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## Role of the previous ulcers in the biomechanical impairments in the patients with diabetes

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**Objective:** To study the plantar pressure distribution parameters in diabetic patients with the history of ulceration. **Methods:** 57 patients with healed ulcers (Gr.1) and 82 patients with healed ulcers and subsequent amputations on the same foot (Gr.2) were examined as well as 103 patients without any history of ulcers (Gr.3). Pressure distribution measurements were performed with emed-a50 system. Maximum force (MF), peak (PP) and mean pressure (MP), force- (FTI) and pressure-time integrals (PTI) were calculated in the hindfoot (Hf), midfoot (Mf), metatarsal heads (MTH1-MTH5), big toe (T1), second (T2), and lateral toes (T345). MF and FTI were normalized to the body weight. ANOVA was used for the intergroup comparison ( $p < 0,001$ ). **Results:** Gr1. vs. Gr.3: healed ulcers under MTH1 and increased loading of T2; under MTH2 and increased loading of Hf, Mf, MTH1 and decreased loading of MTH2-MTH4, and T1; under MTH3 and increased loading of MTH2-MTH5 and decreased loading of the toes; under MTH4 and increased loading of T2 and T345; under MTH5 and increased loading of Hf and MTH5; toes location of healed ulcers: under T1 and increased loading of MTH1 and T1; under T2 and increased loading of Hf and MTH1; under T3 and increased loading of Hf, MTH1-MTH3, and T2 and T345; under T4 and increased loading of MTH4. No correlation of healed ulcers occurrence under T5 and dorsum of toes with foot loading change were found. Gr2. vs. Gr.1: the frequencies of the healed ulcers occurrence and the amputations of the same foot areas (in %) were the following. T1- 29,5:17,2; T2-22,2:21,0; T3-12,1:10,8; T4- 4,0:5,9; T5-6,7:7,0; MTH1-6,0:10,8; MTH2- 3,4:9,1; MTH3-4,0:5,9; MTH4-3,4:3,8; MTH5-3,4:4,3. **Conclusion :** 23,9% of the healed ulcers under the metatarsal heads and 63,4% under the toes cause the significantly increased loading under the same area for big and third toes, third and fifth metatarsal heads. The occurrence of the healed ulcers under the second and third metatarsal heads and the third toe influence significantly on the foot areas loading. Amputations of the second and fourth toes, metatarsal heads exceed the occurrence of the healed ulcers in these areas.