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# Uni-Compartment Knee Replacement

This is a general information packet for patients undergoing unicondylar knee replacement. Osteoarthritis (OA) is a degenerative disease of joints caused by a breakdown and eventual loss of articular cartilage. Articular cartilage lines the bony joint surfaces and allows the joint to move in a near frictionless environment. There are many reasons for cartilage loss including, wear, trauma and genetics. Once the knee joint cartilage is worn away, patients start to experience pain, stiffness and loss of function. The knee joint may assume an altered alignment such as a bowlegged or knock-kneed position.


The knee joint is made up of three compartments consisting of the outside (lateral), inside (medial) and the knee cap (patella femoral). Only one of the three compartments may experience ostoarthritic changes. The degenerative condition may spare the other knee areas leaving good working cartilage. A Unicondylar (one condyle) knee replacement is ideal when only 1 portion of the knee joint needs to be replaced. Often this surgery can relieve the pain of regional osteoarthritis and maintain a pain free knee for an extended period. In the event that the knee develops multiple compartment osteoarthritis a total knee replacement can be utilized even after undergoing unicondylar replacement surgery

There are many advantages of a unicondylar replacement over a total knee replacement. See table one for a list of these benefits. Unicondylar replacement does not prevent osteoarthritis from forming in the remainder of the knee and a future knee replacement is often required.

| Table 1. Benefits of unicondylar replacement over traditional knee replacement: |
|---|
| Smaller incision |
| Decreased blood loss (no blood donation needed) |
| Quicker return to activity/ work |
| Reduced hospitalization (1-2 days) |
| Less Post-op discomfort |

As with any surgical procedure, there are risks to unicondylar knee replacement. These risks include but are not limited to infection, blood clot (DVT), bleeding, and nerve injury.

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**Pre-Surgery:**

Before surgery, patients are instructed to continue to be as active as the knee permits. The following are specific instructions leading up to unicondylar knee replacement surgery.

- Anti-inflammatory such as ibuprofen or aspirin must be stopped 10 days prior to surgery. Utilize ice and elevation and Tylenol to control pain and swelling during this period
- On the night before surgery, do not eat after midnight (no chewing gum or lozenges)
- On the morning of surgery you may take your daily pills with a sip of water
- Your surgery time will be confirmed the day before
- Please see general surgical guidelines on Dr. Nelson's website for further information.

**Post-Surgery:**

After the surgery is completed, you will awaken in the operating room and be moved to the recovery area. Once in recovery, you will meet a nurse who will take care of you prior to transfer to either home or the the hospital unit (2 hours later). If you are staying overnight, expect to stay in the hospital for 1 day.

**Pain Control:**
—Femoral Nerve Block: Upon your consent, a femoralnerve block will be provided by an Anesthesiologist for pain control. This consists of an injection of Marcaine (like Novacaine) into the region around the femoral nerve and may decrease leg pain for up to 12 hours, many cases this is unnessecary but may help with your pain postoperatively.
—Oral pain medicine: Oral pain medicine will be provided to control your pain. A pain medication prescription will be provided to you prior to discharge. You may take the prescribed medication as directed. You should expect to experience minimal to moderate knee discomfort for several days and even weeks following the surgery. Patients often only need prescription narcotics for a few weeks following surgery and can then switch to over-the-counter medications such as Tylenol or Ibuprofen. Dr. Nelson will not prescribe oral narcotics for more than 6 weeks following surgery.Ice should be used to reduce pain and swelling. In general apply ice for 20 minutes every 2 -3 hours during the initial postoperative period.

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**Physical Therapy:**
You will receive PT prior to discharge from the hospital. PT will work on ambulation, functional mobility and leg exercises. You should be comfortable walking independently with crutches before leaving the hospital. You will be able to put as much weight as tolerated on your knee. You should participate in the home exercise program provided in this packet and the program made by your hospital physical therapist until your post-op appointment were outpatient physical therapy will be initiated.

**General information:**

- If the bandage is draining, reinforce it with additional dressings for the first 48 hours. After 48 hours remove the bandage leave the aquacel in place. Showering is acceptable at this time. Do not submerge or scrub the knee.
- Skin numbness often occurs around the incision (most common on outside of knee). This usually returns but may be permanent
- You may shower on post up day one. Keep incision covered when showering for up to two days post-op. Do not wet wound until it is completely dry (non-draining).
- Take one 325 mg (full strength) aspirin in the morning and one at night daily for 6 weeks (unless otherwise instructed) to prevent blood clots.
- Eat a regular diet as tolerated and please drink plenty of fluids.
- First post-op appointment is 2 weeks after the surgery. Please call the office if you have any problems or questions.
- You may drive once you establish full control of your extremity (able to perform a straight leg raise, etc.). If your right knee was
  operated on, this may take several days or even weeks
- Call office for Temperature >102 degrees, excessive swelling, pain or redness around the incision sites.
- Maximal improvement from surgery can be up to a year; typically patients are extremely mobile at 6-8 weeks.
- Golf and skiing can start after 8-10 weeks
- Plan at least 2 weeks away from work (sedentary job) or school. Utilize this time to decrease swelling and participate in your home exercise program. You may resume work once the pain and swelling resolves (this varies based on job activity).

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# Phase I – Immediate Post Surgical Phase (Day 0-3):

The goal of physical therapy intervention during the early post-operative phase is to decrease swelling, increase range of motion, enhance muscle control and strength in the involved lower extremity and maximize patients' mobility with a goal of functional independence. Physical therapy interventions are also directed towards identifying other sensomotor or systemic conditions that may influence a patients' rehabilitation potential.

Goals:

The patient will:

1. Perform bed mobility and transfers with the least amount of assistance while maintaining appropriate precautions.
2. Ambulate with an assistive device for 25-100 feet and ascend/descend stairs to allow for independence with household activities while maintaining appropriate WB.
3. Regain at least 80 degrees of passive and active range of motion in the knee to perform sit to stand transfers with minimal compensatory activity.
4. Gain knee extension less than or equal to -10 degrees.
5. Independently perform operative extremity Straight Leg Raise (SLR) exercise.
6. Verbalize understanding of post-operative activity recommendations/precautions including use of proper positioning of the lower extremity, range of motion and strengthening exercises.
7. Patients will also be educated on superficial massage of the knee joint to minimize hypersensitivity following surgery.

**Observation and Assessment:**

**• Observe for any signs of deep vein thrombosis (DVT): increased swelling, erythema, calf pain.**

- If a large amount of drainage is present, or there is blistering or frail skin around the knee joint or the lower extremities, discuss with the nurse and decide if notifying the surgical team is indicated.
- Assess patients' pain using the visual analogue scale. Ensure that patients are premedicated with oral/IV pain medication 30-60 minutes prior to treatment. Cryotherapy is recommended following physical therapy treatment to reduce pain, discomfort and swelling in the knee joint.

**Therapeutic exercise and functional mobility:**

- Active/active assisted/passive (A/AA/PROM) exercises (seated and supine).
- Patella femoral and tibial femoral joint mobilization and soft tissue mobilization as indicated.
- Soft tissue massage not over incision ever! Sutures dissolve on their own and don't need help.
- Isometric quadriceps, hamstring, and gluteal isometric exercises.

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- Straight leg raises (SLR)
- Lower extremity range of motion (ROM) and strengthening as indicated based on evaluation findings.
- Closed chain exercises (if patient demonstrates good pain control, muscle strength and balance). Close-chained exercises should be performed with bilateral upper extremity support while maintaining appropriate WB precautions.
- Gait training on flat surfaces and on stairs.
- Transfer training.

Modalities:

- Continuous Cryotherapy for 72 hours after surgery, or at least 5 times/day.
- Patients are encouraged to use cryotherapy for 20 minutes before and after their independent exercise program.

Precautions:

- Weight bearing as tolerated (WBAT) with assistive device (unless indicated otherwise by the surgeon) to full weight bearing.
- Monitor wound healing and consult Dr. Nelson if signs and symptoms of excessive bleeding and poor incision integrity are present.
- Monitor for signs of DVT, pulmonary embolism (PE), and/or loss of peripheral nerve integrity. In these cases, notify Dr. Nelson or his team immediately.
- No exercises with weights or resistance.
- Avoid torque or twisting forces across the knee joint especially when WB on involved limb.

Positioning:

- A trochanter roll may be used as needed to maintain neutral hip rotation and promote knee extension.
- A towel roll should be placed at the ankle to promote knee extension when patients are supine in bed. **Extension is the most important at this stage!**
- Nothing should be placed behind the operative knee, to promote maximal knee extension and prevent knee flexion contracture.

*Criteria for progression to the next phase:*

- Ability to demonstrate Quadriceps contraction and/or perform a straight leg raise (SLR)
- Active knee range of motion (AROM) 0°-80°
- Minimal pain and inflammation
- Independent transfers and ambulation at least 100 feet with appropriate assistive device.

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# Phase II – Motion Phase (Day 3 – Week 6)

**Goals:**

- Improve knee active range of motion (AROM) to >/= 0-110 degrees
- Muscle strengthening of the entire operative extremity with emphasis on knee extensor and flexor muscle groups.
- Attention should also be directed toward any weakness present in the operative extremity as well as, any generalized weakness in the upper extremities, trunk or contralateral lower extremity.
- Proprioceptive training to improve body/spatial awareness of the operative extremity in functional activities.
- Endurance training to increase cardiovascular fitness.
- Functional training to promote independence in activities of daily living and mobility.
- Gait training: Assistive devices are discontinued when the patient demonstrates adequate lower extremity strength and balance during functional activities (usually 1-4 weeks)
- Decrease inflammation/swelling
- Return to functional activities

**Therapeutic Exercises:**

**Weeks 1-4**

- AA/A/PROM, stretching for flexion (>90 degrees) and extension
- Stationary Bicycle for ROM, begin with partial revolutions then progress as tolerated to full revolutions (no resistance).
- Patella femoral and tibial femoral joint mobilization as indicated.
- Continue isometric quadriceps, hamstring, and gluteal isometric exercises
- Supine heel slides and seated Long Arc Quad (LAQ)
- SLR in 4 planes (flexion, abduction, adduction, extension)
- Neuromuscular electrical stimulation (NMES) for quads if poor quad contraction is present. NMES parameters to be set based on goal of exercise/activity. See neuromuscular electrical stimulation procedural standard of care for specific details.)
- Gait training to improve function and quality of involved limb performance during swing through and stance phase. Patients are encouraged to wean off their assistive device at the latest by the end of second week from surgery.
- Postural cues/ reeducation during all functional activities as indicated.

**Weeks 4-6**

- Continue above exercises
- Continue patella femoral and tibial femoral joint mobilization as indicated.

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- Continue NMES of quads if poor muscular performance of quad is present. May progress NMES use from isometric quad activity to isotonic and functional activity
- Front and lateral step up and step down.
- 1/4 front lunge.
- Use sit to stand and chair exercises to increase knee flexion during functional tasks.
- Continue stationary bicycle for ROM
- Begin pool program if incision is completely healed if available.

*Note: Exercises with resistance may be initiated *as tolerated* for operative extremity after goals for the first phase have been met, and the patient has met criteria for progression to the next phase.

Modalities:
- Cryotherapy 1-3x/day for swelling and pain management.
- Other modalities at the discretion of the therapist based on clinical findings.

Precautions:
- WBAT with assistive device as needed to minimize compensatory gait. Patient may be encouraged to use a straight cane within one week of surgery if he/she is WBAT to FWB. Patients may be weaned from assistive device by 2 weeks if they did not use an assistive device preoperatively and post-operative muscle performance is adequate for weight acceptance.
- Monitor wound healing and consult with referring MD if signs and symptoms of infection are present.
- Monitor for increased edema and continue with cryotherapy as needed.

*Criteria for progression to the next phase:*
- AROM 0-110’
- Good voluntary quadriceps control
- Independent ambulation community distances (>/= 800 feet), without assistive device, deviations or antalgia
- Minimal pain and inflammation

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**Phase III – Intermediate phase (week 6-8):**

Goals:

- Maximize post-operative ROM (0-115 degrees plus)
- Good patella femoral mobility.
- Good strength all lower extremity musculature.
- Return to most functional activities and begin light recreational activities (i.e. walking, pool program)

Therapeutic Exercises:

- Continue exercises listed in Phase II with progression including resistance and repetitions. It is recommended to assess hip/knee and trunk stability at this time and provide patients with open/closed chain activities that are appropriate for each patient's individual needs.
- Continue patella femoral and tibial femoral joint mobilization as indicated.
- Initiate endurance program, walking and/or pool.
- Initiate and progress age-appropriate balance and proprioception exercises.
- Discontinue NMES of quads when appropriate quad activity is present.

*Criteria for progression to next phase:*

- AROM without pain, or plateaued AROM based on preoperative ROM status.
- 4+/5 muscular performance based on MMT of all lower extremity musculature.
- Minimal to no pain or swelling.

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**Phase IV – Advanced strengthening and higher level function stage (week 8-12):**

Goals:
- Return to appropriate recreational sports / activities as indicated
- Enhance strength, endurance and proprioception as needed for activities of daily living and recreational activities

Therapeutic Exercises:
- Continue previous exercises with progression of resistance and repetitions.
- Increased duration of endurance activities.
- Initiate return to specific recreational activity: golf, doubles tennis, progressive walking or biking program.

**Criteria for Discharge:**

(These are general guidelines as patients may progress differently depending on previous level of function and individual goals.)
- Non-antalgic, independent gait
- Independent step over step stair climbing
- Pain-free AROM
- At least 4+/5 muscular performance based on MMT of all lower extremity musculature.
- Normal, age appropriate balance and proprioception.
- Patient is independent with home exercise program.

# Dr. Nelson's Uni Knee arthroplasty Rehabilitation Protocol

**Diagnosis:**

**Procedure date:**

| | WEEK | | | | | | | | | | | MONTH | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | | 3 | 4 | 5 | 6 |
| ***PHASE 1 EXERCISES*** | | | | | | | | | | | | | | | |
| Extension/Flexion sitting and supine | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | ● | ● | ● | ● |
| Quad sets with straight Leg Raises | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | |
| Hamstring sets | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | |
| Patella Mobs/Quad patellar Tendon | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | |
| Wall slides | | | | | ● | ● | ● | ● | ● | ● | | | | | |
| Toe and Heel Raises | | | ● | ● | ● | ● | ● | ● | ● | ● | | ● | ● | ● | ● |
| Heel Props | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | | | | | |
| Step up/downs | | | | ● | ● | ● | ● | ● | ● | ● | | | | | |
| Sit to stand squat | | | | ● | ● | ● | ● | ● | ● | ● | | | | | |
| ***MUSCLE STRETCHES*** | | | | | | | | | | | | | | | |
| Sit and Reach for Hamstrings | | | ● | ● | ● | ● | ● | ● | ● | ● | | ● | ● | ● | ● |
| Lying Rectus | | | ● | ● | ● | ● | ● | ● | ● | ● | | ● | ● | ● | ● |
| Stork Stand for Quadriceps | | | | | | ● | ● | ● | ● | ● | | ● | ● | ● | ● |
| Runners stretch for calf and achilles | | | ● | ● | ● | ● | ● | ● | ● | ● | | ● | ● | ● | ● |
| ***CARDIOVASCULAR EXERCISES*** | | | | | | | | | | | | | | | |
| Bike with Both Legs | | | ● | ● | ● | ● | ● | ● | ● | ● | | ● | ● | ● | ● |
| Aquajogging | | | | | | ● | ● | ● | ● | ● | | ● | ● | ● | ● |
| Swimming | | | | | | | | | | | | ● | ● | ● | ● |
| Eliptical trainer | | | | | | | | | ● | ● | | ● | ● | ● | ● |
| Rowing | | | | | | | | ● | ● | ● | | ● | ● | ● | ● |
| Stair Stepper | | | | | | | | | | ● | | ● | ● | ● | ● |
| Treadmill | | | | | | | | | | ● | | ● | ● | ● | ● |
| ***PHASE 2 SPORT CORD EXERCISES*** | | | | | | | | | | | | | | | |
| Double Knee Bends (Knee not over foot) | | | | | | | ● | ● | ● | ● | | ● | ● | ● | ● |
| Carpet Drags | | | | | | | ● | ● | ● | ● | | ● | ● | ● | ● |
| Forward Backward Jogging | | | | | | | | | | ● | | ● | ● | ● | ● |
| Side to side agilities | | | | | | | | | | ● | | ● | ● | ● | ● |
| ***PHASE 3 WEIGHTS*** | | | | | | | | | | | | | | | |
| Leg press down to 90 degrees | | | | ● | ● | ● | ● | ● | ● | ● | | ● | ● | ● | ● |
| Leg Curls | | | | ● | ● | ● | ● | ● | ● | ● | | ● | ● | ● | ● |
| Ab/Adduction | | | | ● | ● | ● | ● | ● | ● | ● | | ● | ● | ● | ● |
| Balance squats | | | | | | | ● | ● | ● | ● | | ● | ● | ● | ● |
| Knee Extension Pain free Arc | | | | ● | ● | ● | ● | ● | ● | ● | | ● | ● | ● | ● |
| NO LUNGES | | | | | | | | | | | | | | | |
| ***PHASE 4 HIGH LEVEL EXERCISES*** | | | | | | | | | | | | | | | |
| Biking Outdoors | | | | | | | | | ● | ● | | ● | ● | ● | ● |
| Rollerblading | | | | | | | | | | | | | ● | ● | ● |
| Running | | | | | | | | | | | | ● | ● | ● | ● |
| Skiing,basketball,Tennis,football,soccer | | | | | | | | | | | | | ● | ● | ● |
| Golf | | | | | | | | | ● | ● | | ● | ● | ● | ● |
| Agility Exercises | | | | | | | | | | | | | ● | ● | ● |
| Trail Riding | | | | | | | | | | | | ● | ● | ● | ● |

## Additional Instructions:

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