Contents of Presentation

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Knee aspiration is a skill all Foundation Doctors (FDs) are expected to perform safely and competently

Previously an essential skill for foundation trainees

Currently not on the list of procedures required to complete foundation training

This has resulted in a lack of teaching of the procedure, and a lack of confidence in trainees to perform it

However, it is generally considered and easy and safe procedure compared to more invasive investigations performed by FDs.

Data suggests that this has lead to;

• Delays in referral to specialities
• Distorted microbiology results caused by the administration of antibiotics prior to joint aspiration
Knee Aspiration

- Aspiration of the knee joint may be performed for the diagnosis of an unexplained effusion or the evacuation of a painful effusion (3).
- Several approaches documented in the literature (superior lateral approach used within this setting).
- Steps:
  - Patient in supine position with knee in extension.
  - Palpate the knee to identify the and mark the site.
  - Clean and prep the area.
  - Strict aseptic non-touch technique.
  - Attach a large (20-60ml) syringe to an 18-20 gauge needle.
  - Stretch the skin with the one hand and insert the needle into the joint whilst gently aspirating.
  - Withdraw the needle once completed.
  - Place sample correct sample pots as required by the trust.
  - Dispose of needle in sharps bin.
  - Dress the injection site.
  - Accurately label the samples and sent to the lab accordingly.
Aspiration and Injection of the Knee Joint: Approach Portal

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Aspiration and injection of the knee joint is a commonly performed medical procedure. Injection of corticosteroid for the treatment of osteoarthritis is the most common reason for knee joint injection, and is performed as an office procedure. Debate exists among practitioners as to the 'best' approach portal for knee injection. This paper examines the various approach portals for injection and/or aspiration of the knee joint, as well as the accuracy of each approach. Searches were made of electronic databases, and appropriate papers were identified and hand-searched. Although there is some evidence that particular approach portals may be more efficacious in the presence of specific knee joint pathologies, generally in experienced hands, it is of no clinical consequence as to which approach portal is utilised for aspiration or injection of the knee joint. No approach portal is 100% accurate, and the accuracy of injection of the knee joint may be enhanced by the use of techniques such as ultrasound. Practitioners are reminded that they should continuously refine and practice their preferred technique. Knee joint aspiration and injection is a common, simple, and generally safe office procedure.

Keywords: Knee Joint, Osteoarthritis, Injections, Intra-articular

Introduction

Aspiration of the knee joint may be performed for the diagnosis of an unexplained effusion, or the evacuation of a painful effusion. Injection of the knee can be undertaken for radiological investigation of the knee, for the injection of corticosteroid into a joint suffering from a non-infectious inflammatory process, or for the injection of viscosupplementation. Of these indications for aspiration or injection of the knee joint, the most common is the injection of corticosteroid in cases of osteoarthritis (OA) of the knee, and is performed as an office procedure.

A recent article examined the choice and utilisation of corticosteroid agents for injection into the osteoarthritic knee, and suggested that it is traditional clinical Orthopaedic Surgery and Rheumatology teaching which determines the likelihood of utilisation of one corticosteroid (and dosing regimen) over another. Similarly, disagreement also exists among practitioners as to the 'best' approach portal for knee aspiration and injection. This article examines the different approach portals for aspiration or injection of the knee joint with the aim of: describing the available approach portals for aspiration or injection of the knee joint; determining if indeed there is a 'best' approach portal; determining whether the 'best' approach portal for knee joint aspiration is the same as that for injection; and examining the possible problems encountered with each approach portal.

Finally, the paper makes recommendations for improvement in technique by medical practitioners.

Approaches to Aspiration or Injection of the Knee Joint

The first reported use of intra-articular (IA) corticosteroid in knee OA was by Hollander in 1953, and the first clinical trial of IA steroid use for knee OA was reported by Miller et al in 1958. Six major portals of approach to the knee joint for its aspiration...
Near Peer Tutoring

- Passage of knowledge between persons at similar stage of training
- Typically two to five years ahead of the trainee (4)
- Comparable insights and experience (4)
- Well-accepted amongst trainees (5)
- Useful for tutors to improve their teaching skills (5)

**Medical Education Online**

**SHORT COMMUNICATION**

Near peer teaching in medical curricula: integrating student teachers in pathology tutorials

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Introduction: Due to increased cognitive and social congruence with their tutees, near peer teachers (NPTs) may be capable of more effectively delivering course material. This study examines NPTs as pathology tutors alongside more traditional teachers (e.g., consultants and registrars) to explore their acceptability, effectiveness, and years of ‘distance’ between tutors and tutees.

**Method:** In total 240 first- and second-year undergraduate medical students were taught set material in a pathology tutorial setting by NPTs (fourth-year medical students), registrars, or consultants. Learners were then asked to provide feedback using a 15-item Liberti type scale.

**Results:** On 11 of the 15 items, there were no significant differences in students’ median ratings. However, NPTs were perceived to be significantly more approachable than consultants, more aware of learning outcomes, more receptive to student input, and more invested in exam success. Compared with second-year students, first-year students showed a preference towards registrar tutors in terms of perceived gain of knowledge and use of time. In contrast, second-year students showed a preference towards NPTs, who provided more perceived knowledge gain and investment in exam success. No significant differences were found regarding consultant tutors.

**Discussion:** Perhaps due to increased congruence with tutees, NPTs show promise as tutors within medical curricula. This provides advantages not only to tutees, but also to tutors— who may gain vital teaching experience and offer an effective supplement to ‘traditional’ faculty educators.

**Keywords:** undergraduate education; peer assisted learning; social congruence; cognitive congruence
Aim

- Address the lack of knowledge and technical ability, and the lack of confidence in performing knee joint aspiration by Foundation Doctors
Method

- We designed a teaching session incorporating a mixed educational approach\(^{(6)}\)

- Two separate teaching sessions, each lasting two hours, were given to a group of foundation year 2 (F2) doctors from Royal London, Whipps Cross, St Barts and Newham General hospitals

- Facilitated by consultants, registrars and clinical skills trainers

- The aim was to achieve a low trainee to trainer ratio
Course Outline

• Pre course evaluation and questionnaire
• Case based scenarios in a lecture format
• Tutorial on knee aspiration
• Practical sessions
• Post course evaluation and questionnaire
Pre Course Evaluation

- Only one trainee had aspirated a knee joint prior to the session
- 26.67% of trainees they had ‘no knowledge’
- 46.67% of the trainees never received teaching related to knee aspiration
How were you originally taught knee joint aspiration:

- See one, do one
- Internet
- Reading
- Clinical Skills/Simulation Lab
- No previous teaching
FOUNDATION PROGRAM

Clinical Skills Session

KNEE ASPIRATION (PRE-EVALUATION FORM)

1. Please rate your current knowledge and confidence with relation to the following areas:
   (Mark the box with ‘X’)

   1 = No knowledge or confidence
   2 = Minimal knowledge or confidence
   3 = Some knowledge and confidence
   4 = Considerable knowledge and confidence
   5 = Expert knowledge and confidence

<table>
<thead>
<tr>
<th>Indications for aspiration of the knee joint</th>
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<th>2</th>
<th>3</th>
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<tr>
<td>Asepsis, including the preparation and maintenance of the sterile field</td>
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<td>Technique and steps involved in the aspiration of the knee joint</td>
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<td>Common key differential diagnoses which may be considered when a patient presents with a pathological knee</td>
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<td>Complications and risk involved in the aspiration and/or injection of the knee joint</td>
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<td>Interpretation of pathology reports with relation to aspirated fluid from the knee joint</td>
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Case Based Scenarios

- Interactive lecture focusing on two common, clinically significant cases; **gout and septic arthritis**

- The use of clinical questions and “**Buzz Groups**” to promote small group discussion and interactivity amongst students

- Relating the topic to clinical practice and discussion of further investigations and management
Scenario

- 45 year old Bengali lady
- 2 day history of right knee swelling and pain
- No history of trauma, no recent travel.
- Feverish
- Recently been treated for a sexually transmitted disease.
Case Example

- 45 year old Bengali lady
- 2 day history of right knee swelling and pain
- No history of trauma, no recent travel.
- Feverish
- Recently been treated for a sexually transmitted disease.
- Past medical history – hypertension.
- Drug history – No known allergies, Ramipril.
- Social history – lives alone and works as a receptionist. She smokes 25/day and doesn’t consume alcohol.
- Family history – mother has rheumatoid arthritis
• Red hot swollen knee
• Range of motion is painful and is restricted from 15 degrees to 40 degrees of flexion.
• Patella tap test is positive
What are you differential diagnosis from the history and examination?

- Synovial fluid colour – yellow, turbid.
- Volume – 40 mls

What are your thoughts about the sample fluid?
What tests would you send the sample for? Routine or urgent basis?
Practical Sessions

- Pre-course reading material was provided prior to the course; *Aspiration and Injection of the Knee Joint: Approach Portal*
- Part Task simulators were used to mimic a real life knee joint
- Standard *superior-lateral approach* used which is shown to be 91% (95 CI) effective (3)
- Other commonly used approaches were discussed
- The verbal consenting process was reviewed
- Students performed the procedure under supervision with one-to-one feedback

Fig. 2. Photograph of right knee demonstrating the superolateral approach to aspiration or injection of the knee via the suprapatellar bursa.

Fig. 3. Photograph of left knee. Crosses indicate the anteromedial and anterolateral approaches to aspiration or injection of the knee joint. P: patella, PT: patellar tendon, TT: tibial tuberosity.
Practical Sessions
Post Course Feedback

Self Rated Confidence Scores (Post Intervention)

- Indications
- Asepsis
- Technique
- Differential Dx
- Complications/Risks
- Interpreting Pathology

Color Legend:
- No Confidence
- Minimal Confidence
- Some Confidence
- Considerable Confidence
- Expert Confidence
Overall Confidence in Performing Knee Arthrocentesis (Pre and Post Intervention Comparison)
Questions

1. What is the optimal approach when aspirating the knee joint?

2. What is the normal range of serum urate?

3. What is the most common causative organism in adult septic arthritis?

4. Which gene is implicated in Reiter’s syndrome? (Reactive arthritis)
Results

• Everyone showed improvement

• Average pre course score was 63.3%

• Average post course score was 78.56%

• Average Improvement of 15.25%
Effective teaching method

- Strongly Disagree
- Disagree
- Neither Agree nor Disagree
- Agree
- Strongly Agree
Conclusions

- Knee aspiration is an essential skill for foundation doctors to perform. However, the majority of trainees do not feel confident in doing so.

- Near Peer tutoring was identified as an effective teaching method.

- Real-time feedback, interactive discussion, and simulation-based training were used to provide comprehensive training.

- Overall improvement in knowledge, technique, and confidence was achieved, as evidenced by pre and post-course questionnaires and evaluation forms.
References

7. FP 01/02: Foundation Doctor Role and Responsibilities within the Local Education Provider and Minimum Requirements for Clinical Supervision of Foundation Doctors - September 2010