RESULTS

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All data collected from the last follow up were tabulated according to HSS knee scoring system . We considered excellent and good as satisfactory result, and fair and poor as unsatisfactory result.

Overall results:

According to the standard HSS knee scoring system 31cases (86.11%) gave satisfactory results, and 5 cases (13.88%) gave unsatisfactory results.

The mean preoperative total score was 40.4 while the mean postoperative total score was 80.8. The difference between the preoperative and postoperative means of scores was found statistically highly significant (table 10).

Age and results:

The mean age for the satisfactory results was 65.7 years, while the mean age for unsatisfactory results was 58.8 years. The relation between the age of the patients and the overall results was found to be statistically insignificant (table 11).

Sex and results:

25 female (69.4%) and 11 male patients (30.6%) were included in the study. The mean total score for female cases was 81.6 , while for male cases was 78.9. The difference between both means was found to be statistically insignificant (table 12).

Table (10): Comparison between total score pre and postoperatively according to the HSS knee scoring system.

	Preoperative	Postoperative
Range	30-48	58-90
Mean	40.4	80.8
S.D.	8.6	9.0
t	26.0064	
p	0.000	

Table (11): Correlation between the age and overall results.

Age	No.,	%
Less than 60 :		
Satisfactory	5	83.3
Unsatisfactory	1	16.7
Total	***6***	***100***
From 60 to 70 :		
Satisfactory	13	76.5
Unsatisfactory	4	23.5
Total	***17***	***100***
More than 70 :		
Satisfactory	13	100
Unsatisfactory	0	0
Total	***13***	***100***

Fig.(1): Comparison between total score pre and postoperatively according to the standard HSS knee scoring system.

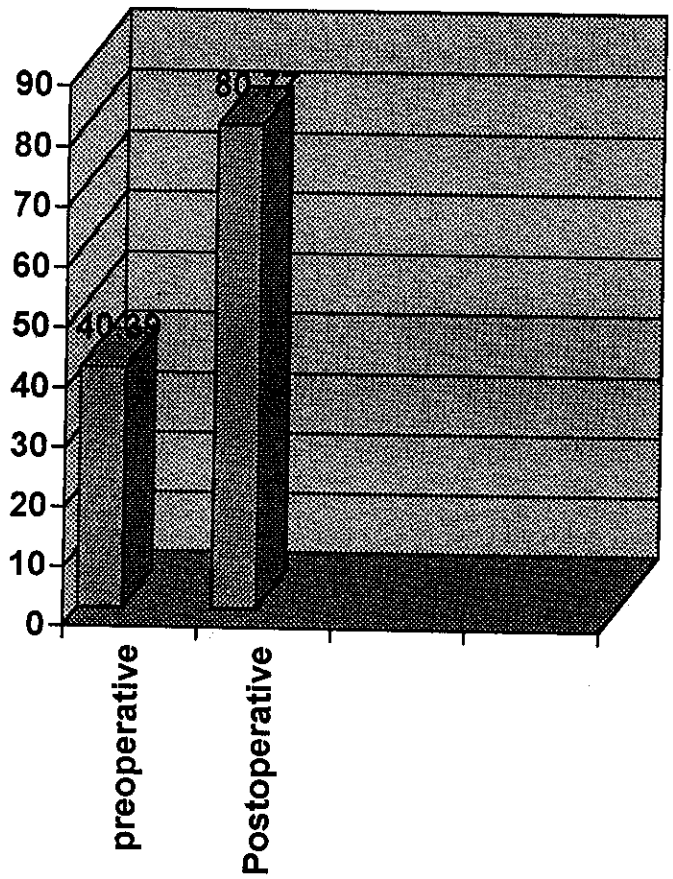
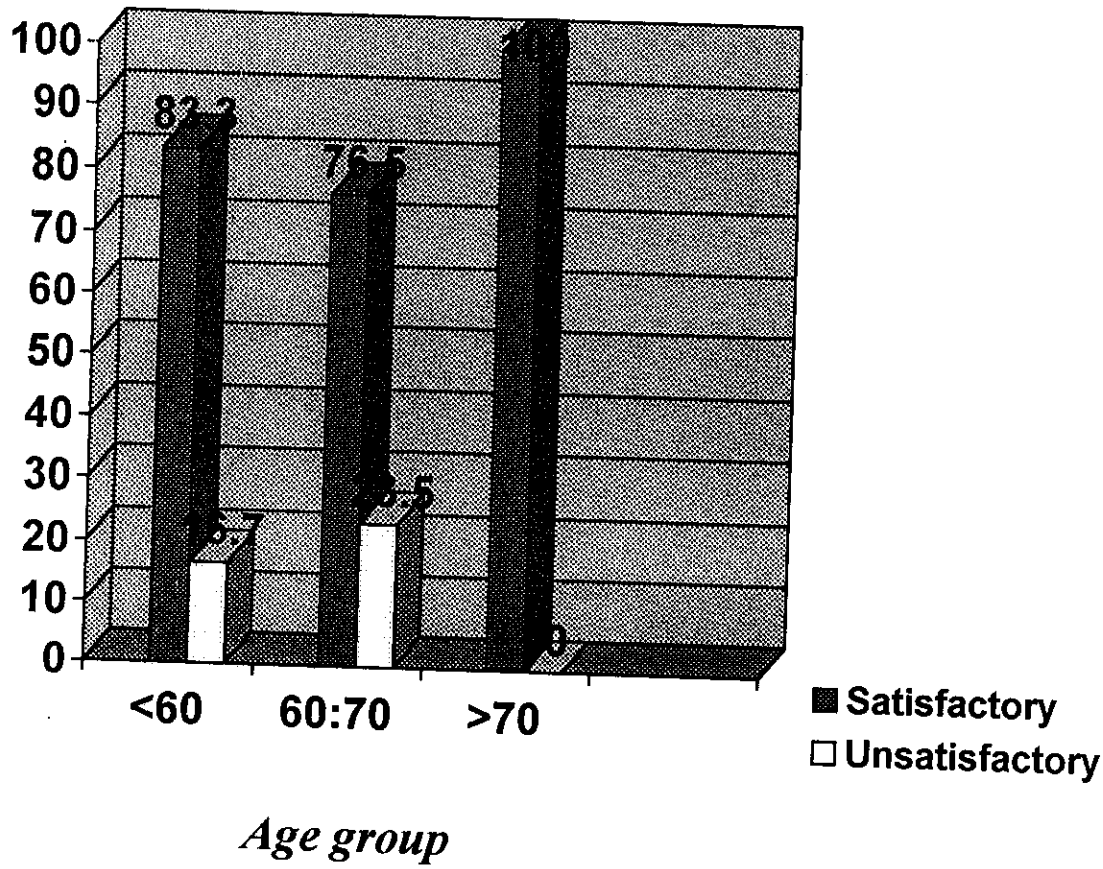


Fig. (2): Correlation between the age and the overall results.



Aetiology and results:

27 cases (75.%) of osteoarthritis and 9 cases (25 %) of rheumatoid arthritis were included in this study. The mean total score for osteoarthritis was 81.2, while for rheumatoid arthritis was 79.6. The difference between both means was found to be statistically insignificant (table 13).

Type of deformity and results:

26 cases (72.2%) of varus deformity and 10 (27.8 %) cases of valgus deformity were included in this study. The mean total score for varus deformity cases was 82.3, while for valgus deformity cases was 76.8. The difference between both means was found to be statistically insignificant (table 14).

Pain at rest:

The mean preoperative score for pain at rest was 6.6, while the mean postoperative follow up score was 14.6. The difference between both scores (pre and postoperative) was found to be statistically significant (table 15).

Pain on walking:

The mean preoperative score for pain on walking was 0.61, while the mean postoperative follow up score was 14.08. The difference between both scores (pre and postoperative) was found to be statistically significant (table 16).

Table (12): Correlation between the sex and overall results.

Sex	No.	%
Male		
Satisfactory	9	81.81
Unsatisfactory	2	18.19
Total	11	100
Female		
Satisfactory	22	88
Unsatisfactory	3	12
Total	25	100
p	0.09	

Table (13): Correlation between the aetiology and the final score.

	OA (27)	RA (9)
Range	58:90	58:88
Mean	81.2	79.6
S.D.	8.5	10.9
t	0.152	
p	0.879	

Fig. (3): Correlation between the sex and the overall results.

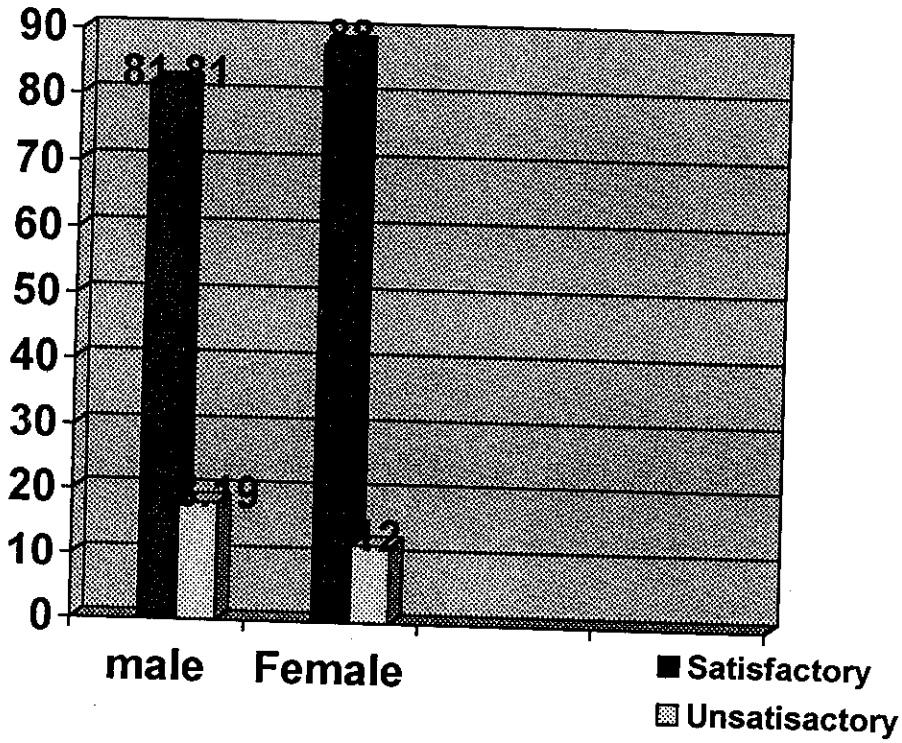


Fig. (4): Correlation between the aetiology and the final score.

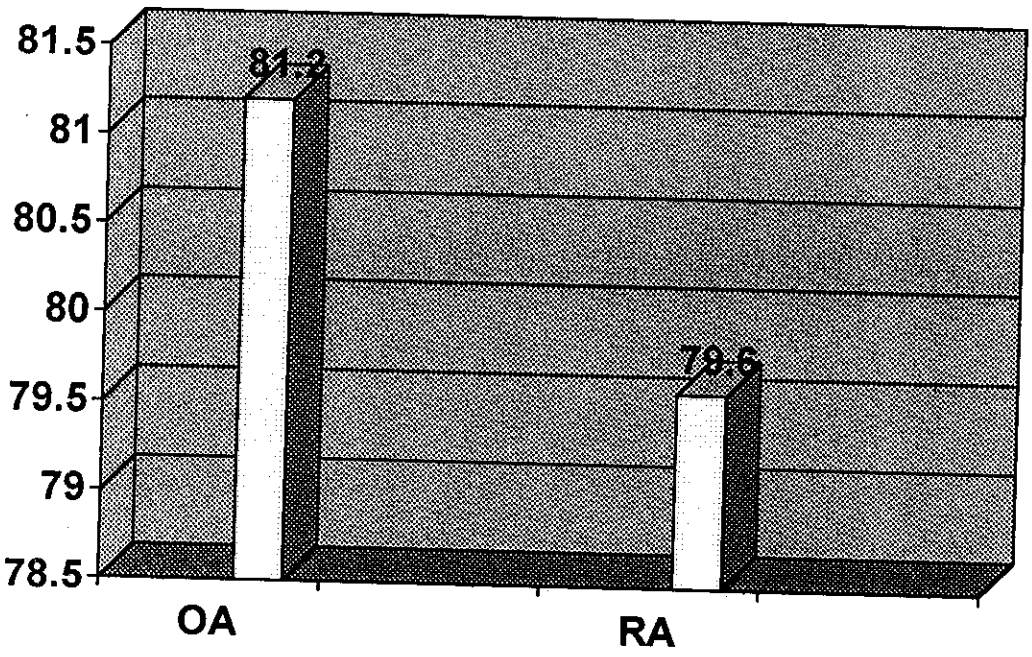


Table (14): Correlation between the type of deformity and the final score.

	Varus (26)	*Valgus (10)*
Range	*66:90*	*58:88*
Mean	*82.3*	*76.8*
S.D.	*6.02*	*11.4*
t	*0.737*	
p	*0.464*	

Table (15): Correlation between the Preoperative and Postoperative score for rest pain.

	Preoperative	*Postoperative*
Range	*0:10*	*5:15*
Mean	*6.6*	*14.6*
S.D.	*3.4*	*1.7*
t	*14.47*	
p	*0.0*	

Fig. (5): Comparison between the type of deformity and the final total score.

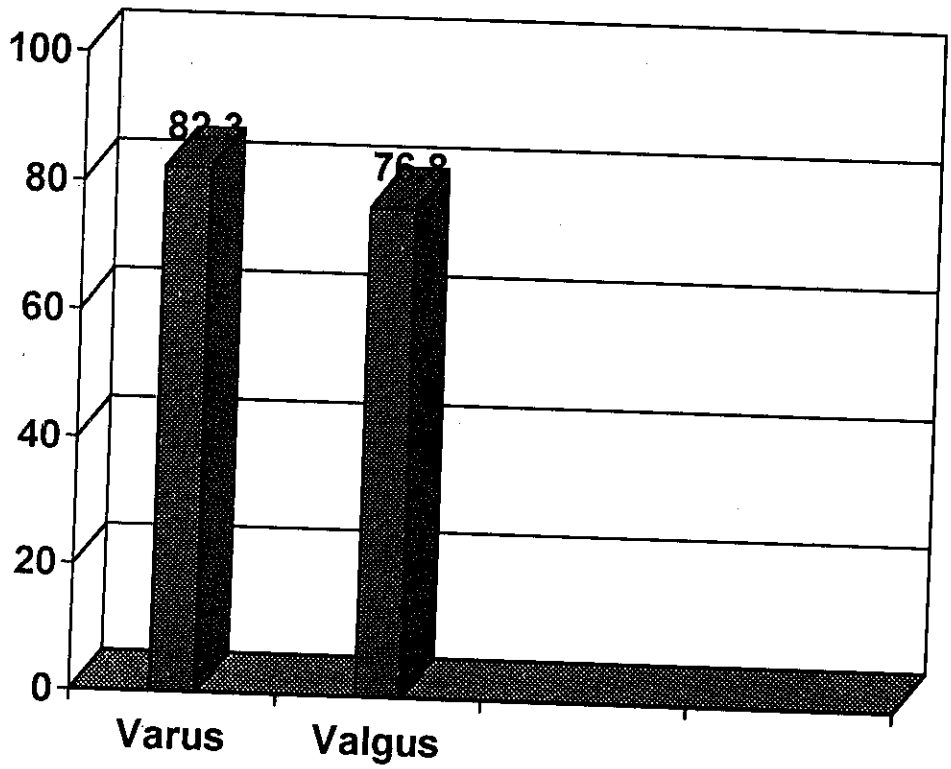


Fig. (٥): Relation between preoperative and postoperative score for pain at rest.

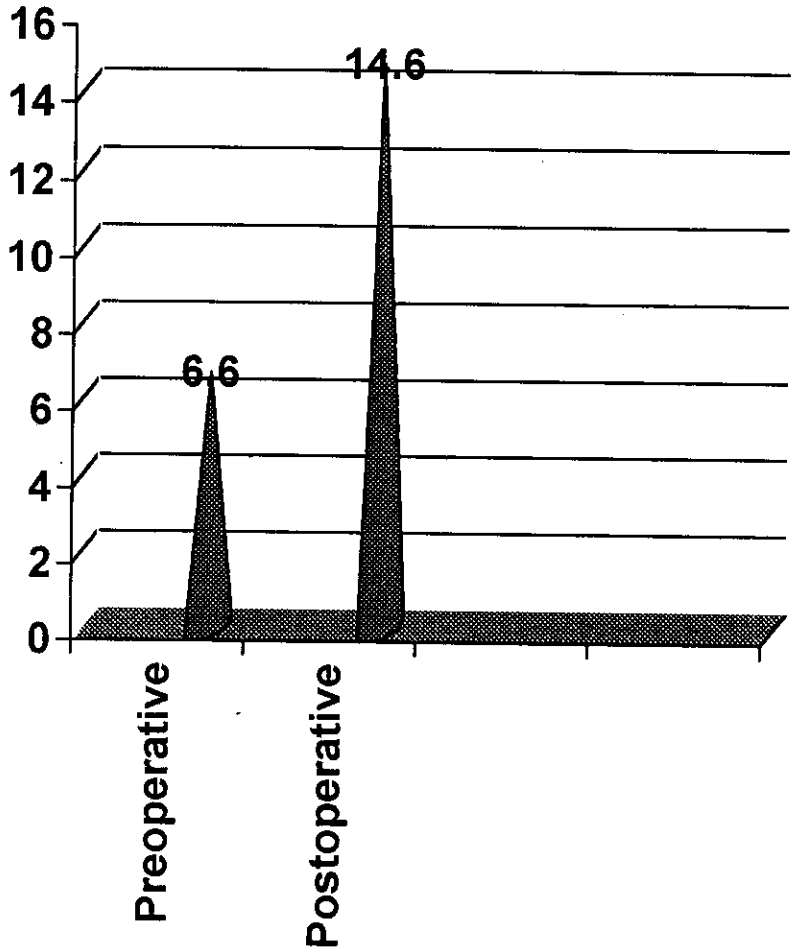


Table (16): Correlation between the Preoperative and Postoperative score for walking pain.

	Preoperative	Postoperative
Range	0:5	5:15
Mean	0.61	14.08
S.D.	1.7	2.2
t	34.177	
p	0.000	

Table (17): Correlation between the Preoperative and Postoperative score for walking ability.

	Preoperative	Postoperative
Range	0:10	4:12
Mean	4.8	9.6
S.D.	1.7	1.9
t	12.62	
p	0.0	

Fig. (7): Relation between preoperative and postoperative score for pain on walking.

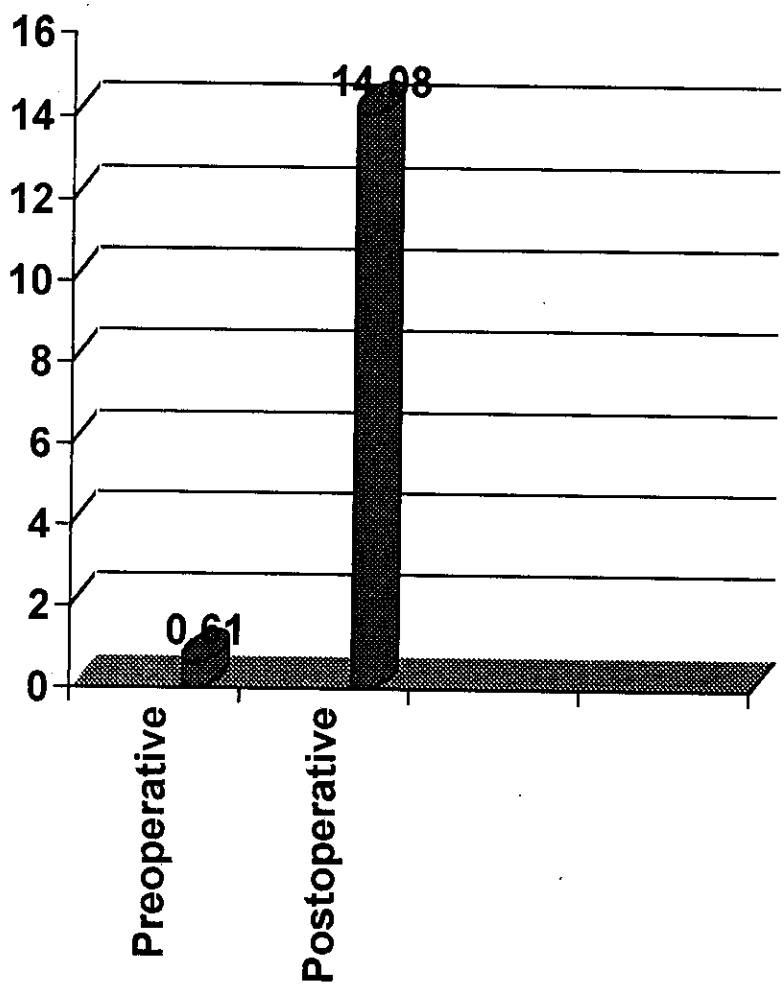
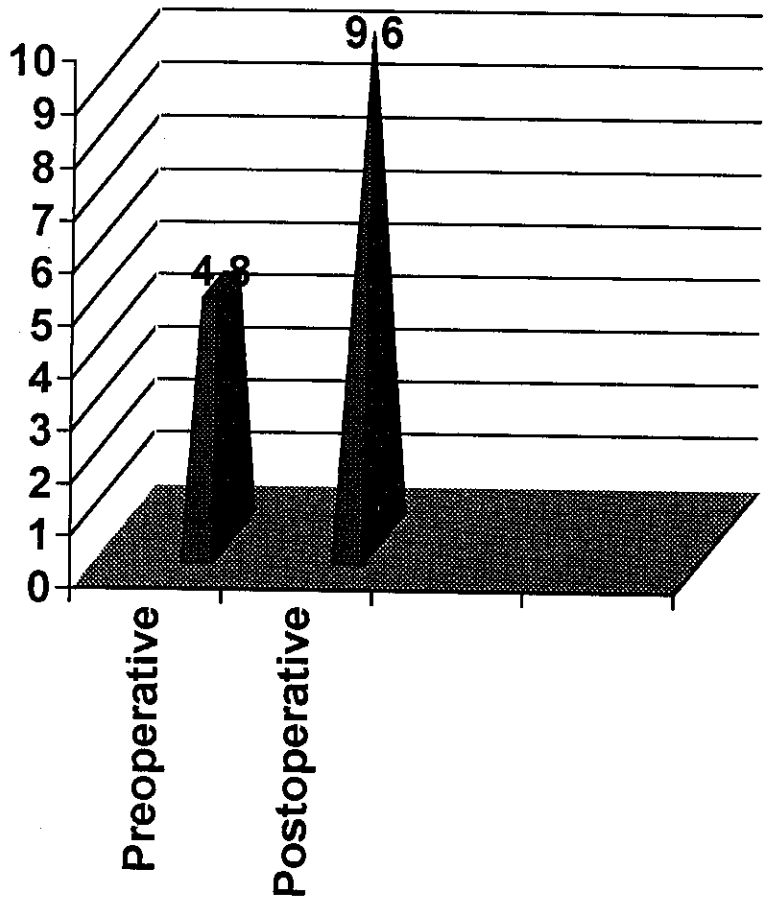


Fig. (8): Relation between preoperative and postoperative score for walking ability.



Walking ability:

The mean preoperative score for walking ability was 4.8, while the mean postoperative follow up score was 9.6. The difference between both scores (pre and postoperative) was found to be statistically significant (table 17).

Transfer activity:

The mean preoperative score for transfer activity was 2.1, while the mean postoperative follow up score was 4.6. The difference between both scores was found to be statistically significant (table 18).

Muscle strength:

The mean preoperative score for muscle strength was 7.9, while the mean postoperative follow up score was 9.9. The difference between both scores was found to be statistically significant (table 19).

Flexion deformity:

The mean preoperative score for flexion deformity was 6.4, while the mean postoperative follow up score was 9.8. The difference between both scores was found to be statistically significant (table 20).

Stability:

The mean preoperative score for stability was 6.1, while the mean postoperative follow up score was 9.9. The difference between both scores was found to be statistically significant (table 21).

Table (18): Correlation between the Preoperative and Postoperative score for transfer activity.

	Preoperative	Postoperative
Range Mean S.D.	2.0:5.0 2.1 0.6	2.0:5.0 4.6 1.06
t p	14.06 0.000	

Table (19): Correlation between the Preoperative and Postoperative score for muscle strengh.

	Preoperative	Postoperative
Range Mean S.D.	4 :10 7.9 0.9	4 :10 9.9 0.8
t p	10.97 0.000	

Table (20): Correlation between the Preoperative and Postoperative score for flexion deformity.

	Preoperative	Postoperative
Range Mean S.D.	0:10 6.4 3.23	5:10 9.8 1.03
t p	6.872 0.000	

Table (21): Correlation between the Preoperative and Postoperative score for stability.

	Preoperative	Postoperative
Range Mean S.D.	0:10 6.1 2.05	5:10 9.9 0.71
t p	12.21 0.000	

Table (22): Correlation between the Preoperative and Postoperative score for range of motion.

	Preoperative	Postoperative
Range Mean S.D.	4:14 8.7 2.97	8:16 13.1 1.56
t p	9.37 0.000	

Table (23): Correlation between the Postoperative tibiofemoral angle and the overall result.

	Satisfactory	Unsatisfactory
Range Mean S.D.	1.0:9.0 6.04 1.79	5.0:7.0 6.25 0.95
t p	0.224 0.823	

Range of motion:

The mean preoperative ROM score was 8.7, while the mean postoperative follow up score was 13.1, the difference between both scores was found to be statistically significant (table 22).

Tibiofemoral angle:

The postoperative tibiofemoral angle was valgus in all cases, and it ranged from 1 to 9 degrees. The mean postoperative valgus angle was 6.06 degrees. The mean postoperative tibiofemoral angle for satisfactory cases was 6.04 degrees, while for unsatisfactory cases was 6.25 degrees. The relation between the postoperative tibiofemoral angle and the overall results was found to be statistically insignificant (table 23).

Non resurfaced Patella:

Ten cases had non resurfaced patella during surgery. One of these cases had persistent retropatellar pain and graded as unsatisfactory result. The other cases had no pain and graded as satisfactory result.

Bone graft:

Three cases had bone graft of the medial tibial condyle at surgery. graft was taken radiologically at the end of follow up (9-12 months). follow up score of these three cases were graded as satisfactory

Lateral retinacular release:

Twelve cases had lateral retinacular release during surgery. The total follow up score of these cases were graded to be satisfactory result. Non of these cases developed patellar instability nor any symptoms related to the release.

Complications

Seven cases (19.4%) developed complications during the immediate or late postoperative period.

Wound healing problems:

Two cases (5.55%) has wound healing problems in the form of leakage, disruption of area of skin closure, and healing with secondary intention. Culture and sensitivity swabs from both wounds proved to be negative for infection. Clinically the knee did not show any manifestation of deep infection. Both cases were treated by prophylactic antibiotics and repeated dressing. Complete healing was achieved in 4 weeks in one case and 6 weeks in the second case.

Wound healing problems has affected the postoperative rehabilitation as we stopped knee flexion exercises until complete wound healing. The first case achieved satisfactory result at the end of follow up, while the second case achieved unsatisfactory result because of persistent pain with stiffness.

Foot drop:

Three cases (8.3%) developed postoperative foot drop due to incomplete injury of the lateral popliteal nerve. These cases were originally valgus deformity. The degree of valgus deformity was 17, 20 and 30 degrees.

One of these cases made complete recovery within 10 weeks. The second case made complete recovery within 18 weeks. The third case

showed partial recovery, with active dorsiflexion of the ankle and persistent numbness over the dorsum of the foot.

The first case achieved satisfactory results at the end of the follow up, while the other two cases were graded unsatisfactory, the relation between the occurrence of foot drop and the degree of deformity was found statistically insignificant.

Recurrent dislocation:

One case (2.77%) developed recurrent dislocation of the extensor mechanism with extension lag 30 degrees. This case had patellectomy prior to knee replacement. The follow up score of this case was graded as unsatisfactory.

Persistent retropatellar pain:

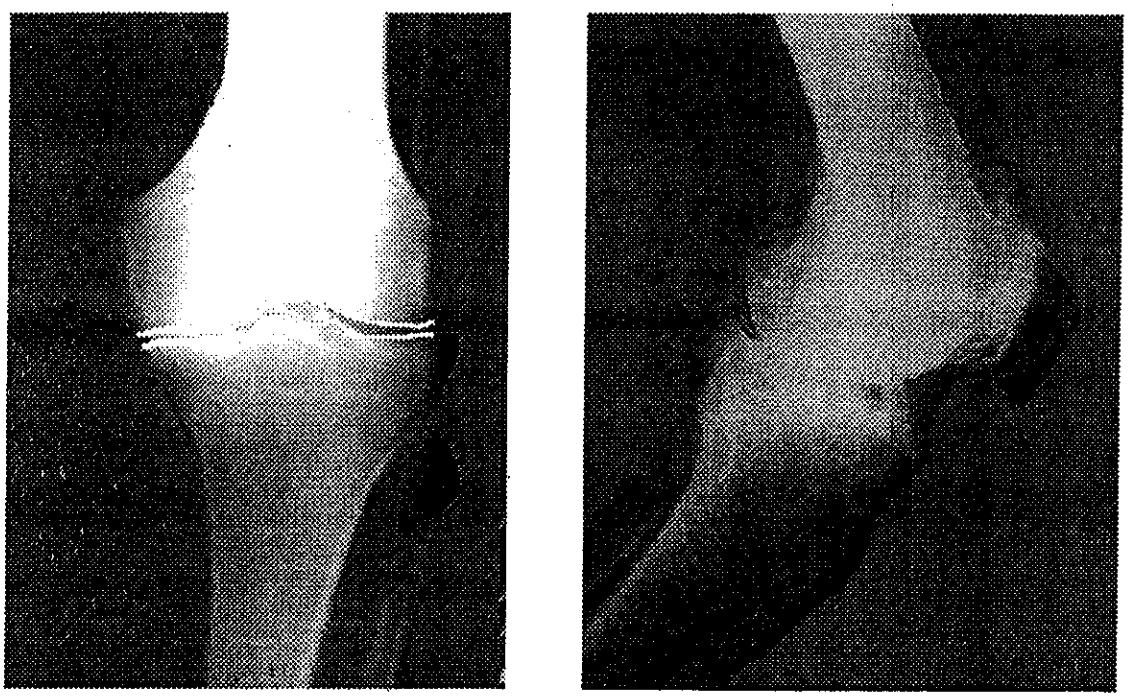
One case (2.77%) had persistent retropatellar pain. This case had no patellar resurfacing during the operation. The end follow up score was graded as unsatisfactory result.

Case reports:

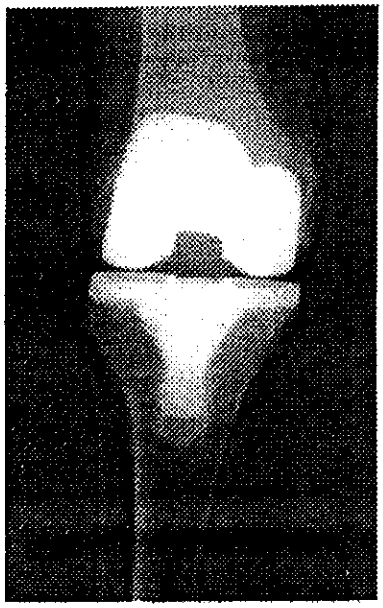
Case 1:

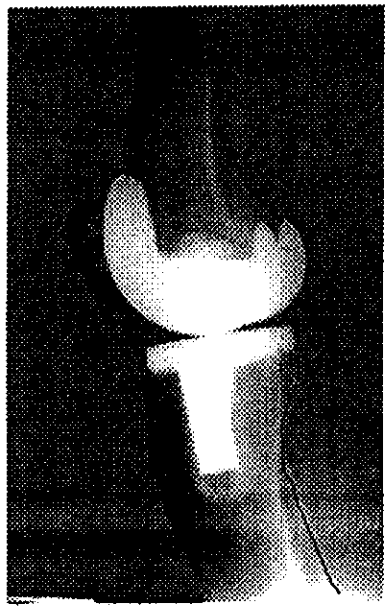
A male patient 64 years old, suffering from osteoarthritis affecting his left knee, he had 15 degrees varus deformity, 13 degrees flexion deformity, his preoperative score according to HSS scoring system was 38. A primary total knee arthroplasty was done to him, the follow up period was 24 months, and his final post operative score was 82.

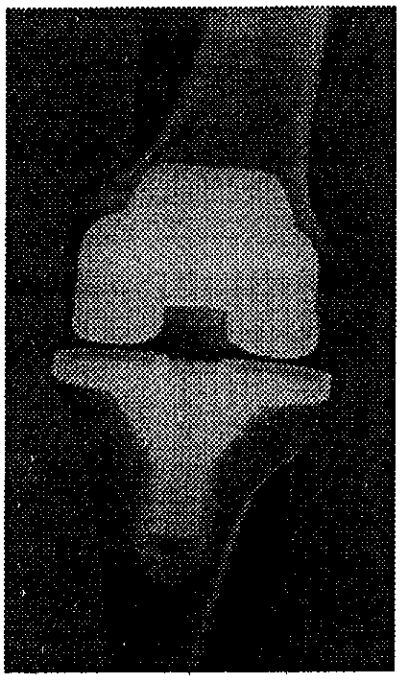
Preperative anteroposterior and lateral radiographes of case 1.

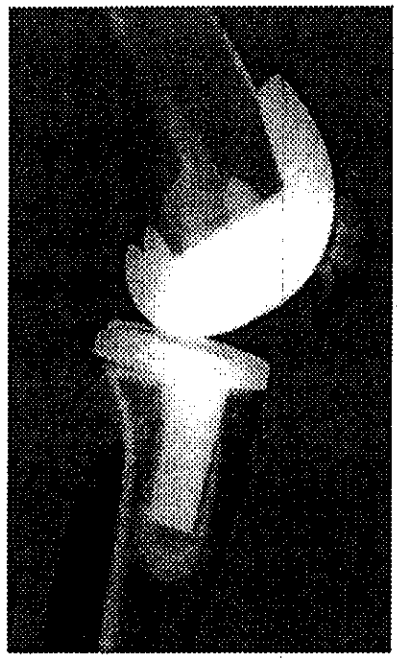


Immediate postoperative A/P and Lat., radiographs of case 1.







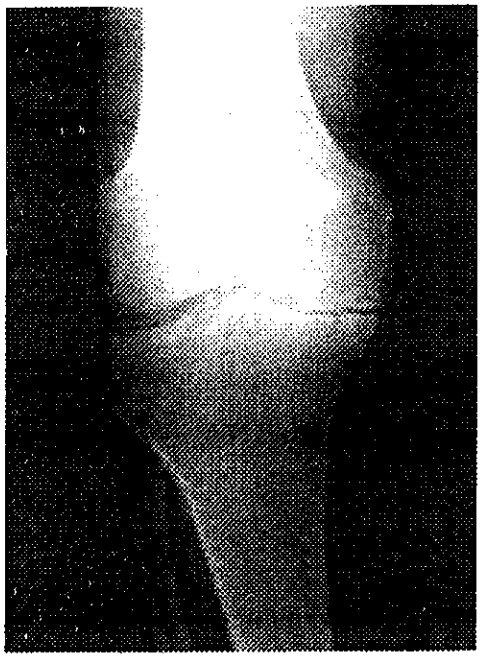


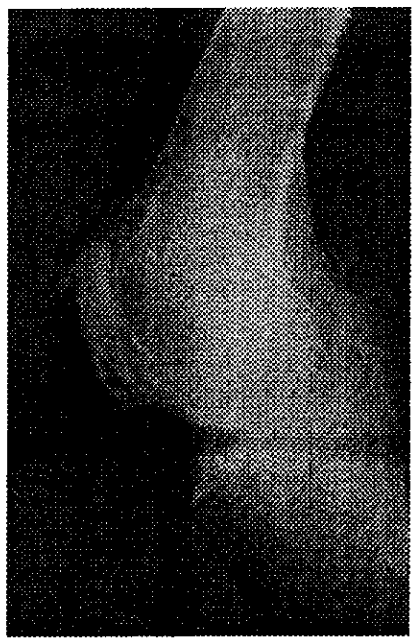
A/P and Lateral radiographs of case 1, at the end of follow up period.

Case 2:

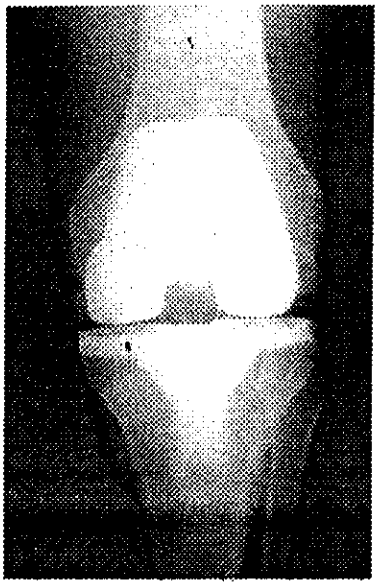
A female patient 72 years old, suffering from osteoarthritis affecting her right knee, she had 30 degrees varus deformity, 25 degrees flexion deformity, her preoperative score according to HSS scoring system was 44. A primary total knee arthroplasty was done to her, the follow up period was 22 months, and her final post operative score was 80.

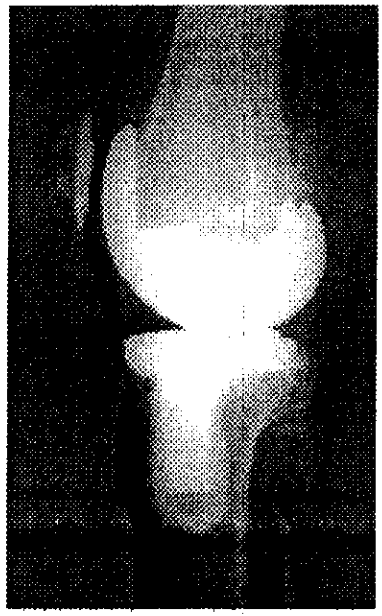
Preoperative A/P and lateral radiographs of case 2.



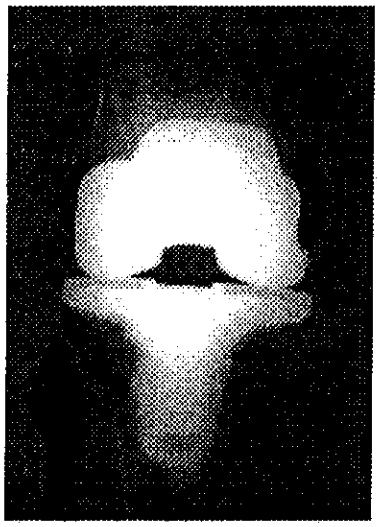


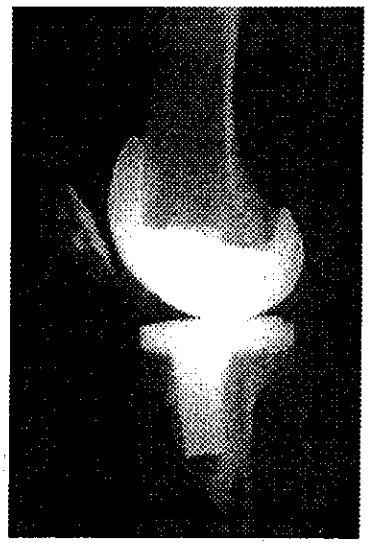
Immediate post operative radiographs of case 2.





Post operative radiographs of case 2 at the end of follow up period.

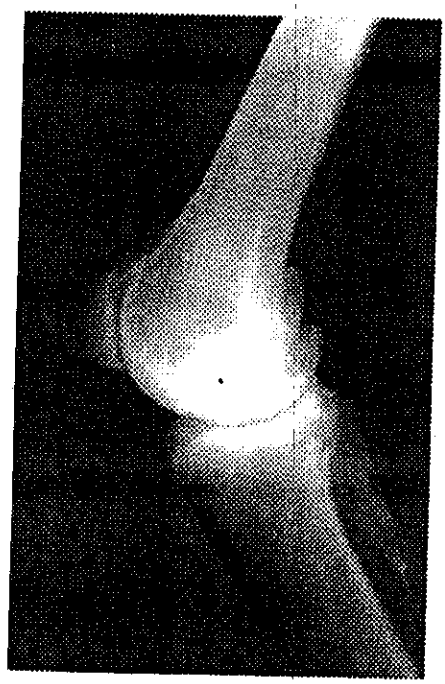




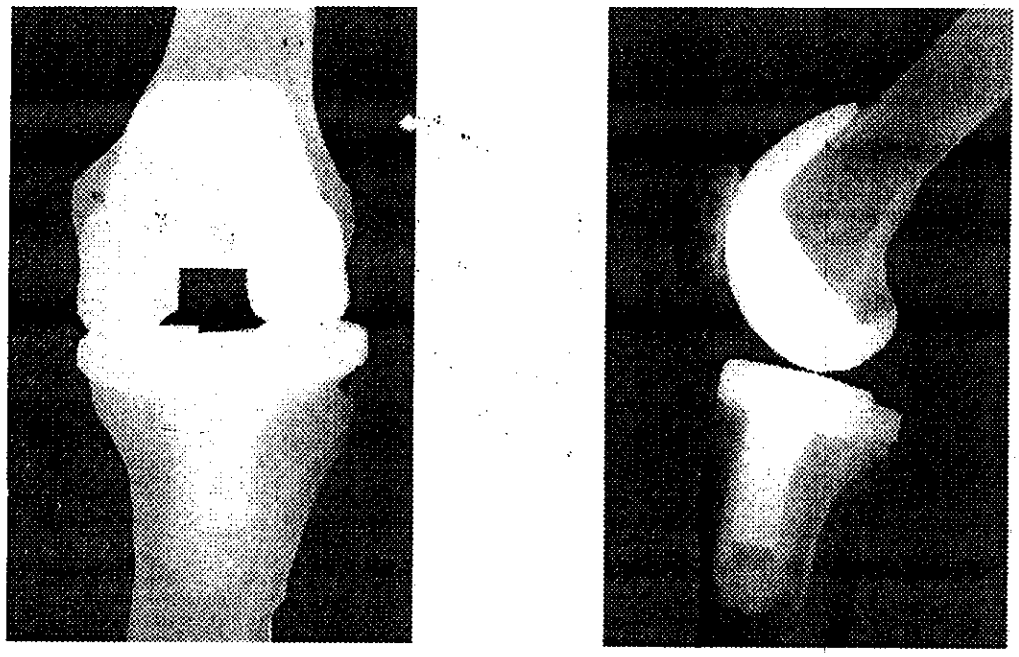
Case 3:

A female patient 45 years old, suffering from rheumatoid arthritis affecting her right knee, she had 20 degrees valgus deformity, 15 degrees flexion deformity, her preoperative score according to HSS scoring system was 36. A primary total knee arthroplasty was done to her, the follow up period was 30 months, and her final post operative score was 82.

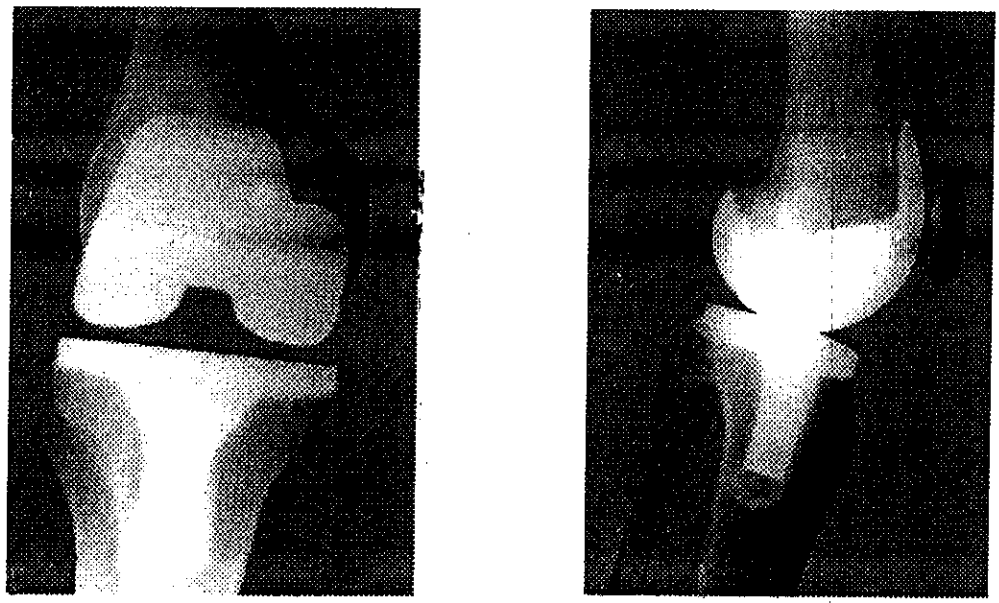
Preoperative A/P and lat., view of case 3.



Immediate post operative A/P and lat., view of case 3.



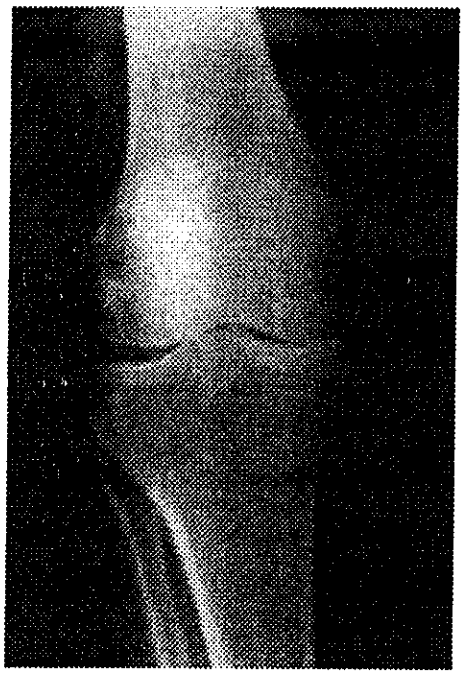
Late post operative anteroposterior and lateral views of case 3 at the end of follow up period.

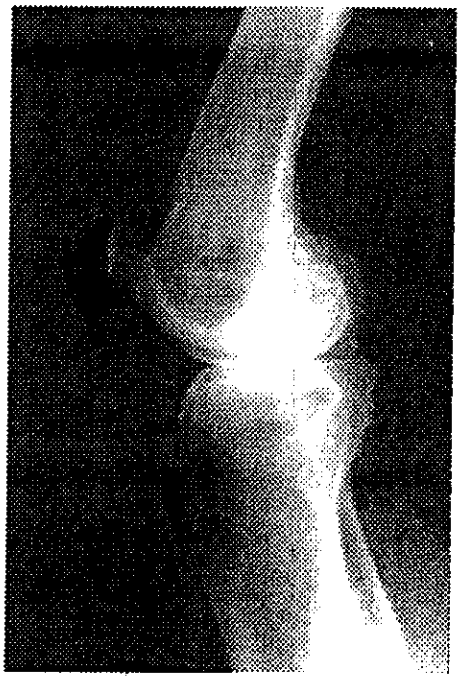


Case 4:

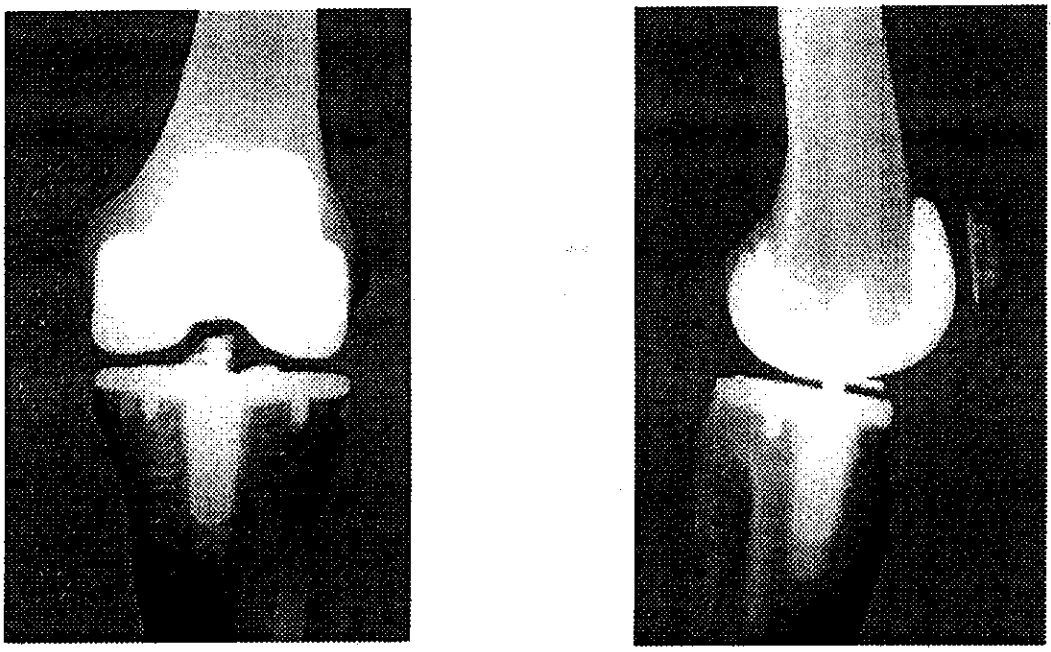
A male patient 66 years old, suffering from osteoarthritis affecting his right knee, he had 10 degrees varus deformity, his preoperative score according to HSS scoring system was 48. A primary total knee arthroplasty was done to him, the follow up period were 25 months, and his final post operative score was 88.

Preoperative anteroposterior and lateral views of case 4.

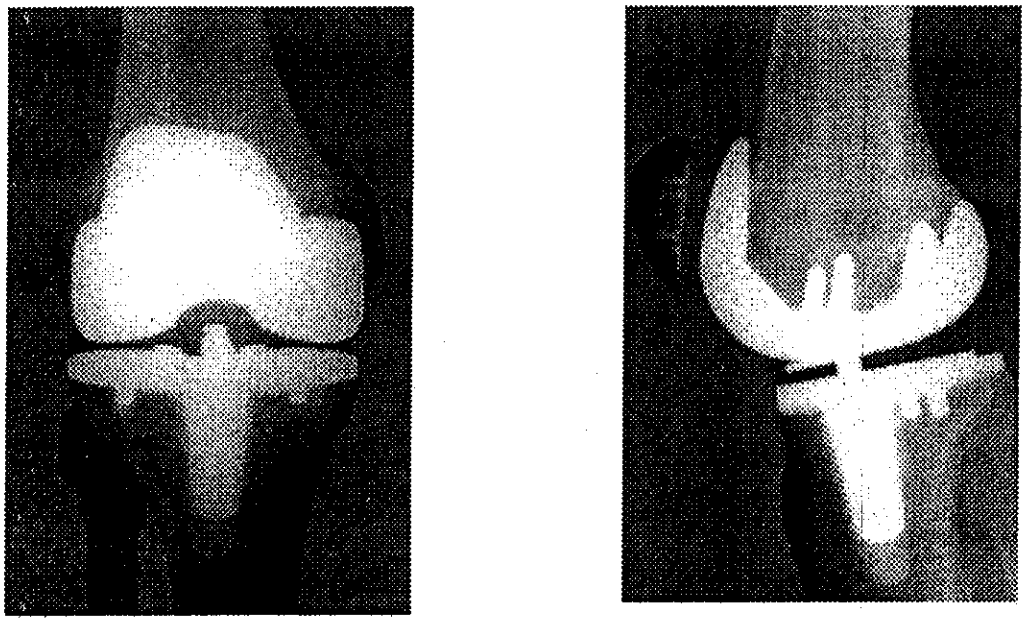




Immediate postoperative anteroposterior and lateral views of case 4.



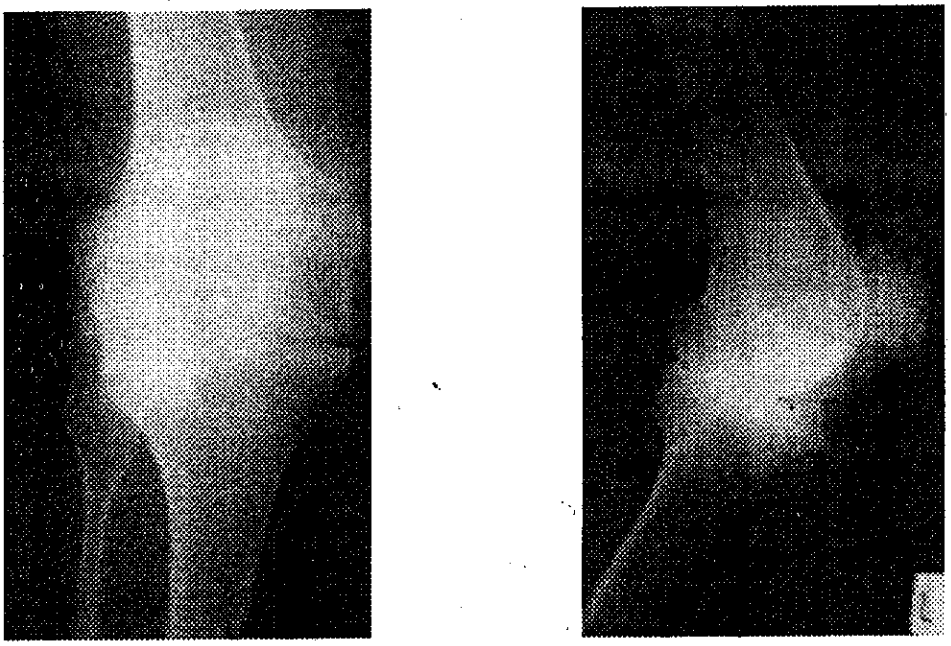
Late postoperative anteroposterior and lateral views of case 4.



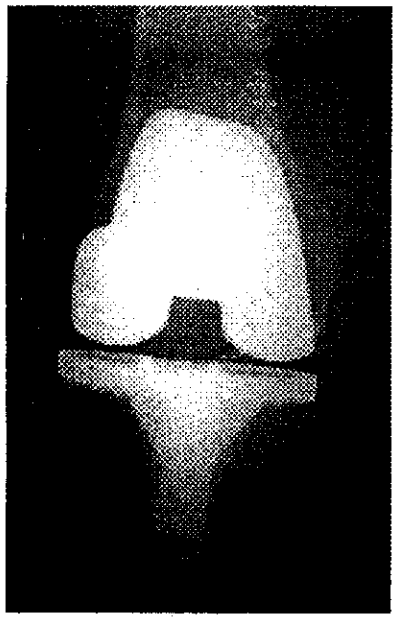
Case 5:

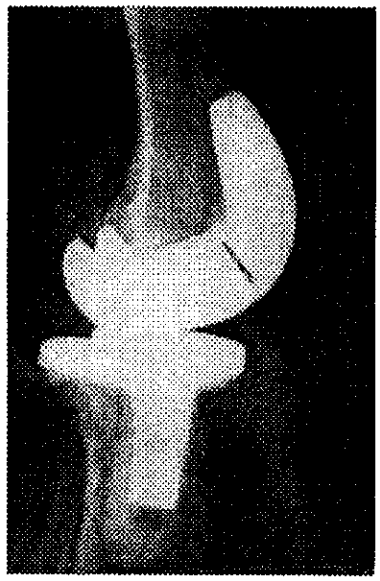
A female patient 30 years old, suffering from rheumatoid arthritis affecting her left knee, she had 17 degrees valgus deformity, 20 degrees flexion deformity, her preoperative score according to HSS scoring system was 40. A primary total knee arthroplasty was done to her, the follow up period was 28 months, and his final post operative score was 88.

Preoperative anteroposterior and lateral views of case 5.

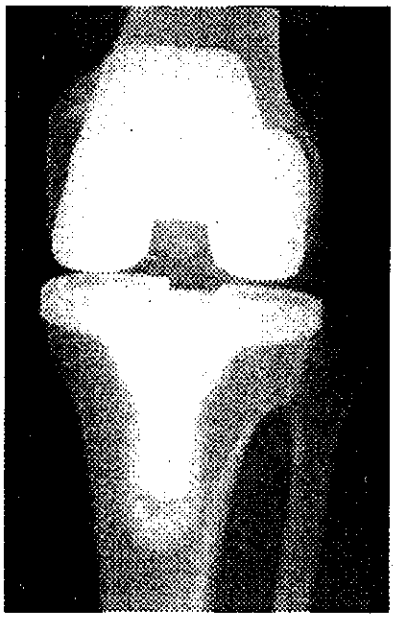


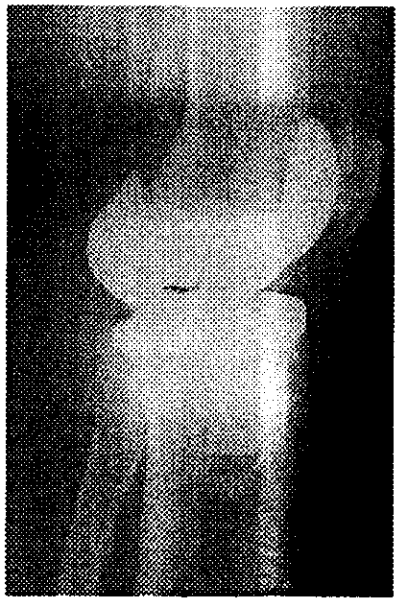
Immediate postoperative anteroposterior and lateral views of case 5.





Late postoperative anteroposterior and lateral views of case 5.

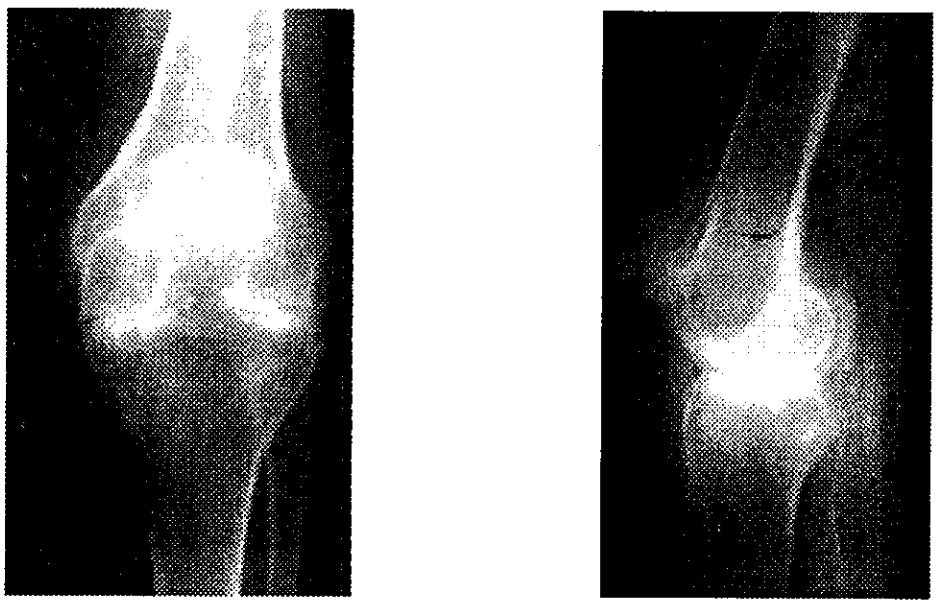




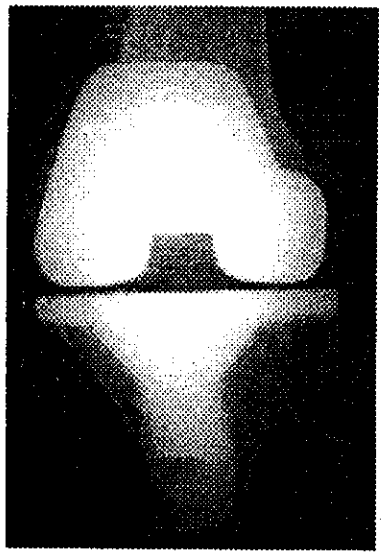
Case 6:

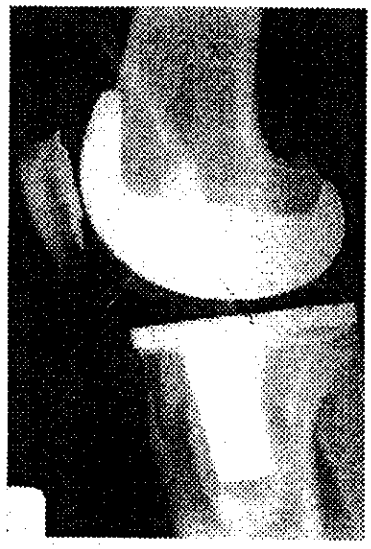
A female patient 65 years old, suffering from rheumatoid arthritis affecting her right knee, she had 15 degrees valgus deformity, 40 degrees flexion deformity, her preoperative score according to HSS scoring system was 44. A primary total knee arthroplasty was done to her, the follow up period was 24 months, and her final post operative score was 68. She developed a wound-healing problem, in the form of persistent drainage and marginal skin necrosis, which respond well to conservative management in the form of repeated dressing and stoppage of physiotherapy. The problem comes from delay in the rehabilitation of the knee, which was about 6 weeks. The patient developed stiffness in her knee associated with persistent pain and rated unsatisfactory.

Preoperative anteroposterior and lateral views of case 6.

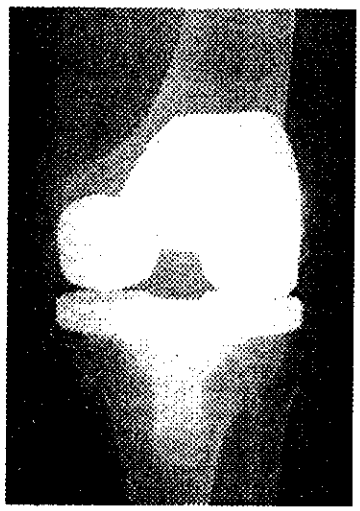


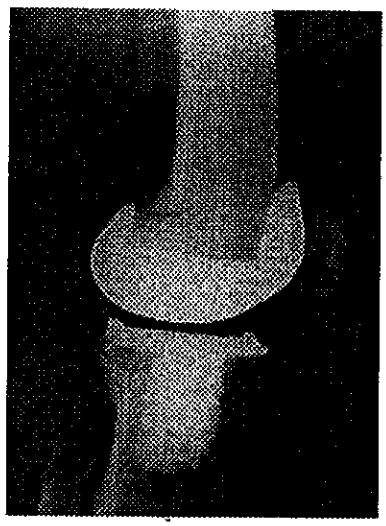
Immediate postoperative anteroposterior and lateral views of case 6.





Late postoperative anteroposterior and lateral views of case 6 at the end of follow up period.



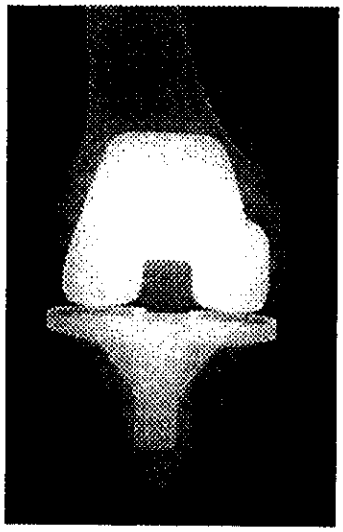


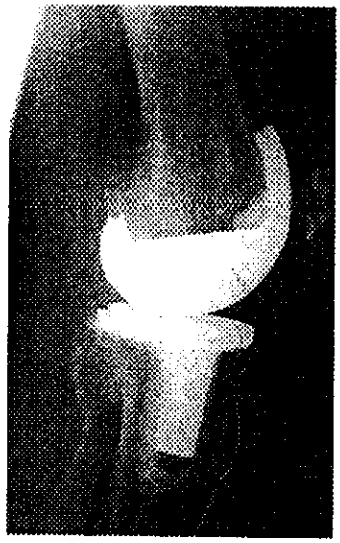
Case 7:

A male patient 68 years old, suffering from osteoarthritis affecting his left knee, he had 31 degrees valgus deformity, his preoperative score according to HSS scoring system was 38. A primary total knee arthroplasty was done to him, the follow up period was 32 months, and his final post operative score was 66. The patient developed peroneal nerve palsy and foot drop. We treated him by loosening of the bandage around the knee, putting the knee in slight flexion, and splinting the ankle in 90 degrees. The patient showed partial recovery within 18 weeks, but complete recovery did not occur.

Preoperative anteroposterior and lateral views of case 7.

Immediate postoperative anteroposterior and lateral views of case 7.





Late postoperative anteroposterior and lateral views of case 7 at the end of follow up period.