





Preoperative X Ray



Figure 3.2 (a)

POSTOPERATIVE XRAY



Figure 3.2 (b)

At 7 Days of Distraction



Figure 3.2 (c)

**Table 1:** Showing Preoperative Radiological Grading

Grade	Feature	No of patients	%
1	Narrowing of joint space	15	50
2	Obliteration of joint space	6	20
3	Minor bone attrition	3	10
4	Moderate bone attrition	6	20

**Table 2:** Showing Preoperative Knee Score by Knee Society  
 Clinical Rating Score  
 Clinical Knee Score

Rating	points	No of patients	%
Excellent	85-100	0	0
Good	70-84	0	0
Fair	60-69	0	0
Poor	<60	30	100
Total		30	100

**Table 3:** Average Knee Score

Rating	points	No of patients	%
Excellent	85-100	0	0
Good	70-84	0	0
Fair	60-69	0	0
Poor	<60	30	100
Total		30	100

In our study preoperatively all patients had poor clinical knee score while postoperatively 15 progressed to excellent score, 9 patients good and 3 patients fair, 3 patients remained in poor grade.

**Table 4:** Showing Post- Operative Severity of Pain

Grade	No of patients	Percentage
Severe	0	0
Moderate- continuous	3	10
Occasional	3	10
Mild on occasional walking + stairs	6	20
Stairs only	15	50
None	3	10
<b>Total</b>	<b>30</b>	<b>100</b>

Pre operatively most patients were able to walk only 100 metres before they had to stop for pain to subside. Post-operatively results are as below.

**Table 5:** Showing Post Operative Walking Distance

Distance(km)	No of patients	Percentage
Unlimited	1	3.33
>1	12	40
0.5-1.0	7	23.33
<0.1	8	26.67
Housebound	2	6.67
Unable	0	0

**Table 6:** Showing Pre-Operative Degree of Angular Deformity

ANGLE	No of patients	Percentage
>10degree varus	6	20
10-8 degree varus	15	50
7-5 degree varus	6	20
4-2 degree varus	3	10

**Table 7:** Showing Post Operative Limb Alignment

Post-operative alignment	No of patients	Percentage
<5 valgus	0	0
5-7 valgus	18	60
8-9 valgus	12	40
>9 valgus	0	0

The post-operative alignment of 7+2 degree valgus as aimed for correction was achieved in all knees. The average angle post operatively was 6.8 degree valgus as shown in above table.

**Table 8:** Showing Radiological Assessment of Bony Union

Earliest evidence of osteotomy union present at(weeks)	No of knees	Percentage
8	3	10
10	6	20
12	12	40
14	6	20
>14	3	10
Total	30	100

#### 4. Observations

##### Age Distribution

The average age of our patients was 49.20 years with 70% of our patients were in 4<sup>th</sup> decade ( 41 to 50 years). 6 patients (20%) were in the fifth decade and there were 2 patients (10%) above 60 years.

##### Sex

Out of 30 patients 23 (76.67%) patients were female and 7 patients were male (23.33%).

##### Obesity Distribution

Out of 30 patients 16 were obese and obesity was more common in females. 14 patients out of 16 obese were females and only 2 males.

##### Range of Motion

In our study 25 patients had pre-operative range of motion more than 125 degree with no flexion contracture, 5 patients had range of motion of 90-125 degree.

#### 5. Discussion

In this study of 30 patients of osteoarthritis knee none had undergone another surgical procedure except osteotomy. All knees had a varus deviation from normal femorotibial angle of 7 degree  $\pm$  2 degree. All patients received conservative treatment first and only those patients who had minimal or no relief and had radiographic evidence of unicompartamental osteoarthritis, osteotomy was performed to improve the symptomology by mechanical as well as biological reasons. The rationale of high Tibial Osteotomy for osteoarthritis of the knee is to transfer the load from the medial to lateral compartment<sup>13</sup>. Overcorrection between 2 and 4 degree valgus, depending on the extent of cartilage damage is recommended. Morrey stated that patients with secondary degenerative osteoarthritis, a varus knee and localized medial joint pain are candidates for an osteotomy.<sup>14</sup>

Our results were comparable to other studies of Nakamura E et al<sup>15</sup> which showed higher incidence among Indian women due to their customary squatting habits. In our study we concluded that male patients had superior results. They showed a better tolerance to pain while undergoing physiotherapy during postoperative rehabilitation resulting in shorter duration of time required for unaided ambulation and better preservation of range of motion.<sup>16</sup>

Obesity is major risk factor but it is modifiable factor.<sup>17</sup> BMI of more than 30 had a 1.4-fold increase in osteoarthritis, and this increase was even larger in women.<sup>18</sup> The strong

association between osteoarthritis and being overweight or obese has been well established.<sup>19,20,21</sup>

The main indication for performing the procedure was pain. In our study visual analog scale of pain was taken in to account. Most of the patients pre-operatively had moderate pain of continued duration(60%) to severe pain(40%). Post-operatively, we found an excellent decrease in the severity of pain in the most of patients (70%). In one study of Insall et al complete relief of pain was seen in 59 percent, partial relief in 18 percent and no relief in 23 percent patients.

In our study 25 patients had pre-operative range of motion more than 125 degree with no flexion contracture, 5 patients had range of motion of 90-125 degree. Post-operatively, range of motion in 22 patients was close to the preoperative range. There was decrease of 15-20 degree range of motion postoperatively in 4 patients and 8 patients showed improvement of 10-15 degree range of motion postoperatively. It is advisable to allow a patient to start knee mobilization as early as possible in the postoperative period.

In our study union had been confirmed radiologically at a mean of 12 weeks (10-16 weeks) after surgery. This observation coincides with the study of Nakamura et al.

In our study patients with good and excellent results had a dramatic increase in their walking capacity while other patients also showed an improvement in their walking distance.

In our study thrust is defined as a sideways movement of the knee in a coronal plane manifested on weight bearing or walking. The presence of the thrust either medial or lateral indicated laxity in the collateral ligaments associated with deformity which was present in all cases. After surgery 21 knees( 70%) showed no instability while it persisted in 9 knees( 30%) to some extent. Our results are similar to study by Insall et al who chose thrust as an index of instability rather than recording measurements of the degrees of movements of the tibia on femur during varus or valgus stress.

In our study preoperatively all patients had poor clinical knee score while postoperatively 15 progressed to excellent score, 9 patients good and 3 patients fair, 3 patients remained in poor grade

#### 6. Complications

**Early complications:** These were the complications seen in first 6 weeks which included Wound infections in 3 cases and Pin site infections in 4 cases.

**Late complications:** These were seen after 6 weeks which included delayed union of the osteotomy site in 3 cases and 2 cases developed swelling at the osteotomy site due to bursitis.

Complications were seen in 60% of the knees.

## 7. Conclusions

The following conclusions were drawn from the study:

- 1) Osteoarthritis of knee has a much higher incidence in females as compared to males.
- 2) Surgery for management of osteoarthritis knee is indicated only in unicompartmental osteoarthritis following unsatisfactory response to conservative treatment.
- 3) Pain, range of motion and walking distance are the three prime factors for evaluating the outcome of this procedure.
- 4) Using External Fixator allows accurate correction of deformity and possibility of adjustment during treatment and early knee mobilization in postoperative period.

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