

Clinical Application: Physical Examination Procedure to Assess Hip Joint Synovitis/Effusion

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ABSTRACT

The purpose of this article is to describe a physical examination procedure that can be used to infer the presence of clinically significant hip joint effusion. The clinical examination procedure is operationally defined. The findings of the examination procedure can be used to recommend additional diagnostic imaging, and can assist in providing guidance and objective criteria to modify rehabilitation protocols. The operational description of the examination procedure provides a starting point for research to investigate diagnostic accuracy (reliability, sensitivity, sensitivity, and likelihood ratios) for this method.

Key Words: hip, evaluation, pathology, clinical decision making

BACKGROUND

Synovitis occurs in association with conditions such as rheumatoid arthritis, gout and lupus, etc. It can also be seen in patients with osteoarthritis. Chronic synovitis can lead to joint destruction. Symptoms of synovitis are joint pain, swelling, and nodules. Tenderness is not a very good indicator of synovitis. Synovitis is an important feature in management of musculoskeletal pain problems and is indirectly manifested as joint effusion or swelling.¹ Just as there are differences in how we measure pain, there are differences in how we detect joint synovitis or joint effusion. The prevalence of significant synovitis is difficult to determine because of the varying diagnostic techniques and it is likely under reported.² There is wide variation as to how knee joint effusion is observed and reported. A majority of the unstandardized clinical tests to assess joint effusion in knee osteoarthritis have relatively low intra- and inter-observer reliability.³ Examination and documentation of joint effusion are an important part of the diagnostic and treatment processes.²

Physical examination of joint effusion is used for a variety of purposes including:

- To suggest that more sophisticated diagnostic imaging techniques should be used to quantify the amount of effusion (diagnostic ultrasound, radiograph, or MRI)

- To suggest that invasive measurement using volume arthrocentesis is indicated⁴
- To suggest that intervention to address possible synovitis is indicated⁵
- The early identification of synovitis related to systemic arthritic conditions, and monitoring and managing a systemic arthritic condition
- To provide guidance and objective criteria to adjust rehabilitation protocols⁵

Studies of knee and ankle joint effusion have provided evidence that joint effusion can cause muscular inhibition adversely affecting rehabilitation and recovery.⁶⁻⁸ Hip joint effusion is a significant contributor to gluteal muscle inhibition.⁷ It is likely the arthrogenic muscle inhibition process occurs at the glenohumeral joint; however, this concept has not been investigated.⁸

Observation and measurement of joint effusion can be a valuable sign to determine criteria for progression through stages of post-op protocols.⁹ As seen in Table 1, clinicians at the University of Delaware propose the symptom of pain, and the objective sign of observation of joint effusion in the knee joint as criteria to guide whether to have the patient do more exercise/activity; decrease amount of exercise/activity, or to keep the amount of exercise activity at the same level.^{5,9}

At the hip joint, signs of joint synovitis and effusion are a bit more difficult to recognize because of the depth of the hip joint and size/volume of the large gluteal muscles.¹⁰

Circumferential measures of the hip joint raise some suspicion of significant joint effusion, but it would be helpful if additional physical examination could provide support for the same.¹¹ Girth measures are not sensitive or responsive enough to use as clinical guidelines in post orthopedic knee surgery protocols.⁵

There is a need for a physical examination process that can be used to make inferences regarding the presence and quantity of joint effusion at the hip joints. This can further justify the need for diagnostic imaging to help determine the extent of effusion and tissues involved, which can further assist to identify whether the swelling is intra- or extracapsular. There is a need for physical examination procedure of the hip joint effusion that the clinician can use to adjust the amount of exercise and to determine progression through rehabilitation protocols.

PURPOSE

The purpose of this article is to describe a physical examination procedure that can be used to infer the presence of clinically significant hip joint effusion.

The following concepts were considered in the development of the unique physical examination procedure. The examination procedure must demonstrate inter- and intra-rater reliability.

The assessment requires collecting supportive subjective history and information. Physical examination looking for joint effu-

Table 1. Guide Using Joint Soreness and Joint Effusion to Progress Exercise or Rehab Protocol		
Eligible to progress exercise/protocol	No joint soreness after last session	No evidence of joint effusion
Eligible to progress exercise/protocol	Joint soreness after last session gone by next morning	No evidence of increase or change in amount of joint effusion
Stay with same amount of exercise or protocol level	Joint soreness for 24 hours after last session	Physical examination demonstrates increase in amount of joint effusion from previous visit
Regress the amount of exercise or protocol level	Joint soreness for more than one day after last session	Physical examination demonstrates increase in amount of joint effusion from previous visit

sion uses a ballottement maneuver, light quick poking motion looking for and/or feeling for displacement of fluid or sensation, or rebound. In an effort to improve reliability of observation and measurement, the examination procedure needs to be performed in a standardized manner.

PROCEDURE

Begin with visual observation of size, girth; shape of anterior hip joints. If the problem is unilateral, look to see if there is symmetry or asymmetry (Figure 1).

The patient lies supine with the limb relaxed with the hip joint in position of relative extension and medial rotation. Palpate the uninvolved side first in order to establish a relative baseline of normalcy or benchmark to compare the involved side.

Lightly palpate the anterior aspect of the hip joint, uninvolved hip joint first, assessing the degree of puffiness or swelling (Figure 2). If the patient has had surgery, the surgical scar can be used as a landmark. Place one hand along the anterior lateral hip/thigh just distal to the hip joint. Press down and in an upward direction towards the head, and squeeze the thigh and sweep slide along the anterior lateral aspect of the hip/thigh. Perform 2 to 3 sweep slides consecutively alternating hands. You are trying to move or performing a milking effect of the effusion from the inferior anterior hip joint capsule superiorly (Figure 3).⁵

After the last sweep, sustain and hold the squeeze while with the opposite hand palpates the anterior aspect of the hip joint. Comparison can be made between the amount of soft fluid like material during palpation with and without the manual sweep and squeeze procedure (Figure 4).

If the hip pain and suspected joint effusion is unilateral, a rating of the magnitude of feeling the soft fluid material can occur using the following criteria:

- no sign of joint effusion relative to the uninvolved side,
- mild amount of joint effusion relative to the uninvolved side, and
- significant amount of joint effusion relative to the uninvolved side.

DISCUSSION

A description of a physical examination procedure that can be used to infer the presence of clinically significant hip joint synovitis, and hip joint effusion has been presented. This examination procedure may provide valuable information regarding the presence or absence of intraarticular fluid and propose



Figure 1. Note the asymmetry of shape (bulge) on the right side (yellow arrow).



Figure 2. Palpate the anterior aspect of uninvolved hip joint followed by involved hip joint.



Figure 3. Squeeze, sweep, milking of joint fluid in a cephalic direction.



Figure 4. Perform a ballottement maneuver, light quick poking motion looking for and/or feeling for displacement of fluid or sensation or rebound.

appropriate imaging studies for quantification. In order for this test to be widely implemented, a case series needs to be conducted to demonstrate the reliability and validity of this test. Data collection in various practice locations and by various providers to determine similar findings and further follow-up with sonogram or MRI is warranted. Diagnostic values such as sensitivity, specificity, and likelihood ratios could then be calculated.

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