

Comparison Patellar Resurfacing Versus Patelloplasty for Treatment of Patellofemoral Joint Osteoarthritis in Total Knee Replacement: A Randomized Controlled Trial

MOHAMED R. ABDALLAH, M.D.*; ASHRAF A. ELNAHAL, M.D.** and HANY S. SHAFIK, M.D.*

The Department of Orthopedic Surgery, Faculty of Medicine, Helwan* and Cairo** Universities

Abstract

Background: Total knee arthroplasty (TKA) is the recommended treatment to correct deformity, relieve pain, and restore normal biomechanics in osteoarthritis of the knee joint. We aimed to compare between patellar resurfacing versus patelloplasty for treatment of patellofemoral joint osteoarthritis in total knee replacement.

Patients and Methods: This randomized clinical study was carried out on 60 orthopaedic patient's clinic suffering from advanced osteoarthritis knee joint, both gender, and aged from 35 to 65 years old, presented at the orthopedic clinic. We were randomly allocated into two groups preoperatively for treatment with either (group I) or (group II). Group (A) was managed with patellar resurfacing and Group (B) was managed with Patelloplasty.

Results: Regarding the postoperative KSS, there was a significant difference between both groups regarding pain, alignment ($p < 0.05$), ROM was significantly higher in group (I) compared to group (II) ($p = 0.036$). Lateral patellar placement was significantly higher in group B compared to group A ($p = 0.036$). Patellar thickness was significantly higher in group B compared to group A ($p < 0.001$).

Conclusions: Total knee prosthesis, patellar resurfacing is a better option compared with patelloplasty for patellofemoral osteoarthritis treatment regarding post operative different clinical scores specially anterior knee pain and ROM and functional knee score walking distance, stairs climbing, walking aids used.

Key Words: Patellar Resurfacing – Patelloplasty – Patellofemoral Joint Osteoarthritis – Total Knee Replacement.

Introduction

TOTAL knee arthroplasty (TKA) is the recommended treatment to correct deformity, relieve pain, and restore normal biomechanics in osteoarthritis of the knee joint [1]. There is still controversy about the ideal treatment for patellofemoral joint arthritis, i.e., whether to resurface patella or not. Anterior knee pain (AKP) is a common reason for patient dissatisfaction, reportedly seen in up to 5%–47% of cases postprimary TKR [1].

Early designs of total knee arthroplasties retained the patella. AKP being a predominant symptom prompted many surgeons to resurface the patella. Patellar resurfacing have their own complications, namely, subluxation, dislocation, loosening, patellar fracture, rupture of quadriceps tendon or patellar tendon, and patellar clunk [2].

One of the controversial topics among arthroplasty surgeons is resurfacing of the patella. Three basic strategies have evolved as follows: (i) always resurface patella, (ii) never resurface, and (iii) selectively resurface patella [3]. Proponents of selective resurfacing patella base their decisions on patient-related and prosthesis-related factors of preoperative weight, AKP, deformity, radiographic changes, quality of the remaining patellofemoral cartilage, intraoperative tracking, and the feasibility of patellar resurfacing [4].

Patelloplasty is a rarely used surgical technique. In addition to removal of the osteophytes, patellar cartilage is resected using a tangential saw cut. The patella is shaped to match the trochlea of the femoral component, in order to improve congruence [5].

Sun et al. [6] retrospectively studied 152 patients, who were either treated traditionally or with patelloplasty, with minimum follow-up of 48 months. They found that patelloplasty was better

Correspondence to: Dr. Mohamed R. Abdallah,
The Department of Orthopedic Surgery, Faculty of Medicine,
Helwan University

than traditional patellar management at relieving pain, enhancing patient satisfaction and improving knee function.

A metaanalysis of 1223 knees showed 14% reduction in AKP following patellar resurfacing in primary TKA. A randomized controlled trial (RCT) of 1715 patients showed no significant difference in functional outcomes between patellar resurfacing or non-resurfacing, using the Oxford knee score [7].

We aimed to compare between patellar resurfacing versus patelloplasty for treatment of patellofemoral joint osteoarthritis in total knee replacement.

Patients and Methods

This randomized clinical study was carried out on 60 orthopaedic patient's clinic suffering from advanced osteoarthritis knee joint, both gender, and aged from 35 to 65 years old, presented at the orthopedic clinic from January 2021 to June 2023.

We included patients with tibiofemoral osteoarthritis (OA) or rheumatoid arthritis (RA) who have symptoms consistent with patellofemoral arthritis such as anterior knee pain, difficulty to rise from chairs and difficulty with stair climbing who are a candidate for primary knee arthroplasty, Patients who are candidates for primary knee arthroplasty and have Bartlett patellofemoral score is lower than 21, Patients with tibiofemoral osteoarthritis or rheumatoid arthritis who have moderate to severe patellofemoral arthritis exhibiting radiographic changes consistent with patellofemoral arthrosis, such as loss of joint interval, increased bone density at the patellofemoral margins, lateral tilt and/or lateral patella facet osteophytes.

Patients with tibiofemoral arthritis with or without mild patellofemoral arthritis, Patients who previously had a patellar operation such as patellectomy, patellar realignment operation or a high tibial osteotomy, patients who previously had a patellar dislocation, Revision knee arthroplasty, and Preoperative patellar thickness in the skyline view less than 15mm were excluded.

Randomization:

We were randomly allocated into two groups pre-operatively for treatment with either (group I) or (group II).

- Group (A) was managed with patellar resurfacing.
- Group (B) was managed with Patelloplasty.

All patients were subjected to general history:

- Cardiac diseases or previous admission in coronary care unit.
- Chest diseases.
- Peripheral vascular diseases: Ischemia, claudication pain.

- Previous history of deep venous thrombosis.
- Systemic diseases: Diabetes mellitus, hypertension.

Local history: The local history of the knee focus especially on quantifying the pain and disability, pain and disability:

Physical examination:

General examination:

- Blood pressure.
- Cardiovascular examination.
- Chest examination.
- Abdominal examination.

Local examination: Complete local examination of the involved knee joint was done.

Preoperative investigations:

The following laboratory investigations were done:

- Complete blood picture and blood grouping.
- Blood sugar.
- Kidney function tests.
- Liver function tests.
- Bleeding profile.
- E.C.G.
- Chest X-ray.
- Other investigations according to patient's condition e.g.: Echocardiography for cardiac patients, Doppler U/S for vascular disease and urine analysis.

Operative technique:

Epidural anesthesia was used in all patients. Medial para-patellar approach was used in all cases of this study. All femoral cuts were made using intramedullary alignment guide. Femoral point of entry was located at the top of the inter-condylar notch and closer to the medial femoral condyle.

Urinary catheterization: It was applied to all patients due to the effect of epidural anesthesia on control of urinary system and due to difficulty of movement in the first few days postoperatively.

Femoral landmark: A disposable plastic airway was used as a landmark over the palpable pulsation of the femoral artery just below the inguinal ligament as a marker for the center of the hip joint for intra-operative assessment of limb alignment. (The center of the hip is just lateral to this landmark, also it can be checked under image intensifier.

Tourniquet application: In all cases, a pneumatic tourniquet was applied with softban liner as high as possible over the thigh. Then the limb was exsanguinated using an Esmarch bandage.

The inflation pressure was around (400mmHg). In bilateral cases, the pneumatic tourniquet was ap-

plied to both lower limbs, but we inflate only one side that we start with and after finishing, the other side is elevated for 5 minutes then the tourniquet is inflated after deflation of the first one. Draping and sterilization: The limb is scrubbed by Povidone iodine from just distal to the tourniquet till the toes. Sterile disposable draping was a routine use. Draping is carried out with water-proof sheets, and the exposed area is covered by plastic sheet (Ioban sheet). The number of persons in the operative theater was kept to minimum. Traffic in and out of the theater was minimized as possible.

Femoral cuts and preparation: Alignment guide: All femoral cuts were made using intramedullary alignment guide. Point of entry: Femoral point of entry is located at the top of the inter-condylar notch and closer to the medial femoral condyle i.e. approximately one centimeter anterior to the origin of the posterior cruciate ligament. The hole is parallel to the shaft of the femur in both the antero-posterior and lateral projections.

Distal femoral cut: Distal femoral valgus angle was between 5 to 7 degrees valgus angle.

Thickness of the distal femoral cut was done using the measured resection technique by cutting from the distal femur equal to the thickness of the selected prosthesis (usually between 9-11mm) in reference to the intact femoral condyle. Sizing and rotational consideration: The posterior condyles were used as a reference for proper sizing and rotation of the femoral component. The size was checked before completion of the final cuts by special stylus to avoid either femoral notching or faulty sizing.

Final femoral cuts (anterior, posterior, anterior chamfer, posterior chamfer and trochlear recess) were taken as the routine procedure in TKA. The last femoral cut is the notch cut. The notch chamfer guide was applied on the cut surface of the distal femur with the anterior tab resting in the trochlear recess and a saw is used to cut the sides of the notch. Tibial cut and preparation:

Optimal exposure of the whole tibial plateau surface was first step in tibial preparation.

Alignment guide: Combined intra & extra-medullary alignment guide were used in all cases to avoid varus or valgus tibial cut. Intramedullary point of entry were determined by the anteroposterior axis of the tibia (Akagi's line). It is drawn by electro-cautery from posterior cruciate ligament attachment point to medial third of tibial tuberosity. The entry point is at the junction of anterior 1/3 and posterior 2/3 of this line. Tibial cut: Tibial cut level was identified either 2mm below the worn tibial plateau side or 10mm below the healthy side. And double checked using a specific stylus. Sizing and

rotational consideration: Again, using electro-cautery the AP axis of tibia was drawn. The axis of the tibial component should be parallel to this AP axis to avoid internal rotation. After choosing the proper size and rotation, final preparation of the tibia is done using the proper size tibial broach. The tibial broach impactor is impacted to the proper depth indicated by the marked groove on the impactor handle then removed to create a space for the keel of the tibial tray.

Patellar preparation:

In group (I), patellar resurfacing was done, where the knee was placed in extension. The thickness of the patella was measured using a special calibre. The universal patellar saw guide was positioned parallel to the anterior cortex of the patella, its serrated jaws were positioned at the proximal and distal margins of the patellar articular surface then thumbscrew of the guide were tightened so that the jaws were firmly holding the patella. This patellar guide had a calibrating 10mm gauge which ensure that only 10mm thickness is resected from the patella.

Resection was done with an oscillating saw, maintaining the saw blade flush with the surface of the cutting guide. The remaining patellar surface was sized by the superior-inferior dimension using a series of templates. The proper sized template was positioned so that its medial border is flush with medial border of the patellar surface without overhang. This was medializing the patellar component and improve patellar tracking. Then the three holes for the fixation pegs were drilled using a special drill bit.

In group (II), the knee is placed in extension as in group (I). The patellofemoral ligament were released. Then a bone holding forceps with pointed tip was used to firmly hold the patella and all peripheral osteophytes were removed using Rongeur bone nibbler or oscillating saw to regain more or less the normal patellar shape. Denervation of the patellar edges using electrocautery were done. Drilling of the eburnated articular surface also were done to decompress the patellar bone and decrease postoperative pain.

Trial components were inserted for assessment of size, fitting of the prosthesis, position, rotation, equality of bone gaps and ligamentous balance. Also, patellar tracking and stability was assessed using no thumb technique. Intra-operative imaging of the knee was a routine step in all cases of the thesis. Soft tissue balancing by medial or lateral release according to the need in each case. Copious irrigation lavage and suction were done in all cases either by suction irrigation machine or by 50cc syringe. The femoral component was cemented first then the tibial components with trial insert applied, and the joint is reduced. The knee was extended,

and gentle pressure was applied to pressurize the cement. At the same time in group (I), only the patellar prosthesis was positioned and pressurized. After cement hardening again ligamentous balance and antero-posterior and medio-lateral tibiofemoral stability were rechecked. Again, patellar tracking and stability were rechecked using “no-thumb technique”.

Closure of the arthrotomy with continuous Vicryl suture No. 2 was done with the use of suction drainage system. Then subcutaneous tissue was closed by Vicryl suture No. 0 and the skin is closed by staples. The wound was covered and the whole lower limb was wrapped by softban and crepe bandage starting from tourniquet site till the foot.

Post-operative measurements:

The patients were be followed-up at 3 months, 6 months and 1year assessed by clinical evaluation using knee society clinical rating system (knee and functional score) including pain, range of motion, alignment, flexion contracture, extension lag, anteroposterior instability, and mediolateral instability [8], and Bartlett patellofemoral scoring system including anterior knee pain, quadriceps strength, ability to rise from chair and stair climbing (116). Radiological evaluation of limb alignment, change in component alignment, patellar subluxation or dislocation, and skyline view measured data (patellar tilt angle (α angle), lateral patellar placement (d) and patellar thickness (T).

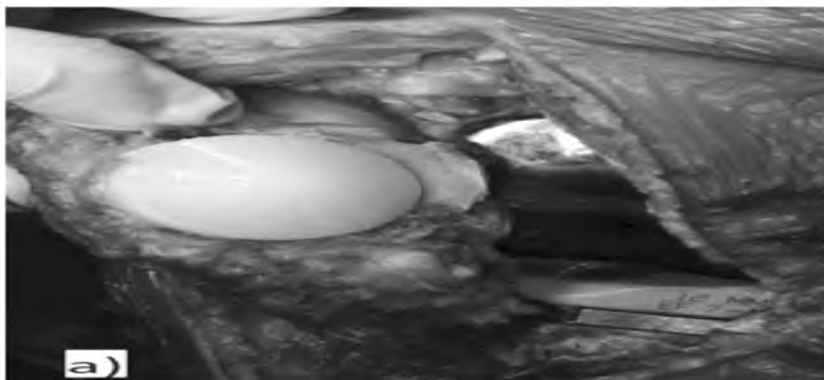
Male patient, 58 years old, right side, OA, follow-up 12 months



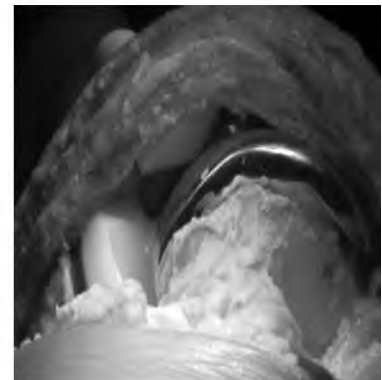
Preoperative imaging



Preoperative imaging



Intraoperative pictures



Intraoperative patellar tracking

Clinical results: The knee society clinical rating system: Bartlett Patellofemoral scoring system: Radiological results: Skyline view measurement:

- **Operative data:** Patellar resurfacing was done.

- **Postoperative complications:** None.

Statistical analysis:

Statistical analysis was done by SPSS v28 (IBM Inc., Armonk, NY, USA). Quantitative variables were presented as mean and standard deviation (SD) and compared between the two groups utilizing unpaired Student's *t*-test. Qualitative variables were presented as frequency and percentage (%) and were analysed utilizing the Chi-square test or Fisher's exact test when appropriate. A two tailed *p*-value <0.05 was considered statistically significant.

Results

The demographic and clinical data was presented in (Table 1).

Table (1): Comparison to basic demographic and clinical data of the studied groups.

	Group (A) (Patellar resurfacing) (n=30)	Group (B) (Patelloplasty) (n=30)	<i>p</i> -value
Age (years)	54.39±12.10	55.89±8.20	0.398
Sex:			
Male	10 (33.3%)	8 (26.7%)	0.581
Female	20 (66.7%)	10 (33.3%)	
Side operated:			
Right	12 (40.0%)	20 (66.7%)	0.592
Left	18 (60.0 %)	20 (40.0%)	
Diagnosis:			
OA	26 (86.67%)	24 (80.0%)	0.652
RA	4 (13.33%)	6 (20.0%)	

Data presented as mean ± SD or frequency (%).

OA: Osteoarthritis. RA: Rheumatoid arthritis.

Regarding the postoperative KSS, there was a significant difference between both groups regarding pain, alignment (*p*<0.05), ROM was significantly higher in group (I) compared to group (II) (*p*=0.036), with no significant difference between both groups regarding Flex. Contract. and Ext lag.

The postoperative functional knee score revealed that walking distance 30 was higher in group (I), while walking distance 20 was higher in group (II), stairs climbing 30 was higher in group (I), while stairs climbing 15 was higher in group (II), walking aids used 0 was higher in group (I), while walking aids used -5 was higher in group (II). Regarding the Knee society clinical rating system, the total score was significantly lower in group (I)

compared to group (II), and total functional knee score was significantly higher in group I more than group (II) (Table 2).

Table (2): Postoperative Knee society score, functional knee score and knee society clinical rating system of the studied groups.

	Group (A) (Patellar resurfacing) (n=30)	Group (B) (Patelloplasty) (n=30)	<i>p</i> - value
Knee society score			
<i>Pain:</i>			
30	2 (6.7%)	10 (33.3%)	<0.001*
40	4 (13.3%)	14 (46.7%)	
45	16 (53.3%)	4 (13.3%)	
50	8 (26.7)	2 (6.7%)	
ROM	22.43±3.28	21.12±1.89	0.036*
<i>Alignment:</i>			
-3	6 (20.0%)	2 (6.67%)	0.125
0	24 (80.0%)	28 (93.33%)	
<i>Flex. Contract.:</i>			
-5	2 (6.7%)	0 (0.00%)	0.491
-2	28 (93.3%)	30 (100%)	
<i>Ext lag:</i>			
-10	2 (6.7%)	3 (10%)	1.0
-5	28 (93.3%)	27 (90.0%)	
<i>AP instability:</i>			
10	30 (100.0%)	30 (100%)	NS
<i>ML instability:</i>			
10	4 (13.3%)	0 (0.0%)	0.114
15	26 (86.7%)	30 (100%)	
Functional knee score			
<i>Walking distance:</i>			
10	4 (13.3%)	10 (33.3%)	0.008*
20	8 (26.7%)	16 (53.4%)	
30	18 (60.0%)	4 (13.3%)	
<i>Stairs climbing:</i>			
0	0 (0.0%)	4 (13.3%)	0.012*
15	10 (33.3%)	16 (53.4%)	
30	20 (66.7%)	10 (33.3%)	
<i>Walking aids used:</i>			
-20	0 (0.0%)	4 (13.3%)	0.006*
-10	0 (0.0%)	2 (6.7%)	
-5	8 (26.7%)	14 (46.7%)	
0	22 (73.3%)	10 (33.3%)	
Knee society clinical rating system			
Total knee score	79.90±10.74	89.93±10.77	0.029*
Total functional knee score	46.00±11.79	32.90±16.90	0.001*

Data are presented as mean ± SD or frequency (%).

*: Statistically significant as *p*-value <0.05.

Lateral patellar placement was significantly higher in group B compared to group A (*p*=0.036).

Patellar thickness was significantly higher in group B compared to group A (*p*<0.001) (Table 3).

Table (3): Skyline view measured parameters of the studied groups.

	Group (A) (Patellar resurfacing) (n=30)	Group (B) (Patelloplasty) (n=30)	p- value
- Patellar tilt angle (α) (degrees)	–	22.43 $\pm$ 5.39	–
- Patellar tilt angle (β) (degrees)	9.83 $\pm$ 3.59	–	–
- Lateral patellar placement(d) (mm)	2.90 $\pm$ 0.69	3.94 $\pm$ 1.26	0.036*
- Patellar thickness (T) (mm)	20.90 $\pm$ 3.15	24.53 $\pm$ 2.96	<0.001*

Data are presented as mean $\pm$ SD.

*: Statistically significant as p -value <0.05.

Discussion

Anterior knee pain (AKP) is a common reason for patient dissatisfaction, reportedly seen in up to 5%–47% of cases postprimary TKR. Early designs of total knee arthroplasties retained the patella. AKP being a predominant symptom prompted many surgeons to resurface the patella.

Patellar resurfacing have their own complications, namely, subluxation, dislocation, loosening, patellar fracture, rupture of quadriceps tendon or patellar tendon, and patellar clunk [9].

One of the controversial topics among arthroplasty surgeons is resurfacing of the patella. Three basic strategies have evolved as follows: (i) always resurface patella, (ii) never resurface, and (iii) selectively resurface patella. Proponents of selective resurfacing patella base their decisions on patient-related and prosthesis-related factors of preoperative weight, AKP, deformity, radiographic changes, quality of the remaining patellofemoral cartilage, intraoperative tracking, and the feasibility of patellar resurfacing [4].

Our results showed that the postoperative knee score showed a significant increasing in patellar resurfacing group more than the patelloplasty group in pain, ROM, also the functional score was significantly higher in patellar resurfacing group more than the patelloplasty group in walking distance, stairs climbing, walking aids used.

Patella-related complications after total knee replacement arthroplasty include osteonecrosis, fracture, subluxation, patellofemoral instability, rupture of the quadriceps or patellar tendons, patellar component failure, soft tissue impingement, patellar pain, and malrotation of the femoral or tibial component [10]. The reported rates of these complications varied remarkably when patellar resurfacing is performed. Barrack et al. [11] reported that anterior knee pain will develop postopera-

tively regardless of whether patellar resurfacing is performed, and also noted that no significant difference between the groups treated with or without resurfacing with regard to the overall Knee Society Score or the pain and function score [12].

The Bartlett patellofemoral score was significantly higher in patellar resurfacing group more than the patelloplasty group in anterior knee pain, ability to rise from chair, stair climbing, except the quadriceps strength, generally the total Bartlett patellofemoral score was significantly higher in patellar resurfacing group more than the patelloplasty group [13].

Wood et al. [14] reported a low incidence of anterior knee pain in patients with resurfaced patellae with the same implant. Less than 5° of combined tibial and femoral internal malrotation of a knee arthroplasty component could possibly contribute to anterior knee pain without visible radiographic changes such as patellar tilt or subluxation.

In our results, there was statistical significant difference between two studied groups regarding lateral patellar placement and patellar thickness ($p < 0.05$), while there was no statistical significant difference regarding patellar tilt angle ($p > 0.05$).

In agreement with our study, Ha, C et al., [15], study the Resurfacing versus not-resurfacing the patella in one-stage bilateral total knee arthroplasty: A prospective randomized clinical trial, this study was carried out on Sixty-six patients (132 knees) scheduled for first-ever one-stage bilateral TKA due to osteoarthritis received patellar resurfacing and retention, There were significantly improved Knee Society and Feller scores ($p < 0.001$) in the resurfacing group compared with the non-resurfacing group post-operatively. Anterior knee pain and patellar clunk rates were lower on the resurfaced side compared with the non-resurfaced side ($p < 0.001$).

Our results were consistent with Kordelle et al. [16] prospective randomised study was to investigate the necessity of resurfacing the patella in combination with total knee arthroplasty, Between May 1999 and May 2000 fifty patients were enrolled in a prospective, randomised study. All patients received the same posterior-cruciate-sparing total knee replacement and were randomised to treatment with and without resurfacing of the patella in patients without or mild anterior knee pain before undergoing total knee replacement, the patients with patella resurfacing demonstrated a higher overall Knee Society score.

A previous study for Patel K et al. [17] reported an average AKP incidence in non-resurfaced patients of 10%, versus 3.3% for resurfaced cases, also the incidence of reoperation was 6.7% in non-resurfaced knees as compared to 0% in resurfaced knees.

Parvizi et al. [18] performed a meta-analysis of 14 studies between 1966 and 2003. The incidence of anterior knee pain was higher when the patellae were not resurfaced. Secondary resurfacings due to anterior knee pain were required in 8.7% of the nonresurfaced knees. There were no differences in reported complications. Total knee arthroplasty resulted in improved functional outcome regardless of patellar resurfacing.

Gildone et al. [19] reported improvement of the mean clinical knee society score in the resurfaced group from 30.2 preoperatively to 91.6 at final follow-up while in the non-resurfaced group from (30.3 to 90.5). Also the functional knee score improved from 49.7 preoperatively to 86.7 at final follow up for the resurfaced group, and in the non-resurfaced group (from 50.2 to 85.5).

Regarding patellofemoral joint performance, they used visual analogue scoring (getting out of a car, getting into a chair and getting up & down stairs) and they reported no significant differences between the two groups [17].

Gildone et al. [19] reported same mean clinical KSS (which is different from our results) and similar ability to perform daily activities involving the patellofemoral joint in the two groups. On the other hand there were significant differences regarding the functional KSS score (similar to our results), range of passive flexion, anterior knee pain and patellar tilt and subluxation, in favor of the resurfaced group. (129) So, they recommended resurfacing in TKA design. Patella resurfacing enhances ROM and decreases anterior pain, but without any benefit for activities requiring knee flexion superior to 100° (getting up and down stairs, seating and getting out of a car), likely because the non-resurfaced group had sufficient passive flexion to perform these activities without problems [19].

Although there is controversy, the scientific evidence that favors patellar resurfacing in primary total knee arthroplasty (TKA) is abundant. The literature shows a substantially higher incidence of anterior knee pain and higher rates of re-operation where the patella is not resurfaced primarily. Prospective randomized studies have reported re-operation rates to carry out the resurfacing of the patella that exceeded the complications after the surgery with resurfacing [20].

Conclusions: Total knee prosthesis, patellar resurfacing is a better option compared with patelloplasty for patellofemoral osteoarthritis treatment regarding post-operative different clinical scores specially anterior knee pain and ROM and functional knee score walking distance, stairs climbing, walking aids used.

Financial support and sponsorship: Nil.

Conflict of Interest: Nil.

References

- 1- RIVIÈRE C., IRANPOUR F., AUVINET E., HOWELL S., VENDITTOLI P-A., COBB J., et al.: Alignment options for total knee arthroplasty: A systematic review. *Orthopaedics & Traumatology: Surgery & Research*, 103: 1047-56, 2017.
- 2- ABDEL M.P., PARRATTE S. and BUDHIPARAMA N.C.: The patella in total knee arthroplasty: to resurface or not is the question. *Current reviews in musculoskeletal medicine*, 7: 117-24, 2014.
- 3- SCHINDLER O.S.: The controversy of patellar resurfacing in total knee arthroplasty: Ibisne in medio tutissimus? *Knee Surgery, Sports Traumatology, Arthroscopy*, 20: 1227-44, 2012.
- 4- KATIYAR A.: Patellar resurfacing and non-resurfacing in patients undergoing bilateral TKA. *Journal of Advanced Medical and Dental Sciences Research*, 7, 2019.
- 5- ŽUPAN A., SNOJ Ž., ANTOLIČ V. and POMPE B.: Better results with patelloplasty compared to traditional total knee arthroplasty. *International Orthopaedics*, 38: 1621-5, 2014.
- 6- SUN Y.Q., YANG B, TONG S.L., SUN J. and ZHU Y.C.: Patelloplasty versus traditional total knee arthroplasty for osteoarthritis. *Orthopedics*, 35: e343-8, 2012.
- 7- TANG X., HE Y., PU S., LEI L., NING N., SHI Y., et al.: Patellar Resurfacing in Primary Total Knee Arthroplasty: A Meta-analysis and Trial Sequential Analysis of 50 Randomized Controlled Trials. *Orthopaedic Surgery*, 15: 379-99, 2023.
- 8- GOPAL S., WOOD W., MYEZZA H. and STEWART A.: Intra- and inter-rater reliability of the Knee Society Knee Score when used by two physiotherapists in patients post total knee arthroplasty. *South African Journal of Physiotherapy*, 66: 21-5, 2010.
- 9- AGARWALA S., SHETTY V., KARUMURI L.K. and VIJAYVARGIYA M.: Patellar Resurfacing versus Nonresurfacing with Patellaplasty in Total Knee Arthroplasty. *Indian J. Orthop.*, 52: 393-8, 2018.
- 10- PUTMAN S., BOUREAU F., GIRARD J., MIGAUD H. and PASQUIER G.: Patellar complications after total knee arthroplasty. *Orthop Traumatol. Surg. Res.*, 105: S43-s51, 2019.
- 11- BARRACK R.L., BERTOT A.J., WOLFE M.W., WALDMAN D.A., MILICIC M. and MYERS L.: Patellar resurfacing in total knee arthroplasty. A prospective, randomized, double-blind study with five to seven years of follow-up. *J. Bone Joint Surg. Am.*, 83: 1376-81, 2001.
- 12- JI-YE HE, LEI-SHENG JIANG and DAI L-Y.: The Knee. Is patellar resurfacing superior than nonresurfacing in total knee arthroplasty? A meta-analysis of randomized trials, 6: Elsevier, 2011.
- 13- MCCONAGHY K., DERR T., MOLLOY R.M., KLIKA A.K., KURTZ S. and PIUZZI N.S.: Patellar management during total knee arthroplasty: A review. *EFORT Open Rev.*, 6: 861-71, 2021.

- 14- WOOD D.J., SMITH A.J., COLLOPY D., WHITE B., BRANKOV B. and BULSARA M.K.: Patellar resurfacing in total knee arthroplasty: A prospective, randomized trial. J. Bone Joint Surg. Am., 84: 187-93, 2002.
- 15- HA C., WANG B., LI W., SUN K., WANG D. and LI Q.: Resurfacing versus not-resurfacing the patella in one-stage bilateral total knee arthroplasty: A prospective randomized clinical trial. International Orthopaedics, 43: 2519-27, 2019.
- 16- KORDELLE J., SCHLEICHER I., KALTSCHMIDT I., HAAS H. and GRUNER M.R.: [Patella resurfacing in patients without substantial retropatellar knee pain symptoms?]. Z Orthop. Ihre Grenzgeb., 141: 557-62, 2003.
- 17- PATEL K. and RAUT V.: Patella in total knee arthroplasty: to resurface or not to a cohort study of staged bilateral total knee arthroplasty. Int. Orthop., 35: 349-53, 2011.
- 18- PARVIZI J., RAPURI V.R., SALEH K.J., KUSKOWSKI M.A., SHARKEY P.F. and MONT M.A.: Failure to resurface the patella during total knee arthroplasty may result in more knee pain and secondary surgery. Clinical Orthopaedics and Related Research®, 438: 191-6, 2005.
- 19- GILDONE A., MANFREDINI M., BISCIONE R. and FACCINI R.: Patella resurfacing in posterior stabilised total knee arthroplasty: A follow-up study in 56 patients. Acta. Orthop. Belg., 71: 445-51, 2005.
- 20- BENAZZO F., PERTICARINI L., JANNELLI E., IVONE A., GHIARA M. and ROSSI S.M.P.: Controversy: Supporting patellar resurfacing in total knee arthroplasty - do it. EFORT Open Rev., 5: 785-92, 2020.

المقارنة بين تبديل سطح الرضفة ورأب الرضفة لعلاج إلتهاب المفصل الرضفى الفخذى فى إستبدال الركبة الكلى: تجربة عشوائية محكمة

ان التغيير الكامل لمفصل الركبة هو الطريقة الجراحية الفعالة لتحسين وظيفة الركبة وتخفيف الألم فى مرضى خشونة الركبة ومرضى التهاب المفاصل الروماتويدي. بل هو عملية جراحية لتخفيف الألم وتحسين الوظيفة مع درجة عالية من الرضا والارتياح بالنسبة للمرضى. وبالرغم من أن آلام المفصل الفخذى الرضفى من أشهر مضاعفات هذه العملية الا أن التقويم الرضفى لا يزال محل جدل واسع.

وبذلك يكون لدينا ثلاثة انواع للجراحين وهم: من يقومون بعمل التقويم الروتيني الرضفى لكل مرضاهم ويعزون ذلك الى أنه يقلل آلام المفصل الفخذى الرضفى مابعد عمليات التغيير الكامل لمفصل الركبة.

النوع الثانى من يفضلون عدم التقويم باستخدام الطرق المذكور أعلاه خوفا من مضاعفات عملية التقويم الرضفى مثل كسر الرضفة والموت النيكروزي لعظمة الرضفة واصابة الوتر الرضفى وعدم ثبات عظمة الرضفة الذى قد يكون بسبب سوء اختيار حجم المكون المستخدم أو التسليك الزائد للأنسجة.

وأخيرا النوع الثالث الذى يقوم بعمل التقويم الاختيارى اعتمادا على وجود ما يستدعى ذلك مثل وجود آلام بالمفصل الفخذى الرضفى قبل العملية والروماتويد وحسب شكل عظمة الرضفة. وتبقى عملية التقويم الرضفى أو عدم التقويم محل جدل واسع لوجود مميزات وعيوب لكلا العمليتين وعدم وجود اتفاق تام على فوائد العمليتين.

الهدف من الدراسة: مقارنة بين التقويم الرضفى مقابل عدم التقويم فى التغيير الكامل لمفصل الركبة.