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Short Term Complications in Operated Patients of Total Hip Arthroplasty in Indian Population

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Abstract

Background: Today, total hip replacement (total hip arthroplasty, THA) is one of the most successful surgical procedures in the field of orthopaedic and trauma surgery. Besides relieving pain, restoration of the hip joint biomechanics with appropriate femoral offset, and leg length is an important goal of THA and facilitates normal gait and function. THA is effective for decreasing pain and improving the function of patients. But like any other surgery. Total Hip Arthroplasty is also associated with few complications. The purpose of our study is to present the common complications associated with total hip arthroplasty.

Material and Methods: This longitudinal study was conducted from January 2018 to Jan 2020 in which we have performed a total of 84 total hip replacements (THR) in 64 patients at Sri Aurobindo Institute of Medical Science, Indore. (Table 1) Patient's age was in the range of 23 to 65 years. Median age of patient was 35 years. (Table 2)

Results: Complications were diagnosed in 25 (29.7%) patients. Postoperative complications such as aseptic loosening of the prosthetic components in 1 patient (1.1%), superficial or deep Hematogenous infections in 2 patient (2.3%), prosthetic dislocations in 4 patient (4.6%) and limb length discrepancy in 16 patients (19%) and radicular pain in lower limb in 2 patients (2.3%) were predominant.

Conclusion: Complications and adverse events are associated with all medical and surgical treatments. By identifying and defining complications and adverse events associated with THA we can reduce the intra operative and post operative complications of total hip arthroplasty.

Keywords: Hip; Arthroplasty; Complication; Infection.

Introduction

THA is one of the clinically most successful and cost-effective medical procedures which has developed over the last 60 years.[1] Since its introduction in the 1960s, total hip arthroplasty (THA) has proved to be an excellent and the most reliable treatment procedure for the end stages diseases of hip, fracture non union of neck femur in middle ages and high activity persons, with satisfactory clinical outcomes even after 15 to 20 year follow-up.[2] Besides relieving pain, restoration of the biomechanics of the hip joint with appropriate femoral offset, and limb length is an important goal of THA and to facilitate the normal gait and function of the limbs.[3] THA is effective for decreasing pain and improving the function of patients with arthritis refractory to non-operative treatment with non steroidal anti-inflammatory medications, life-style modification, and weight loss. THA helps in increasing the mobility of the patients.[4]

One of the intraoperative challenges in total hip arthroplasty (THA) is correcting limb length inequality without compromising hip stability. Despite the efficacy of THA, complications can occur which result in poor functional outcomes for a subset of patients.[3] The short-term complication rates could be reduced if we predict the post operative complications and the pre operative risk factors.[4] The most common major complications include mortality, infection, dislocation, revision, and pulmonary embolism.[1]

Yet complications after total hip replacement can be very challenging for both the patient and the surgeon. Complication rates after primary hip arthroplasty range from 2% to 10%.[1] Despite successful outcomes, THA revision rates have grown in recent years. Increased life expectancy associated with the increased use of THA, has resulted in increased in the revision rates of total hip replacement.[2]

Higher revision rates are reported in juvenile arthritis series, while aseptic loosening is the main reason for revision. The poor survivorship of the prostheses in the young population has been attributed mainly to the underlying condition (most commonly rheumatoid arthritis and congenital hip disease), that is usually associated with markedly musculoskeletal deficiencies and deformations which influence the stability of the surgical implants thus leading to early loosening. Common causes of revision THA are wear, loosening, dislocation or instability and infection.[2] Other factors associated with poor survival of THA in young patients are the higher activity.[5]

The other major complications which we did not encounter in our study but are worth mentioning are Pulmonary embolism occurring as a result of deep vein thrombosis but these were prevented by a combined use of anti-thrombotic agent (low molecular weight heparin) and ankle exercises. Hematoma formation, Heterotrophic ossification, Nerve injuries, Injuries to the femoral nerve, sciatic nerve, and superior gluteal nerves are most common. Along with this peri prosthetic fractures and post operative dislocation are also not uncommon complications. To prevent hip dislocation the ideal position of the acetabular cup to be inserted during hip arthroplasty is at an abduction angle of 40 degree and ante-version angle of 20 degree.[6]

Material and Method

This longitudinal study was conducted from January 2018 to Jan 2020 in Orthopaedic department of a tertiary care centre of the metropolitan city of India. A total of 84 hips were taken and included in our study.Patient were followed up at 1 month,3 months and 6 months and 12 months duration.On each visit patient was asked for any limb length discrepancy, any spontaneous dislocations or any radicular pain or any other complaints.

The inclusion criteria were all the operated patients of total hip replacement by the professor and head of unit of orthopaedics at Sri Aurobindo Institute Of Medical Sciences and the patients who had the minimum follow-up of 6 months.

Exclusion criteria was the patient not willing for follow up.

One patient died due to natural causes but is included in the study as he has completed 6 months of follow-up.

Observations and Results

Table 1: Sociodemographic features of patients who underwent total hip replacement.

(N=64)

Characteristics		Bilateral	Unilateral
Gender	Female	3(15%)	11(25%)
	Male	17(85%)	33(75%)
Number of total hip replacement		20(31.3%)	44(68.7%)

Table 2: Distribution of patients according to age.

(N=64)

Age	Bilateral Total Hip Replacement (n=20)		Unilateral Total Hip Replacement (n=44)	
	No.	%	No.	%
23–30 years	5	25.0	13	29.5
31–40 years	9	45.0	17	38.6
41–50 years	4	20.0	3	6.8
51–60 years	2	10.0	9	20.5
>60 years	0	0.0	2	4.5
Total	20	100.0	44	100.0

Patient median age was 35 years.

Table 3: Distribution of patients according to complications.

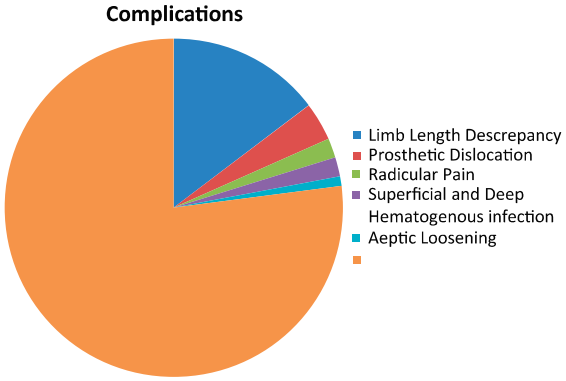
(N=84)

Complications	No.	%
LLD	16	19.0
Dislocation	4	4.8
Radiculopathy	2	2.4
Aseptic loosening	1	1.2
Infection	2	2.4
None	59	70.2
Total	84	100

LLD was seen in 16 (19.0%) patients, dislocation was seen in 4 (4.8%) patients, radiculopathy was

seen in 2 (2.4%) patients, aseptic loosening in 1 (1.2%) patients and infection in 2 (2.4%) patients. While a vast majority of the patients i.e. 59 (70.2%) did not show any complication. (Table 3)

Graph 1: Pie chart showing the complication.



Discussion

Complications and adverse events after THA can compromise patient outcomes, increase hospital readmissions, decrease patient satisfaction, and increase healthcare cost. Despite the clinical success of THA, complications after THA can be expected despite reasonable and safe care, and rates of complications after total joint arthroplasty can vary considerably. Leg length discrepancy after THA has been associated with general dissatisfaction as well as other complaints, e.g. gait disorders, suspected aseptic loosening, greater trochanteric pain and nerve palsy.

The incidence of LLD after primary THA has been reported to range from 1% to 27%.[7]

In our study limb length discrepancy was reported in 19% of the patients.For the limb length discrepancy the patient was given shoe raise in the opposite limb, i.e. in the limb which was short.

Restoration of LLD is an important goal of any hip arthroplasty procedure as it affects functional outcome. According to Jasty et al preoperative LLD of more than 2 cm presents social problems.[3] The measurement of leg length discrepancy (LLD) represents an important part of the musculoskeletal physical examination. In patients considered for total hip arthroplasty (THA), the preoperative and postoperative LLD measurement is commonly carried out clinically and/or radiologically. The clinical measurement can be performed with the patient in the supine position using a tape and calculated as the distance between the anterior superior iliac spine (ASIS) and the medial malleolus. The radiological measurement is made on an anteroposterior (AP) view of the pelvis as the distance between a line passing through the teardrop point's medial to the acetabulum or through the ischial tuberosities to the tip of the lesser trochanter. Selection of an appropriate intraoperative technique to overcome LLD from the numerous methods described can be overwhelming.[3]

Emilios e pacos conducted a study of the in younger age group less than 30 yrs of age in which the sample size was of 30 patients. Of which 11 patients had a complication of aseptic loosening of the implant. 8 patients had loosening of the acetabular component, 2 hips had polyethylene wear, and 1 had loosening of the femoral component.[5]

In our study only 1 patient had aseptic loosening of the implant. In our case patient was advised resurgery, and the loose femoral stem was removed and the higher size stem was put in its place.

The overall 90-day complication rate of 0.68% for mortality, 0.64% for pulmonary embolus, and 1.39% for hip Dislocation while wound infection rate was 0.9% as it was reported by nelson et al.[4]

Medicare population of 1.0%, 0.9%, and 3.1%, respectively and wound infection rate was 0.2%.[4]

Our study had 0% mortality and 0% pulmonary embolus complication and 4% hip dislocation rates and 2.3% wound infection rates.

The hip dislocations were managed by closed reduction under general anaesthesia on the same day of hip dislocation, out of the four patients who had hip dislocation three were reduced by closed method and one in which closed reduction did not reduced the hip in its place we went for open reduction under spinal anaesthesia.

There were only 2 cases of infection which were managed by through debridement, pus culture was sent and antibiotics were started according to culture sensitivity report.

We had one patient which died of natural causes and was not associated with the complication of total hip arthroplasty. (Graph 1)

Conclusion

Dislocation following total hip replacement can be extremely traumatising for patients. They lose confidence in their artificial joint, completely move away from the aim of a "forgotten joint", and may reproach the surgeon for this outcome. Thus, dislocation prophylaxis is essential for which

Abduction Pillow was given and pre operatively patient was told not to sit cross legged or squat. Apart from preoperative risk assessment, this includes proper surgical technique with optimised alignment of the components, soft-tissue balancing and head-neck ratio, as well as adequate surgical experience. To overcome Limb Length Discrepancy there has to be an appropriate intra operative technique to see for limb length and to measure it so that post operatively there is no discrepancy. Therefore, it is paramount that surgeons maintain their focus on avoiding LLD as one of the primary goals of THA.

We have given Deep Vein Thrombosis prophylaxis in all our patients, so no case of DVT, pulmonary embolism was diagnosed at our institute.

Avoid using two posterior retractors while acetabular reaming to prevent sciatic nerve damage.

For prevention of superficial or deep infection pre operative assessment should be done and we have to rule out any foci of infection, all aseptic precaution should be taken during the procedure of hip arthroplasty. Placing drain in surgical wound helps in reducing hematoma formation but sometime it may carry the risk of introducing infection inside joint.

By identifying and defining complications and adverse events associated with THA, this project intended to improve quality and safety for THA. Complications and adverse events are associated with all medical and surgical treatments and the same goes with post operated patient of total hip arthroplasty and many complications are preventable or can be managed conservatively. Few complications like loosening of implant or peri prosthetic fracture require revision. Our study reports short-term complication rates following total hip arthroplasty and the role of some patient and provider factors in predicting the occurrence of complications.

In general, reporting of THA complications and adverse events is not standardised. Different investigators report different complications with different definitions. Furthermore, all THA complications are not equal.

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