



ORAL PRESENTATION

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# Postural control in total knee arthroplasty patients with patellofemoral pain syndrome before and six months after re-operation

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## Background

Although excellent long-term clinical results have been reported for the total knee arthroplasty (TKA), 37% of patients have limited functional improvement one year after the surgery [1]. Patients with a clinical presentation of anterior knee pain could be diagnosed with patellofemoral pain syndrome (PFPS). Modified clinical classification of PFPS patients includes two main groups: with malalignment and with muscular dysfunction [2]. The aim of the study was to compare postural stability characteristics in TKA patients with PFPS before and six months after re-operation.

## Materials and methods

Twelve patients aged 59-77 years with PFPS following unilateral TKA participated in the study. Pre-TKA, all patients had primary degenerative knee OA in stage III or IV (Kellgren-Lawrence Scale) and were scheduled for the first TKA. Duration of pain before TKA was  $9.3 \pm 2.5$  years and re-operation due to PFPS was performed  $18.8 \pm 3.5$  months later. Patella malalignment was noted in eight patients and patella altered position in three patients. Static standing balance was assessed by centre of foot pressure (COP) sway registered during 30 s quiet bipedal standing with eyes open on twin force plates *Kistler 9286A* (Switzerland) using *Sway* software of motion analysis system *Elite* (BTS S.p.A., Italy). Plantar pressure distribution was recorded by *Digital Biometry Scanning System* and *Milletrix* software (DIASU, Italy). Data are means and standard errors of means ( $\pm$ SE).

**Table 1 Plantar pressure distribution (weight ratio %) in TKA patients with PFPS before and 6 months after re-operation**

Characteristics	Before re-operation	After re-operation	p
FOREFOOT PFPS leg	$66.37 \pm 4.90$	$51.55 \pm 1.64$	0.021
Non-PFPS leg	$64.15 \pm 6.47$	$52.16 \pm 3.40$	NS
REARFOOT PFPS leg	$44.85 \pm 1.75$	$51.54 \pm 1.86$	0.021
Non-PFPS leg	$49.16 \pm 3.36$	$47.84 \pm 3.40$	NS

## Results

COP sway trace radius of PFPS leg was significantly shorter 6 month after re-operation as compared before it ( $5.91 \pm 0.48$  and  $4.22 \pm 0.22$  mm, respectively,  $p=0.007$ ). No significant difference was found in COP trace length and velocity as compared pre- and post-surgery data ( $p>0.05$ ). Significant decrease of plantar pressure distribution in forefoot of PFPS leg was noted ( $p<0.05$ , Table 1).

## Conclusions

Main findings of our study were: (1) postural control in TKA patients with PFPS significantly improves (and 2) re-distribution of plantar pressure from forefoot to rear-foot in PFPS leg takes place 6 months after re-operation. The link between the segmental configuration of the lower limbs was described [3] and the importance of paying attention to balancing of the PF soft tissues was emphasized in studies of PF pain after TKA [4].

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