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Title	In vivo kinematics of three-component mobile-bearing total ankle replacement in rheumatoid ankle with talocalcaneal arthrodesis and spontaneous talocalcaneal fusion
Author(s)	岩本, 圭史
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論 文 内 容 の 要 旨
Synopsis of Thesis

氏 名 Name	岩本 圭史
論文題名 Title	*In vivo* kinematics of three-component mobile-bearing total ankle replacement in rheumatoid ankle with talocalcaneal arthrodesis and spontaneous talocalcaneal fusion. （関節リウマチ後足部障害に対する距踵関節固定術を併用したモバイルベアリング型人工足関節置換術後の生体内動態解析）

論文内容の要旨

〔目 的(Purpose)〕

The standard treatment for end-stage arthritis of ankle joint due to rheumatoid arthritis (RA) has been arthrodesis. On the other hand, it is often that patients with RA who require ankle surgeries already have the degeneration of talocalcaneal joints. Total ankle replacement (TAR), which can relieve pain while retaining ankle movement, seems ideal for patients with RA in whom talocalcaneal joint needs arthrodesis or has already been fused spontaneously. We performed mobile-bearing TAR in rheumatoid ankles with talocalcaneal arthrodesis to obtain better outcomes. However, there remains a concern that ankle kinematics would be affected when talocalcaneal joint was fused. The purpose of this paper was to study *in vivo* kinematics of mobile-bearing TAR in rheumatoid ankle with concomitant talocalcaneal arthrodesis or with preexisting spontaneous talocalcaneal fusion.

〔方法ならびに成績(Methods/Results)〕

Methods: Thirteen TARs in ten patients with RA, in whom talocalcaneal joints had already been fused spontaneously or surgically fused, were studied. Fluoroscopic images were obtained while each patient walking with full weightbearing on the implanted ankle. Thereafter tibio-talar motion was analyzed by 2D/3D registration technique.

Results: Average tibio-talar motion during the stance phase of gait with full weightbearing was 4.0±5.3° of plantarflexion and 6.6±0.3° of dorsiflexion, with average arc of 10.7±2.8°. Overall, average kinematic pattern from heel-strike (HS) to toe-off (TO) in gait cycle was as follows; slightly plantarflexed initially by 2.6±5.6° toward foot flat, then gradually dorsiflexed by 10.4±6.3° toward heel off, and finally plantarflexed again by 2.9±6.4° toward TO. Average range of internal/external rotation, inversion/eversion and AP translation was 3.8±1.3°, 2.7±1.0° and 1.6 ±0.6mm, respectively. There was wide inter-subject variability in terms of internal/external rotation and AP translation in particular.

〔総 括(Conclusion)〕

Mobility of mobile-bearing TAR with talocalcaneal fusion was small during the stance phase of gait, but clinically measured ROM was mostly preserved. The movements of internal/external rotation and AP translation were allowed to a certain degree, but not of inversion/eversion. Even though the movement of inversion/eversion was limited, talocalcaneal arthrodesis could be accompanied with mobile-bearing TAR in rheumatoid ankles.

論文審査の結果の要旨及び担当者

（申請者氏名）　岩本　圭史

		（職）	氏　　名
論文審査担当者	主　査	大阪大学教授	芦本一臣
	副　査	大阪大学教授	菅野仲彦
	副　査	大阪大学教授	冨山憲幸

論文審査の結果の要旨

本研究は、関節リウマチにおける足部障害の中でも後足部アライメント不良を引き起こす外反偏平足変形の主要因となる距踵関節障害を伴う足関節障害に対して、モバイルベアリング型人工足関節置換術を施行する際に、アライメント矯正のため距踵関節固定術を併用する術式に対する評価を行ったものである。距踵関節が固定されることによって隣接関節である術後足関節動態に変化をもたらす可能性が考えられたが、上記術後足関節の生体内3次元動態解析を行ったことで、距踵関節固定術による術後足関節動態への明らかな影響は認められなかったことが証明された。以上のことから、モバイルベアリング型人工足関節置換術を施行する際に、後足部アライメント不良を軽減する目的で距踵関節固定術を併用し得ることを示唆したもので、大変興味深く、臨床的にも有用であり、その価値は高く評価されるものである。このため、審査員の合議により本論文は学位論文に値するものと判定した。