

Comment on Conteduca et al.: Patient-specific instruments in total knee arthroplasty

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Dear Editor,

The recently published article on “Patient-specific instruments in total knee arthroplasty” [1] caught our attention. Contemporary techniques like custom cutting blocks (CCB), computer-assisted surgery (CAS) etc. are being promoted and developed for improving the mechanical alignment of the limb in total knee arthroplasty (TKA), which has so far not been achievable [2]. It is also not yet proven if achieving a near normal mechanical alignment improves the survival of the TKA and has any significant clinical repercussion [3].

We are however convinced CCB may offer certain other advantages like decreased operative time [2] and bleeding [4] and faster recovery [4]. The major disadvantages of CCB include increased cost and delay in their procurement for surgery. In our set-up, typically this lag time has been reduced to five to seven working days and the cost for a single knee block has come down to about US\$400 [4].

We believe that the additional cost of CCB can be offset by decreased operative time, less need for blood transfusion and reduction of number of trays used with CCB [2] and less need for sterilisation of the trays used in the surgery. It could also potentially lead to decreased change over time in a high volume set-up. We also have the following concerns about the results in the article:

1. The authors state that “the mean deviation of the EM tibial guides from the ideal alignment (0°) was $0.7^\circ \pm 0.39$ and

of the VISIONAIRE was $129^\circ \pm 1.55$ ($P=0.22$).” There seems to be a significant oversight in the data for VISIONAIRE as the variations from ideal alignment cannot be 129° .

2. The authors state that the EM guide group had a mean posterior tibial slope of -1.62 and the patient-specific had a slope of $+1.16$, an anterior slope. This seems contrary to other studies published which measured the component alignment between conventional and patient-specific jigs [5] and reported a posterior slope in both groups. The problem of not being able to reproduce the posterior slope may be inherent to the magnetic resonance imaging (MRI)-based jig of VISIONAIRE. Chotanaphuti et al. [5] in their study comparing component alignment in both sagittal and coronal planes used computed tomography (CT)-based custom jigs and were able to reproduce the posterior slopes. It is possible to predetermine and reproduce the tibial slope in CCB by CT-based techniques like PrePlan (Stryker).

Koch et al. [6] in their review of 301 TKA performed with CT-based custom jigs reported a posterior tibial slope in both computer-assisted and patient-specific instrumentation (PSI). Whether this advantage is inherent to the CT-based PSI needs further exploration.

We believe that CT-based manufacturing of CCB may prove to be superior to MRI-based techniques. We hope that with further developments in computer analysis of CT images, manufacturing techniques of CCB and clinical experience of the surgeons their accuracy will be enhanced and it may be possible to provide a near normal mechanical alignment of limbs after TKA.

Conflict of interest The authors declare that they have no conflict of interest.

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