ARTHROSCOPY OF MOBILE BEARING KNEE REPLACEMENTS

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SUMMARY

Introduction: Diagnostic and therapeutic role of arthroscopy in the treatment of fixed bearing total knee replacements is well documented. We report our experience with arthroscopy in symptomatic mobile bearing knees.

Material and Method: Between April 1995 and March 1999, 23 mobile bearing total knee replacements presented with unresolved symptoms. Arthroscopy was offered to the patients and the procedure undertaken after all the conventional noninvasive measures failed to resolve the symptoms.

Results: A definitive cause of symptoms was found in 21 out of 23 patients (success rate of 91.3%).

Discussion: Arthroscopy for symptomatic mobile bearing total knee replacements is a safe procedure which can be used both as a diagnostic as well as a therapeutic tool.

Key Words: *Arthroscopy; Mobile Bearing; Total Knee Arthroplasty.*

INTRODUCTION

Diagnostic and therapeutic role of arthroscopy in the treatment of fixed bearing total knee replacements is well documented[2-4]. With the renewed interest and developments in the mobile bearing knee, a high percentage of knees are now replaced with mobile bearing prostheses. Despite the overall success rate of mobile bearing knees, complications and failure can occur. Most problems can be diagnosed with conventional clinical examination and noninvasive studies such as radiographs, bone scan and aspiration. When the diagnosis remains unclear, arthroscopy has been proved beneficial in both diagnosis and treatment of symptomatic fixed bearing total knee replacements and is well documented in literature[6,8,10].

We report our experience of arthroscopy in symptomatic mobile bearing knees.

MATERIAL AND METHOD

Between April 1995 and March 1999, 23 mobile bearing total knee replacements presented with unresolved symptoms. All of these knees had Mobile bearing inserts (Rotaglide, LCS) type with posterior cruciate sacrifying knees. These cases were investigated by conventional means i.e. radiographs, bone scans, inflammatory markers and aspiration but the diagnosis remains unclear. Arthroscopy was offered to the patient and the procedure undertaken after all the conventional noninvasive measures failed to resolve the symptoms.

The age of patients ranged between 50 and 84 years (mean of 68.6years).There were 12 left and 11 right knees. The duration from initial operation to onset of symptoms ranged from 0 to 46 months (mean of 11 months). The duration between onsets of symptoms to arthroscopy ranged between 2 to 28 months. The mean follow up since total knee arthroplasty was 11.1 months.

Symptoms, in order of incidence, were pain in 21 patients, stiffness in 16 patients, swelling in 7 patients and redness in one patient. Most of the patients had more than one symptoms. Range of motion at last examination before arthroscopy ranged between 30° and 130° (mean of 80.4°).

The follow up period after arthroscopy of total knee replacements range from 18 months to 48 months (mean 22 months).

SURGICAL TECHNIQUES

All arthroscopies were performed in a Howarth laminar airflow enclosure by one surgeon (SB). Perioperative antibiotic cover with 1.5 gm of cefuroxime i.v. was given to all patients. Under tourniquet, standard anterolateral and anteromedial

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portals were used. There were no problems with portal insertion or visualisation of components. Diagnostic arthroscopy was performed, all compartments were visualised and findings documented.

Mobility of the mobile bearing component was assessed arthroscopically in a non weight bearing situation. If indicated synovial biopsies were taken. Fibrous tissues were excised arthroscopically. Utmost care was taken to avoid any iatrogenic injury to the components and no motorised instruments were used. Postoperatively patients were encouraged to start immediate active mobilisation under physiotherapy guidance. No post operative antibiotics were used.

RESULTS

At arthroscopy 9 patients (39.1%) drained turbed fluid on insertion of probe which was sent for microscopy, culture and sensitivity at the end of procedure. No growth was reported on the aspirated fluid after culture.

Fibrous Bands: were noted in 9 patients (39.1%). The bands were most commonly seen in the intercondylar notch (6patients), followed by medial gutter in 3 patients, lateral gutter in 2 and suprapatellar pouch in 2 patients. One patient each in the group above had a combination of bands in the notch and suprapatellar pouch, notch and lateral gutter, notch and medial gutter and suprapatellar pouch and medial gutter.

Polyethylene Wear: was noted in three patients at arthroscopy. All these three patients with polyethylene wear (21.4%) were non mobile with tight soft tissues. Although an attempt was made to release soft tissue but all of these three continue to have pain and revised at a later date.

Post Operative Range of Motion: was noted to be range from 75°to 130° (mean of 99.1°). Fourteen patients had considerable improvement of range of motion between 10° and 85° (mean of 30.7°).

Synovial Biopsy: Fourteen patients had synovial biopsies performed. Three had foreign body reaction with HDPE (high density polyethylene) particles and 11 were inconclusive.

A definitive cause of symptoms was found in 21 out of 23 patients (success rate of 91.3%). All the 9 patients with fibrous bands had resection of bands arthroscopically and had improvement in range of motion.

Out of 21 patients who had presented with pain, 3 had evidence of polyethylene wear and had to be revised. Thirteen patients (76.5%) had relief of pain. Five of seven patients (71.4%) had relief of swelling and 10 out of 16 patients (62.5%) had relief of stiffness.

DISCUSSION

Arthroscopy for symptomatic fixed bearing total knee replacements has been used for diagnosis and treatment of postoperative arthrofibrosis and soft tissue impingement[1-3,5,8,9,10]. Arthroscopy has also been useful for diagnosis of component wear, loosening and infection[1,2,4,5,7] when non-invasive method proved unsuccessful. Review of the literature showed studies of arthroscopy of total knee replacement have involved relatively few patients ranging from 53[1] to one case report[5]. Mobility of the component of mobile bearing knee mainly depends on the balance of soft tissue around the knee apart from correct placement and alignment of the components. In fact soft tissue balance is a single most important factor in long term survival of the total knee replacements whether it is mobile or fixed bearing knee[9]. Tightness of soft tissues can lead to early wear on the bearing prosthesis and conventional diagnostic techniques are not helpful for early pick up of these wear of inserts. Arthroscopy of the mobile bearing knee has the added advantage of observing the mobility of the polyethylene inserts in relation to soft tissue balance in a non weight bearing situation. In our study all of the three cases showing early polyethylene wear did confirm the immobility of the component.

Arthroscopy of mobile bearing total knee replacements is technically easy to perform and is of low risk. It is similar to arthroscopy of fixed bearing total knee replacements with added advantage of assessing the mobility of the insert.

In summary, arthroscopy for syptomatic mobile bearing total knee replacements is a safe procedure which can be used both as a diagnostic as well as a therapeutic tool. Arthroscopy of mobile bearing knees is technically similar to arthroscopy of fixed total knee replacements yielding similar results regarding diagnosis and treatment.

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