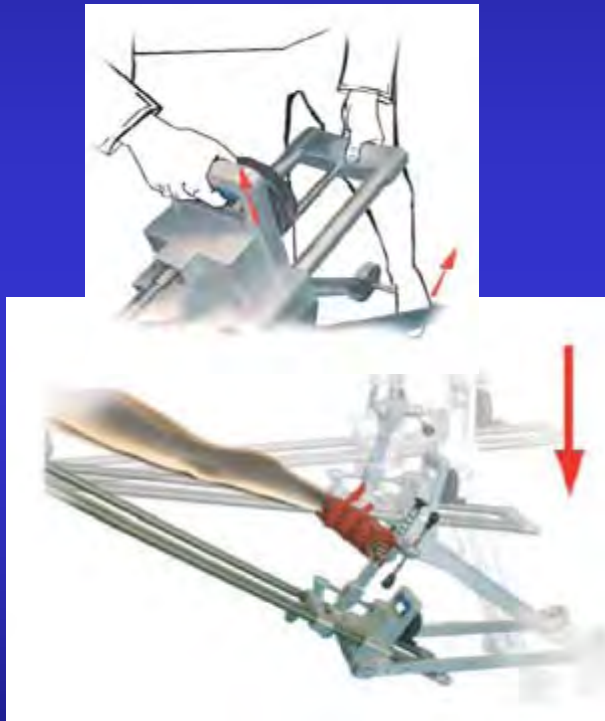


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SURGICAL TECHNIQUE



4 - Hyperextension



5 - Adduction



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SURGICAL TECHNIQUE

Wound Closure

The joint capsule is closed. The superficial aponeurosis of the tensor fascia lata is closed, taking care not to catch a branch of the femoral cutaneous nerve. The skin is then closed.



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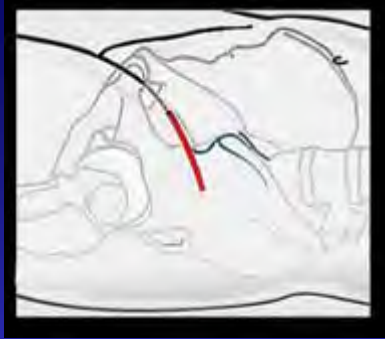
Surgical Video



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What's New?



- Bikini line incision
 - ‘scar that is cosmetically pleasing given that it is hidden in the groin’
 - A transverse/oblique incision in line with the Groin crease.
 - Generally not used in obese patient, or very muscular patients
- Superior Approach Hip Replacement
 - Release of Piriformis tendon with capsular split
 - Use of special reamer to prepare the acetabulum
 - Femur prepared prior to neck osteotomy
 - Unable to insert acetabular screws (need to make a separate incision to insert drill/screwdriver)



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Conclusion

- **All recognized surgical approaches work** and the most important determining factor in ensuring a successful hip replacement that should last well over 20 - 25 years is for the patient to choose a surgeon who is well skilled in hip replacement surgery.
- With proper surgeon training, minimally invasive total hip replacement with the anterior surgical interval is safe and efficacious.
 - IJO: 2008: 42: 3 , Minimally invasive total hip arthroplasty with the anterior approach, B Sonny Bal, S Vallurupalli



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Conclusion

- Clinical results have shown that the technique is safe, with infection, dislocation, and early revision rates comparable with those associated with the posterior and lateral approaches.
- The risk of complications such as intraoperative fracture and nerve palsy appears to decrease with operative experience.
 - Total Hip Replacement with Use of a Direct Anterior Approach-A Critical Analysis Review, Crist, Ivie, Bal, JBJS Reviews, 2014 Jun;2(6)



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Conclusion

- The Heuter (Anterior) group showed significantly quicker balance control, on average 10 days earlier, than the posterior group ($p < 0.05$).
- The achievement of the other milestones of independent and distance walking, stair climbing and hip movement also showed quicker recovery overall in the Heuter group; this was, however, not statistically significant ($p > 0.05$).
 - A prospective randomised trial comparing the functional recovery after posterior versus anterior approach for total hip arthroplasty, F Strambi, A Yeo, G Riva, J Buly, J Hisole and RE Field, Bone Joint J 2013 vol. 95-B no. SUPP 1 23



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Conclusion

- Primary total hip arthroplasty using the anterior approach versus the posterior approach allows for more rapid recovery in patients with no significant selection bias or protocol changes, even during the learning curve period.
 - Early Outcomes of the Anterior Approach Versus the Mini-Incision Posterior Approach for Primary Total Hip Arthroplasty: 150 Consecutive Cases, Paulus, Zawadsky and Murray, JBJS 2013 vol. 95-B no. SUPP 34 478



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