



## Title: **Surgical treatment for severe flexion deformity of the knee due to Poliomyelitis sequelae**

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### Abstract:

**Objective:** To analyse the characteristics of severe knee flexion of poliomyelitis sequelae in adults, to conclude curative effects and key points of composite method.

**Methods:** From September 2008 to February 2017, 61 cases of severe knee flexion of poliomyelitis sequelae in adults were treated by composite method, 41 of which met the inclusion criteria, 33 of which were followed-up and data collected. The age of 17 males and 16 females at the time of operation were 19-53 years old with an average of 30 years; 7 left lower limbs, 16 right lower limbs and 10 bilateral sides. the patient with hand on knee gait preoperatively in 2 cases, 22 cases of walking with single crutch, 5 cases were walking with crutches, 4 cases could not stand and crawling (squatting) on the ground. The average angle of knee flexion was 52 °(range, 90 °to 40 °) .Among them, 7 cases were single knee flexion, 11 cases were combined with hip deformity, 4 cases combined with ankle deformity, 11 cases combined with hip flexion and ankle deformity. Of 33 cases were done with composite method of iliotibial band release, biceps tendon release, peroneal fascia release, femoral super condyle osteotomy and Ilizarov fixation application. The deformity of hip or (and) ankle could be corrected at same stage. The external fixator can be adjusted to correct the residual deformity of knee flexion to 0 °or mild retroflexion position. In the processing of treatment, weight bearing and the motion of the knee were encouraged. The function of the lower extremity was followed-up and evaluated by the postoperative evaluation table.

**Results:** 43 lower limbs of 33 patients were included this study and were treated with composite methods, in 6 cases of knee flexion > 60 °, 15-34mm shortening osteotomy of the femur with an average of 22mm have been done. The follow up period as a mean of 56 months (40-133 months).36 knee with flexion deformities were corrected to the 0 ° to - 7 ° position, and bone osteotomy site was completely healed; 7 knee flexion deformities remained at 6 ° - 15 °; the deformities of hip and ankle were corrected in same stage. The wearing time of external fixator was 38 to 110 days with an average of 47 days. The knee orthosis with hinge was assembled for 2-3 months at knee joint straight position after fixator removal. All patients were complicated with 20 ° - 60 ° knee flexion dysfunction. Transient paralysis of the common peroneal nerve occurred in 2 cases. No case suffered vascular injury, no fractures and no case with venous thrombosis of lower extremity. According to the evaluation criteria, 19 cases were excellent, 10 good, 4 fair and 0 poor, the rate of excellent and good was 87.9%.

**Conclusion:** It is effective and controllable for the management of severe flexion deformity of the knee due to poliomyelitis sequelae in adult using composite method of soft tissue and common peroneal nerve release, supracondylar osteotomy of femur and combined with Ilizarov technique, which was recommended as an good option to correct the deformity and improve the walking function of the lower limbs with severe deformities.