

عنوان مقاله:

Alteration of Lower Limb Kinematics and Kinetics due to Bilateral Triple Arthrodesis

محل انتشار:

مجله استخوان و جراحی عمومی، دوره 11، شماره 11 (سال: 1402)

تعداد صفحات اصل مقاله: 6

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خلاصه مقاله:

Objectives: The study aimed at discovering the existing differences in lower limb joints' kinematics, and EMG signals of ۴ particular muscles of the ankle joint during gait, between normal subjects and patients with bilateral triple arthrodesis. **Methods:** In this research, a ۳D motion analysis system was used and joints' angles were calculated using a MATLAB code, and based on the data collected from markers movements, for patients with bilateral triple arthrodesis and normal subjects. Moreover, the EMG signals of ankle muscles in each subject, and the graphs of mean plus and minus standard deviation of lower limb joint angles and muscles' EMG were calculated by MATLAB. **Results:** In all patients, an initial ankle eversion and valgus deformity were observed in their knee joints. In addition, for all patients, the maximum knee extension was less than that of the average value of the normal subjects. Furthermore, the results of the electromyography showed that, in all patients, delay occurred in gastrocnemius and soleus muscles in maximum contraction in their EMG signals. Besides, during the early stance phase of gait cycles, the mean value of EMG of peroneus brevis muscle for patients was more than that of normal subjects. **Conclusion:** Atrophy of four ankle muscles including (soleus, lateral gastrocnemius, tibialis anterior and peroneus brevis), also limitation of joints movement were observed in patients, compared to normal subjects. Based on the results of this work, in order to reduce further musculoskeletal disorders in patients who underwent bilateral triple arthrodesis surgery, there is a serious need to use physiotherapy after the surgery. Level of evidence: IV

کلمات کلیدی:

Ankle joint kinematics, Bilateral triple arthrodesis, Electromyography, Gait cycle, Muscle atrophy

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