

CONSTRAINT TIPS

POSTERIOR CRUCIATE LIGAMENT DEFICIENCY	This is adequately compensated for by use of either a PS (post-and-cam) device or a deep-dish highly conforming device. Very important to distinguish sagittal instability due to posterior cruciate ligament (PCL) deficiency from sagittal instability due to an unbalanced flexion gap. The latter requires use of a constrained condylar device.
LATERAL COLLATERAL LIGAMENT DEFICIENCY	Often surprisingly well tolerated with minimally constrained devices, as long as limb alignment is neutral. Otherwise requires a constrained condylar device.
LOOSE FLEXION GAP	Probably one of the most commonly unrecognized problems that leads to failure and early revision. Rule of thumb: <ul style="list-style-type: none"> ■ Mild laxity (3 to 5 mm) requires correction of gap imbalance and a PS device. ■ Moderate gap laxity (5 to 10 mm) requires constrained condylar device. ■ Extreme flexion gap laxity (greater than 15 to 20 mm) necessitates a hinge.
MEDIAL COLLATERAL LIGAMENT DEFICIENCY	<ul style="list-style-type: none"> ■ Again, one of the common recurring errors of surgeon judgment. ■ An attenuated but intact medial collateral ligament requires a constrained condylar device. ■ Complete functional absence of the medial collateral ligament requires a hinge....every time!
LOOSE EXTENSION GAP	Recurvatum, if not correctable by distal femoral augmentation, requires a hinge.
EXTENSOR MECHANISM DEFICIENCY	Chronic extensor mechanism disruption is often associated with circumferential soft tissue attenuation and global instability. This requires a hinged device or knee fusion.

Indications

Hinge implants are most commonly indicated in cases with extreme flexion gap imbalance (greater than 15 to 20 mm) or where complete absence of the medial collateral ligament exists. Chronic extensor mechanism disruption or deficiency also requires a hinged device to resist the hyperextension instability that frequently develops in these cases. They are also useful in situations of massive bone loss.

SUMMARY

As the volume and complexity of revision TKR cases continue to rise, surgeons are increasingly faced with cases involving severely compromised bone and soft tissue support. To address these situations, revision implants are required with varying degrees of inherent mechanical constraint. Experienced surgeons differ in their approach to constraint: some espouse a minimalist philosophy and advocate the use of the least constraint possible; others believe more is better. The author feels the correct answer lies somewhere between these extremes. The surgeon must