

Instrumental Gait analysis after limb preservation procedures to resect malignant tumors of the thigh

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Abstract

INTRODUCTION

The goal of the examination is to evaluate, using instrumental gait analysis and clinical examination, the level of damage to the lower extremity, the functional impact on the patient's gait as well as the possible modes of compensation after removal of the extensors while resecting a malignant lesion.

OBJECTIVES

Patients with malignant neoplasms of the thigh were evaluated using 3D instrumental gait analysis at least 6 months post surgical resection.

METHODS

10 patients with malignant neoplasms of the thigh were evaluated using 3D instrumental gait analysis.

Inclusion criterion was that the operation needed to have taken place at least 6 months prior to evaluation to minimize direct post-surgical influences on their respective gait patterns.

Furthermore, the patients needed be freely ambulatory.

The patients were clinically examined and consequently underwent instrumental gait analysis. A 12 Camera Vicon 3D Motion-Analysis System and Kistler force plates were used to gather kinematic and kinetic data. Using the acquired data, ground reaction forces, joint motion, forces and moments were calculated.

CONCLUSION

Standard surgical oncologic resection of soft-tissue tumors of the thigh result in substantial post-operative soft-tissue defects. Post-operative treatment with chemotherapy and radiation further compromises the local soft-tissue situation. The affected limb displays an over-all functional impairment. This is particularly seen in a decrease in force generation, resulting in substantial post-operative weakness, which can, however, be functionally compensated. This loss of force in the knee extensors is compensated by transferal of the body's center of gravity to the affected limb. Similar compensation mechanisms have been described in patients with neurologic disorders, such as poliomyelitis. One may still expect good residual function in the affected limb despite radical tumor resection.

REFERENCES