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RESEARCH ARTICLE

"COMPARATIVE STUDY OF POSTERIOR STABILIZING VS CRUCIATE RETAINING PROSTHESIS IN TOTAL KNEE REPLACEMENT"

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Abstract

Introduction: There has been a continuing debate regarding whether the posterior cruciate ligament should be sacrificed or retained at the time of total knee arthroplasty.It is still controversial which approach is superior because both cruciate retaining prosthesis and posterior stabilizing prosthesis have advantages and disadvantages.

Materials and Methods: A cross sectional analytical study was conducted on 37 patients (20 in Posterior Stabilized group and 17 in Cruciate Retaining group) fulfilling the inclusion and exclusion criteria. The follow up was done at 1, 3 and 6 months during which functional outcome was compared using American Knee Society Score and associated complications were also compared.

Results: At 6 months, the mean Knee Society Knee scores in Posterior Stabilized Group and Cruciate Retaining group were 91.05 ± 3.53 and 90.12 ± 3.57 respectively and mean Knee Society Functional scores were 89.75 ± 4.44 and 88.52 ± 4.24 respectively. The mean Knee Society Knee Score and Functional Score in both the groups were statistically not significant at pre-operative, 1 month, 3 months and 6 months as revealed by insignificant p value (>0.05).

There were 3 complications in Posterior Stabilized Group which were 1 case of knee stiffness, 1 infection and 1 tibiofemoral subluxation. There were 2 complications in Cruciate Retaining Group which were 1 case of anterior knee pain and 1 periprosthetic proximal tibia fracture.

Conclusions: Although, both the groups individually had significant improvement in regards to function from pre operative status to post operative status, there was no statistically significant difference in clinical and functional outcome between the two groups when compared with each other. However, the Posterior Stabilizing Total

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Knee Arthroplasty had better Range of motion score throughout the study. The complications associated with both the groups were comparable.

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Introduction:-

One of the most popular orthopaedic surgical procedures today is total knee arthroplasty(TKA). Every year, close to 650,000 thousand knee replacements are carried out over the world.[1]TKA,likeotherjointreplacements,wasinitiallycreatedasalastresortorseverely injured knees, frequently as a res ult of infections or advanced arthritis. Over the years, a more demanding lifestyle of patients combined with early successes of TKA has increased the expectations of the patient and in-turn has led to development of newer and newer prostheses. This study will deal with two such kind of prostheses – the Posterior Stabilized (PS) TKA and the Cruciate Retaining(CR)TKA.

There has been a continuing debate regarding whether the posterior cruciate ligament (PCL) should be sacrificed or retained at the time of total knee arthroplasty. Numerous studies have been conducted comparing PS TKA and CR TKA designs, and they have bothdemonstrated differences and shown no differences in the functional outcome and complications between the two designs.[4]

Some randomized trials have shown a significantly greater range of motion of the knee after use of a PS prosthesis[2,6,11], whereas other studies have shown no difference in knee motion between the PS and CR designs[12,13,14,15].

This study was conducted to compare functional outcome between PS prosthesis vs CR prosthesis in TKA and to study the associated complications.

Materials and Methods:-

This was a cross sectional analytical study conducted at Sri Aurobindo Medical College & Post Graduate Institute, Indore for 18 months (12 months for data collection and 6 months for analysis and writing) from 1st April 2021 to 30th September 2022. 37 patients were enrolled (20 patients in PS group and 17 in CR group) fulfilling the inclusion and exclusion criteria, admitted in Department of Orthopaedics undergoing either CR TKA or PS TKA and completing the duration of the study. Patient were selected on the alternate basis for CRTKA or PS TKA.

Inclusion criteria

1. All patients who presented to Orthopaedics OPD during the study period with primary knee osteoarthritis Kellgren–Lawrence grade 3, 4.

Exclusion criteria

1. Patients with active infection around knee.
2. Patients with Revision TKA.
3. Patients who had distal femoral or proximal tibial osteotomies.
4. Patients requiring augmentation in TKA.
5. Patients with diagnosis of malignant disease or infection in the knee.
6. Patients with previous patellectomy.
7. Patients with Extra-articular deformities.
8. Patients not giving consent for surgery /study.

Pre-Procedure Protocols

History was taken to rule out secondary cases.The patients were examined and evaluated thoroughly for the integrity of the soft tissues, the neurovascular status, range of motion, limb deformity.Routine standing antero-posterior, lateral and skyline radiographs of the knee along with scanogram were obtained.Pre-Op scoring systems American Knee society score was calculated.If patients had any other comorbidities, concerned specialist opinion was obtained prior to surgery.Systemic antibiotics were administered 30 minutes before surgery to all patients.

Intra Operative Protocols

Patient was taken in supine position on OT Table under combined spinal and epidural Anaesthesia. Tourniquet was applied. Approach for primary TKA was anterior mid line skin incision. The standard retinacular incision in TKA was a medial parapatellar incision which was used to expose the knee joint. Preliminary soft tissue balancing is performed and fine tuning of soft tissue balancing continues throughout the procedure. Peripheral osteophytes are removed followed by removal of menisci and Anterior Cruciate Ligament (ACL) and PCL except is cases of CR TKA where PCL was retained and protected by the placement of a Hohmann retractor over the posterior notch of tibia. Patella-femoral ligament was released and removed. The tibia was cut perpendicular to its mechanical axis with posterior slope of 3°, using extramedullary guide. A distal femoral cut at valgus angle (5 to 7°) was made perpendicular to predetermined mechanical axis of femur. The amount of bone removed was generally the same as thickness of femoral component. The anterior and posterior femoral cuts determined the rotation of the femoral component and the shape of the flexion gap. Anterior and posterior femoral cut along with chamfer cut was made using Anterior Referencing System. Femoral component rotation was determined by one of several methods. The trans epicondylar axis, anteroposterior axis, posterior femoral condyles, and cut surface of the proximal tibia all could serve as reference points. Flexion and extension gaps were assessed if both are equal then trial components are inserted and valgus or varus laxity are checked. After bone deficiencies have been treated, ligamentous balancing is satisfactory and the extensor mechanism is tracking properly, trial component was removed. Cut bone surface was cleaned with a pulsatile lavage irrigator using saline containing an antibiotic solution and surface dried with clean sponges.Cemented Tibial prosthesis was impacted and excess cement is removed from the periphery followed by implantation of cemented femoral component in similar fashion. After the femoral components has been seated, knee was extended with a trial tibial spacer in place to ensure complete seating of the femoral prosthesis. After carefully searching for any cement debris final tibial polyethylene articular surface was inserted. After hemostasis was obtained, Romovac drain of size 14 was inserted and then the subcutaneous tissue and skin were closed with knee in 30 to 40 degrees of flexion.Sterile dressings were applied and patient was given long knee brace for 1st post operative day to minimize pain.

Figure 1:- Positioning of patientFigure 2:Midline longitudinal incision.

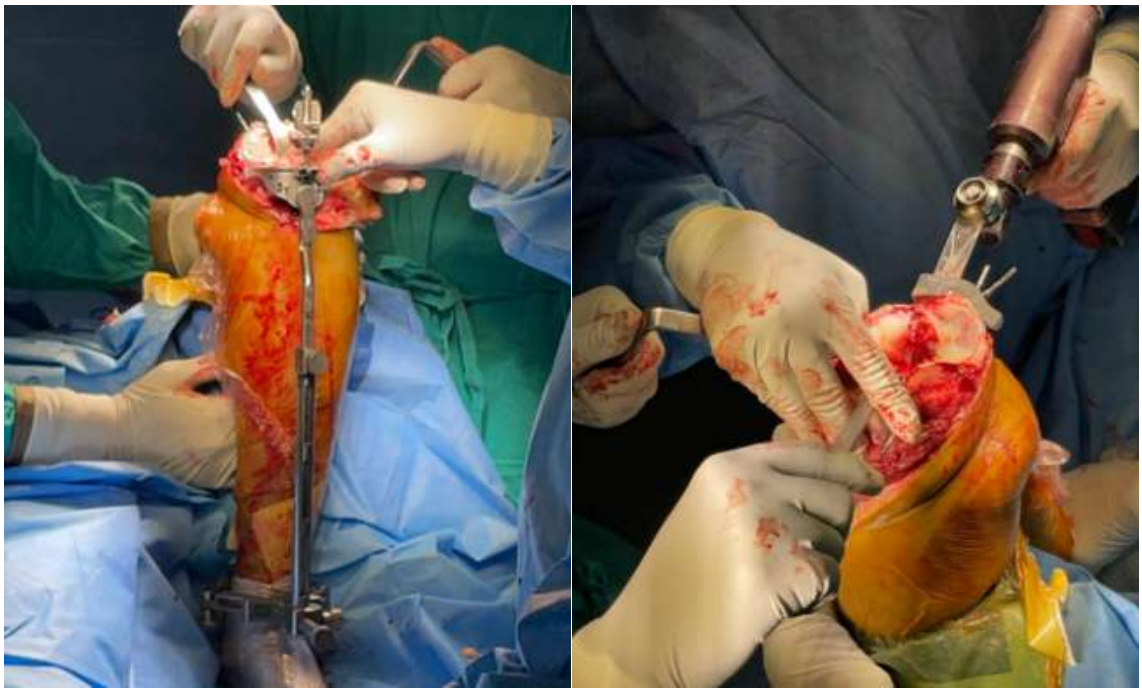

Figure 3:- Placement of extramedullary jigFigure 4: Proximal tibial cut.

Figure 5:- Distal femoral cut using.

Figure 6:- Placement of Hohmann retractor to protect PCL intramedullary guide.

Figure 7:- Prepared femoral and tibial ends.

Figure 8:- Cementing of cut surfaces.

Figure 9:- Placement of the polyethylene insert.

Figure 10:- Closure of skin with drain placement.

Post-Operative Protocols

Post operatively patients were given IV antibiotics for 5 days followed by 7 days of oral antibiotics. Pain was managed with IV analgesics and top up of epidural analgesia. S/C Clexane was given as a prophylaxis for DVT.Post operative X-ray of Knee AP and lateral views were taken.Physiotherapy was started from 1st post operative day. Static quadriceps, ankle foot pump exercises were performed.Patient were taught to walk with walker from 2nd post-operative day.Patient was allowed to sit on the edge of bed and dynamic quadriceps exercises are started.The sutures were removed on 14th postoperative day.

Follow Up Protocol

The follow up was done at 1, 3 and 6 months during which clinical assessment and functional examination were done using American Knee Society Score. Radiological evaluation was done by taking X-ray Knee antero-posterior and lateral views.

Results:-

Table 1:- Distribution of patients according to study groups(N=37).

Group	Number	Percentage
Posterior Stabilized	20	54.05%

Cruciate Retaining	17	45.94%
Total	37	100.0

In PS group, minimum age of the patient was 45 years and maximum age was 76 years.In CR group 2, minimum age of the patient was 44 years and maximum age was 79 years.

Table 2:- Frequency of patients in different age groups.

	Posterior Stabilized		**Cruciate Retaining**	
Age (years)	Frequency	Percentage	Frequency	Percentage
45-54	5	25%	2	11.77%
55-64	9	45%	7	41.17%
>65	6	30%	8	47.06%
Total	20	100%	17	100%
Mean	61.1		64.05	
SD	8.8		10.47	
t test	1.08545			
p value	.285142			

Table 3:- Distribution of patients according to sex (N=37).

	Posterior Stabilized		**Cruciate Retaining**	
	Frequency	Percentage	Frequency	Percentage
Male	6	30%	8	47%
Female	14	70%	9	53%
Total	20	100%	17	100%
Chi Squared test	1.1369			
p value	.286308			

In our study there were 14(70.0%) females and 6(30.0%) males in PS group whereas, 9(53.0%) females and 8(47.0%) males in CR group, showing a female preponderance in the study.

Table 4:- Distribution of patients according to KL Grade.

	Posterior Stabilized		**Cruciate Retaining**	
Kellgren Lawrence grade	Frequency	Percentage	Frequency	Percentage
3	4	20%	3	18%
4	16	80%	14	82%
total	20	100%	17	100%
Pearson chi squared test	0.032			
p value	.85549			

There was no statistical difference present in both the groups in terms of Kellgren and Lawrence's grade distribution as revealed by insignificant p value 0.85549.

Table 5:- Comparing side distribution between groups.

	Posterior Stabilized		**Cruciate Retaining**	
	Frequency	Percentage	Frequency	Percentage
Right	8	40%	7	41%
Left	12	60%	10	59%
Total	20	100%	17	100%
Pearson chi squared test	0.0053			
p value	.94209			

In our study, there was no statistical differences in terms of side of knee joint chosen for type of implant in total knee replacement.

Table 6:- Comparing BMI in both the groups.

BMI	Posterior Stabilized		Cruciate Retaining	
	Frequency	Percentage	Frequency	Percentage
Underweight (<18.5)	0	0%	0	0%
Normal (18.5-24.9)	6	30%	4	23.52%
Over weight (25.0-29.9)	10	50%	10	58.82%
Obese (>=30.0)	4	20%	3	17.64%
Total	20	100%	17	100%
Mean ± SD	26.45 ± 2.72		26.56 ± 2.80	
t score	0.28111			
p value	.780279			

In our study, there was no statistical differences in terms of BMI of patients getting operated for either PS TKA or CR TKA.

Table 7:- Categorization of patients according to knee score.

KNEE SCORE	GRADE	FREQUENCY	
		Posterior Stabilized	Cruciate Retaining
<60	POOR	0 (0%)	0 (0%)
60 – 69	FAIR	0 (0%)	0(0%)
70 – 85	GOOD	2 (10%)	2 (11.76%)
>85	EXCELLENT	18 (90%)	15 (88.23%)

Table 8:- Categorization of patients according to Functional Score.

FUNCTIONAL SCORE	GRADE	FREQUENCY	
		Posterior Stabilizing	Cruciate Retaining
<60	POOR	0 (0%)	0
60 – 69	FAIR	0(0%)	0
70 – 85	GOOD	4 (20%)	7 (41.17%)
>85	EXCELLENT	16 (80%)	10 (58.82%)

The data below shows the mean Knee Society Score at preoperative, 01 month, 03 months & 06 months follow up.

Table 9:- Comparing knee score between PS TKA vs CR TKA.

Knee Score	Posterior Stabilizing		Cruciate Retaining		p value
	Mean	SD	Mean	SD	
Pre OP	43.5	5.25	45.35	2.55	.068019
1 Month	58.8	6.07	58.65	4.32	.931345
3 Months	77.15	4.31	75.82	4.09	.346332
6 Months	91.05	3.53	90.12	3.57	.431123

Table 10:- Comparing functional scorebetween PS TKA and CR TKA.

Functional Score	PS		CR		p value
	Mean	SD	Mean	SD	
Pre OP	26	7.88	23.24	4.98	.220126
1 Month	51.5	8.67	50.29	6.24	.642158
3 Months	77.25	5.73	76.17	6.25	.589554
6 Months	89.75	4.44	88.52	4.24	.400674

Table 11:- Comparing p value of Functional Scores and Knee Scores between Posterior Stabilized Group and Cruciate Retaining Group.

	FUNCTIONAL SCORE	KNEE SCORE
PRE OP	.220126	.068019
1 MONTH	.642158	.931345
3 MONTHS	.589554	.346332

6 MONTHS	.400674	.431123

Complications

There was only one occurrence of postoperative infection in this study in the PS group at 4 months follow up period. Patient was managed with 2 sessions of debridement with insertion of antibiotic impregnated cement beads for a duration of 3 weeks each and administration of IV antibiotics according to culture sensitivity reports. Infection subsided within a span of 5 weeks and antibiotic impregnated cement beads were removed and there was no evidence of infection at the end of the study period.

In our study 1 patient had periprosthetic tibial plateau fracture (Felix et al. type 1) following acute trauma due to fall on ground at 3 months after surgery. Open reduction and bi-columnar plating were done. At 6 months follow up period her functional outcome was excellent with knee score of 83 and knee functional score of 85.

In our study 1 patient in CR group had persistent anterior knee pain since the surgery. At 5 months follow up period she was given genicular block following which she had complete relief of anterior knee pain at 6 months follow up period.

In our study there were 2 knees in PS group which had pre operative medial tibiofemoral subluxation. Post operatively correct alignment was achieved. At 6 months follow up both patients presented with complaint of pain and difficulty in walking and on X-ray evaluation of both knees in anteroposterior and lateral views were found to be medially subluxated.

In our study 1 patient in PS group had stiffness with knee ROM of 0° to 85° at 3 months follow up period due to non-compliance to physiotherapy. Patient was advised for strict adherence to physiotherapy by assistance with continuous passive movement machine and quadriceps strengthening. At 6 months follow up period patient's knee ROM improved to 0° to 110°.

Table 12:- Comparing complications between groups.

COMPLICATIONS	POSTERIOR STABILIZED		CRUCIATE RETAINING		TOTAL
	COUNTS	%	COUNTS	%	
INFECTION	1	5%	0	0%	1
PERIPROSTHETIC FRACTURE	0	%	1	5.88%	1
ANTERIOR KNEE PAIN	0	0%	1	5.88%	1
SUBLUXATION	1	5%	0	0%	1
STIFFNESS	1	5%	0	0%	1
NIL	17	85%	15	88.23%	32
TOTAL	3	15%	2	11.76%	5
t-value	0.577				
p-value	.579				

The complications in PS Group were Stiffness in 5% of patients, Infection in 5%, Subluxation in 5 %. In present study at the end of 6 months, 85% of the patients of PS Group did not have any post operative complications.

The complications in CR Group were Periprosthetic Proximal Tibial Fracture in 5.88%, Anterior Knee Pain in 5.88%. In present study at the end of 6 months, 88.23% of the patients of PS Group did not had any post operative complications.

Representative Cases
Case 1: CR

A-Pre-Operative X-Ray **B-Post-Operative X-Ray**

C-1 Month Follow UP X-Ray **D-3 Months Follow UP X-Ray**

E-6 Months Follow UP X-Ray

Figure 11:- X-rays: A- pre operative X-ray, B- post operative X-ray, C- 1 month Follow up X-ray, D- 3 months follow up X-ray, E- 6 months Follow up X-ray.

Figure 12:- 6 month follow up knee range of motion.

Case 2: PS

A-PRE-OPERATIVE X-RAY **B-POST OPERATIVE X-RAY**
C-1 Month Follow Up X-Ray **D-6 Months Follow Up X-Ray**

Figure 13:- X-rays: A- pre operative X-ray, B- post operative X-ray, C- 1 month Follow up X-ray, D- 6 months follow up X-ray.

Figure 14:- 6 months follow up range of motion.

Discussion:-

Our study comprised of 37 patients with newly diagnosed primary OA Knee joint of which 20 patients were treated by PS TKA and 17 patients were treated by CR TKA.

In our study, the PS group consisted of 5 (25%) patients in the age group 45-54 years, 9 (45%) patients in the age group 55-65 years and 6 (30%) patients in the age group more than 65 years whereas, the CR group consisted of 2 (11.77%) patients in the age group 45-54 years, 7 (41.17%) patients in the age group 55-65 years and 8 (47.06%) patients in the age group more than 65 years. Most of the patients were in the age group 55-64 years with a mean age of 61.1 ± 8.8 years in the PS group (range: 45 years to 76 years) whereas, in the CR group most patients were in the age group >65 years with a mean of 64.05 ± 10.47 years (range: 44 years to 79 years).

In a study by Catani et al.[2] 2004 the mean age of patients was 71 years in PS Group and 70 years in CR Group. With youngest patient is being 48 years old and the oldest is being 80 years in PS Group whereas, in CR Group youngest patient being 60 years old and the oldest is being 82 years. In a study by Chaudhary et al.[4], 2008 the mean age of patients was 70.2 ± 8.4 years in PS Group and 69.2 ± 9.1 years in CR Group.

In our study there were 14 (70.0%) females and 6 (30.0%) males in PS group whereas, 9 (53.0%) females and 8 (47.0%) males in CR group, showing a female preponderance in the study. Srikanth VK et al.[7],(2005) reported the presence of sex differences in OA knee, with females generally at a higher risk. In a study by Chaudhary et al.[4], 2008 there were (45.0%) females and (30.0%) males in PS group whereas, (53.0%) females and (47.0%) males in CR group.

In our study, there were 6 (30%) patients with a BMI of 18.5-24.99 kg/m2, 14 (70.0%) patients with a BMI of >25 kg/m2, and none with a BMI of less than 18.5 kg/m2 in the PS group, mean BMI being 26.45 ± 2.72 kg/m2 whereas, 4 (23.52%) patients with a BMI of 18.5-24.99 kg/m2, 13 (76.47%) patients with a BMI of >25 kg/m2, and none with a BMI of less than 18.5 kg/m2 in the CR Group, mean being 26.56 ± 2.80. In a study by Chaudhary et al.[4] 2008 the mean BMI of patients in PS group was 30.9±4.3 kg/m2 whereas, the mean BMI of patients in CR Group was 32.4 ± 5.7kg/m2. In a study by Harato et al.[3] 2008 the mean BMI of patients in posterior stabilized group was 31.4 kg/m2 (range 21.7 to 48.5) whereas, the mean BMI of patients in CR Group was 29.8 kg/m2 (19.7 to 43.6).

In our study, right side involvement was seen in 8 (40%) patients and left side involvement was seen in 12 (60%) in PS group whereas, in CR, right side involvement was detected in 7 (41%) patients and left side involvement was seen in 10 (59%).Patel KR et al[8] (2016) found that 45 percent of patients had right side involvement, 42 percent had left side involvement, and 13 percent of patients had bilateral involvement.

In our study, 4 patients (20%) had OA knee according to KL grade III, and 16 patients (80%) had OA knee according to KL grade IV in the PS group whereas, in CR group, 3 patients (18%) had OA knee according to KL grade III, and 14 patients (82%) had OA knee according to KL grade IV. Study by Meheux et al[9] (2016) meta-analysis, in which grade II (40.7 percent) and grade III (37.9%) were the most common arthritic knee grades, followed by grade IV (12.6 percent) and grade I (8.7%). Filardo et al.[10] (2012) found that KL grade II was likewise the most common.

The pre-operative mean knee scores were 43.5 ± 5.25 and 45.35 ± 2.55 in PS Group and CR Group respectively. In PS Group there mean knee score at 1, 3 and 6 months were 58.8 ± 6.07, 77.15 ± 4.31 and 91.05 ± 3.53 respectively. While in CR Group, the mean knee scores were 58.65 ± 4.32, 75.82 ± 4.09 and 90.12 ± 3.57 at 1, 3 and 6 months respectively. The mean knee scores in both the groups were not statistically significant at pre-operative, 1, 3 and 6 months as revealed by insignificant p value (>0.05). The pre-operative mean functional scores were 26 ± 7.88 and 23.24 ± 4.98 in PS Group and CS Group respectively. In PS Group there mean functional score at 1, 3 and 6 months were 51.5 ± 8.67, 77.25 ± 5.73 and 89.75 ± 4.44 respectively. While in CR Group, the mean functional scores were 50.29 ± 6.24, 76.17 ± 6.25 and 88.52 ± 4.24 at 1, 3 and 6 months respectively. The mean functional scores in both the groups were not statistically significant at pre- operative, 1, 3 and 6 months as revealed by insignificant p value (>0.05).

In a study by Maruyama et al.[6],2004 which compared functional outcome of patients getting operated for PS TKA in one knee and CR TKA in another knee reported at the endof 30 months. The mean preoperative Knee Scores was 43.6 ± 10.1 for PS knees and 42.8 ± 9.9 for CR knees whereas post operative values at 30 months were 89.5 ± 8.9 and 89.8 ± 7.2 respectively. In a study by Harato et al. [3],2007 the preoperative mean AKSS were 44.3 ± 17.6 in PS TKA knees and 46.7 ± 16.9 in CR TKA knees. The postoperative mean AKSS were 90.4 ± 15.7 in PS TKA knees and 90.8 ± 13.0 in CR TKA knees at the end of 5 years. In a study by Mayne et al.[5],2017 the preoperative Knee Score were 30.5 ± 15.7 in PS TKA knees and 31.23 ± 16.76 in CR TKA knees. The preoperative Functional Score were 55.46 ± 15.09 in PS TKA knees and 56.06 ± 17.47 in CR TKA knees. The postoperative Knee Score were 88.7 ± 13.9 in PS TKA knees and 88.5 ± 13 in CR TKA knees at the end of 10 year follow up. The postoperative Functional Score were 58 ± 31 in PS TKA knees and in 53.6 ± 26.6 CR TKA knees at the end of 10 year follow up.

In our study the major complications that occurred in PS group in the whole duration 6 months of study period were 1(5%) case of deep-seated infection, 1 (5%) case of subluxation, 1(5%) case of stiffness, and 17(85%) cases had no major complications. The major complications in our study in CR group in the whole duration 6 months of study period were 1(5.88%) case of periprosthetic proximal tibia fracture, 1(5.88%) case of anterior knee pain and 15(88.23) % had no major complications. In a study by Catani et al.[2], 2004 major complications that occurred in CR group in the whole duration 2 years of study period were 1(5%) case of anterior knee pain, 1 (5%) case of stiffness and 18(90%) cases had no major complications. The major complications in his study in PS group in the whole duration 2 years of study period were 2(10%) case of anterior knee pain and 15(90%) had no major complications. In a study by Mayurama et al.[6], 2004 major complications that occurred in PS group in the whole duration 2 years of study period were 1(5%) case of superficial wound infection and 19(95%) cases had no major complications. There were no major complications in his study in CR group in the whole duration 2 years of study period. In a study by Chaudhary et al.[4], 2008 major complications that occurred in PS group in the whole duration 22 months of study period were 1(2.04%) case of stiffness, and 48(97.95%) cases had no major complications. The major complications in his study in CR group in the whole duration 22 months of study period were 1(1.96%) case of deep-seated infection and 50(98.03%) had no major complications. In a study by Harato et al.[3], 2008 major complications that occurred in PS group in the whole duration 5 years of study period were 1(1.07%) case of lucent line, 1 (1.07%) case of Deep Vein Thrombosis, 3(3.22%) case of deep-seated infection, 1(1.07%) case of stiff knee, 1(1.07%) case of hemarthrosis, 2(2.15%) case of anterior knee pain, and 84(90.32%) cases had no major complications. The major complications in his study in CR group in the whole duration 5 years of study period were 1(1.01%) case of lucent line, 1 (1.01%) case of deep-seated infection, 7(7.07%) case of stiff knee, 2(2.02%) case of hemarthrosis, 5(5.05%) case of anterior knee pain, and 83(83.83%) cases had no major complications.

Summary

1. The mean AKSS showed statistically significant improvement in both the groups from pre-operative score to 6 month follow up score in all patients. Regarding Knee Society Knee Score, 90% patients achieved excellent score and 10% patients achieved good score in the PS group. 88.23% patients achieved excellent score and 11.76% patients achieved good score in the CR group. No patient had fair or poor outcome in any of the either group
2. Regarding Knee Society Functional Score, 80% patients achieved excellent score and 20% patients achieved good score in the PS group. 58.82% patients achieved excellent score and 41.17% patients achieved good score in the CR group. No patient had fair or poor outcome in any of the either group.
3. The mean AKSS was comparable in both the groups at all point of times of the study duration. Pre operatively the mean Knee Society Knee scores in PS Group and CR group were 43.5 ± 5.25 and 45.35 ± 2.55 respectively. At 6 months, the mean Knee Society Knee scores in PS Group and CR group were 91.05 ± 3.53 and 90.12 ± 3.57 respectively. Pre operatively the mean Knee Society Functional scores in PS Group and CR group were 26± 7.88 and 23.24 ± 4.98 respectively. At 6 months, the mean Knee Society Functional scores in PS Group and CR group were 89.75 ± 4.44 and 88.52 ± 4.24 respectively. The mean Knee Society Knee Score and Functional Score in both the groups were not statistically significant at pre-operative, 1, 3 and 6 months as revealed by insignificant p value (>0.05).
4. There were 3 complications in PS Group and that were 1 case of knee stiffness, 1 case of deep-seated infection and 1 case of tibiofemoral subluxation. There were 2 complications in CR Group and that were 1 case of anterior knee pain and 1 case of periprosthetic proximal tibia fracture. In present study, 85% patients in PS group and 88.23% patients in CR group did not have any post operative complications.

Conclusions:-

The present study compared the PS TKA with CR TKA. Although, both the groups individually had significant improvement in regards to function from pre operative status to post operative status, the study showed that there is no statistically significant difference in clinical and functional outcome between the two groups when compared with each other. However, the PS TKA had better Range of motion score throughout the study.The complications associated with both the groups were comparable.

This study is not without limitations. Even though it is prospective study, the results cannot be extrapolated to general population as the patients were followed for shorter duration only and sample size was small. Hence, a multicentric study with large sample size, elegant methodology and long follow up period can accurately assess the comparison of PS vs CR prosthesis used in Total Knee Arthroplasty.

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