THE ANTERIOR CRUCIATE LIGAMENT

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- Anatomy
- Incidence
- Surgery
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- Prevention

ANATOMY OF THE ACL

- Femoral condyle
- Intercondylar notch
- Femur
- Fibula
- Tibia
- ACL
- Anteromedial bundle: Smaller, tight in flexion
- Posterolateral bundle: Larger, tight in extension

MECHANISM OF INJURY

- 50-70% are noncontact injuries
- Incidence is higher in men than women
- Certain sports have higher rates for women

INCIDENCE OF ACL TEARS

- Rate is 1.5-4.6 times higher for females than males
- MEASURES OF INJURY
  1. Intercondylar notch size
  2. Pelvis size
  3. Ligament laxity
  4. Reflex time
  5. Hormones

MALES VS FEMALES

- Women typically have a wider pelvis
- Women’s ligaments can be more lax than men’s ligaments
- Women’s muscle tissue is more elastic than men’s tissue
- Women’s muscles stabilizing the knee may take a millisecond longer to respond than men’s
- Changes in estrogen levels during the menstrual cycle may affect the strength of the ACL

MECHANISM OF INJURY

- These usually involve planting, cutting and jumping, such as a sudden stop on an extended knee
- This also commonly involves a combination of foot weight and malalignment of body position, such as landing with a knee on toes

PREVENTION

- Pelvis size
- Reflex time
- Hormones

ANATOMY OF THE ACL

- Meniscal tears
- Femoral condyle
- ACL
- Tibial plateau
- Anteromedial bundle
- Posterolateral bundle
- Femur
- Tibia
- Fibula
- Knee joint
- Meniscus
- Patella

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ACL INTERNAL BRACE

It has been shown that the ACL graft can take 12-18 months to fully mature. Using something to protect the graft during this time period would be very advantageous.

The internal brace is a small tape made of braided polyethylene that runs alongside the graft and protects the graft during the healing phase. This has been shown in several different ligament reconstructions and repairs to be non reactive and to have a potential biomechanical improvement to graft healing.

POST OP ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION INSTRUCTIONS

1. Wear the brace locked in extension when walking but try and stop using the crutches
2. Goal of the first week is to have knee go to full extension.
3. Start isometric quadriceps strengthening doing 4 sets of 20 several times/day
4. Goal at the end of two weeks is to bend the knee to 110 degrees (90 degrees if there was a meniscal repair)
5. 2nd goal is to be able to do a straight leg raise with knee in full extension without the brace. If this is possible at the end of two weeks the brace can be discontinued.
6. Start stationary bike and progress to closed chain quadriceps strengthening
7. Start jogging if effusion free.
8. May start jogging if effusion free.
9. If you have been jogging for 1 month and effusion free strength testing may be performed for return to sports.
10. May start plyometric ACL prevention program

WHY HAMSTRING OVER PATELLAR TENDON GRAFT:

1. Less risk of pain with kneeling
2. Smaller scar
3. Less post-operative pain
4. Less risk of osteoarthritis in long term follow up

Hamstring All Inside ACL Reconstruction

1. Tunnels need only to be drilled partially through bone
2. Harvest only one hamstring tendon with greater hamstring strength post operatively

POST-OPERATIVE ACL REHABILITATION:

1st Week:
- Wear the brace locked in extension when walking
- Start flexion exercises
- Follow up the day after surgery for a dressing change
- Flexion exercises (knee bending) may be started and performed 3x/day using the other leg for support
- Flexion should not exceed 90 degrees if the meniscus was repaired for the first two months.
- Do isometric quadriceps strengthening exercises daily, doing 4 sets of twenty repetitions and make sure your knee goes completely straight while performing these exercises

2nd Week:
- 1. Good of the first week is to have knee go to full extension.
- 2. Start stationary bike and progress to closed chain quadriceps strengthening
- 1. May start jogging if effusion free.

3rd Week:
- 1. If you have been jogging for 3 months and have no knee pain strength testing may be performed for return to sports.
- 2. May start plyometric ACL prevention program

2-3 Months:
- 1. Good of the first week is to have knee go to full extension.
- 2. 2nd good is to be able to do a straight leg raise with knee in full extension
- 3. If you have been jogging for 3 months strength testing may be performed for return to sports.

3rd Month:
- 1. Start jogging if no knee pain
- 2. May start plyometric ACL prevention program

4 months+
- 1. Wear the brace locked in 120 degrees and 90 degrees if effusion free
- 2. Start stationary bike and progress to closed chain quadriceps strengthening
- 3. May start plyometric ACL prevention program

1. Pain medication may be prescribed. If your pain does not require a narcotic pain medication take Tylenol (as long as you do not have a history of Tylenol allergy or medical problem where Tylenol is contraindicated, i.e.: Liver disease)
2. Pain medication may be constipating. If you are prone to this you may take an over the counter stool softener such as Senokot
3. Pain medication will be prescribed in one week.
4. NSAID
5. Follow up the day after surgery for a dressing change
6. The knee should be iced ½ hr on and ½ hr off through out the first day and at least 3x/day after the first initial post-operative day.
7. If you have a cryocuff (ice machine), this can be used continuously for the first day until 11pm and then ½hr on and off after 11pm if you awaken with pain. After the first day this should be used on ½hr on and ½ hr off at least 3x/day.
8. Always place a or small towel or the ace wrap between your skin and the cryocuff.
9. Thrombosis is usually expected to be 4 months after surgery
10. THERAPY

THERAPY

Therapy is usually expected to be started the first week after surgery

CRYOCUFF

If you have a cryocuff (ice machine), this can be used continuously for the first day until 11pm and then ½hr on and off after 11pm if you awaken with pain. After the first day this should be used on ½hr on and ½ hr off at least 3x/day.

POST-OPERATIVE ACL REHABILITATION:

1. Wear the brace locked in extension when walking but try and stop using the crutches
2. Goal of the first week is to have knee go to full extension.
3. Start isometric quadriceps strengthening doing 4 sets of twenty several times/day

1. The knee should be locked in 120 degrees and 90 degrees if effusion free
2. Start stationary bike and progress to closed chain quadriceps strengthening
3. May start jogging if effusion free