ACL Updates

Doron Sher
MBBS MBiomedE FRACS(Orth)
Knee, Shoulder and Elbow Surgeon
What’s New in ACL Reconstruction?

- History
- Examination
- Investigations
- Graft Placement
- Graft Choice
- Rehabilitation
Routine Imaging

- Weight Bearing AP
- Lateral
- Notch View
- Skyline Patella
MRI

Sagittal

Coronal
Bone bruising from dislocation
Segond Fracture
Graft Placement – Lots New

• Over the top  NO
• 1 or 11 O’clock  NO
• Trans tibial drilling  NO
• Vertical grafts  NO

Tight in extension with negative Lachmann and good KT scores / IKDC scores BUT not ideal rotational stability
Graft Anatomy

• Vertical graft does not recreate PL bundle
  – PL bundle resists tibial IR near full-knee extension

• “Anatomic” reconstructions better reproduce the PL bundle
Graft Placement – why do we need something new?

• 2-8% of pts not happy
• Negative Lachmann but ongoing functional instability
• Pivot shift remains positive despite an excellent operation
Using the anatomical footprint makes sense but…
It has lead to higher re-rupture rates in professional soccer players
Pivot shift after surgery

• Poorer patient-reported outcomes after ACL reconstruction
• Can happen without failure of the ACL
• In some patients an intra-articular reconstruction is not sufficient to completely restore rotational knee stability
Evolution of tunnel position

1. Open Surgery
2. OTT
3. Early DB
4. Current Double Bundle

Current Single Bundle
What does the Segond fracture signify?
Anterolateral Ligament

- Originates from the LFC, just anterior to the popliteus tendon
- Inserts on the anterolateral tibial plateau
- Tibial insertion posterior to the posterior border of Gerdy’s tubercle
Anterolateral Ligament

- The anterolateral ligamentous structures of the knee are under significant load when the lateral tibia is translated anteriorly and could act as a secondary restraint, supplementing the primary role of the ACL in preventing tibial rotation and anterior translation.
Anterolateral Ligament Injury
Lateral extra-articular tenodesis

• Goal: to diminish tibial internal rotation and anterior translation of the lateral tibia.
Lateral Reconstruction

• The longer lever arm = more efficient control of tibial rotation
• Rotational laxity controlled even if intra-articular graft fails
• Decreases stress on intra-articular reconstruction by more than 40%
Anterolateral Ligament Reconstruction

• Not usually done as a primary procedure
• Indicated in revisions where the operation was done well the first time
Contraindication

• The presence of a PL corner injury
  – The tenodesis may tether the tibia in a PL subluxed position.
Surgical Technique
Graft Sources

• LARS going out of favour
  – Was trendy and advertised in the media
  – Results not as good as promised
  – High number of revisions
  – Still not sure if it will destroy the knee

• Based on historical failures (Kennedy LAD etc) I have never done one
Graft Sources

- BTB being used more often
- Quads Tendon with bone a good option
- Allograft
  - Very high failure rate <25 years old
Rehabilitation

- FIFA 11
- PEP
- Reducing re injury rates from 10% to 1%
The Programme

• Part 1: Running exercises at a slow speed combined with active stretching and controlled partner contacts

• Part 2: Six set of exercises, focusing on core and legs strength, balance, and plyometrics/agility, each with three levels of increasing difficulty

• Part 3: Running exercises at moderate/high speed combined with planting/cutting movements.
PEP Program: Prevent injury and Enhance Performance

Field Set-Up

Area #5 Agilities
Shuttle Run / Diagonal Run

Area #2 – Stretching
Lunges, HS, Toe raise

Area #3 – Strength
Lunges, HS, Toe raise

Area #4 – Plyometrics
Side-to-side / Forward and Backward Hops

Area #1 – Warm-Up
Jog, Shuttle run, Backward run

Note: Set-up one half of the field with cones 10 minutes prior to practice. This will allow for a smooth transition between exercises.
The “11+” has three parts with a total of 15 exercises, which should be performed in the specified sequence at the start of each training session.

**Part 1:** running exercises at a slow speed combined with active stretching and controlled partner contacts.

**Part 2:** six sets of exercises focusing on core and leg strength, balance and proprioceptors/agility, each with three levels of increasing difficulty, and

**Part 3:** running exercises at moderate/high speed combined with planting/cutting movements.

A key point in the programme is to use the proper technique during all of the exercises. Pay full attention to correct posture and good body control, including straight leg alignment, knee-over-toe position and soft landings.
4 RUNNING CIRCLING PARTNER

Jog forwards to the first cone. Shuffle sideways at a 90-degree angle towards your partner, shuffle an entire circle around one another (without changing the direction you are looking in) and back to the first cone. Jog to the next cone and repeat the exercise. When you have finished the course, jog back.

Do the exercise twice.

Important when performing the exercise:

1. Bend your hips and knees slightly and carry your body weight on the balls of your feet.
2. Do not let your knees buckle inwards.

CORRECT

WRONG
11.2 SQUATS WALKING LUNGES

This exercise strengthens your hamstring and gluteal muscles and improves your movement control.

**Assume the starting position**, standing with both feet hip-width apart on the ground and your hands on your hips.

**During this exercise**, lunge forwards slowly at an even pace. As you lunge, bend your hips and knees slowly until your leading knee is flexed to 90 degrees. The bent knee should not extend beyond your toes. Keep your upper body straight and your pelvis horizontal. Do 10 lunges on each leg.

**Repetitions**: 2 sets (10 lunges on each side)

**Important when performing the exercise:**

1. Bend your leading knee to 90 degrees.
2. Keep your upper body upright.
4. Your bent knee should not extend beyond your toes.
5. Do not let your leading knee buckle inwards.
6. Do not bend your upper body forwards.
7. Do not twist or tilt your pelvis to the side.

**CORRECT**

**WRONG**
Summary

• Common injury
• Current operation works very well
• New operations need to be monitored very closely
• Rehab improving
Thank you

[Cartoon of a toothbrush and a roll of toilet paper. The toothbrush says, "Sometimes I feel that I have the worst job in the world!" The roll of toilet paper responds, "Ya, right!".]