MAKOplasty®

Walk Away From Knee Pain With Surgeon-Interactive Robotic Arm Surgery

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Osteoarthritis

- Osteoarthritis (OA) is a degenerative bone disease that causes cartilage found on healthy joints to break down, removing the buffer between bones.

- 46% of people will develop knee OA over their lifetime.*

- According to the American Academy of Orthopedic Surgeons, OA of the knee is the most common form of arthritis and a leading cause of disability worldwide.

- Treatments for knee osteoarthritis include:
  - Weight loss
  - Nonsteroidal anti-inflammatory drugs, Injections
  - Change in activities
  - Surgery is generally reserved for patients whose osteoarthritis is unresponsive to non-surgical treatment.

* Source: Arthritis Care & Research, September 2008
Cartilage is Holy
What is Normal vs. Arthritis?
What are the symptoms of Knee Arthritis

- *Stiffness in the morning and at night*
- *Trouble with stairs, kneeling and squatting*
- *Swelling*
- *Pain*
- *Cracking or Popping*
Who gets Knee Arthritis?

• Athletes
  • Wear and Tear
• BMI
• Genetics
• Occupational stress
• Baby Boomers

• Multifactorial

NO CURE!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
Osteoarthritis Disease Progression

- Progression of knee joint disease
  - Early-stage: Mild disease
    - Sports related injuries
    - Minor defects/ loss of cartilage
  - Mid-stage: Moderate disease
    - Increased pain
    - Reduced mobility
    - Changes to lifestyle/sports activities
    - Partial knee disease: single or bi-compartmental
  - Late-stage: Severe disease
    - Leading cause of disability
    - Severe pain
    - Walking, stair climbing challenging
    - Total knee disease
Treatment Options

Conservative

Surgical

Understand the Risks. See the Benefits.
Watch the new CELEBREX (celecoxib capsules) advertisement to Learn more.
Treatment Options

- Medications
- Activity Modification
- PT
  - Stretching
  - Strengthening
- Injections
Medications

- **Oral NSAIDS and analgesics**
  - Advil, Aleve, Celebrex, Tylenol and “Drugs”
- **Topical Agents**
  - Creams and Gels
Injections: Cortisone vs. Viscosupplementation
Arthroscopic Surgery

Outpatient
Crutches 1 day:  
  WBAT
Immediate PT
Walking Comfortably  
at 1 week
Sports at 6 weeks
Surgery

Arthroscopic Surgery

• My favorite type of surgery! I spent an extra year of training
• Small Incisions
• Quick Recovery
• No Hospitalization
• Back to Golf Like Tiger

Guess What?
• It doesn’t work for knee arthritis!

• What NOW?
What is Sports Medicine?

- Let’s take an injured athlete and get “em” back in the game!
- Let’s train them with pre and post-operative therapy
- Let’s do the least invasive techniques
- Let’s recreate the anatomy to make the knee work
- Let’s make it simple, easily attainable and effective
Surgical Treatment Options

Total Knee Arthroplasty (TKA) is considered the Gold Standard for osteoarthritis affecting the total knee.
- Proven long term survivorship 90% out 15 years
- One of the most successful procedures in orthopedic medicine

Limitations
- Highly invasive surgery
- Requires extensive rehabilitation
- Addresses late stage osteoarthritis (OA)
- Removes healthy cartilage and tissue
- Duke University study survey reports 88-92% of women and men respectively decline hip and knee total arthroplasty when offered*

Big Daddy: Knee Replacement

**Big Surgery**

- Hospitalization
- Inpatient Rehab
- Home
- Revisions
Total Knee Replacement

Are you crazy?
• Big Incision
• Long Hospitalization
• Long Recovery

Is there anything else?

Partial Knee Replacement.....it is a Sports Medicine Procedure
Partial Knee Replacement

- Small Incision
- Easier Recovery
- Less Pain
- Less Surgery
- Less Hospital Stay
- Less Blood Loss
- Easier Rehab
Partial Knee Replacement

*Will Not Work if Arthritis is Severe*
Regular Partial Knee Replacement vs MAKO

- Small Incision
- Less bone destruction
- Precise Anatomical Reconstruction due to Robotics
- Potentially longer survival rates
Treatment Gap For Early to Mid-Stage OA

- Early Stage Sports Injuries
- Early to mid-stage OA
- Late stage OA

- "MIS" Arthroscopy
- Partial Knee Arthroplasty (PKA)
- Total Knee Arthroplasty (TKA)

Treatment Gap
Only Small Number of Manual Surgeries
Treatment Gap for Early to Mid-Stage OA

- More than 600,000 total knee procedures in the United States in 2007.

- Less than 50,000 partial knee procedures in the United States in 2007.

- Partial knee outcomes have been shown to be dependent on implant positioning and alignment. This is challenging with a manual technique.

Source: Datamonitor 2004
MAKOplasty® New Treatment for Early to Mid-Stage OA

Early Stage Sports Injuries

“MIS” Arthroscopy

Early to mid-stage OA

MAKOplasty®
Partial Knee Resurfacing

Late stage OA

Total Knee Arthroplasty
What is MAKOplasty®?

The MAKOplasty® procedure is an innovative treatment option for patients who suffer from early to mid-stage osteoarthritis of the knee.

It can be performed on the medial (inner) portion of the knee, the patellofemoral (top), and the lateral (outer) portion of the knee. It can also be performed as a bicompartamental procedure on both the medial and patellofemoral portions of the knee.

Unicompartmental MAKOplasty®

Bicompartamental MAKOplasty®
Potential Benefits of MAKOplasty®

- Performed through a smaller incision than that required for traditional total knee replacement surgery.
- Only the arthritic portion of the knee is removed, preserving healthy bone and tissue.
- Implants are optimally positioned in the knee joint to allow the knee to move smoothly again.
  - Improved surgical outcomes
  - Less implant wear and loosening
  - Bone sparing
  - Smaller incision
  - Less scarring
  - Reduced blood loss
  - Minimal hospitalization
  - Rapid recovery
  - Less invasive surgery for a more natural feeling knee

* Individual results may vary. There are risks associated with any knee surgical procedure, including MAKOplasty®. Your physician can explain these risks and help determine if MAKOplasty® is right for you.
MAKOplasty® is Enabled by the RIO® Robotic Arm Interactive Orthopedic System
RIO® Enables Consistently Reproducible Precision

RIO® assists the surgeon in achieving natural knee motion and optimal results at a level of precision previously unattainable with conventional instrumentation, providing:

• Pre-operative planning
• Intra-operative guidance
• Surgeon-interactive robotic arm
MAKOplasty® Partial Knee Resurfacing

Utilizes surgeon-interactive robotic arm technology
Brings the advantages of minimally invasive partial knee resurfacing to a broader patient population by providing consistently reproducible precision
Pre-surgical plans are created using CT scan data for precise pre-operative planning of implant size, orientation and placement
Surgeon interactive robotic arm guides the surgeon through each well-defined surgical plan
Integrity of implants are based on clinical designs that preserve critical tissue and bone stock for improved outcomes
Peri-operative Protocol Facilitates Optimal Outcome

**Pre-operative Case Management**
- Patient education provides a comprehensive overview about the procedure, what to expect during recovery and realistic outcome
- Pre-emptive analgesia decreases inflammation, reduces pain and promotes rapid recovery
- Pre-emptive anti-emetics block histamine and serotonin receptors and prepare GI tract for anesthesia

**Intra-operative Case Management**
- Minimize trauma to quadriceps mechanism and the suprapatellar pouch with attention to tourniquet pressure
- Prevention and treatment of pain, nausea and hypovolemia

**Post-operative Case Management**
- Motion of the knee joint is encouraged soon after surgery to facilitate accelerated recovery
- Activities include walking as much as possible and performing specific range of motion exercises
  - Straight leg raises and quad sets
  - Range of motion exercises 3x a day with an emphasis on reaching the extents of knee flexion and extension

*Perioperative Management of Unicompartmental Knee Arthroplasty Using the MAKO Robotic Arm System (MAKOplasty®) Andrew D. Pearle, MD, Daniel Kendoff, MD, PhD, Volker Stueber, MS, Volker Musahl, MD, and John A. Repicci, MD Supplement to The American Journal of Orthopedics® Vol. XXXVIII Number 2S 2/09*
Who would be a good candidate for the MAKOplasty® procedure?

Although the best treatment for each patient must be determined individually, typical MAKOplasty® patients share the following characteristics:

- Knee pain with activity, on the inner knee, under the knee cap or the outer knee
- Start up knee pain or stiffness when activities are initiated from a sitting position
- Failure to respond to non-surgical treatment such as rest, weight loss, physical therapy and non-steroidal anti-inflammatory medication
How long can I expect the implant used in a MAKOplasty® procedure to last?

All implants have a limited life expectancy that depends on several factors including a patient’s weight, activity level, quality of bone stock and compliance with the doctor’s orders. However, alignment and positioning are also very important factors affecting the life expectancy of an implant. The goal of the MAKOplasty® procedure is to achieve the absolute best alignment and positioning for your implant to help it last as long as possible.
Common Questions

What are the benefits of this new technology?

Results have shown that the MAKOplasty® procedure potentially allows patients to experience a shorter hospital stay, minimal blood loss, quicker rehabilitation and a smaller scar.

In addition, many MAKOplasty® patients are able to return to an active lifestyle within weeks of the procedure.
MAKOplasty® Patient Testimonials

“The pain was keeping me from walking ... I couldn't walk but from one room to the next. This is such a pleasure to have had this surgery and recuperation was so speedy!”

-Marjorie Moon, MAKOplasty® patient

“My physical therapist says she has never seen such rapid muscle response. I was recently able to walk three miles and that included some hills. I had no difficulty with the knee.”

- Dr. David Lubin, MAKOplasty® patient
"Sometimes when I am walking, it feels so comfortable that I have to stop and think which knee has an implant. I'm now able to go up and down steps without holding on to the railing totally pain-free. I no longer feel limited or cautious because of my knee pain and discomfort. Now, I can do just about anything and everything I want - all physical activities except running."

- Dr. Harvey Saff, MAKOplasty® patient
MAKOplasty® Partial Knee Resurfacing
X-Ray Images:

Unicompartmental MAKOplasty® - Medial

Bicompartmental MAKOplasty®
Why Good Samaritan Hospital?

- Chief of Orthopaedic Surgery: I am excited!
- Commitment to Center of Excellence for Knee Surgery
- Only Robotic Knee Surgery in Palm Beach County
- State-of-the-art Operating Rooms
- Multi-million dollar renovation for patient rooms
- CEO, Administration, Nurses, PT staff say YES!!!!!!!!
Contact Info

Palm Beach Orthopaedic Institute

www.pboi.com

Appointments
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Thank you!

Are you a candidate?
Are you Ready?

Dig Deeper and Make it Happen