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Short term outcome of primary hip osteoarthritis treated with total hip arthroplasty in adults

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Abstract
Introduction: In 1961 Sir John Charnley demonstrated the use of steel, plastics and cement to conquer the hip joint, ending the dread associated with the ' hip disease'. A new era of orthopedics had begun. There has been continuous evolution of total hip arthroplasty over last four decades throwing up newer forms of prosthesis from cemented to hybrid to cementless. Inspite of few drawbacks, total hip arthroplasty has emerged by far the popular choice among orthopaedic surgeons to tackle common or complicated hip pathologies and today most commonly performed hip reconstruction procedure. The present study aims to evaluate the results of cement less total hip replacement arthoplasties and to compare the results with other standard series.
Aim: To evaluate the results of cement less total hip replacement arthoplasties and to compare the results with other standard series.
Materials and Methods: The present prospective study was carried out on 30 patients of either sex or varied age groups having various hip disorders who were admitted during the year 2013-2014. The surgical approach for all the patients enrolled in the current study remained the same i.e Modified Gibson (Modified by Marcy and Fletcher) approach. Patients were followed up every month for the first 6 months followed by quarterly visits thereafter. The follow ups included proper clinical evaluation and roentgenographic evaluation.
Results and discussion: We obtained 100% excellent overall results in our series which are comparable to a similar larger series done at the department of orthopaedics, university of Innsbruck, Austria which included 71 primary cementless hip arthroplasty using porous coated press fit acetabular cups which were combined with 61 cementless stems and 10 cemented stems with an average follow up of 2.4 years. However Coventry *et al* had reported 83% overall good to excellent functional results in their series while, Charnley had found it to be 91% in his series. Thus, our results were consistent with the standars series available in literature.
Conclusion: We conclude that the operative treatment for various hip disorders in the form of cementless total hip arthroplasty has helped in alleviation of intractable pain, early rsumption of ambulation and return to functional activity.

Keywords: Short term, osteoarthritis treated, arthroplasty.

Introduction
In 1961 Sir John Charnley demonstrated the use of steel, plastics and cement to conquer the hip joint, ending the dread associated with the ' hip disease' [1]. A new era of orthopedics had begun. A quote in a London journal captured the moment for eternity. “Oh what a delight for every feeling heart to find a New Year ushered is with the announcement...have conquered the hip joint".
In retrospect, it would be fair to comment that these remarks were a little optimistic.
Our endeavor to conquer the hip joint has led us through a path strewn with success and obstacles, Success in terms of better implant design and material, better techniques of fixation, cementless and hybrid fixation techniques, improved cementation techniques, improved operation theatre environment and so forth depicting in terms of more pain free stable hip joint, less complications and longevity of prostheic joint in situ. The major obstacles have been loosening.
There has been continuous evolution of total hip arthroplasty over last four decades throwing up newer forms of prosthesis from cemented to hybrid to cementless[2]. Inspite of few

drawbacks, total hip arthroplasty has emerged by far the popular choice among orthopaedic surgeons to tackle common or complicated hip pathologies and today most commonly performed hip reconstruction procedure.

The present study aims at evolution of cementless hip arthroplasty in primary avascular necrosis of hip in our institute reaching to surface replacement arthroplasty- a reflection of past few years. The present study aims to evaluate the results of cement less total hip replacement arthoplasties and to compare the results with other standard series.

Aim: To evaluate the results of cement less total hip replacement arthoplasties and to compare the results with other standard series.

Materials and Methods

The present prospective study was carried out on 23 patients of either sex or varied age groups having various hip disorders who were admitted in the Department of Orthopaedics, Sir. Takhatshihji Hospital, Bhavnagar during the year 2013-2014.

History and clinical examination

A detailed history regarding name, age, sex, occupation, chief complains, pain, limp, severity of pain, duration of symptom, any previous treatment etc was taken. Thorough general and systemic examination was done to recognize any prevailing or impending cardiovascular, respiratory, neurological, renal or other systemic disease.

Local examination was performed to record any swelling, local tenderness, deformity, shortening of extremity, involvement of other hip, any other joints involvement, etc.

Apart from routine assessment, specific evaluation included the following:

- Is the patient suffering from some incurablae disease?
- Whether life expectancy is reasonable.
- General condition to tolerate elective procedure.
- Peripheral vascular status was evaluated especially for deep vein thrombosis to avoid any complication.
- Long term ingestion of aspirin or any other anti - inflammatory drugs, or steroids.
- Any phylogenic infections elsewhere were eradicated and intramuscular injections were avoided a day before surgery.

If there is any contracture of knee or deformity of foot, it also requires correction along with Hip Replacement for good results.

Roentgenograms

X-rays of pelvis with both hips A.P. view and affected hip frog leg or lateral view were taken. [Digital radiographs and CT SCANS were preferred]. Templating was done preoperatively to measure the expected size of prosthesis and limb length discrepancy.

Investigations

Routine Hb, TC, DC, ESR, BT, CT, urine, blood urea, blood surger, serum electrolytes, Liver function tests, ECG, X-ray chest or any other investigations suggested by physician were done according to pre-anaesthetic assessment requirements. Patients from tribal area with avascular necrosis were tested for sickling and haemoglobinopathies also.

Preoperative treatment

Patients with systemic diseases like hypertension and diabetes mellitus were treated as per physician's advice. Preoperative traction was maintained for correction of deformity and to decrease spasm and pain.

Surgical approach: The surgical approach for all the patients enrolled in the current study remained the same i.e Modified Gibson (Modified by Marcy and Fletcher) approach [3].

Postoperative protocol: Prophylactic antibiotics were continued for 5 -14 days postoperatively.

Negative suction drain was removed 48-72 hours after surgery, when the first dressing was performed. Routine X-ray was done usually on 3rd post-operative day. Sutures were removed on 10th -14th day after surgery. Oral or intramuscular diclofenac or tramadol was used for analgesis after removal of epiduarl catheter (if used). Catheters, IV line and other foci of infection were removed as early as possible.

None of the patients under this study received any prophylaxis for deep vein thrombosis / pulmonary embolism or heterotrophic bone formation however we routinely used intermittent pneumatic compression device (Electronic pump) for calves and thighs in all the patients.

Physiotherapy and mobilization

Under normal circumstances, with the patient being stable postoperatively, static and active quadriceps exercises were begun on the same evening within the limits of comfort followed by high sitting on the 2nd postoperative day. In case of hybrid hip arthroplasty, patients were instructed not to squat, sit cross- legged or to indulge in active sports. They were advised to western style toilets. All the patients were given a separate card for such instructions for better compliance and all these instructions along with the rehabilitation protocol were discussed with them in detail at each visit.

Follow up Patients were followed up every month for the first 6 months followed by quarterly visits thereafter. The follow ups included proper clinical evaluation and roentgenographic evaluation.

Observations and Results

This prospective study was conducted in Department of Orthopaedics, Government medical college and Sir T. Hospital, Bhavnagar and included 23 patients (total hips) between July- 2011 to September- 2013.

1. Age Distribution

Maximum number of patients were from middle age groups, though young patients too constituted a handsome proportion. The youngest one was -22years aged and eldest one was 56 yrs.

Table 1: Age Distribution

Sr. No.	Age Groups (in years)	No. of Cases
1	00-10	0
2	11-20	0
3	21-30	01
4	31-40	05
5	41-50	11
6	51-60	06
7	61-70	00
	Total	23

2. Sex Ratio
23 cases (15) were males and (08) were females.

Table 2: Sex Ratio

Sex	No. of Cases	Percentage
Male	15	65.21
Female	08	34.78
TOTAL	23	100

3. Occupation
The patients belonged to varied groups of occupatin right from being highly physically active to retired personnel and house-wives.

Table 3: Occupation

Occupation/ Level of Activity	No. of Cases	Percentage
Highly physically active	10	43.48
Moderately active	13	56.52
Low activity patients	00	00
Sedentary patients	00	00

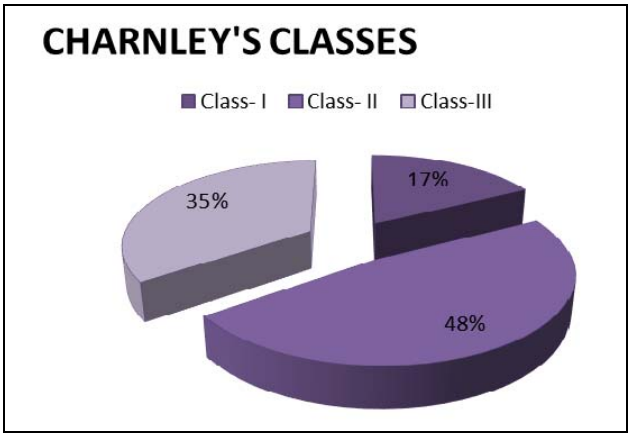
4. Laterality
10 patients were operated on left side and 06 on right side. 07 patients were operated for total hip replacement on both sides.

5. Charnley's Classes
To determine the effect of bilateral disease on total hip arthroplasty, the patients were divided into Charnley's classes [4].

Class I: Arthroplasties in which the contralateral hip was normal.
Class II: Arthroplasties in which the contralateral hip was diseased but Arthroplasty was not performed on that side
Class III: Arthroplasties in which the patient had an arthroplasty on the contalateralside within 2 years of the first procedure

Table 4: Charnley's Classes

Class	No. of Cases	Percentae
Class- I	04	17.39
Class- II	11	47.83
Class-III	08	34.78



07 patients out of 23 patients in our series were operated for both hips. This is suggestive of the patients of the patients towards surgery done on one side and hence their willingness to get operated on the other side also, after short interval of time.

Table 5

Side	No. of cases	Percentage
One Side	16	69.57
Both sides operated	07	30.43
Total patients	23	100

6. Associated Systemic Disease
Association of systemic disease was found as follows:

Table 6: Associated Systemic Disease

Systemic Diseases	No. of Cases
Nil	16
Hypertension	07
Sickle cell disease	00
Alcoholism	00

7. Surgical Approach
All the patients in our series were operated using modified Gibson's posterior approach

8. Anesthesia
Epidural + spinal anesthesia was preffered but general anesthesia was given when there was some definite indication for it, as determined by the anaesthetist team.

9. Blood Transfusion
The distribution for blood transfusion during surgeries was as follows:

Table 8: Blood Transfusion

No. of Units	No. of Cases	Percentage
1	8	34.78
2	12	52.17
3	3	13.04

10. Type of Prosthesis
We have used cementless pressfit extensively porous coated ACETABULAR CUP in all the patients with or without Cancellous screws. Cementless pressfit extensively hydroxyappetite coated femoral stem was used. (Total cementless THR)

11. Size of Prosthesis
Acetabular component: 50 mm found to be the most common size usedin patient of our study followed by size 48mm.
Femoral component: Size 11 was the most common size for femoral component used in our study.

12. Intraoperative Significant Events
There were no intraoperative significant events.

13. Prophylactic Antibiotics
Antibiotics were used prophylactically in all our cases starting from the day of surgery for upto 5 to 14 days. Average number of days for antibiotics was 7 days.

14. Postoperative Mobilization
Patients were kept partial weight bearing for 4 weeks and thereafter check roentgenograms were taken and was mobilized progressively full weight bearing.

15. Complications
We had no significant early or late complications.

16. Follow up Periods
The patients were followed every month for 6 months.

17. Radiological Assessment position of Acetabular component at final follow up:

Table 10: Inclination

	No. of Cases
50°- 55° inclination	04
35°- 50° inclination	19
< 35° inclination	Nil
Total	**23**
Anteversion	19
Neutral	04
Retroversion	Nil
Total	**23**

In majority of cases acetabular cup inclination was found to be 45°. In 19 cases, cup was anteverted and in 04 cases it was found in neutral position.

Acetabular migration
Radiolucency in acetabulum was not seen in any patient.
Maximum bone ingrowth was observed around acetabular screws. No breakage or osteolysis around screws was noted in any patient.
In no case the wear was ≥ 2 mm.
No dedefoliation of porous surface was noted in any patient.

Position of femoral component at final follow up

Table 11

	No of Cases
Neutral	19
Valgus	04
Varus	Nil
Total	23

In majority of the cases the femoral component was in neutral position while in only 2 cases it was in valgus position.

Femoral component loosening
All the Hydroxyapatite coated cementless stems showed excellent bone ingrowth and stable fixation. No breakage or bending of the stems was noted. None of the stem showed defoliation of the porous surface. In no case4 was ectopic ossification, hypertrophy of shaft or resorption of calcar was seen.

18. Functional Assessment
18 A) Amount of pain

Table 12: Amount of Pain

	No of Cases	Percentage
None	22	95.65
Slight	01	4.34
Moderate	Nil	00
Severe	Nil	00
Total	23	100

Most of the patients had no complaints of pain while walking. One patent had complain of occasional pain in the operated limb.

18 B) Limp

Table 13: Limp

	No of Cases	Percentage
None	22	95.65
Slight	01	4.34
Moderate	Nil	00
Severe	Nil	00
Total	23	100

One patient in our series had slight limp on final follow up due to pain.

18 C) Stairs and ability to enter public transport
All but one patient in our series were able to climb stairs and use public transport without difficulty. All patients in our series were advised to use a can in opposite hand postoperatively to decrease the wear, even they could walk without support.

18 D) Walking distance

Table 14: Walking Distance

	No. of Cases	Percentage
Unlimited	20	86.96
>1 km	03	13.04
½ km	Nil	-
< ½ km	Nil	-
Household only	Nil	-
Unable to walk	Nil	-
Total	23	100

18 E) Range of movement
Almost all the patients had severely restricted range of movements preoperatively.

Table 15: Range Of Movement

	Preoperatively	Postoperatively
Fixed flexion deformity	17	Nil
Fixed add. deformity	11	Nil
Fixed abd. deformity	03	Nil
Restricted ER	19	Nil
Restricted IR	20	Nil

1. Flexion

Table 16: Flexion

Degrees	No. of Cases	Percentage
0-45	0	00
46-90	8	26.67
91-110	22	73.33
111-130	0	00
Total	30	100

2. Abduction

Table 17

Degrees	No. of Cases	Percentage
0-15	0	00
16-20	0	00
21-45	22	10033
More than 45	0	00
Total	30	100

3. Adduction

Table 18

Degrees	No. of Cases	Percentage
0-15	0	00
More than 15	30	100
Total	30	100

4. Internal rotation

Table 19

Degrees	No. of Cases	Percentage
0-10	0	00
10-20	03	10
More than 20	27	90
Total	30	100

5. External rotation

Table 20

Degrees	No. of Cases	Percentage
0-15	0	00
More than 15	30	100
Total	30	100

18 G) Limb length

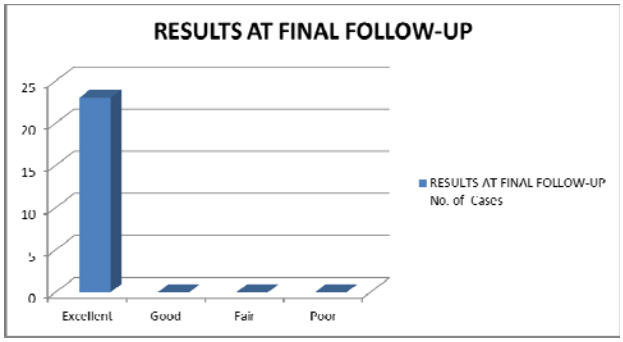
At final follow-up in all patients limb length was restored.

18 H) Overall Functional Result

Patients were assessed using modified Harris hip score[5] for the overall performance after the total hip arthroplasty. The average score for the patients at final follow-up was 98.

Table 20: Results at Final Follow-Up

Result	No. of Cases	Percentage
Excellent	23	100
Good	-	-
Fair	-	-
Poor	-	-
TOTAL	23	100



Discussion

"Arthroplasty or surgical reconstruction of a joint is a procedure which is under evolution since 1890. The Gluck made first attempt to do total hip arthroplasty. It came through the ages of Smith Peresen, Judet brothers, Moore and Thompson and many others. But it was the pioneer work of late Sir John charnley, the Father of total hip arthroplasty to whom the main credit of present day status of this surgery goes. Knowing the fact that the biomechanics of total hip arthroplasty is different from screws and plates because it has to withstand many years of cyclic load equal to several times of total body weight, various modifications came into vogue. To overcome the common denominator of biomechanical weakness, many types of impants with different biomaterials, size, implant design, fixation techniques and surgical technique has been tried. But still improvement is going on for its betterment ".

In the present study, maximum number of patients were in elderly age group (5th and 6 th decades) But young patients also formed a good proportion (patiens < 40 years). Though Coventry [6] and have primarily advocated total hip arthroplasty in patients of age 60 years and above. Chandler [7] did not recommend total hip arthroplasty below 30 years because loosening incidence is significantly high which might require revision surgery. The main factor according to him is the activity of the patient. The young patients in our series with cement less total hip replacement showed good early and medium term results. They were instructed not to indulge in active sports activities. With new generations of cement and better cementation techniques a long term success can be expected in old patients too. Good results can also be attributed to good bone stock of young patients and bone in growth as compared to osteoporotic bones in older patients undergoing Total Hip Replacement.

The male to female ration in our series was approximately 3:1 as compared to the ratio observed in Charnley series [8], which was 2.5:1. In our series, this disproportionate representation of females was probably due to higher incidence of Avascular Necrosis in males, and the fact that our series involved maximum number of patients of Avascular Necrosis of hip.

Most of our patients (80%) were occupied into moderate to heavy physical activity. All of them, but 1, was able to carry out their occupations without any hindrance. Even the highly active patients were fully satisfied with the performance of their hip joint.

Our series revealed avascular necrosis of hip joint to be prime indicator of total hip arthroplasty followed distantly by old fracture dislocations of hip with arthritis.

The series of Charnley *et al* [8] have shown arthritis as the leading indicator for total hip arthroplasty, but the study comprised western population with a substantially more incidence of hip arthritis due to living habits. Our series have shown avascular necrosis due to various causes as the major indication followed by arthritis comparable to the study of Mukkerjee and Mohanty (1995), who have been shown avascular necrosis of hip to be prime indicator of hip Replacement in our country, followed by arthritis due to other causes.

The patients with avascular necrosis of hip showed better results than the arthritis group. The best results may be seen in patients with secondary post-traumatic osteoathritic group. The patients with arthritis showed gradual improvement in range of motion and functions after surgery, while patients in AVN group achieved good range of movements immediately postoperatively, due to less soft tissue pathology.

Two of our patients who had acetabular fractures with dislocation of hip who were treated conservatively and had developed hip arthritis showed equally good results after hip replacement as compared to the nontraumatic arthritis group of patients.

Bella, barba, berger, Jacobs and Rosenberg from Chicago, USA states that the intermediated term clinical results of cementless total hip replacement arthroplasty in the patients of acetabular fractures were similar to those after the same procedure for non-traumatic arthritis regardless the acetabular fracture had been fixed internally initially. But the operative

time was longer with greater blood loss which was comparable to our study,

The incidence of total hip replacement was almost equal on either side in our series. About 12 of our patients had Charnley class I and 6 had Charnley Class III. The remaining one patient who belonged to Charnley Class II had affected opposite hip but no arthroplasty was done on that side till final follow up. These patients could have overall more chances of failure as they lend to load the operated hip more. Their functional capacity can be affected by the painful hip on the showed 79% satisfactory results in Charnley class II and 90% satisfactory results in Charnley class III. In our series we have observed excellent results in all three types of Charnley classes.

Approximately 95% of the cases in our study were done under combined epidural and spinal anesthesia. Regular anesthesia being safer was the preferred one whenever possible. All of our surgeries were over all within the expected time and in none of the case the surgery extended for longer durations. Though no correlation was found with blood loss and type of anesthesia used, it was directly proportional to the duration of surgery.

Being major surgery 2 units of cross-matched blood was usually kept ready for intraoperative use. The average use was 1.8 units for each surgery. Considering the anemic status of patients, 30% in our series having systemic diseases and significant number of cases with sickle cell disease, this finding was expected.

All the patients in our series were operated by modified Gibson's approach. The same had been followed by Chandler *et al.* [7]. It has the advantage of preserving the anterior capsule, shorter operating time, lesser blood loss, decreased morbidity and less compromised abductor function thus allowing early post-operative mobilization. Though theoretically possible, posterior dislocation of hip was not found in any of our patient, similar observations has been made by Charnley *et al.* [8]. From these observations, we conclude that the ease and reliability of this approach is well established.

Though trochanteric osteotomy was advocated by Sir Charnley in 13 hips (one bilateral - hybrid veriety) and extensively hydroxyapettite coated pressfit femoral stem in rest of 12 hip (5 bilateral -cementeless variety). However, in all the case we used extensively porous coated pressift cementless cup with or without screws irrespective to the type of femoral component used. The low frictional torque design of small size Charnley [9] head makes it more preferable to the 22.225 mm head size prosthesis available, which in turn increases the range of movement. Properly done Charnley's prosthesis has fair amount of range of movement. The theoretical disadvantage of small size Charnley head of dislocation was not seen in any of our case. We used extensively Hydroxyappetite coated stems for cement less femoral fixation which are proven to be superior to the noncoated stems.

We used manual mixing and cementation techniques with bone cement which is a time tested method for fixating of the prosthesis at our institute since decades. The non-availability of the advanced 4th generation cementation equipment viz. vacuum centrifugal measured pulsed lavage systems did not hamper the results of our series, as none of the cemented femoral stem showed signs of loosening on final follow up however Hunter and Holdsworth [10] reported in 1997 a series with 16% definite and an additional 10% probable loosening of femoral component at 26 months follow up.

All the cementless femoral stems showed excellent oesteointegration with no signs of loosening at final follow while Harris and Mulroy [11] in 1990 reported 1 femoral loosing (1%) 7% localized radiolucency around the cementless femoral component.

None of the cementless stems showed proximal stress shielding comparable to the results of the studies done by Rhohrl SM, Nlsoon KG, Umea, Sweden stating that the Hydroxyapettie coated stems favours advantageous proximal load transference and bony fixation, however three of the cemented femoral stems showed proximal stress shielding at final followup but as it is described as a normal phenomena in literature, it did not affected the final result, From above we concluded that the cementless coard pressift femoral component favors more physiological stress distribution in proximal femur.

On the acetabular side, the cementless extensively porous coated pressfit sockets showed significant bone ingrowth especially at the periphery of the cup and adjacent to the screws without any sign of loosening. Our study showed a continuous radiolucent line along the whole periphery of the cup in one case which suggests ' stable fixation by fibrous ingrowth ' rather than lossening according to the available standard literature. According to Udomkiat, Dorr ad Wan [12], Los Angeles USA, the fixaton of pressfit socket did not deteriorate over time (average 10 years followup) and was associated with a low rate of osteolysis. In our series we observed the same at the final follow up.

As the list of operative success grows longer, so does the list of complications in a major arthroplastic surgery. The most common complication after aseptic loosening, reported in literature was infection, septic loosening and dislocatin. Coventry [6] *et al* reported 2% infection rate in their series of 2012 arthroplasties. They used maeticulous antiseptic measures with modern laminar airflow type operation theatres. None of the patient from our series showed any type of infection at any point of time.

Harris WH [11], Boston, USA reported problems of periprosthetic osteolysis and dislocations in 15 years follow up study on the results of uncemented cups but none of patients from our series showed such results. Most of the cementless cups in our study were fixed with pressfit technique without any screws which showed excellent results comparable to study done by Udomkiat, Dorr and Wan [12], Los Angeles USA on 132 primary pressfit acetabylar component which showed a very low rate of osteolysis.

Deep vein thrombosis has been reported to be up to 40 to 70% in patients where no prophylactic measures have been taken. Bengt, Erikson, Kalebo and several other authors had advocated use of low molecular weight heparin as prophylaxiss for prevention of deep vein thrombosis. In none of our patients any prophylaxia was given and then too more of our patients developed deep vein thrombosis. The reason could be the routine use of pneumatic intermittent calf and thigh muscle compression pump, early mobilizatin and proper physiotherapy. Coventry [6] *et al* reported 0.6% incidence of sciatic nerver palsy (in their series of 2012 patients). It was reportd to be 3.5% in series by Harris. We haven 'st observed it in any case of our series. Sir Charnley [9] *et al.* reported a 5% incidence of heterotopic ossification while it was nil in our series without the use of any prophylaxis viz. indomethacin. None of our patients developed cardiopulmonry complications during surgery or anesthesia so as to require prolonged monitoring / ventilatory support. Coventry [6] in his series had noted a rate of cardiopulmonary

complications to be 5.4%.

The available literature suggests placement of the acetabular component in neutral i.e. between 35° to 50° inclination. Our calculations revealed 84% in neutral and 16% in vertical (50° -55°) inclination. The component could only be concluded to be having anterior or retroversion but without special markers in the component or without CT scan it was not possible to calculate the degree of the version present.

We have found 90% of femoral components to be in neutral position and 10% to be in valgus position and mone of them in varus position. The better placement of acetabular and femoral components could have been a reason for no incidence of dislocation in our series.

Functional Outcome

Our observations revealed only one patient to be having a limb length discrepancy of less than 1 cm while 95% had no discrepancy at all. Coventry [6] had noted limb length discreppancy more than 1cm in his series to be 11%. 95% of patients in our series had no complaints of pain on follow up. No patient had cmoplaint of severe pain on follow up. 95% of patients walked without limp while on patient had slight limp while walking. 78% of patients in our series could walk for unlimited distance. All the patients were able to sit comfortably, wear opposite footwear and enter public transportation.

No patient in our series had a deformity in the hip on final follow up. The average flexion was upto 110°, abduction was 35°, adduction was 30°, enternal rotation 30° and internal rotation was 30°.

Overall Result

We obtained 100% excellent overall results in our series which are comparable to a similar larger series done at the department of orthopaedics, university of Innsbruck, Austria which included 71 primary cementless hip arthroplasty using porous coated press fit acetabular cups which were combined with 61 cementless stems and 10 cemented stems with an average follow up of 2.4 years. However Coventry [6] *et al* had reported 83% overall good to excellent functional results in their series while, Charnley [9] had found it to be 91% in his series. Thus, our results were consistent with the standars series available in literature.

According to Goldberg, nimomiya, Kelly and Kraay [13] hybrid hip replacement arthroplasty was an excellent procedure for reconstruction of arthritic hip with minimal evidence of wear and pelvic osteolysis amongst the patients with an average age of 71 years (Range, 25-87 years) with minimum follow up of 7 years. (Average harris hip score was 92, range 65 -100).

Though the present study has small number of cases and the follow up is of relatively shorter duration, as compared to the large series available in western literature, total uncemented and hybrid hip replacement have continued to show excellent fixation and clinical results for most patients and a definite trend is seen as far as this major surgery in our set up is concerned.

Total hip arthroplasty has undoubtedly helped in number of old arthritic patients to walk free of pain with a stable pain - free hip. This has not only improved the function of the joint but has improved in a great way the overall life of the patiennts. Hence, total hip arthroplasty has produced constaantly excellent results irrespective of age and disease, and these results have been valid over a long time of decades. Encouraged by consistent excellent results of Hybrid hip replacement, we conclude that the Hybrid Total hip arthroplasty is the *state of the art in the new millennium !!!*

Conclusion

We concluded that the operative treatment for various hip disorders in the form of cementless total hip arthroplasty has helped in alleviation of intractable pain, early resumption of ambulation and return to functional activity. We would like to end with a note of caution that though the results in rehabilitating bed ridden patient are dramatic but as the follow up of study group is short, procedure is demanding, implant is costly and he the concept is newer, more work needs to be done on this subject, so that it can give decades of trouble free life and results comparable to proven techniques of Hip Replacement Arthroplasty.

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