Knee Prolotherapy

Wayne A. Feister, DO
Knee Anatomy

Largest joint of body

Strong ligamentous support

Susceptible to muscular imbalance

Surface Anatomy
Intra-articular Injection

Locate the lateral “sweet spot”

Right Knee
**Surface Anatomy**

**Intra-articular Injection**

Mark the lateral “sweet spot” with ink--dark & wide--to prevent removal by the antiseptic solution.

Right Knee
Surface Anatomy
Intra-articular Injection

Marking the lateral “sweet spot”

Right Knee

W. Feister
Surface Anatomy
Intra-articular Injection

**Marking** the lateral “sweet spot”

- Edge of patella
- Joint line
- Bottom of patella
Preparation of Injection Site

Application of povidone-iodine antiseptic solution
Preparation of Injection Site

Allow povidone-iodine antiseptic solution to dry
Prolotherapy Solution

25% Dextrose solution for intra-articular injection

✓ 6cc Terumo syringe
✓ 3cc 50% Dextrose
Prolotherapy Solution

25% Dextrose solution for intra-articular injection

✓ 6cc Terumo syringe
✓ 3cc 50% Dextrose
✓ 3cc 1% Lidocaine
Injecting Prolotherapy Solution

25ga x 2” needle on a 6cc syringe positioned and ready to pierce the skin

Joint line
Injecting Prolotherapy Solution

25ga x 2” needle in the intra articular space with 5cc of solution injected
Anatomy of the ACL

Anterior cruciate ligament (ACL) = *intra-articular*—but *extracapsular*

Attaches proximally to the posterior part of the medial surface of the lateral femoral condyle and distally to the medial part of the anterior tibial plateau

Primary function of the ACL: resists posterior displacement of the femur on the tibia (hyperextension)

Anatomy of the ACL

Anterior cruciate ligament (ACL) = intra-articular—but extracapsular

Attaches proximally to the posterior part of the medial surface of the lateral femoral condyle and distally to the medial part of the anterior tibial plateau

Primary function of the ACL: resists posterior displacement of the femur on the tibia (hyperextension)
Anatomy of the ACL

1) Anterior cruciate ligament (ACL) = intra-articular structure

2) Attaches proximally to the posterior part of the medial surface of the lateral femoral condyle and distally to the medial part of the anterior tibial plateau

3) Primary function of the ACL: resists posterior displacement of the femur on the tibia (hyperextension)

4) ACL = secondary stabilizer to varus and valgus stress

5) Strongest but least flexible ligament in the knee
Injecting Prolotherapy Solution

25ga x 2” needle angled caudally treats the ACL & central meniscal ligaments on the tibial plateau
Injecting Prolotherapy Solution

**Needle angled**
cranially to treat the PCL on the medial femoral condyle


Infiltration of the anterior end of the posterior cruciate ligament.
Injecting Prolotherapy Solution

Needle removed and cotton ball compress applied
Surface Anatomy

Proximal end of the medial collateral ligament

Coronary ligament

Distal end of the medial collateral ligament
Knee Anatomy

Proximal end of the medial collateral ligament

Coronary ligament

Distal end of the medial collateral ligament

Prolotherapy Solution

17% Dextrose (standard) solution for injecting ligaments, tendons, & small joints

- 6cc Terumo syringe
- 2cc 50% Dextrose
Prolotherapy Solution

17% Dextrose (standard) solution for injecting ligaments, tendons, & small joints

✓ 6cc Terumo syringe
✓ 2cc 50% Dextrose
✓ 4cc 1% Lidocaine
Injecting Prolotherapy Solution

Injection of the proximal medial collateral ligament (MCL) using a 27ga x 1½” needle
Knee Anatomy

Location of the proximal medial collateral ligament (MCL)

Cause of medial knee pain

Grant’s Atlas of Anatomy.
Knee Anatomy

Coronary ligament sprain

Cause of medial knee pain

Anchors the less mobile medial meniscus to the tibia

Important to treat in meniscus pathology

Injecting Prolotherapy Solution

Injection of the coronary ligament using a 27ga x 1½” needle
Injecting Prolotherapy Solution

Injection of the coronary ligament


Infiltration of the medial coronary ligament.
Injecting Prolotherapy Solution

Injection of the distal medial collateral ligament (MCL) using a 27ga x 1½” needle
Injecting Prolotherapy Solution

Injection of the distal medial collateral ligament (MCL) using a 27ga x 1½” needle
Injecting Prolotherapy Solution

Injection of the distal medial collateral ligament (MCL) using a 27ga x 1½” needle.
Injecting Prolotherapy Solution

Location of the distal medial collateral ligament (MCL)

Cause of medial knee pain

Grant’s Atlas of Anatomy.
Surface Anatomy

Injection of the proximal lateral collateral ligament (LCL) using a 27ga x 1½” needle.

Joint line
Injecting Prolotherapy Solution

Injection of the proximal lateral collateral ligament (LCL)

Joint line
Injecting Prolotherapy Solution

Injection of the proximal lateral collateral ligament (LCL)

Gerdy’s tubercle

Grant’s Atlas of Anatomy.
Injecting Prolotherapy Solution

Treatment completed

Patient should complete
  4 similar sessions

Four weeks between
treatments works best

For more rapid resolution,
treat at 3 week intervals
Knee Anatomy

Bursas


Figure 76.17 Cysts and bursitis around the knee: 1, patellar bursitis; 2, medial collateral ligament bursitis; 3, meniscal cysts; 4, pes anserinus bursitis; 5, bursa between the iliotibial tract and lateral epicondyle.
Note: the number of bursas about the knee

Polley and Hunder. *Physical Examination of the Joints.*

*Figure 13-1.* Medial aspect of knee showing distribution of synovial membrane and adjacent bursae when distended.
Knee Anatomy

Note: the number of bursas about the knee

Polley and Hunder, Physical Examination of the Joints.
Knee Anatomy

**Note:** the number of bursas about the knee

Polley and Hunder. *Physical Examination of the Joints.*

*Figure 13-3.* Schematic sagittal section of knee through area medial to midline showing relationship of synovial membrane and adjacent bursae to other joint structures.
Surface Anatomy

Pes anserine bursa
Knee Anatomy

Pes anserine bursitis

Knee Anatomy

Pes anserine bursitis

- Mistaken for intra-articular knee pathology
- Medial knee pain

Hansen. *Netter’s Clinical Anatomy.*
Knee Anatomy

Pes anserine bursitis

✓ Mistaken for intra-articular knee pathology

✓ Medial knee pain

Grant’s Atlas of Anatomy.
Surface Anatomy

Injection of the pes anserine bursa, use a 27ga x 1½” needle
Knee Anatomy

Patellar instability

Note: checking ligaments
Remember: check the posterior knee for popliteal aneurysm & Baker’s cyst.

Hoppenfeld. *Physical Examination of the Spine and Extremities.*
Baker’s Cyst

Knee Checklist

✓ Know anatomy
✓ Evaluate for pathology
✓ Educate the patient
✓ Allergies
✓ Inject the proper solution and volume
✓ Tell the patient to expect tenderness for 2 days
✓ Return every 4 weeks, completing 4 sessions of treatment
Reference


Polley & Hunder, *Physical Examination of the Joints*.


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