

Improving the Modelling of the Shape of Knee: An Intelligent System based approach

Dislocation of the patella is a fairly common and very unpleasant condition. It tends to affect younger patients who are physically active and tends to be recurrent.

There is an increased incidence of low level anatomical variation in the shape of the knee with flattening of the trochlea groove of the distal femur and also relative flattening of the angle of the articular surface of the patella. This flattening leads to a tendency to lateral displacement of the patella during movement and when stressed dislocation.

Treatment is not entirely satisfactory with placentation of the retinacular ligaments (medial and lateral ligaments of the patella). And with release of the same ligaments. More recently and osteotomy, remodelling of the bone in the region of the distal trochlea groove to change the angle and thereby help prevent lateral slip is being used.

This current study would be to model the shape of the knee as seen on axial MR and CT images, to estimate the range of normal and compare this with the range seen in the patient group. Then to look at the effect of surgery on the shape of the knee and to correlate the 'success' of surgery with the amount of change seen postoperative in the knee. The project would also aim to produce individual and group measurement so as to better understand what is happening and to inform the surgeons as to how to make this process better.

Image data is available, patient group is identified.

Ethics either by substantive amendment to existing ethics or new submission

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Analysis Prof Hines

PhD follow on project

This project is highly suitable for development into a PhD project depending on the interests and aptitude of the student.