Alternation of trunk movement after arthroplasty in patients with osteoarthritis of the knee

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【Objective】Trunk movement is important and still little understood after total knee arthroplasty that is an effective knee surgery to reduce pain and recover functions of joint. [Materials and Method] 20 patients of knee osteoarthritis (female 18, male 2) were subjected. Using three-dimensional motion capture, the gait parameters (cadence, walking speed, stride length, and step length), range of motion of lower extremity joints and the trunk movement parameters (angle, speed, and displacement) were measured and compared between pre- and the 4th post-arthroplasty week. [Results] At the 4th post-arthroplasty week, range of motion of hip and knee in arthroplasty side, and ankle in non-arthroplasty side were significantly increased than those at pre-arthroplasty. Among gait parameters, only stride length was increased significantly. As the trunk movement, the maximal trunk speed to the non-arthroplasty side and the maximal trunk displacement to arthroplasty side were both reduced in the medio-lateral direction; and at up-down direction, the maximal trunk speed in the arthroplasty side during foot-off phase was increased and the maximal trunk displacement in the non-arthroplasty side was decreased significantly. [Conclusion] At the early post-arthroplasty period, the reduction of trunk movement at coronal plane is benefit to maintain trunk balance and prevent falls, at same time, it may be a risk factor that lead to prosthesis loosening, deteriorate OA at other lower extremity joints.