

Not all knee surgeries are the same

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Anterior cruciate ligament (ACL) reconstruction is a good operation which eliminates symptomatic instability of the knee for most patients.

It has a high success rate and a low complication rate.

Unfortunately, despite a technically successful operation, a few patients continue to complain about some residual laxity (“the knee just doesn’t feel normal”).

Over the past decade there have been major changes in the surgical techniques for ACL reconstruction. While the intra-articular anatomy of the ACL is now well understood, it has only recently become clear that in some people the extra articular stabilisers are just as important.



PROMOTED

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David Dandy performed the first arthroscopic ACL reconstruction in the United Kingdom in 1980 and this then became the standard method for this operation.

The trade-off for smaller skin cuts was that the new graft was not inserted where the old ACL attached. Generally speaking, most people were still happy after their operation but not many returned to the same level of sport they had participated in previously.

Changes to techniques

A few years ago surgeons started using the 'anatomical' insertion point of the ACL as the attachment point for the new ACL.

This required an extra skin cut but resulted in improved stability of the knee. There was also a push to perform 'double bundle' ACL reconstruction, which more closely mimicked the anatomy of the native ACL.

Unfortunately this operation was technically difficult and gave higher complication rates, even in experienced hands; and has not been widely adopted.

Using the 'anatomical' insertion point for reconstruction places higher forces on the ACL compared to both the native ACL and non-anatomically placed grafts — but it should result in a more stable knee.

This has resulted in a significantly higher re-rupture rate in professional soccer players returning to sport at six months.

As a result, rehabilitation and return to sport after 'anatomic' ACL reconstruction will need to be progressed more slowly than after traditional, non-anatomic ACL reconstruction.

There is also a trend towards using either patella tendon or quadriceps tendon grafts rather than hamstring tendon grafts. These are stiffer grafts but can lead to problems with kneeling and jumping in some people.

Extra-articular tenodesis

The anterolateral capsule of the knee is frequently injured when you tear your ACL.

The capsular avulsion is called a Segond fracture and is said to be pathognomonic of an ACL tear. This lesion has been shown to be present in the majority of acute ACL injuries and is associated with significantly increased rotational knee laxity.

There have been recent anatomical studies suggesting that there is a ligament here which originates from the lateral femoral condyle and inserts on to the anterolateral tibial plateau. Over time this 'ligament' can stretch out and cause more anterior laxity in an already ACL deficient knee.

It makes sense that if this structure and the intra-articular ACL are both injured that repairing only one of them will leave the knee somewhat unstable.

Since the reconstruction is outside the knee it is better at controlling tibial rotation and decreases the stress on intra-articular reconstruction by about 40%. These advantages are especially useful in cases of revision ACL reconstruction.

The challenge for surgeons now is to work out which patients require a traditional arthroscopic ACL reconstruction and which require an extra articular tenodesis. Unfortunately MRI scanning and clinical examination are not yet accurate enough to help us with our decision-making.

There is convincing clinical evidence that lateral extra-articular augmentation should be used in a revision ACL reconstruction where no clear reason for failure of the previous graft is seen.

The exact method of reconstruction is still being studied and I expect it to improve with time and further research.

Summary

Traditional ACL reconstruction is an excellent operation.

The surgical indications for this technique are evolving and being improved.

At this stage only a small number of patients need an extra-articular tenodesis but it does appear that the future of ACL surgery has arrived now.