Resurfacing Hip Arthroplasty

An essay submitted in partial fulfillment of Mast degree(orthopaedicsurgery)

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Introduction

The predominant surgical intervention for the treatment of severe degenerative hip diseases is total hip replacement (1)

The outcome of conventional total hip replacement (THR)in terms of pain relief and improved mobility are generally considered to be good in elderly people more than 65 years (2).

The treatment of younger people with diseases of the hip joint presents a difficult clinical problem. conventional total hip replacement (THR)may be felt to carry too
High risk of failure over a patient's lifetime.
Overall , long-term results of THR in younger patients
With a variety of underlying conditions indicate
That 25-30% may require revision by 15 years (3).

There are problems associated with this procedure (THR) in more active adults like short device survival, device dislocation and loosening(3-4%of cases) (4)

The resurfacing hip arthoplasty is to delay the need for conventional primary total hip replacement with the aim of relief pain, restore function and preserve bone stock needed for future revision surgery. It also has the advantage of easy future revision to THR if it become necessary since the femur is preserved as in initial total hip replacement.(5)

Aim of the work

Aim of the work in this essay is to discuss (resurfacing hip arthroplasty)as an alternative pathway to conventional total hip replacement "its basic science, indication, technique, outcome, advantages,& disadvantages".

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الإحلال السطحي لمفصل الفخذ

رسالة
توطئة للحصول على
درجة الماجستير في جراحة العظام

مقدمة من
الطبيب/ مروان مصطفى الشال
بكالوريوس الطب والجراحة

تحت إشراف
الأستاذ الدكتور/ الظاهر حسن الظاهر
أستاذ جراحة العظام
كلية الطب – جامعة عين شمس

الدكتور/ ماجد محمد سامي
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كلية الطب - جامعة عين شمس

جامعة عين شمس
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الإحلال السطحي لمفصل الفخذ

تعد عملية الإحلال السطحي لمفصل الفخذ واحدة من أهم عمليات جراحة العظام حيث إنها تمثل طفرة في جراحات المفاصل في النصف الثاني من القرن العشرين. حيث إنها تساهم في علاج العديد من الأمراض التي تصيب رأس عظمة الفخذ أو عظمة الحرقفة منها الخشونة أو التآكل وبخاصة في السن المبكرة. وأنها تمتاز بالمقارنة بعملية تغيير مفصل الفخذ الكامل بأنها تحافظ على عنق ورأس عظمة الفخذ مما يسمح بإعادة تلك العملية مستقبلاً أو إمكانية استبدال مفصل كامل بعد ذلك.

ويتم ذكر نبذة عن تاريخ وتطور هذه العملية وكذلك المواد المستخدمة في تصنيع مكوناتها ومزايا وعيوب كل منها.

ويتم مناقشة مميزات هذه العملية بالتفصيل وأحدث الطرق المتبعة لإجراء هذه العملية وكذلك المضاعفات التي قد تنجم عنها وطرق تفاديها والتعامل معها.

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List of abbreviations

- Co: cobalt.
- Cr: cromium.
- DDH: Developmental dysplasia of the hip.
- HA: Hydroxyapatite.
- IL-2: Interlukin-2.
- INF: Interferon.
- M-O-M: Metal on metal.
- NICE: National institute for clinical excellence.
- SARI: Surface arthroplasty risk index.
- THARIES: Total hip articular replacement using internal eccentric shells.
- THR: Total hip replacement.
- UK: United kingdom.

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Anatomy of The Hip Joint

The hip joint is multi-axial, synovial, ball and socket joint composed of acetabulum and femoral head which provides stability and great range of mobility [1].

Its stability is largely the result of adaptation of the articulating surfaces of the acetabulum and the femoral head to each other and its great range of motion results from that is the femur has a neck that is much narrower than the equatorial diameter of the head and also due to the distance from the hip centre of rotation to the greater trochanter [1] .

The acetabulum is formed by fusion of three components of the hip bone ilium, ischium, and pubis which meet at a Y - shaped cartilage which forms their epiphyseal junction, this epiphysis closes after puberty.

The acetabular articular surface, covered with hyaline cartilage, is a c–shaped concavity. Its peripheral edge is deepened by a rim of fibrocartilage (the a acetabular labrum which encloses the femoral head)[1]. The cavity of the acetabulum faces obliquely forwards, outwards, and downwards. A mental visualization of acetabular orientation is essential when directing the reamer for preparation of the acetabulum during surgery [1].

A plane through the circumference of the acetabulum at its opening would intersect with the sagittel plane at an angle of 40 degree opening anteriorly, and with the transverse plane at an angle of 60 degree opening laterally [1].

The femoral head is spherical and adapted to the concavity of the articular surface of the acetabulum and forms two-thirds of sphere. It is directed upwards,medially and slightly forwards, the cartilage covering the femoral head is thickest on the medial-central surface and thinnest towards the periphery. The variations in the thickness of the cartilage results in a different strengthes on different regions of the femoral head[1]. These differences in the mechanical properties from point to point on the cartilage of the femoral head may influence the transmission of stresses from the acetabulum through the femoral head to the femoral neck. Although stresses on the femoral head are distributed, the joint reaction forces usually act on the superior quadrant [1].

The non-articulating region of the head is excavated into a pit for attachment of the ligamentum teres[1].

The neck of femur is narrower than the equatorial diameter of the head which responsible for the wide range of movement in such a stable joint [1].