Simultaneous Total Knee Arthroplasty and Management of Extraarticular Fractures and Deformities

Thesis Submitted for Partial Fulfillment of M.D. Degree In Orthopedic Surgery

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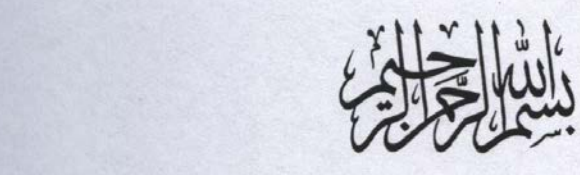

قالوا سبحانك لا علم لنا إلا ما
علمتنا إنك أنت العليم الحكيم

سورة البقرة- الأية ۞٣٢۞

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Contents:

Introduction

Patients with arthritis of the knee and an extra-articular deformity present a unique technical challenge, as it becomes more difficult to restore the mechanical axis during total knee replacement .[1]

While an extra-articular deformity is typically the result of a femoral or tibial malunion, it can also result from metabolic bone disease (ie,Paget's disease, rickets, osteomalacia), congenital deformity, prior osteotomy, or other deformities.[1]

Three types of extra-articular deformities may exist: coronal(varus-valgus), sagittal(flexion-extension) and transverse(rotational). Deformities in the transverse plane are less frequent than in the frontal and sagittal planes and are difficult to assess both clinically and radiographically,these deformities may or may not be associated with intraarticular instability.[2,3]

Extra-articular deformity can be addressed with asymmetrical intra-articular resection which can make ligamentous balancing difficult or with correctional osteotomy performed prior to or at the time of primary total knee arthroplasty.[1]

Correction of the deformity by osteotomy allows bony resections more similar to those routinely performed at the time of arthroplasty and less complex soft-tissue releases. Osteotomy at the site of the deformity can be performed simultaneously with TKA or in a staged fashion.[3]

Simultaneous corrective osteotomy and total knee arthroplasty has been advocated to achieve normal alignment of the long bones and better ligament balancing when a patient has an arthritic knee with extra-articular deformity.[4]

Performing an osteotomy in a staged fashion or simultaneously during TKA is a matter of debate, and it depends, in part, on surgeon preference and experience. There are obvious pros and cons to both staged and simultaneous methods. In either situation, the decision to perform an osteotomy adds further complexity to the knee arthroplasty and should not be undertaken without careful consideration and planning.[5]

Several factors must be considered in formulating a treatment plan for the management of extra-articular deformities about the knee.[2]

Factors affecting the type of treatment include age, activity level of the patient, underlying diagnosis, other joint disease, location and extent of the fracture, presence or absence of union, effect of the fracture on limb alignment, quality of the overlying skin, musculature, and neurovascular status.[6]

Preoperative clinical evaluation of the entire limb is necessary including knee range of motion, presence of knee stiffness or flexion contracture, and the existence of apparent deformities in the three planes.[2]

Preoperative radiographic evaluation should be done to evaluate correction of any intra-articular deformity.[2]

Next, proper planning involves cuts perpendicular to the mechanical axes of the femur and the tibia separately. The limitation of an intra-articular correction of an extra-articular deformity at the knee is the collateral ligament insertions. Planned bone resection should not compromise the collateral ligaments.[1]

Careful preoperative planning will obviate many of the potential problems that can occur at the time of surgery with correction of many complex deformities.[2]

Each case should be considered individually. Intra-articular bone resection and soft-tissue balancing may be appropriate when the insertion of the collateral knee ligaments would not be jeopardized by the intra-articular bone resection. Most complex bi- and triplane extra-articular deformities require proper realignment of the limb with osteotomy.[2]

Aim of the Work

The aim of this study is to study the reciprocal relationship between the total knee arthroplasty procedure and simultaneous correction of extraarticular deformity and extraarticular fracture fixation. This will be done on a selected group of patients

Patients and Methods

Type of the study and number patients:

A prospective study will be conducted on 30 patients in Ain Shams University Hospitals with extraarticular deformity or fractures and are candidates for total knee arthroplasty.

This study is considered pilot exploratory study.

Inclusion criteria:

All patients with extraarticular deformities around the knee including fracture malunion , non union, patients with previous osteotomies around the knee,congenital deformities, metabolic deformities, patients with fractures around the knee who are candidates for total knee arthroplasty.

Exclusion criteria:

Patients with pure intraarticular deformity including varus knee or valgus knee which are due to intraarticular cause.

Patients with primary osteoarthritis without extraarticular deformity or periarticular fractures.

Procedure:

Simultaneous correction of extraarticular deformity and/or extraarticular fracture fixation during total knee arthroplasty.

Assessment:

Patients will be assessed preoperatively, immediate, six weeks and six months,one year,and then yearly postoperatively using The Knee Society Clinical Rating System and and knee society radiographic evaluation system. The system is subdivided into a knee score that rates only the knee joint itself and a functional score that rates the patient's ability to walk and climb stairs. The maximum knee score is 100 points including 50 points allotted for pain, 25 points for stability, and 25 for range of motion.

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الفهرس

الهدف من الرسالة

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