

GAIT ANALYSIS IN PATIENTS WITH ENDOPROSTHESIS REPLACEMENT AROUND THE KNEE

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INTRODUCTION:

Outcome of limb salvage surgery with endoprosthetic reconstruction for bone tumours around the knee is good. However, there is only subjective assessment with Musculoskeletal Tumour Society (MSTS) score. An objective assessment of the functional outcome is still lacking.

In this study, we aim to assess the functional outcome of patients after tumour resection and endoprosthetic reconstruction of the knee with gait analysis. We also assess the correlation of the subjective parameters with the objective parameters obtained from gait analysis.

METHODS:

We performed gait analysis in 20 patients with osteosarcoma and giant cell tumour who underwent tumour resection and endoprosthetic reconstruction. Temporal parameters assessed were walking velocity, stride length, duration of stance and goniometry of knee. These parameters were compared with Musculoskeletal Tumour Society (MSTS) score, a subjective assessment.

RESULTS:

Our findings are consistent with findings of previous studies. The mean free-paced walking velocity was 68% of normal. The stride length was shorter in the affected limb compare to normal ($p < 0.05$). And, stance phase of the affected limb was shorter than the unaffected ($p < 0.05$). But otherwise the gait was symmetry as there was no difference of stride length ($p = 0.148$), velocity ($p = 0.918$), knee flexion ($p = 0.465$) and knee extension ($p = 0.321$) between the affected and unaffected limbs. Goniometry measurement showed 2 abnormal gait patterns in stance phase. Sixteen patients had stiff knee gait and 2 patients with flexed knee gait. Only 2 patients showed normal

gait during stance. The mean MSTS score was 21 points. There was significant correlation, but moderate, between overall MSTS score ($p = 0.023$), function ($p = 0.039$) and walking score ($p = 0.007$) in MSTS with walking velocity.

CONCLUSION:

We concluded limb salvage surgery with endoprosthetic reconstruction for knee tumour gives good functional outcome, both objectively and subjectively. However, there is only moderate correlation between the subjective parameters and objective parameters obtained from gait analysis. We propose gait analysis as an objective measurement of the outcome in limb salvage surgery.