

Clinico-Radiological Profile of Patients Admitted With Osteoarthritis of the Knee in Rural Population

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Abstract: AIM AND OBJECTIVES: 1. To study clinicoradiological findings in cases of Medial compartment osteoarthritis of knee joint. 2. To study Biomechanics of knee joint with special reference to knee in osteoarthritis. 3. To compare the results with other available series

METHODOLOGY: The patients for the present study of A clinical study of role of Medial opened wedge tibial osteotomy in medial compartment osteoarthritis of knee were selected from cases of osteoarthritis of knees attending Orthopaedic O.P.O. of Pravara Rural Hospital, Loni India. Clinical and radiological assessment and grading was done.

Results: Osteoarthritis of knee joint we found to be common in patients between 45 to 65 years of age [82.60%], in over weighted patients it was earlier and was more severe. Majority Le. 69.57% patients were females and 31.43% were males. Most of the patients had right sided involvement [65.22%]. In Medial compartment osteoarthritis varus deformity of varying degree was commonly found. Most of the patients had complaints about osteoarthritis of more than 1 year duration [69.57%]. Many of the patients of present study had patella femoral arthritis [43.48%] and could be responsible, at least to some extent, for the persistent or recurrence of pain following osteotomy. In the present study 52.81 % patients had 5 to 8degree varus angulation and one patient had 2degree of valgus angulation pre-operatively. Results of the present series are comparable to other published series of high tibial osteotomies.

Key words: Osteoarthritis, knee joint

I. Introduction

Osteoarthritis or osteoarthritis is not a disease by itself. It is the effect of degenerative processes. Osteoarthritis is a well-known entity even before the understanding of biomechanics of joint and its effect on articular cartilage. This disease leaves a long lasting impact on the personality due to the loss of confidence, depression and social isolation. Hence the need for the treatment of osteoarthritis has become essential. Thus in such a fast moving world it has become absolute mandatory to offer some solution to the problems produced by osteoarthritis.

In this era of increasing life expectancy and change in the lifestyle, osteoarthritis of weight bearing joints, particularly the knee joint has become the most common Orthopaedic problem of enormous magnitude. Osteoarthritis is the most common disorder in elderly population. The survey had shown that osteoarthritis can involve any population irrespective of geographical location or climate [1]. After the age of 60 years large population suffer from osteoarthritis of the knee joint [2]. This is one of the major causes for morbidity at that age, which increases with age. The symptoms like pain, joint stiffness, instability, deformity and loss of function may lead to functional disability even to the extent of affecting their bread wining capacity.

Pathological studies have shown that the knee joint is the most commonly affected joint by osteoarthritis as compared to other joint in the body. [HEINE, 1926] [3] This is the result of aging. Cytokines and growth factors are thought to play a role in the patho-physiology of the disorders. Interleukin-1 and tumor necrosis factor- β may function to activate enzymes involved in proteolytic digestion of cartilage. Growth factors such as tissue growth factor- β and insulin growth factor-1 may role in the body's attempts to repair cartilage through cartilage synthesis. When catabolism exceeds cartilage synthesis, osteoarthritis develops. Thus there is break down of articular cartilage, eburnation of the bone and even the disorganization of the joint compartment.

It is now well proved fact that out of total body weight, 60% of weight is transmitted by muscles and 40% by bones [4]. At that age the physical activities of the people reduce considerably, there by leading to muscle wasting particularly Quadriceps & Hamstring muscles. This invites bone to shear more than 40% of body weight and therefore pain in joint and subsequent structural and biomedical problems.

This study has been carried out in rural population where patient are from a low socioeconomic status as they are many a times the bread earners of the family. Medial opened wedge tibial osteotomy fixed with standard ring fixator will be very useful for them as being of low cost and giving them immediate pain free mobilization, so that they can carry out their routine activities freely and as early as possible. The procedure is simple, safe and effective method. It is a small operation with negligible blood loss and no blood transfusion is

required. No anesthesia is necessary to remove the apparatus. The fact that all of the patients requiring bilateral osteotomy return for the operation to be performed on the opposite side speaks for itself.

II. Aims And Objectives

To study clinicoradiological findings in cases of Medial compartment osteoarthritis of knee joint.
 To study Biomechanics of knee joint with special reference to knee in osteoarthritis.
 To compare the results with other available series.

III. Clinical Material And Method

The patients for the present study of A clinical study of role of Medial opened wedge tibial osteotomy in medial compartment osteoarthritis of knee were selected from cases of osteoarthritis of knees attending Orthopaedic O.P.O. of Pravara Rural Hospital, Loni India.

GRADING OF RESULTS

EXCELLENT	-	1. Completely pain free	2. Improved free range of flexion as compared to its pre-operative status. OR
			2. Free range of flexion more than 90°
GOOD	-	1. Grade 1 pain (mild pain)	2. Free range of flexion same as pre-operative. OR
			2. Free range of flexion more than 90°
FAIR	-	1. Grade II pain (moderate pain)	2. Pain free or mild pain without flexion possible
			Up to 90°.
POOR	-	1. Grade III pain (severe pain)	2. Pain with flexion less than 90°.

RADIOLOGICAL ASSESSMENT

The radiological assessment was also carried out to study the relation between the post-operative Tibio - femoral angle and the results using the criteria employed by **Coventry** (1965) [5].

5° - 13° valgus alignment is ideal and has satisfactory results.

Grade I - The knee that maintained 5° - 13° of valgus as shown by **Coventry** (1965) [5] **Insall** (1974) [6] **Maquet** (1976)[7].

Grade II - The knee in which the alignment was not ideal with less than 5° or more than 14° of valgus alignment.

IV. Observation Tables

In the present series, 23 patients were subjected to Medial opened wedge tibial osteotomy stabilized with external ring fixator for medial compartment osteoarthritis of knee joint.

AGE AND SEX DISTRIBUTION

In the present series, 56.52% patients were between 45 to 50 yrs of age. The average age was 54 yrs.

TABLE -1 AGE AND SEX DISTRIBUTION

AGE IN YRS.	SEX		TOTAL	PERCENTAGE
	MALE	FEMALE		
Below 45 yrs.	0	2	2	8.70%
44-55 yrs.	3	10	13	56.52%
55-65 yrs.	3	3	6	26.08%
Above 65 yrs.	1	1	2	8.70%
TOTAL	7	16	23	100%
Percentage	30.43%	69.57%		100%

In the present series, out of 23 patients 16 patients were female i.e. 69.57% and 7 patients were male i.e. 30.43%

WEIGHT OF THE PATIENT

Majority of patients in this series had weight between 50-70 kg (73.92%)

TABLE-II WEIGHT OF THE PATIENT

WEIGHT OF PATIENT	NO. OF CASES			PERCENTAGE
	MALE	FEMALE	TOTAL	
Below 50 kg	0	3	3	13.04%
50-70 kg	5	12	17	73.92%
Above 70 kg	2	1	3	13.04 %
TOTAL	7	16	23	100%

SIDE OF INVOLVEMENT

Majority of patients in this present study had Right sided involvement (65.22%).

TABLE – III SIDE OF INVOLVEMENT

	RIGHT	LEFT	TOTAL
	No. OF CASES	15	8
PERCENTAGE	65.22%	34.78%	100%
TOTAL	7	16	23

PREOPERATIVE DURATION OF OSTEOARTHRITIS OF KNEE

Most of the patients in this series had complaints of osteoarthritis (mostly pain) of more than 1 yr. of duration.

TABLE - IV PREOPERATIVE DURATION OF OSTEOARTHRITIS OF KNEE

DURATION IN YRS.	NO. OF PATIENTS	PERCENTAGE
Below 1 yrs.	7	30.43 %
Above 1 yrs	16	69.57%
TOTAL	23	100%

ASSOCIATION WITH PATELLO-FEMORAL ARTHRITIS

43.48 % patients in this series were associated with mild to moderate patellofemoral arthritis.

TABLE V - ASSOCIATION WITH PATELLO-FEMORAL ARTHRITIS

PATELLO-FEMORAL ARTHRITIS	NO. OF PATIENTS	PERCENTAGE
PRESENT	MILD - 4 MODERATE – 6 SEVERE-O	10 43.48%
ABSENT		13 56.52%
TOTAL		23 100%

GRADING OF PAIN

Pre-operatively 60.87% of knees gave continuous severe pain i.e. grade III in this present study.

TABLE VI - GRADING OF PAIN

GRADE	NO. OF PATIENTS	PERCENTAGE
II	1	4.35%
II	8	34.78%
II	14	60.87%
TOTAL	23	100%

DEFORMITY

In the present study 12 patients i.e. 52.18 % had 50_80 varus angulation pre-operatively. One patient had 2° valgus angulation showing medial compartment osteoarthritis radiologically along with significant clinical findings.

TABLE VII – DEFORMITY

VARUS ANGULATION IN DEGREES	NO. OF PATIENTS	PERCENT
0-4	7	30.43%
0-8	12	52.18%
9 and above	3	13.03%
ONE PATIENT HAD VALGUS ANGULATION	1	4.35%
TOTAL	23	100%

RANGE OF MOVEMENT PRE-OPERATIVELY

73.90% patients had 1260 and more free flexion range of movement pre-operatively.

TABLE VIII - RANGE OF MOVEMENT PRE-OPERATIVELY

FLEXION IN DEGREES	NO. OF PATIENTS	PERCENTAGE
85 – 95	0	0
96 - 105	1	4.35%
106-115	1	4.35%
116 – 125	4	17.40%
126 and above	17	73.90%
TOTAL	23	100%

RADIOLOGICAL GRADINGS OF OSTEOARTHRITIS OF KNEE

60.87% of patient was grouped in IV i.e. osteoarthritic changes showing joint space 2mm or less [given in material and method].

TABLE - IX RADIOLOGICAL GRADINGS OF OSTEOARTHRITIS OF KNEE

GRADE	NO. OF PATIENTS	PERCENTAGE
I	0	0
II	0	0
III	3	13.03%
IV	14	60.87%
V	6	26.10%
VI	0	0
TOTAL	23	100%

V. Summary And Conclusions

- In the present series, 23 cases of medial compartmental osteoarthritis of knee joint, who were subjected to Medial open wedge high tibial osteotomy, were studied.
- Osteoarthritis of knee joint we found to be common in patients between 45 to 65 years of age [82.60%], in over weighted patients it was earlier and was more severe.
- Majority Le. 69.57% patients were females and 31.43% were males.
- Most of the patients had right sided involvement [65.22%].
- In Medial compartment osteoarthritis varus deformity of varying degree was commonly found.
- Most of the patients had complaints about osteoarthritis of more than 1 year duration [69.57%].
- Many of the patients of present study had patella femoral arthritis [43.48%] and could be responsible, at least to some extent, for the persistent or recurrence of pain following osteotomy. In some patients, patello-femoral arthritis became less severe.
- In the present study 52.81 % patients had 5 to 8degree varus angulation and one patient had 2degree of valgus angulation pre-operatively.
- Results of the present series are comparable to other published series of high tibial osteotomies.

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