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[Can plantar soft tissue mechanics enhance prognosis of diabetic foot ulcer?](#)

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Abstract AIM: To investigate if the assessment of the mechanical properties of plantar soft tissue can increase the accuracy of predicting Diabetic Foot Ulceration (DFU).

METHODS: 40 patients with diabetic neuropathy and no DFU were recruited. Commonly assessed clinical parameters along with plantar soft tissue stiffness and thickness were measured at baseline using ultrasound elastography technique. 7 patients developed foot ulceration during a 12months follow-up. Logistic regression was used to identify parameters that contribute to predicting the DFU incidence. The effect of using parameters related to the mechanical behaviour of plantar soft tissue on the specificity, sensitivity, prediction strength and accuracy of the predicting models for DFU was assessed. **RESULTS:** Patients with higher plantar soft tissue thickness and lower stiffness at the 1st Metatarsal head area showed an increased risk of DFU. Adding plantar soft tissue stiffness and thickness to the model improved its specificity (by 3%), sensitivity (by 14%), prediction accuracy (by 5%) and prognosis strength (by 1%). The model containing all predictors was able to effectively (χ^2 (8, N=40)=17.55, P<0.05) distinguish between the patients with and without DFU incidence. **CONCLUSION:** The mechanical properties of plantar soft tissue can be used to improve the predictability of DFU in moderate/high risk patients.

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