



## Title: **Deformity correction and function reconstruction on foot and ankle of Spina Bifida**

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### Abstract:

**Objective:** To analyse the characteristics of foot and ankle deformity with ulceration in patients with spina bifida, to conclude experiences on management with improved Ilizarov method in one stage.

**Methods:** 77 cases suffering foot and ankle deformity with ulceration of spina bifida were included from January 2008 to June 2019, in which 30 male and 47 female, aged 6–46 years with an average age of 22.86 years. There were 10 cases on left, 14 on right and 53 on both. The improved Ilizarov method combined soft tissue surgery, bone osteotomy and Ilizarov technique in one stage, by which the ulcer was dressed aseptically and avoid weight bearing preoperatively, no special treatment, no debridement, no flap coverage and no bacterial culture. Antibiotics were given for 3 days routinely, and the dressing was removed 5 days later. If there was exudation, gauze could be used to wrap continually, if there was no swelling and exudation, no need further more caring. General appearance and radiological image of ulcer and deformity were observed during the period of evaluation and treatment, surgical method and complications, foot & ankle function and overall function were evaluated using AOFAS scoring system and special table designed by authors.

**Results:** 77 cases were followed up for 6–132 months with an average of 50.5 months. Achilles tendon subcutaneous lengthening was performed in 2 cases, posterior tibial tendon and Achilles tendon simultaneous released for 31 cases, subtalar joint arthrodesis 25 cases, calcaneus osteotomy 5 cases, triple osteotomy 28 cases, ankle arthrodesis 19 cases, internal rotation osteotomy of tibia was performed in 1 case and 1 case in external rotation osteotomy. There were 67 cases using Ilizarov fixators and 10 cases using Hybrid fixators for immobilization and correction. Stable feet were obtained and ulcers healed simultaneously when all deformities of foot and ankle had been corrected. The healing time of ulcer was average 26.5 days ranging 7–36 days, and there was no infection or delayed healing occurred in any case. Ankle ankyloses in 25 cases, 3 cases of pin tract infection, 2 wires were broken. The AOFAS score significantly increased from 70.5 preoperative to 81.6 postoperative; based special table evaluating, Excellent 28 cases, Good 42 cases, Fair 7 cases.

**Conclusion:** The patients with foot & ankle deformity and ulceration suffered from spinal bifida can be treated by improved Ilizarov method in one stage, and the results are satisfactory with short treatment period and decreased complications.