The occasional pes anserinus bursitis injection

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The pes anserinus (Latin for "foot of the goose") is the conjoined tendon of (in anterior to posterior direction) the sartorius, gracilis and semitendinosus muscles. It inserts into the proximomedial tibia. There is a bursa directly underneath the conjoined tendon, appropriately termed the pes anserinus bursa.

Overuse of, injury to or inflammation of this bursa leads to the entity pes anserinus bursitis (also known as anserine bursitis) and should be considered in patients with medial knee pain. Its incidence may be underestimated. Because of the superficial nature of (and consequent ease of injection into) the bursa, corticosteroid injection into the pes anserinus bursa is the accepted first-line treatment for pes anserinus bursitis.[1]

ANATOMY AND PATHOPHYSIOLOGY

The knee is the body's most complicated joint, with many bursae.

As mentioned, the pes anserinus tendon (the name reflects its Web-like structure) is the conjoined tendon of the 3 above-named muscles. It inserts into the proximomedial tibia, about 5–7 cm below the anteromedial joint margin of the knee, directly overlying the distal insertion of the medial collateral ligament of the knee. The sartorius, gracilis and semitendinosus muscles collectively flex and internally rotate the knee.

The pes anserinus bursa is located between the conjoined tendon and the distal insertion of the medial collateral ligament, and facilitates movement of the tendon. Pain localized to this area constitutes the clinical entity pes anserinus bursitis[2] (Fig. 1).

There is also a small bursa between the sartorius muscle and the conjoined tendon of the gracilis and semitendinosus muscle. Bursitis of this bursa is also classified as pes anserinus bursitis because these entities cannot be separated clinically.[2]

Although pes anserinus bursitis has been described for at least 80 years,

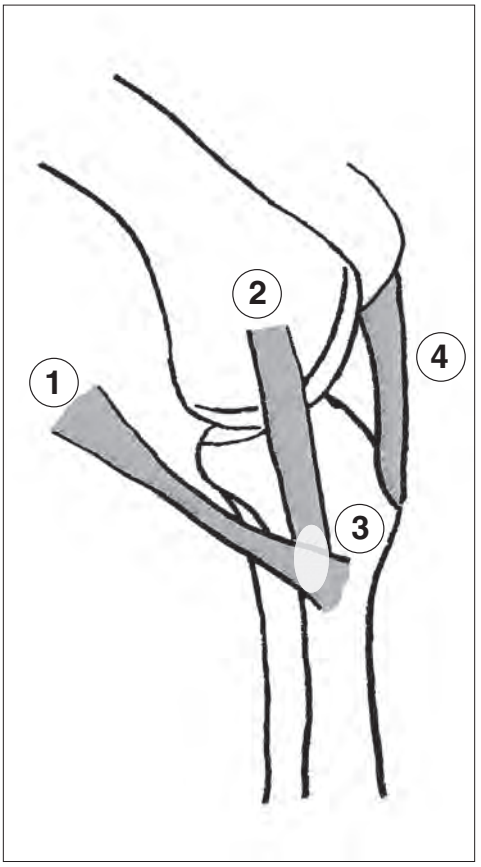


Fig. 1. Anatomy of the knee showing areas where bursitis can occur. (1) Semitendinosus, sartorius and gracilis muscles; (2) medial collateral ligament; (3) pes anserinus bursa; (4) patellar ligament.

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the exact pathology (whether it is tendinitis, bursitis or fasciitis) is not clear.[3] It is associated with the following:

- sports that require side-to-side movement of the knees, such as racquet sports, basketball, soccer and swimming (breaststroker's knee);
- obesity (especially in middle-aged women);
- anatomic abnormalities, such as valgus knees, pes planus or tight hamstrings;
- local trauma;
- knee osteoarthritis or medial meniscus tear, the presumed mechanism being additional stress on the hamstring muscles.

INCIDENCE

The exact incidence is not known, but 2.5% of patients who had magnetic resonance imaging (MRI) for possible internal derangement of the knee had evidence of pes anserinus bursitis.[2]

SYMPTOMS

The patient usually reports pain that is relatively well localized to the medial upper tibia and may be able to point with one finger to the site of pain.[4] The condition may be bilateral. The pain is usually worsened by activities that flex the knee: getting up from a sitting position, ascending stairs and lying in bed. It may be minimal on walking slowly on level ground.[2]

SIGNS

The hallmark is finding mild-to-moderate point tenderness in the area of insertion of the pes anserinus tendon onto the proximomedial tibia.

DIAGNOSIS

Diagnosis is mostly clinical, but the first part is being aware of this as a possible diagnosis. The diagnostic paradigm includes the following:[4]

- local tenderness in the area of insertion of the anserine tendon;
- a negative valgus stress manoeuvre (indicating an intact medial collateral ligament;
- normal radiography of the tibia (i.e., no underlying bony pathology).

DIFFERENTIAL DIAGNOSIS

The differential diagnosis includes the following:[2,4]

- **Medial collateral ligament sprain:** the area of tenderness will be more extensive, further over the joint line and reproduced by valgus stretch;
- **Medial meniscal tears**: there will be tenderness along the medial joint line and a history of locking and knee collapse;
- **Osteoarthritis of the medial knee compartment:** this relatively common diagnosis may coexist with, and is a risk factor for, pes anserinus bursitis;
- **Spontaneous osteonecrosis:** pain will be more severe and will be prominent day and night;
- **Tumours**: possible tumours include osteochondromatosis, sarcoma and villonodular cysts;
- **Other types of knee bursitis:** there are at least 12 bursae in each knee, so familiarization with the anatomy is important;
- **Stress fractures of the proximal tibia**: pain and point tenderness will be more severe than with pes anserinus bursitis;
- **Saphenous nerve compression or trauma:** this more often follows surgery to the knee, and pain is reproduced by a Tinel sign (i.e., light tapping) over the nerve;
- **Medial synovial plica syndrome**: the plica, a redundancy of the joint synovium medially, can become inflamed with repetitive overuse, which results in point tenderness over the medial femoral condyle;
- **Semimembranosus tendinitis**: this results in tenderness over the posteromedial tibia.

If any of the above is suspected, radionuclide isotope scanning or MRI may be indicated. Ultrasonography plays little role in the diagnosis of pes anserinus bursitis in a clinical setting.

TREATMENT

Depending on patient preferences, initial treatment may be medical or by injection.

Medical treatment includes rest with ice application, physiotherapy stretching exercises and anti-inflammatory drugs (although penetration of anti-inflammatory drugs into the bursa may be relatively low).[3]

Injection is both therapeutic and diagnostic. As with all injections, infection or cellulitis over the site is a contraindication.

1. Prepare the equipment you will need:[5]
   - skin preparation agent;
   - 40 mg of methylprednisolone and 1–3 mL of 1% lidocaine;
   - a plastic syringe;

- a large-bore needle to draw up the methylprednisolone and lidocaine and a #21 or #23 needle to inject it;
- lidocaine to anesthetize the skin if preferred.

2. Position the patient in the supine position, with a towel underneath the slightly flexed knee (Fig. 2).
3. Prep the skin using your usual product.
4. Palpate the point of maximal tenderness and mark it if you wish (Fig. 3).
5. Insert the needle perpendicular to the skin, into the point of maximal tenderness until you feel the bone, and then withdraw the needle slightly (2–3 mm) to avoid injecting directly into the conjoined tendon. Inject the contents of the syringe, which should flow easily (Fig. 4).
6. Apply a bandage.
7. Postinjection therapy is important. Advise the patient to
   - rest for 2–3 days with application of ice 4 times daily;
   - take 1000 mg of acetaminophen twice daily;
   - do minimal squatting, kneeling and bending for 3–4 weeks;
   - do straight-leg raising exercises, beginning on day 4.

The injection may be repeated in 6 weeks. Failure to respond to 2 injections may prompt either further investigations, as described above, or orthopedic consultation.[4] No more than 3 injections per year should be done, partly owing to the risk of weakening the tendons.



Fig. 2. Position the patient.



Fig. 3. Determine the area of tenderness.



Fig. 4. Perform the injection.

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