بسم الله الرحمن الرحيم

MONA MAGHRABY

شبكة المعلومات الجامعية

التوثيق الالكتروني والميكروفيلم

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جامعة عين شمس

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Anterior Approach of Total Hip Arthroplasty, a Systematic Review

Submitted for Partial Fulfillment of Master Degree in ***Orthopaedic Surgery***

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Ahmed Essmat Abdel Mohsen

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Abb.	Full term
ASIS	*Anterior superior iliac spine*
BMI	*Body mass index*
GT	*Greater trochanter*
HHS	*Harris hip score*
M	*Muscle*
N	*Nerve*
PRISMA	*Preferred reporting items for systematic review and meta-analysis*
RCT	*Randomized control trial*
THA	*Total hip arthroplasty*
THR	*Total hip replacement*
VAS	*Visual analogue score*

INTRODUCTION

Anterior approach for total hip replacement which known as Muscle-Sparing Approach is considered as Minimal Invasive Surgery (MIS).

The incidence of proximal femoral fractures has increased significantly in recent years, and is expected to continue to rise with increasing life expectancy [(1)].

Femoral neck fractures are usually classified as either displaced or undisplaced. The rates of complications are higher for fixation of displaced femoral neck fractures. The risk of non-union in femoral neck fracture fixation is 5 to 15% and the risk of avascular necrosis is 7 to 12%. Hence, a significant number of cases with internal fixation for femoral neck fracture go on to salvage arthroplasty [(2)].

The development of modern total hip arthroplasty (THA) began in the 1950s with Charnley's low-friction arthroplasty[(3,4)]. After decades of improvement.

Improvements in hip arthroplasty procedures have led to faster functional recovery, shorter hospitalization, and higher patient satisfaction[(5,6)].

There are 4 commonly used surgical approaches to the hip: the anterior, lateral, anterolateral and direct lateral (Hardinge) and posterior approaches. Each one is different from the other in anatomy, technical aspects, outcome and complications **figure (1).** The operations can be performed in supine or in lateral position on standard or on trauma tables. More recently minimal invasive operating techniques (MIS) have been developed for all possible approaches in assumption that muscular damage is reduced and postoperative recovery is thus facilitated. However there is no current consensus regarding which approach is the most suitable.

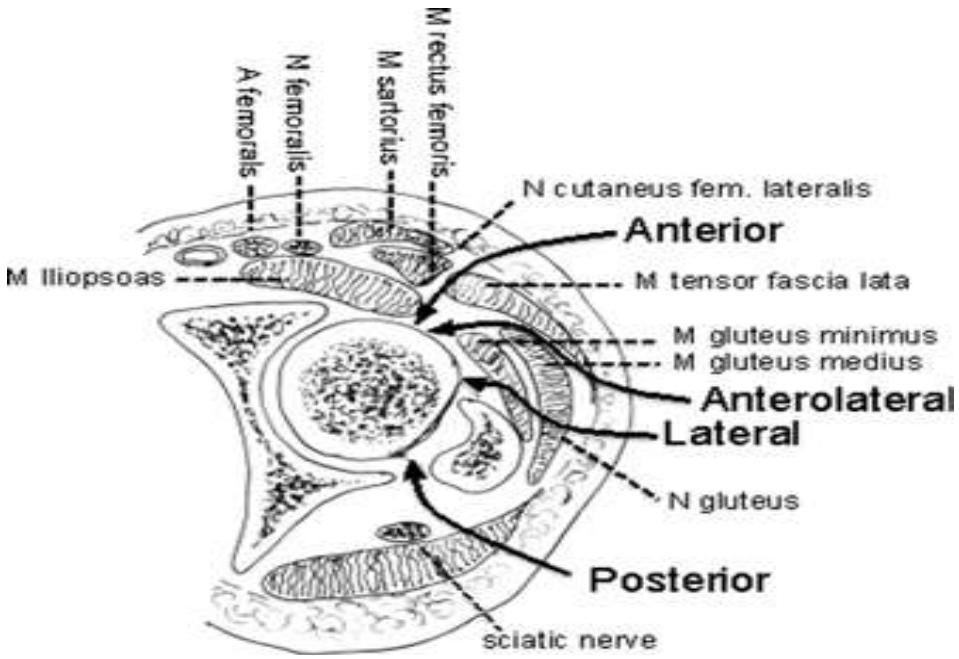

Figure (1): The posterior, lateral, anterolateral and anterior approach. Each approach has specific muscle groups that have to be mobilized and for each approach specific neurovascular structures are at risk[(7)].

Direct anterior approach

The direct anterior approach to the hip was first described by Smith-Peterson in the 1940s, and was later modified by Heuter in the 1950s[8]. Internationally, this approach is gaining popularity in the hip arthroplasty community [9].

The patient is placed in supine position on a standard table or on a fracture table[10]. Incision made from anterior half of iliac crest to ASIS from ASIS curve inferiorly in the direction of the lateral patella for 8-10 cm **figure (2)**.

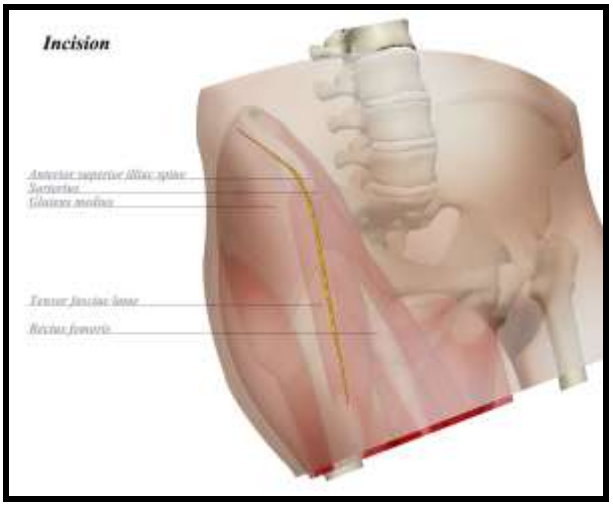

Figure (2): Direct anterior approach (Smith-Peterson) incision [11].

Internervous plane: Superficial between sartorius m. (femoral n.) and tensor fasciae latae m. (superior gluteal n.) Deep between rectus femoris m. (femoral n.) and gluteus mediusm. (superior gluteal n.) **Figure (3).**

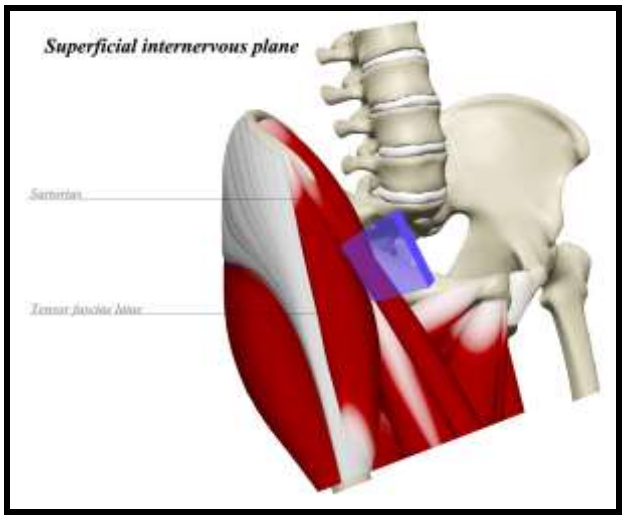

Figure (3): Internervous plane [11].

Sartorius muscle, rectus femoris muscle and iliopsoas muscle on one side and tensor fasciaelatae muscle on the other side are mobilized and held back by retractors as shown in **figure (4)**.

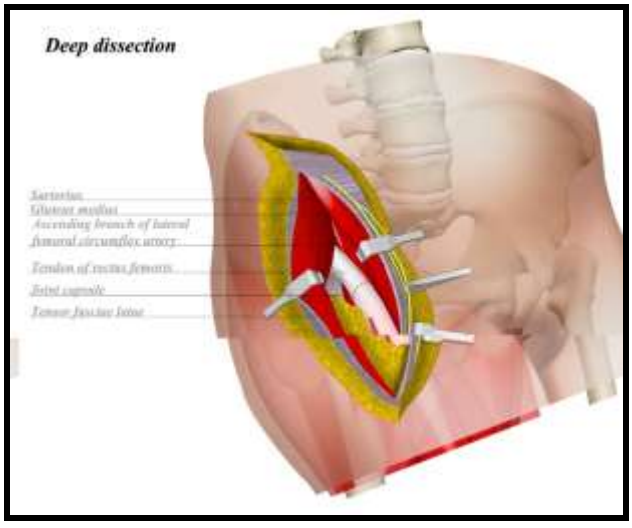

Figure (4): The interval between the rectus and gluteus medius is found, thereby exposing the joint capsule[11].

The femoral nerve and vessels are at risk if retractors are placed on the anterior rim of the acetabulum and the lateral branches of the femoral nerve areat risk when using caudal retractors.

During preparation and remaining parts of the m. tensor fasciae latae mightbe damaged.

The exposure of the acetabulum is good and it can be extendedfor acetabuar revisions but the posterior column can not be reconstructed. The femoral preparation is more difficult and femoral revisions with osteotomies can not be performed using this approach.

Advocates of this approach consider its advantages to be the muscle-sparing nature of its internervous intervals, earlier restoration of gait kinematics and low dislocation rates [12-15]. The direct anterior approach can be performed with or without the use of a specialized table or fluoroscopy [16,17].

Lateral approach

The direct lateral approach to the hip was described by *Hardinge in 1982* [18]. Approximately 60% of Canadian orthopedic surgeons perform THAs using a direct lateral approach [19].