



# THE PRACTITIONER LE PRATICIEN

## The occasional knee aspiration or injection

*John Wootton, MD,  
CCFP, FCFP  
Shawville, Que.*

*Earl Potvin, MD,  
FRCSC  
Shawville, Que.*

*Josh Friedman, MD  
Montréal, Que.*

*Correspondence to:  
Dr. John Wootton,  
Box 1086, Shawville  
QCX 2Y0*

*This article has been peer  
reviewed.*

**A**spiration of the knee is one of the most frequently performed outpatient procedures for diagnostic and therapeutic purposes. When all goes smoothly, it is one of the most satisfyingly productive and confidence-building of procedures. Very little can go badly wrong because this is “pussycat country.” Nevertheless, it is traumatic for the doctor and the patient if things don’t go well, and traumatic taps can obscure important diagnostic information.

Some aspirations are just plain difficult, and it is the knee’s fault. However, knowledge of the anatomy and of a number of options can increase the success rate and reduce the need to consult others.

### STEP 1

It is important not to introduce infection into this normally sterile joint, so particular attention should be given to careful, patient (sic) asepsis.

### STEP 2

Assemble the equipment (Fig. 1), which will depend on the purpose of the aspiration.



Fig. 1. Material required.

### Therapeutic/diagnostic aspiration:

- 1½-inch 25-gauge needle on a 5cc–10 cc syringe, with 2% lidocaine to freeze the skin and soft tissues;
- 1½-inch 18-gauge needle on a 50-cc syringe for aspiration;
- specimen bottles and tubes.

### Joint infiltration with depo-medrol:

- 1½-inch 22-gauge needle on a 5cc–10 cc syringe, containing 40 mg of depomedrol + 1 cc of 2% lidocaine.

If drawing up the lidocaine from a bottle (i.e., not single use) draw the lidocaine up first so as not to contaminate the bottle with the steroid.

You’ll also need:

- Asepsis (e.g., Betadine).

### STEP 3

Identify the landmarks. There are essentially two options:

1. Approach medially or laterally at 90° to the leg, and approximately 45° to the skin, aiming to enter the joint space under the midpoint of the patella. This is the one in which you “walk” the needle down the side of the patella until it reaches the joint space. If this option is chosen, make sure the periosteum of the patella is well frozen!
2. Approach more medially, aiming to enter the joint space under the patella at approximately a 7 o’clock or a 4 o’clock position (Fig. 2, Fig. 3, Fig. 4). (SE and SW for the nautical types among you, depend-

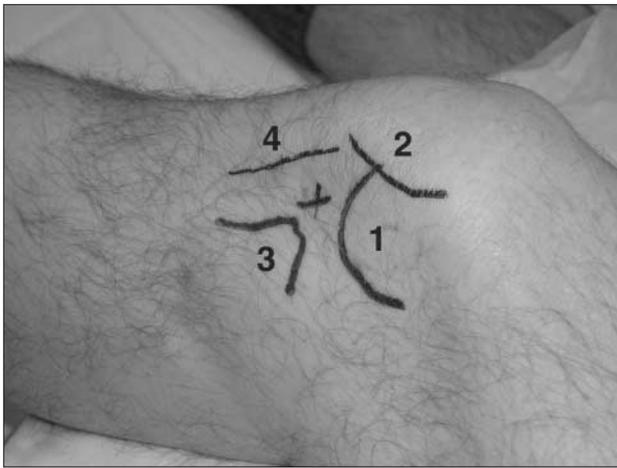


Fig. 2. Knee, with landmarks in ink: 1 = femoral condyle; 2 = patellar edge; 3 = tibial plateau; 4 = tendon.

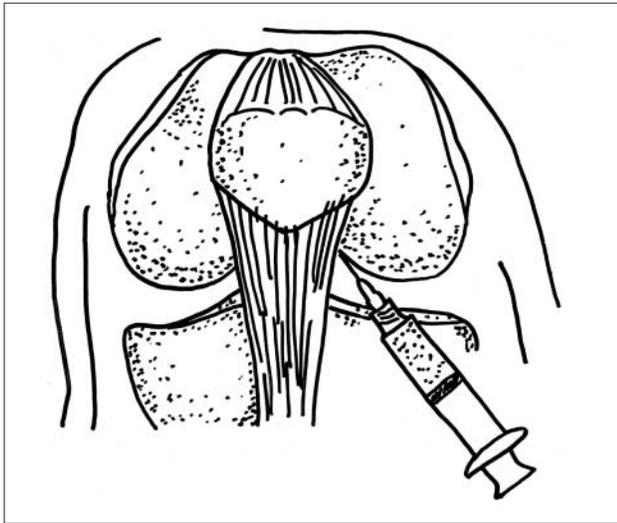


Fig. 3. Knee injection (medial approach).

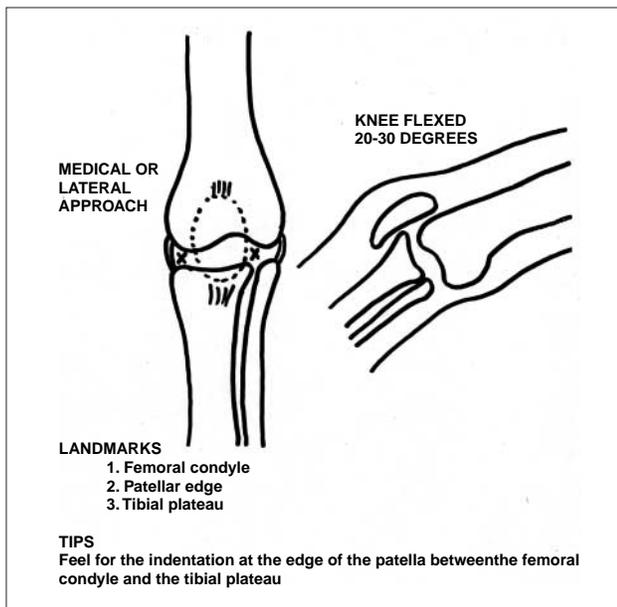


Fig. 4. Landmarks.

ing on whether you prefer your patella as a clockface or a compass...). This is the approach illustrated in Figure 2.

#### STEP 4

If you are aspirating, it helps to confirm the route with the 22-gauge needle and lidocaine before following it with the 18-gauge needle and large syringe. Infiltrate and aspirate as you go. If you bump into bone, pull back and try another angle. If you are at the full 1½-inch depth of your 22-gauge needle, you are likely in the joint space. The remaining lidocaine should be injectable without resistance, and aspiration will often confirm success by filling the syringe with either blood or amber fluid.

It is tempting at this point to leave the needle in place, but aspiration through a 22-gauge needle will not be a pleasant experience.

#### STEP 5

Mentally record the track of the needle before removing it, and follow it with the 18-gauge needle on the 50-cc syringe, applying negative pressure to the plunger as you go (Fig. 5). If you hit bone you have not properly followed your first track, but no harm is done because the whole region should be frozen and therefore the patient should not complain.

When your needle enters the space it should do so without much resistance, and fluid should easily enter your syringe. With a large effusion you may fill several syringes. With the help of a small forceps, stabilize the needle and leave it in the joint while you uncouple the syringe and empty it, and then re-attach it and aspirate some more. It helps to apply pressure with one hand to the supra-patellar bursa as you aspirate, to force fluid to the neighbourhood of the needle tip (Fig. 5).



Fig. 5. 50-cc syringe aspirating via medial approach.

## STEP 6

Once you are no longer getting anything back, simply pull the needle out of the joint and apply an elastoplast.

Fluid can be sent for the following analyses:

- cell count
- culture
- LDH
- crystals
- protein.

## STEP 7

If you are infiltrating, the whole procedure should be done in one step. The lidocaine/steroid mixture can serve to both freeze and infiltrate, but don't use it all up on the way in or there won't be anything left to put in the joint. The procedure is identical to that outlined in Step 3 to freeze the aspiration track.

Using the landmarks identified in Step 3, advance the needle fully into the joint and deposit the depo-medrol (Fig. 6). It is actually difficult to confirm that you are in the correct position because there is no confirmatory fluid to prove it, but if the contents of the syringe go in easily this is a good sign. The worst that will happen if you are not in the right place is that the infiltration will not be very successful.

You can tell the patient that the knee may actually be a little more sore than usual in the first 24

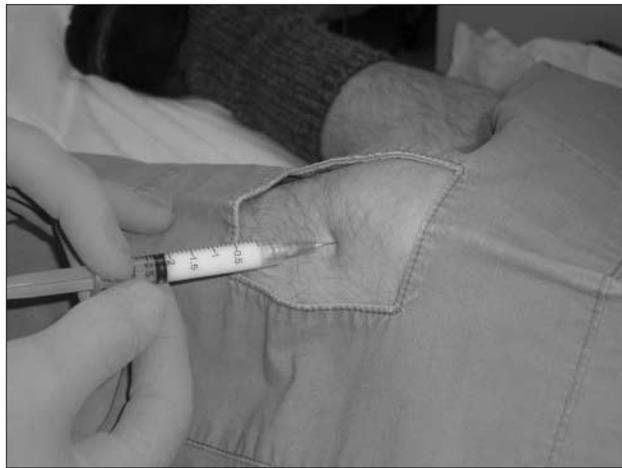


Fig. 6. 3-cc syringe injecting depo-medrol via medial approach

hours, and after that should get better. I have been surprised quite often that infiltrations that were difficult and not obviously intra-articular, ended up by being quite effective.

The same procedure can be used to infiltrate other substances into the knee (such as contrast dye for arthrograms) and, apart from the anatomy, the same technique can be used in other joints, although the knee is the easiest and the safest.

**Competing interests:** None declared.

## Doctors Speak Out

Podium – Letters to the Editor – Editorials

We invite physicians to speak out on issues that concern them. Send your submissions to Suzanne Kingsmill, Managing Editor, CJRM, Box 1086, Shawville QC J0X 2Y0; [cjrm@fox.nstn.ca](mailto:cjrm@fox.nstn.ca)