بسم الله الرحمن الرحيم

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تم رفع هذه الرسالة بواسطة / سلوي محمود عقل

بقسم التوثيق الإلكتروني بمركز الشبكات وتكنولوجيا المعلومات دون أدنى مسئولية عن محتوى هذه الرسالة.

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Longevity of Cemented Total Hip Replacement in Patient Younger than 50 Years Systematic Review and Meta-analysis

Thesis

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Master Degree in **Orthopaedic Surgery**

By

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Abb.	Full term

AAOS .....American Academy of Orthopedic Surgeons

CI.....Confidence interval

HHS.....Haris hip score

THA.....Total hip arthroplasty

THR.....Total hip replacement

ABSTRACT

Background: Total hip replacement is a common and highly effective operation. All hip replacements would eventually fail if in situ long enough and it is important that patients understand when this might happen, **Aim and objectives**: to perform an evaluation and meta-analysis of all available trials and studies demonstrating the different clinical outcomes following cemented total hip replacement in patients younger than 50 years, **Subjects and methods**: This study is Published observational analytical studies (Case-control, case reference or cohort studies) on the outcomes of cemented total hip replacement in patients younger than 50 years. Trials which involve English papers from the year 2000 till 2021. Only studies on human subjects younger than 50 years were included, **Result**: 19 studies were included from 2000 to 2021. There was statistically significant heterogeneity in the studies (I288.47%, P <0.0001). Using the random effects model, total Event rate for revision was 17.847% (95% CI: 12.834 – 23.485), **Conclusion**: this study demonstrates good comparable outcomes for young patients having cemented both components THR. The trend towards using expensive uncemented fixation may be driven largely by marketing and ease of prosthesis insertion rather than real world performance gains for the patient. A THR with a cemented socket offers good outcomes to patients.

Keywords: Total Hip Replacement; Total Hip Arthroplasty, Implant Longevity.

INTRODUCTION

Total hip arthroplasty restores hip function, relieves pain, is cost-effective, and associated with high survival rates. Given this experience indications for THA have now been extended to younger ages including patients younger than 50 years. However, most patients under the age of 50 years with osteoarthritis have some underlying disorder, such as developmental dysplasia of the hip, Legg-Calve´-Perthes disease, or juvenile rheumatoid arthritis. Bone stock deficiencies and bone deformations often are present and can be an additional problem in achieving a stable and durable reconstruction.[(1)]

The results of cemented primary total hip replacement (THR) have been excellent over the recent decades, with national joint registries reporting revision-free survival rates between 90% and 98.2% at ten years. Based on recent long term results of cemented THR using modern cementing techniques, and the unexpected and ongoing problems with metal-on-metal articulations, the discussion regarding hip replacement in young patients has been re-opened. In particular the authors suggest that in current orthopaedic practice, attention has been drawn to the importance of surveillance of newly introduced implants, as well as ongoing long-term results of implants that are currently in use all over the world.[(2)]

The wide range of anatomic abnormalities that characterize hip dysplasia dictate the need for different reconstructive techniques when hip replacement is required; the activity level and age of this patient population, coupled with the increased complexity of surgery, explain the somewhat elevated failure rate of hip replacement in dysplasia and emphasize the need for careful analysis of each case and selection of the most appropriate reconstruction options. In regard to the acetabular cup, deficient bone stock may limit the ability to place the component fully on native bone at the true acetabular region. When standard techniques of reconstruction leave a significant portion of the component uncovered,the alternatives include acetabular augmentation with bone autograft, intentional high placement of the component, or medialization of the component.[3]

Since the amount of remaining supportive acetabular bone stock in the patient plays an important role in the success of reconstruction, proper classification of the degree of acetabular bone defect is necessary preoperatively. The popular classification systems for acetabular bone defect include the American Academy of Orthopedic Surgeons (AAOS) and Paprosky classification systems.[4]

Aim of the Work

The purpose of this study is to perform an evaluation and meta-analysis of all available trials and studies demonstrating the different clinical outcomes following cemented total hip replacement in patients younger than 50 years.

REVIEW OF LITERATURE

Arthroplasty Options in Dysplastic Hip in Young Adults

Total hip arthroplasty is the procedure of choice for most patients with symptomatic end-stage coxarthrosis. The results of total hip arthroplasty demonstrate a high rate of pain relief and functional improvement. The anatomic abnormalities associated with the dysplastic hip increase the complexity of hip arthroplasty. When pelvic bone stock allows, it is desirable to reconstruct the socket at or near the normal anatomic acetabular location. To obtain sufficient bony coverage of the acetabular component, the socket can be medialized or elevated, or a lateral bone graft can be applied.[5]

Classification of hip displasia

Dysplastic hips can be characterized by the severity of anatomical abnormalities. Classification systems are useful for patient assessment as well as comparison of results using different treatments. [6]

The classification of Crowe et al is widely accepted as a method to categorize the degree of dysplasia. The authors divided dysplastic hips radiographically into four categories based on the extent of proximal migration of the femoral head. The migration is calculated on an anteroposterior radiograph of

the pelvis by measuring the vertical distance between the inter-teardrop line and the junction between the femoral head and medial edge of the neck. The amount of subluxation is the ratio between this distance and the vertical diameter of the undeformed femoral head. [7]

Thus, if the distance between the head-neck junction and the teardrop is half the vertical diameter of the femoral head, the hip is subluxated 50%. When the femoral head is deformed, the predicted vertical diameter of the femoral head was found to be 20% of the height of the pelvis as measured from the highest point on the iliac crest to the inferior margin of the ischial tuberosity.[8]

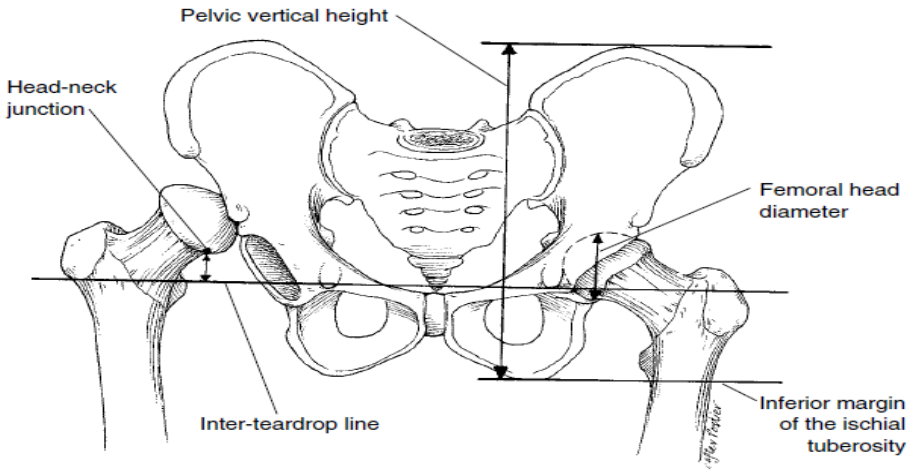

Figure 1: Radiographic references used to determine the severity of hip dysplasia according to the system of Crowe et al.[2]

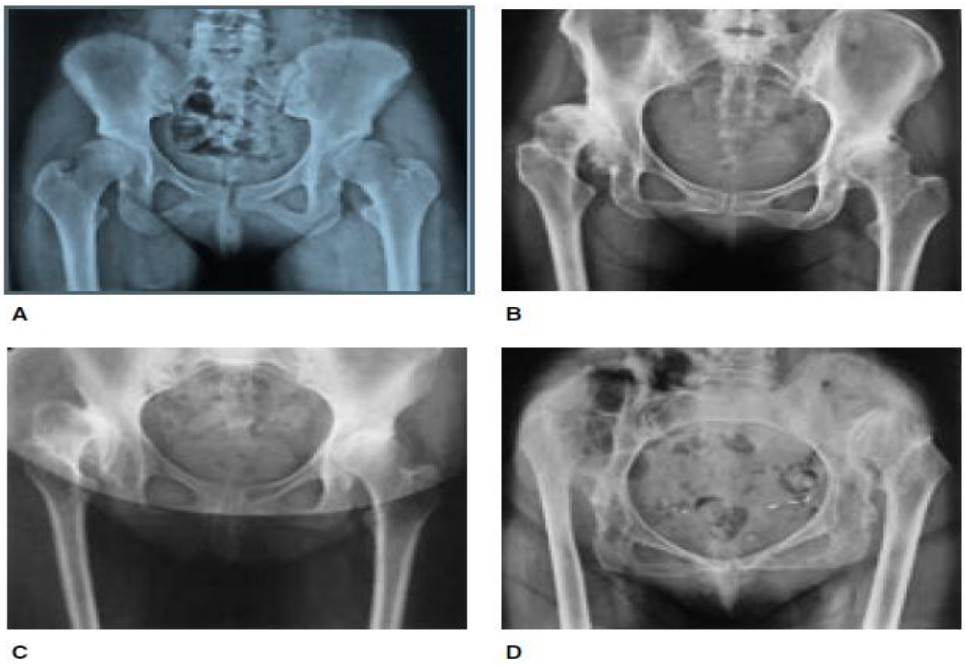

Figure 2: Anteroposterior radiographs of hips showing degrees of dysplasia according to the classification of Crowe et al [(2)] **A,** Type I. **B,** Type II. **C,** Type III. **D,** Type IV.

Type I represents proximal migration of the head-neck junction from the inter-teardrop line of <50% of the vertical diameter of the femoral head (<10% of the vertical height of the pelvis) (Fig. 2).

Type II represents proximal migration of 50% to 75% of the femoral head diameter (10% to 15% of the pelvic height).

Type III has 75% to 100% proximal migration (15% to 20% of the pelvic height).

Type IV has >100% proximal migration (>20% of the pelvic height). [(9-12)]