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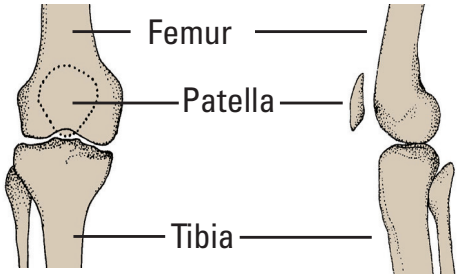
PROCEDURE BASICS

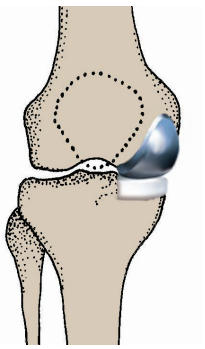
"What a supply chain executive needs to know on one page"

Knee Replacements

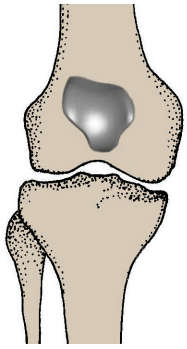
Knee replacements are performed more often than hip replacements in the US. There are several types of common knee replacements including bicondylar knee, unicondylar knee, and patellofemoral knee replacements.



Bicondylar Knee implant



Unicondylar Knee Implant



Patello-Femoral Replacement

COMPONENTS USED IN A KNEE REPLACEMENT

FEMORAL COMPONENT

Bicondylar Femoral Component

Unicondylar Femoral Component

Patello-Femoral Replacement

- Generally made of cobalt-chrome alloy
- System may be porous coated or have embedded mesh to allow a "cementless" fixation
- Different designs for bicondylar knee, unicondylar knee, and patello-femoral joint replacement

TIBIAL BASE

Tibial Base for TKA

Monoblock Tibia for Unicondylar Knee

Monoblock Tibial Base

All Poly Tibia for TKA

- Generally made of cobalt-chrome alloy, although titanium, and all poly tibias are used.
- System may be porous coated or have embedded mesh to allow a "cementless" fixation
- Tibial base may include polyethylne liner—Monoblock
- Unicondylar tibial base has similar features as total knee tibial base.

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TIBIAL INSERT

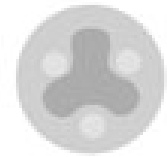
Cruciate Retaining

Posterior Stabilized

Constrained

Tibial inserts touch against the patients femur. How much the patient is able to bend their knee or rotate their leg is often determined by the height of the "post" in the middle of the insert. The post fits into a "box" in the femur. A lower post is less constrained; the highest post is most constrained.
Tibial inserts are made of polyethylene, which may be cross-linked or treated with an anti-oxidant such as vitamin E to prolong longevity.

PATELLA



Patellas are often attached to the inside of the patient's patella so that the polyethylene glides along the slope of the femoral component. Many physicians do not resurface the patient's patella.

"ADD-ONS"

ROBOTICS

OMNI OMNIBot
Robotic Cutting Guide

Robotic assistance is used to provide an exact cut to the femur and tibia during knee replacement. An inexact cut may lead to early revision.

TIBIAL EXTENSION STEMS

Medacta Evolis
Tibial Extension Stems

Designed to provide increased stability for the tibia, their usage is about 10% of primary knees.

BONE-CEMENT

Stryker's Simplex
Bone Cement

Over 80% of knee replacements are cemented systems. Generally two units of 40g of bone cement are used. Antibiotic bone cement may be used although physicians often concoct that themselves during the procedure. Extras include mixers and other devices to deilver the cement to the joint.

MOBILE BEARING KNEES

A mobile bearing knee is designed to provide patients more flexibility by allowing them to pivot their foot and rotate their leg. A variety of knee designs accommodate this but generally involve a flat tibial base with an insert that can pivot along an axis.

COMMONLY USED TERMS AND ABBREVIATIONS

TKA:	Total knee replacement
UKA:	Unicondylar knee replacement
BKA:	Bilateral knee replacement
PFJ:	Patellofemoral joint replacement
CR:	Cruciate retaining
CS:	Cruciate sacrificing; condylar stabilized
PS:	Posterior stabiliizing (same as CS)
MOB:	Mobile bearing

Monoblock: Refers to a one-piece tibial base with an embedded polyethylene tibial insert

Unicompartmental Knee:
Same as UKA

Bicompartmental Knee:
Same as TKA without patella resurfacing

Tricompartmental Knee:
Same as TKA with patella resurfacing

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