

SUPRACONDYLAR OSTEOTOMY FOR CORRECTION OF POST POLIO DEFORMITY AT KNEE JOINT

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Supracondylar osteotomy for fixed flexion deformity is a reliable procedure. Up to 30° of deformity it can be done directly. For severe deformities it is always better to perform Yount's soft tissue release first with two pin skeletal traction and passive stretching. This skeletal traction can be continued till no more correction by traction is expected i.e. the deformity becomes static. This is the time when supracondylar osteotomy should be performed. This reduces chances of complications and yields good results.

Supracondylar osteotomy was performed in 22 such patients, 3 cases being bilateral. Supracondylar osteotomy as second stage procedure showed good results with minimum complications.

Out of many post Polio deformities at knee joint, fixed flexion deformity is most commonly encountered in day to day clinical practice. Most of the patients having this deformity walks with the help of unilateral or bilateral axillary crutches. Many bilaterally and severally affected patients cannot walk at all. Gait pattern of such patients can be significantly improved by doing surgical correction of deformity.

Imbalance of muscle power of extensors and flexors of knee and weak extensors of the hip contribute in development of fixed flexion deformity at knee joint.

MATERIAL AND METHOD

Between June, 1990 to Feb., 1993, supracondylar osteotomy of femur was done in 22 patients for correction of fixed flexion deformity at knee joint, 3 being bilateral.

In 16 cases Yount's soft tissue release was performed initially followed by two pin skeletal traction. In one case skin traction was applied. Supracondylar osteotomy was performed as second stage procedure.

In 8 cases supracondylar osteotomy was performed directly.

OPERATION

Under tourniquet control one long incision was given from left lateral condyl of femur

exposing anterolateral surface of femur.

Periosteum was incised exposing the bone at metaphysis-epiphyseal junction. Osteotomy was done at metaphysis-epiphyseal junction or as low as possible, taking out the wedge keeping the base anteriorly. Size of the wedge depends upon the degree of flexion contracutre. The limb was straightened, rotational deformity if any was corrected. Wound was sutured in layers. Groin to toe cast was applied to immobilise the osteotomy site. Post operative check X-Ray was done. Stitches were removed on 10th day and G.T. cast was reapplied. Patient was instructed not to bear weight on operated extremity. In follow up plaster cast was removed. Osteotomy site was examined carefully for any abnormal mobility in side to side and anteroposterior plane.

Sound union at Osteotomy site was confirmed by check X-Ray.

OBSERVATIONS

Age of the patients varied from 12 to 35 years. Fixed flexion deformity at Knee ranged from 15° to 35° before supracondylar osteotomy.

When the deformity at knee joint was very severe ranging from 15° to 90°, then fixed flexion deformity was also present at hip which was treated by Soutter's soft tissue release.

Major part of fixed flexion deformity at knee

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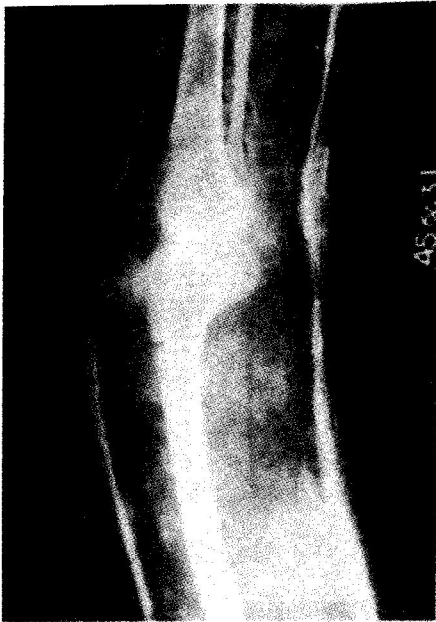


Fig-1



Fig-2

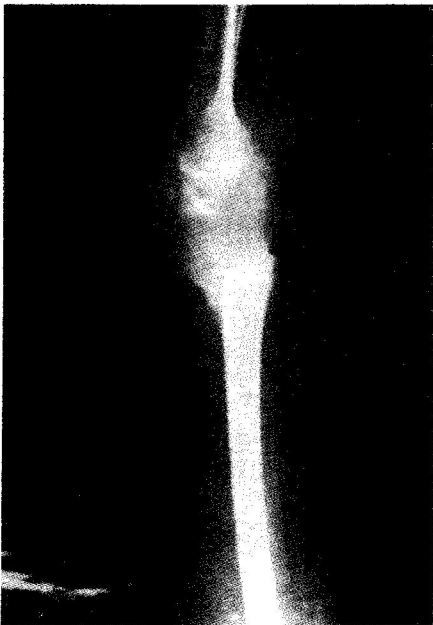


Fig-3



Fig-4

Fig-1 : Pre-operative X-ray showing flexion contracture at knee, osteoporosis and muscle wasting.

Fig-2 : X-ray lower 1/3 of femur including knee joint lateral view showing ideal level of osteotomy. Bony ends are in well united correct position. Narrowing of joint space can be seen.

Fig-3 : X-ray of lower 1/3 of femur including knee joint AP view of same case in Fig-2 shows correct level of osteotomy.

Fig-4 : X-ray of lower 1/3 of femur including knee joint posterior cortex was kept intact here.

joint was corrected by Yount's soft tissue release followed by two pin skeletal traction. In most of the cases it was continued for at least one month. Remaining part of deformity was corrected by supracondylar osteotomy.

Patellectomy was done in one case as patella was laterally placed. Plantar fasciotomy was done in two cases. Hamstring tenotomy was done in 4 cases. First follow up was done after 2- 1/2 months of operation. Second follow up was done after 3 months of first follow up.

COMPLICATIONS

Only few cases showed complications :-

1. Infections— only one case developed infection which was treated by broad spectrum antibiotics.

2. Delayed union or malunion— only few cases developed delayed union. In such cases period of immobilisation was extended for 2 months more.

3. Knee joint stiffness— Severe restriction of movements was observed in two cases.

4. Pain— patients were not having any pain after surgery. 8 cases complained of mild & one case complained of moderate pain.

5. Shortening— All cases showed some shortening— 22 cases showed shortening upto 1/2". 2 cases showed shortening upto 1". One case showed shortening of 2".

DISCUSSION

Various surgical procedures have been used to correct fixed flexion deformity. Hamstring tenotomy and manipulation under G.A. were used initially.

Yount's in 1926 favoured division and excision of Iliotibial band and lateral intermuscular septum.

Wilson in 1929 recommended posterior capsulotomy of knee joint which was later criticised as it resulted in posterior subluxation and gross limitation of movements and pain.

Huckstep in 1975 favoured serial manipulation, Russel traction and calipers. Leong et al in 1982 performed supracondylar osteotomy in 82 patients and showed good results.

Baveja, S and Sharma, J.C. (1986) performed supracondylar femoral osteotomy in 39 cases of flexion contractures of knee due to poliomyelitis and guinea worm infection, as single stage procedure and achieved good results.

Present series although small in number shows good results in comparison to previous two workers (Table No. I) in terms of postoperative pain and infection and lesser number of cases having persistent deformity after supracondylar osteotomy.

In view of observations of earlier workers and comparing it with present series it is clear that supracondylar osteotomy if carried out in severe fixed flexion deformity of knee (more than 30°) carries increased risk of all types of complications including pain at knee, shortening of extremity, delayed union, malunion and even persistent deformity.

Additional procedures if required can be done simultaneously and duration of hospital stay can be reduced.

Only two cases were having 5° of fixed flexion deformity even after supracondylar osteotomy.

TABLE NO. 1

COMPARISON OF RESULTS OF SUPRACONDYLAR OSTEOTOMY WITH RESULTS OF PREVIOUS TWO WORKERS.

	Leong et al	S. Baveja Prof. J.C. Sharma	Present series
Number of Osteotomies	89	39	25
Number of patients	82	35	22
Age in years.	8 to 25	4 to 35	12 to 35
Degree of contractures	15 to 95	20 to 100	15 to 90
Residual deformity	15 to 95	2	5° in two cases
Infection	12	04	01
Pain	06	02	01

This minor deformity is acceptable since it can be accommodated in caliper.

Only four cases showed delayed union which were treated by extending period of immobilisation for one month more.

Most of the patients achieved good range of knee flexion within three months. Only in two cases severe restriction of knee flexion was seen.

RESULTS

Significant improvement was seen in gait pattern of patients after surgery which made them more acceptable in society. Some patients showed dramatic improvement in their day to day activities.

Four patients were using bilateral axillary crutches before surgery. Only one could discard both the crutches remaining while three could discard only one crutch.

Ten patients were using only one axillary crutch before surgery. All of them could discard crutch and could walk with the help of caliper only.

Seven patients were walking with hand on thigh gait. Six could manage to walk with HKAFO and one with KAFO without crutches or cane after surgery.

One patient who was bedridden before surgery, could walk with caliper and one crutch. Three patients were bilaterally affected and were operated. Only one could discard both the crutches and walked with the help of calipers only. Remaining two used bilateral long calipers.

Pain and stiff knee was the commonest complaints made by patients after surgery. Adequate knee flexion was achieved within two to three months after removal of cast.

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