11:25 – 11:31 am

Four-Stage Regimen for Operative Treatment of Diabetic Foot Ulcer with Deformity

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Summary
The management of diabetic foot ulcer combined with deformity is challenging. An operative four-stage regimen (debridement, closure, unloading, correction) is introduced, and the clinical results of in 257 patients treated with this regimen are shown. 235 (91%) completed follow-up at mean of 24 (12 – 38) months. In 42 (16%), recurrent ulcer was registered, the amputation rate in total was 13% (n=33). The scores were as follows, AOFAS, 86 (40-98); VAS FA 88 (36-100).

Introduction
Clinical results of 257 patients treated with operative four-stage regimen are reported

Methods
All patients with diabetes mellitus, unilateral foot ulcer and foot and/or ankle deformity treated between September 1, 2006, and September 1, 2009 were included. The evaluation included clinical evaluation, standard full weight-bearing radiographs, pedography, and scoring (AOFAS and Visual Analogue Scale Foot and Ankle (VAS FA). All patients underwent a four-stage regimen as follows:
Stage 1. Debridement. Repetitive debridement (every 6th day) and vacuum assisted sealing until postoperative specimens were sterile. If 5 debridements did not result in sterile specimen, amputation was performed.
Stage 2. Closure. Secondary closure was the first choice, followed by local shifted skin graft, followed by limited amputation.
Stage 3. Unloading. The closed ulcer was completely unloaded for 6 weeks.
Stage 4. Correction. Relevant deformities such as flatfoot, cavus foot or forefoot deformity that were considered to increase the risk for repetitive ulcer were corrected.
The subjects were managed as inpatients during stages 1, 2 and 4, and as outpatients with weekly evaluation during stage 3.

Results
257 patients entered stage 1 (mean age 62 years, 69% female).
Stage 1: In 153 cases (59%), one debridement resulted in sterile postoperative specimens, in 43 (17%) two, in 23 (9%) three, in 19 (7%) four and in 13 (5%) five. In 6 (2%) cases, five debridements did not result in sterile specimens and amputation was performed.
Stage 2: 251 cases (98%) without amputation entered stage 2. 168 cases (65%) sustained secondary closure, 67 (26%) local shifted skin graft, and 16 (6%) limited amputation.
Stage 3: 234 (91%) finished stage 3, 10 (4%) presented with recurrent ulcer, and 7 (3%) did not finish stage
Stage 4: In 139 cases (54%), successful corrections were performed (arthrodeses at ankle, n=21 (8%); subtalar n=25 (10%); midfoot/TMT, n=74 (n=29); others, n=19 (7%). 84 (33%) were treated with orthosis only, 11 (4%) received amputation.

235 (91%) completed follow-up at 24 (12 – 38) months. In 42 (16%), recurrent ulcer was registered, the amputation rate in total was 13% (n=33) (lower leg, n=3 (1%); midfoot/TMT, n=8 (3%); transmetatarsal, n=4 (2%); toes, n=18 (7%). The scores were AOFAS, 86 (40-98); VAS FA 88

Conclusions
The management of diabetic foot ulcer combined with deformity with the introduced operative four-stage regimen showed low amputation rate and low recurrent ulcer rate compared with.