Summary

The definition of stiffness after TKR evolved over time, reflecting both patient and physicians increasing expectations for function and range of motion (ROM) after surgery. Patients require a knee flexion of 65- to walk, 70- to lift an object from the floor, 85- for stair climbing, 95- for comfortable sitting and standing, and 105- for tying shoelaces .Nichols and Dorr in 1990 defined stiffness after TKR when there was a flexion contracture of 25- or the arc of motion was less than 45-. Christiensen et al. in 2002 defined stiffness when the arc of motion was less than 70-. Finally, Yercan and coworkers in 2006 defined stiffness when the flexion contracture was equal or greater than 10- or the arc of motion was less than 95- Many of these patients, especially those with severe limitation of ROM, have severe disabling pain that interferes with their activities of daily living and quality of life.

Aetiology

Stiffness after TKR is a multifactorial problem in which preoperative, operative, and postoperative factors can be identified. Before primary surgery, the surgeon should recognize the predisposing factors for stiffness to better address patients expectation for postoperative ROM. During the evaluation of a patient who presents with a stiff TKR, the surgeon should attempt at identifying pre-, intra-, and postoperative factors that might have led to postoperative stiffness. This will allow to select the appropriate surgery and to address the patients expectations for function and range of motion before surgery.

limit postoperative ROM by restricting the flexion gap. A tight extension gap frequently results from insufficient distal femoral resection and can lead to a flexion

Surgical management of the stiff TKR

Manipulation under general or epidural anesthesia is generally successful in improving range of motion when used within the first 3 months of surgery. An excessively aggressive or a late manipulation of the knee can result in complications such as supracondylar femur fracture, patellar tendon avulsion, quadriceps tendon tears, hematoma formation, or wound dehiscence . In the event of an unsuccessful manipulation or when the window for safe manipulation has passed , different surgical options may be considered. Among the possible surgical treatments for stiffness, we will discuss the role of arthroscopic lysis of adhesions, open debridement of the joint with exchange of the polyethylene insert, and revision TKR..Arthroscopy of the knee for stiffness In the stiff TKR, a dense fibrous scar (occupies the suprapatellar pouch and gutters. During open surgery for the treatment of stiffness, this fibrous scar is completely resected to allow exposure of the prosthetic components and improved motion. In the majority of patients with stiff TKR, the scar is abundant and dense in collagen fibers Therefore, the use of arthroscopy for the effective treatment of stiffness is limited for two reasons: first, the amount of scar tissue that can be efficiently resected Overstuffed patellofemoral joint resulted in limited flexion . through an arthroscopy is limited. Second, it is not possible to address any implant related causes of stiffness, exchange a polyethylene insert, or perform a posterior capsular release. On the other hand, it is a less invasive procedure and in selected cases proved to improve the ROM.

Arthrolysis and liner exchange

In the presence of a combined flexion and extension deficit in a patient with a sound biomechanical reconstruction and well-fixed components, an open arthrolysis and the exchange of the polyethylene insert can be considered. During surgery, the removal of the insert allows access to the posterior capsule, which can be released from the femur or the tibia if anterior subluxation of the tibia is possible. Downsizing the polyethylene insert has a limited impact in the success of the operation, which vastly depends on the thorough debridement, excision of the fibrous tissue in the suprapatellar pouch, medial and lateral gutters and the posterior capsular release. If the component alignment, position, sizing, and/or fixation can be improved, this limited approach is not indicated.

Revision surgery

The best candidates for revision are those in whom identifiable causes of stiffness can be corrected. Revision surgery remains the most effective surgical treatment for stiffness after TKR.