

**IMPLANT
OPTIONS**

Surgeon-Specific



CASE STUDY

Patient: Female, 59.

Symptoms: Degenerative arthritis of the right knee.
Posterior cruciate ligament in excellent condition.
Pre-op ROM was 0° to 95°.

OUTCOME at end of brochure

The *NexGen*® Complete Knee Solution CR Femoral Component is intended for patients who, in the physician's judgement, have good bone stock and whose ligaments provide adequate mediolateral, anteroposterior and varus/valgus stability. The *NexGen* CR offers true Physician choice and patient specificity with left and right configurations in up to eight sizes, covering most indications. Fixation options include porous fiber metal, PMMA precoat and non-coated versions.*

RETAINING

Deeper patellar groove

The enhanced trochlear recess provides for a deeper patellar groove. This helps to relieve pressure on the patella and reduces forces which can lead to premature wear or breakage. The asymmetric (L+R) patellar groove provides for more normal mediolateral translation of the patella from flexion to extension.





Anterior flange thickness

The minimized width and thickness of the anterior femoral flange helps to relieve tension on the extensor mechanism and restore normal joint function.

Distinctive *Zimaloy*® Cobalt-Chromium-Molybdenum Alloy

Femoral components are made from *Zimaloy* Alloy, a time-tested material known for excellent wear characteristics, biocompatibility and corrosion resistance.¹

Different radii of curvature in the sagittal plane

Asymmetric femoral radii (the lateral condyle is larger than the medial) aid combined natural rotation and rollback, working in concert with the soft tissues.

CR Articular surface options

The surfaces are available in three styles; Standard, Anterior Constrained (AC) for enhanced A/P stability, and Anatomically Rotated (AR) with 6 degrees of external rotation built into the proximal surface.

Tibial fixation options

Stemmed components are available with porous, precoat, and non-coated surface versions.*

Stemmed tibial base plate

The *NexGen* stem base is designed to resist base plate lift-off due to tilting that can result from poor bone stock.² Four stemmed plates and two fluted-stem tibial base plates are available.

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“The asymmetric femoral condyles of the *NexGen* CR promote normal kinematics and provide for proper tensioning of the PCL during flexion activities.”

Jorge Galante, M.D.

“The *NexGen* CR/CRA have a less dished geometry that allows for the femoral component to work in concert with the PCL to provide more normal kinematic function in terms of rotation, and reducing the potential for kinematic conflict.”

Aaron G. Rosenberg, M.D.”

Distinctive *Tivanium*® Ti-6Al-4V Alloy

Tibial components are made of *Tivanium* Alloy, a material known for its strength, hardness, in vivo inertness, and corrosion resistance.¹³

Tibiofemoral conformity

The 1.07-1.0 ratio of articulating radii, a *NexGen* System feature, combined with optimal width of femoral condyles provides for a high degree of conformity in the frontal plane, thereby increasing contact area and better distributing and reducing contact stresses.⁴

Distinctive Net-Shape compression-molded polyethylene

Micro-Finish™ Surface Finish smoothness and reproducible dimensional consistency result from this manufacturing process. Polyethylene with no added calcium stearate, gamma irradiated in an inert nitrogen environment, helps minimize oxidation and creates a more durable, abrasion resistant material.⁵

Four-pegged tibial base plate

For the patient with good bone stock, this plate offers true bone conservation, and is available in porous and precoat surface versions.*

*Indicated for use with bone cement in the United States.

CASE STUDY

Patient: Male, 79.

Symptoms: Left knee initially replaced in June, 1998.
Night pain, severe pain when walking or climbing stairs,
and difficulty with bending activities.
Pre-op ROM was 0° to 95° and ligaments were stable.
Significant poly wear together with a broken tibial face plate.

OUTCOME at end of brochure

The *NexGen* CRA Femoral Component is intended for patients who, in the surgeon's judgement, have adequate mediolateral, anteroposterior and varus/valgus ligament stability, yet require augmentation and/or stem extensions due to inadequate bone stock. The *NexGen* CRA is available with a PMMA precoat fixation surface.*

RETAINING AUGMENTABLE

Double dovetail locking mechanism

The full-capture containment rail, double dovetail, and posterior undercuts of all *NexGen* Tibial Plates provide improved security and stability of the articulating surface and minimize micromotion.





Double-locking mechanism

Both the femoral and tibial stem housings have a double-locking mechanism for the modular stem extensions. A Morse-type taper is combined with a proximal threaded screw for the tibial plate and with double set screws for the femoral component to deliver secure attachment.

Different radii of curvature in the sagittal plane

Asymmetric femoral radii (the lateral condyle is larger than the medial) aid combined natural rotation and rollback, working in concert with the soft tissues.

Distinctive Net-Shape compression-molded polyethylene

Micro-Finish Surface Finish smoothness and reproducible dimensional consistency result from this manufacturing process. Polyethylene with no added calcium stearate, gamma irradiated in an inert nitrogen environment, helps minimize oxidation and creates a more durable, abrasion resistant material.⁵

Tibial fixation options

Stemmed components are available with porous, precoat, and non-coated surface versions.*

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“In my practice, the CRA is the ideal implant for revision of a failed unicompartmental knee prosthesis or when a femoral osteotomy is performed in combination with a total knee replacement.”

Kim Bertin, M.D.

“The least constraining prosthesis should be chosen so that with the available bone and soft tissues, it provides appropriate knee stability, and adequate fixation to provide a well functioning, pain free, stable prosthesis. The CRA is therefore a good choice for those patients who have severe bone loss but adequate ligament stability.”

Aaron G. Rosenberg, M.D.”

Stemmed tibial base plate

The *NexGen* stem base is designed to resist base plate lift-off due to tilting that can result from poor bone stock.² Four stemmed plates and two fluted-stem tibial base plates are available.

Modular femoral & tibial augments

For patients with inadequate bone stock, tibial and femoral augments offer true patient specificity. Tibial: third-, half-, and full wedge augments or 5 and 10mm blocks. Femoral: posterior, distal, posterior/distal, and anterior augments. Augments are designed for either screw or cement fixation (Anterior augments-cement fixation only).

Stem extensions

Interchangeable between all stemmable *NexGen* Femoral and Tibial Components, straight and offset stem extensions offer optimal canal fill and component positioning.

*Indicated for use with bone cement in the United States.

CASE STUDY

Patient: Female, 68.

Symptoms: Severe degenerative arthritis of the left knee.
Knee had a ROM of 16° to 68° and was in 5° of varus.

OUTCOME at end of brochure

The *NexGen Legacy*® Knee LPS Femoral Component is intended for patients who, in the surgeon's judgement, have adequate bone stock and varus/valgus stability, and/or when the surgeon elects to substitute for the posterior cruciate ligament. Fixation options include porous fiber metal, PMMA precoat, and non-coated versions.*

LEGACY
POSTERIOR

STABILIZED

Cam/spine mechanism

After the cam/spine mechanism engages, the contact point moves down the spine during increasing flexion. This reduces the moment arm of the load on the spine and significantly improves resistance to tibiofemoral subluxation, especially at higher flexion angles when dislocation is most likely to occur.





Anterior flange thickness

The minimized width and thickness of the anterior femoral flange helps relieve tension on the extensor mechanism, restoring normal joint function.

Size interchangeability

A broad range of femoral component sizes are capable of mating with at least four, and in some cases six, tibial sizes. This helps to optimize patient fit and kinematic function.

Deeper patellar groove

The enhanced trochlear recess provides for a deeper patellar groove, which helps to improve patellofemoral contact. Compressive stress or pressure on the patella is reduced, allowing patella to ride smoothly in the patellar groove throughout full range of motion.



“Proportionate bearing spacing of the LPS allows the maintenance of frontal curvatures throughout the range of sizes and accommodates lift-off without edge loading.”

John Insall, M.D.

“By moving the femoral cam and tibial spine more posteriorly, the cam/spine interaction remains at the base of the spine, even in higher flexion angles increasing the jump height and resistance to subluxation compared with other posterior stabilized systems that are available.”

Norman Scott, M.D.

“Femoral pegs provide enhanced fixation and a precise fit of the LPS femoral component, which prevents component flexion during insertion.”

John Insall, M.D.



Dished articulation

In the frontal plane, the femoral condyles have smaller radii of curvature compared to the CR/CRA components. This dished articulation provides a large contact area on the loaded condyle, even in up to 7 degrees of varus/valgus lift-off, without edge loading.

Distinctive Net-Shape compression-molded polyethylene

Micro-Finish Surface Finish smoothness and reproducible dimensional consistency result from this manufacturing process. Polyethylene with no added calcium stearate, gamma irradiated in an inert nitrogen environment, helps minimize oxidation and creates a more durable, abrasion resistant material.⁵

Tibiofemoral conformity

The 1.07-1.0 ratio of articulating radii, a *NexGen* System feature, combined with optimal width of femoral condyles provides for a high degree of conformity in the frontal plane, thereby increasing contact area and better distributing and reducing contact stresses.⁴

Tibial fixation options

Stemmed components are available with porous, precoat, and non-coated surface versions.*

Stemmed tibial base plate

This *NexGen* stem base is designed to resist base plate lift-off due to tilting that could result from poor bone stock.³ Four stemmed plates and two fluted-stem tibial base plates are available.

***Indicated for use with bone cement in the United States.**

CASE STUDY

Patient: Male, 50.

Symptoms: Osteoarthritis of the left knee.

Knee had a ROM of 125 with a mild varus deformity.

OUTCOME at end of brochure

The *NexGen* LPS-Flex Fixed Femoral Component is intended for patients with the ability and desire to perform high-flexion activities. The LPS-Flex Fixed is designed to accommodate resumption of high-flexion activities up to 155 degrees of flexion without limiting postoperative ROM. Attention to patient selection, surgical technique, and rehabilitation can help enhance the chances for success.

The *NexGen* LPS-Flex Fixed is available with a noncoated fixation surface.*

FLEX-FIXED

Modified cam/spine mechanism

When the modified posterior stabilized cam/spine mechanism engages, the contact point moves down the spine during increasing flexion. This significantly improves resistance to tibiofemoral subluxation at deep flexion angles.





Deep Flexion

The LPS-Flex Fixed allows for many activities of daily living that require flexion beyond 120 degrees: Climbing stairs (75-140 degrees), sitting in a chair and standing up again (90-130 degrees), or squatting (135-150 degrees).⁶

Extended posterior condyles

The extended posterior condyles on the femoral component facilitate tibiofemoral contact, to support up to 155 degrees of flexion.

Size interchangeability

A broad range of femoral component sizes are capable of mating with at least two, and in some cases six, tibial sizes. This helps to optimize patient fit and kinematic function.

Enhanced Stability

To provide additional stability and fit, the design includes proportionally sized pegs on the femoral component.

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The *NexGen* LPS-Flex Knee was specifically designed to help patients resume their high-flexion lifestyles. For these patients, implant design should not be a limitation to achieving post-op flexion.”

Michael A. Kelly, M.D.

“People today are expecting more out of their surgery. They want to have full motion and be able to continue their lifestyle. The *Legacy* LPS-Flex Knee helps my patients get there safely.”

Giles R. Scuderi, M.D.

“The full-spectrum *NexGen* line gives me the freedom to select the best combination of components for individual patients – including patients capable of up to 155 degrees of active flexion.”

Michael A. Kelly, M.D.

“With their preoperative flexion as evidence, there’s no doubt some TKA candidates are capable of more flexion than others. They should certainly have the opportunity to safely regain the flexion they once had.”

Giles R. Scuderi, M.D.

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Extensor Mechanism Clearance

The articular surface features a deep anterior patellar cut-out. This helps to reduce extensor mechanism tension and provide greater clearance for the patellar tendon during deep flexion.⁷

Tibiofemoral conformity

The conforming geometry of the LPS-Flex Fixed femoral component with its articulating surface allows minimal loss of contact area in deep flexion.

***Indicated for use with bone cement in the United States.**

CASE STUDY

Patient: Female, 72.

Symptoms: Multiple recurrent infections of the right knee. Knee failed four prior implantations. Knee had grown pseudomonas at the time of removal of all components and was treated with insertion of methyl methacrylate bone spacers.

OUTCOME at end of brochure

The *NexGen* LCCK Femoral Component is intended for patients who, in the surgeon's judgement, require additional prosthetic stabilization due to inadequate mediolateral, anteroposterior and varus/valgus ligament function, and require augmentation and/or stem extensions due to inadequate bone stock. The *NexGen* LCCK is available with a non-coated fixation surface.*

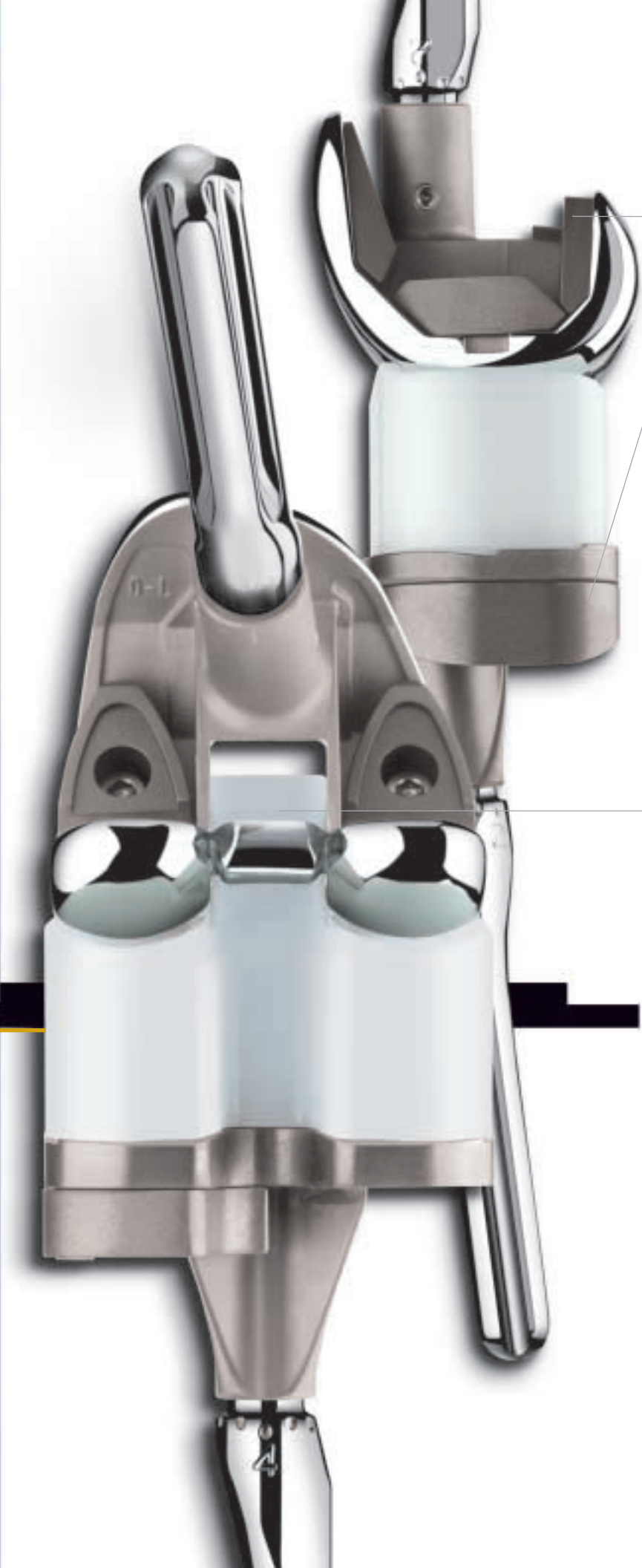
LEGACY
CONSTRAINED
CONDYLAR

CONDYLAR

Offset Stem, A Zimmer Distinctive

For patients whose canal is not centered relative to the distal femur or proximal tibial surface, the offset design allows the component to be positioned 4.5mm away from the center of the canal in any direction. This flexibility provides for a full 360 degrees of orientation for improved bone coverage and optimal implant position.





Distinctive *Zimaloy*® Cobalt-Chromium-Molybdenum Alloy

Femoral components are made from *Zimaloy* Alloy, a time-tested material known for excellent wear characteristics, biocompatibility and corrosion resistance.¹

Modular femoral & tibial augments

For patients with inadequate bone stock, tibial and femoral augments offer true patient specificity. Tibial: third-, half-, and full wedge augments or 5 and 10mm blocks. Femoral: posterior, distal, posterior/distal, and anterior augments. Augments are designed for either screw or cement fixation (Anterior augments-cement fixation only).

Stem extensions

Interchangeable between all stemmable *NexGen* Femoral and Tibial Components, straight and offset stem extensions offer optimal canal fill and component positioning.

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The clinical performance of the net-shape molded articular surface of the original Insall/Burstein® Total Knee System[†] has been excellent and retrieval analysis and clinical follow-up have revealed exceptionally little wear.”

John Insall, M.D.

“I find the offset stem extension can improve the position of most of the stemmed femoral and tibial components that I implant.”

Robert E. Booth, Jr., M.D.

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Prosthetic Constraint

For patients who lack functional collateral ligaments or whose knees cannot be stabilized by the usual soft tissue releases, the LCK features an elevated tibial spine and deeper femoral intercondylar box. A close fit between the spine and box provides stability as the mechanical roll back is induced, inhibiting posterior subluxation, limiting varus/valgus movement to ± 1.25 degrees and internal/external rotation to ± 2 degrees, and providing a theoretical range of motion in excess of 120 degrees.

Distinctive Net-Shape compression-molded polyethylene

Micro-Finish Surface Finish smoothness and reproducible dimensional consistency result from this manufacturing process. Polyethylene with no added calcium stearate, gamma irradiated in an inert nitrogen environment, helps minimize oxidation and creates a more durable, abrasion resistant material.⁵

Distinctive *Tivanium* Ti-6Al-4V Alloy

Tibial components are made of *Tivanium* Alloy, a material recognized for its strength, hardness, in vivo inertness, and corrosion resistance.¹³

Tibial fixation options

Stemmed components are available with porous, precoat, and non-coated surface versions.*

Stemmed tibial base plate

The *NexGen* stem base is designed to resist base plate lift-off due to tilting that could result from poor bone stock.⁴ Three stemmed plates and two fluted-stem tibial base plates are available.

[†] Trademark of Hospital for Special Surgery.

***Indicated for use with bone cement in the United States.**

Femoral Components

Patella Buttons

Articulating Surfaces

CR



Cruciate Retaining
(Precoat, Porous,
or Non-Coated)



3-Peg
All-Polyethylene
Patella



Primary Porous
Patella



Augmentation
Patella



All-Polyethylene
Cruciate
Retaining



Cruciate
Retaining



Anterior
Constrained



Anatomically
Rotated

CRA



Cruciate Retaining
Augmentable
(Precoat)



3-Peg
All-Polyethylene
Patella



Primary Porous
Patella



Augmentation
Patella



All-Polyethylene
Cruciate Retaining



Cruciate
Retaining



Anterior
Constrained



Anatomically
Rotated

Legacy
LPS



Posterior
Stabilized (Precoat,
Porous, or Non-coated)



3-Peg
All-Polyethylene
Patella



Primary Porous
Patella



Augmentation
Patella



Legacy
All-Polyethylene
Posterior Stabilized



Legacy Posterior
Stabilized

Legacy
LPS



Legacy Posterior
Stabilized Flex
(Non-coated)



3-Peg
All-Polyethylene
Patella



Primary Porous
Patella



Augmentation
Patella



Legacy Posterior
Stabilized Flex Fixed

Legacy
LCCK



Legacy Constrained
Condylar Knee
(Non-Coated)



3-Peg
All-Polyethylene
Patella



Primary Porous
Patella



Augmentation
Patella



Legacy
Constrained
Condylar

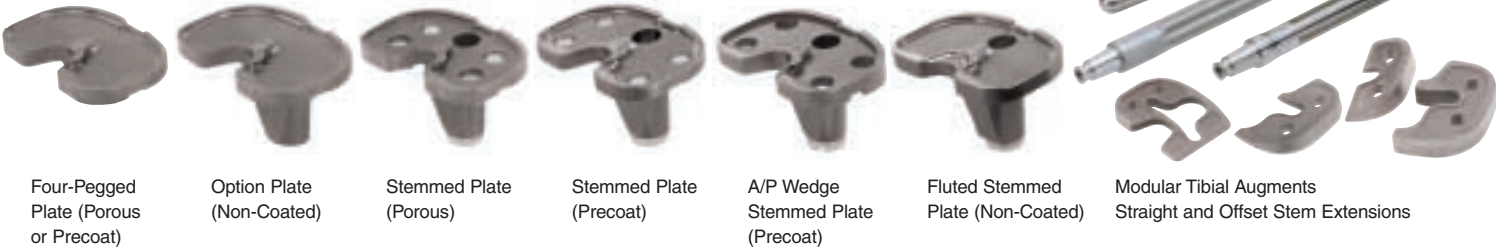


Legacy Posterior
Stabilized

All NexGen Patellas, Femoral and Tibial base plate components are indicated for use with bone cement in the U.S.

Tibial
Trays

Augments
& Extensions



OUTCOMES FOR:

- CR – Cruciate Retaining
- CRA – Cruciate Retaining Augmentable
- LPS – *Legacy* Posterior Stabilized
- LPS-Flex – *Legacy* Posterior Stabilized Flex Fixed
- LCCK – *Legacy* Constrained Condylar

The *NexGen* System is designed to provide multiple solutions for primary or revision total knee arthroplasty. Complete component size interchangeability, multiple fixation options, femoral and tibial augments, and stem extensions provide for complete surgeon choice in providing accurate tibiofemoral joint reconstruction and stability. Of course, pictures are worth a thousand words...see for yourself!

OUTCOMES



CR

POST OP



INDICATION:

CR Femoral Component-size D • Precoat Pegged Tibial Baseplate-size 3 • Cruciate Retaining Articulating Surface-12mm.

OUTCOME:

A 59-year old female who suffered from degenerative arthritis of the right knee was treated with a primary total knee replacement. Pre-op ROM was 0° to 95°. At three months post-op, the patient recovered well with a ROM of 0° to 108°.

CRA

POST OP



INDICATION:

CRA Femoral Component-size F with a 11mm x 145mm Offset Stem • Stemmed Tibial Baseplate-size 5 with a 13mm x 145mm Offset Stem and two 5mm Block Augments • Anterior Constrained Articulating Surface-14mm.

OUTCOME:

A 79-year old male who complained of severe knee pain when walking, bending or climbing stairs was treated with a revision total knee replacement. Pre-op ROM was 0° to 95°. At six months, the patient showed no post-op problems and had a 0° to 111° ROM.

LEGACY LPS

POST OP

INDICATION:

LPS Femoral Component-size C • Stemmed Tibial Baseplate-size 4
• *Legacy* Posterior Stabilized Articulating Surface -10mm.

OUTCOME:

A 68-year old female who suffered from severe degenerative arthritis of the left knee was treated with a primary total knee replacement. Pre-op ROM was 16° to 68°. At eight days post-op, the patient showed no problems and had a 0° to 115° ROM.

LEGACY LOCK

POST OP

INDICATION:

LOCK Femoral Component-size C with a 10mm posterior and distal augment (medially and laterally) and a 15mm x 200mm Stem Extension • Stemmed Tibial Baseplate-size 3 with A/P build up and a 13mm x 145mm Offset Stem • *Legacy* Constrained Condylar Articulating Surface -17mm.

OUTCOME:

A 72-year old female with a history of four failed primary implantations was treated with a revision total knee replacement. At three years, the patient shows no post-op problems and had a 0° to 105° ROM.

LEGACY LPS-FLEX

POST OP

INDICATION:

LPS-Flex Fixed Femoral Component-size E • Fluted Stem Tibial Baseplate-size 5 • LPS-Flex Fixed Articulating Surface -12mm • Unresurfaced patella.

OUTCOME:

A 50-year old male who suffered from osteoarthritis was treated with a primary total knee replacement. Pre-op ROM was 0° to 125°. At one year post-op, the patient shows no instability, has good strength, and a ROM of 0° to 145° ROM.

NexGen[®]
Complete Knee Solution System

Zimmer designers and a team of world-class physicians combined their respective talents to bring you the **NexGen Complete Knee Solution**—solutions that consist of physician- and patient-specific products and technologies. Distinctive fixation enhancing technologies* such as Cobalt/Chrome and **Titanium fiber metal**, **PMMA precoating**, and **Trabecular Metal** offer surgeons a true choice. The issue of wear is managed with our **Net-Shape compression-molded polyethylene**, a time-tested, durable, and abrasion resistant material with a **Micro-Finish** surface smoothness. For patients whose canal is not centered relative to the distal femur or proximal tibial surface, a 4.5mm adjustment is available with Zimmer's patented **Offset-stem**—another patient-specific, Zimmer Distinctive.

DISTINCTIVES

VERSATILITY

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“The *NexGen* Knee, with its coordinated design of instruments and implants, is of benefit for the surgeon whose practice includes the complete spectrum of patients needing posterior cruciate retaining, substituting, and revision total knees.”

Harold K. Dunn, M.D.

“The anatomic femoral component, with its deepened patellofemoral design, improves overall joint kinematics, and provides the potential for leaving the patient's native patella.”

Harry Rubash, M.D.

“The cross-over capability of CR to LPS at the time of surgery, using the same instrument system, is another key benefit of the *NexGen* system.”

Victor Goldberg, M.D.

“Retrievals have shown that the net-shape molded articular surfaces that were available with the original Miller-Galante Total Knee System have performed exceptionally well. *NexGen* Knee returns to that tradition of net-shape molding.”

Thomas Andriacchi, Ph.D.

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*Indicated for use with bone cement in the United States.



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4. Sathasivam S, Blunn GW, Walker PS. Durability and laxity of the *NexGen* Bearing Surfaces. In press, 1997.
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6. Niwa S. Hyperflexion in Japanese knee replacement design and clinical results. Paper presented at: The Wellington Knee Surgery Unit's eighth international teaching; March 5-6, 1998; London England.
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For more information about the *NexGen* Complete Knee Solution, contact your Zimmer representative or visit us at www.zimmer.com.

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