
PART ONE

BACKGROUND

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Orthopaedics in Perspective

Being involved in medical training is always overwhelming, especially when you begin a new field of study and realize how much there is to learn. Orthopaedic surgery is no exception — it is a huge field spanning all age groups and affecting all parts of the body in the musculoskeletal (MSK) system.

All the various disease processes can affect the MSK system and enter into the differential diagnosis. Historically, traumatic and infectious disorders and their sequelae (such as polio or tuberculosis) have caused most of the pathology in orthopaedics. We can take a step back in time in orthopaedic care if we travel to the developing world today.¹

In the developed world, we still have trauma and its sequelae producing our caseloads, but degenerative disorders, rather than infection, now dominate our elective practices.

**Degenerative disorders
dominate our elective practices.**

People are living longer and are healthier at older ages than they were a generation ago. Now, people's hips and knees are routinely replaced in order to maintain mobility, even though their parents may have been resigned to sit in a wheelchair because there were no other viable treatment options. The average age of hip-fracture patients continues to rise due to improved medical management of co-morbidities such as diabetes, heart disease, and lung disease.²

CHECKLIST OF WHEN AN MRI IS USEFUL

MRI is very useful for

- complex soft tissue knee injuries (ligaments and menisci)
- complex sports-related shoulder injuries (more than the rotator cuff alone)
- complex wrist ligament disorders
- spinal conditions with nerve involvement
- soft tissue masses and tumours

MRI is not useful for

- simple osteoarthritis of any joint (actually better seen on plain X-rays!)
 - degenerative knee arthritis/meniscal debris
 - simple rotator cuff integrity (use ultrasound)
 - fracture work (use plain X-rays or computerized tomography [CT] scan)
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Plain X-rays are still the cornerstone of orthopaedic diagnosis and the primary-care physician must be able to communicate the patient's X-ray findings concisely to the orthopaedic specialist when referring a patient. Describing a plain X-ray is a vitally important skill and is not as easy as it sounds!

Some remarks about the general principles in orthopaedic history-taking, physical examination, and plain X-rays will be discussed first, followed by a more focused anatomic region-by-region discussion.

Orthopaedic History

The orthopaedic history should follow the normal format of any medical history: identification, chief complaint, history of present complaint, past medical history, social history, and family history. In the orthopaedic context, the following checklist is particularly useful.

CHECKLIST FOR ORTHOPAEDIC HISTORY

History of present illness

1. Age of patient:

- *if traumatic*: Age predicts where the weak link may be present and, therefore, what injury pattern to expect.
- *if atraumatic*: It broadly predicts what disorders are prevalent.

2. Symptom onset and trends:

- *if traumatic*: The amount of energy involved in producing the injury is very important as it predicts initial outcomes and future complications.

PHYSICAL EXAM

GAIT/ALIGNMENT/ROM

It is very important to evaluate the alignment of the knee when standing and walking. Weight bearing makes all the difference. Feel the joint while moving the knee, and measure the range of motion.

SPECIFIC TESTS FOR LIGAMENT LAXITY

All tests should compare the affected knee to the unaffected knee as people vary greatly in their ligamentous laxity. Be gentle, as only a small movement is required: you are looking for the amount of translation and the end-point feel.

MCL/LCL

For an MCL/LCL test, gently flex the knee and apply a valgus and varus force. Flexing the knee 10 degrees is important to avoid tightening the posterior knee capsule, which may produce a false impression of stability.

ACL TESTS

ACL tests are well described in many texts (anterior drawer; Lachman; pivot shift). Because it is easiest on the patient, the Lachman test is the best. Stand on the *same side* of the patient as the injured knee, as rotation is important, and flex the knee gently.



Figure 2.9 Lachman test: Feel for amount of translation and firmness of the endpoint; compare to the opposite normal knee.

MENISCAL TESTS

Meniscal tests include McMurray's test, Apley's test, and the joint line tenderness test. Be gentle: McMurray's test, in particular, can be painful for patients. A good history, coupled with joint line tenderness, is enough to clinch the diagnosis.

Foot/Ankle

The foot/ankle area is a very common site for chronic pain without bony abnormalities ever being present. Heel pain, arch pain, and forefoot pain are examples of chronic soft-tissue-related pain. However, one must first rule out bone and joint disorders. These are often post-traumatic and degenerative in nature.

Diabetics can have horrendous problems with their feet, as can those with rheumatoid arthritis.

Pay particular attention to the peripheral vascular exam and neurological status since they greatly affect patient outcomes.

HISTORY

Ask about the following:

- site of pain; onset; trends
- unstable versus stiff/swollen
- worse on uneven ground/inclines?
- ADL intact?
- footwear problems?
- Rx to date (orthotics? braces?)

PHYSICAL EXAM

- *look*: Several areas yield diagnostic information:
 - shoes (wear patterns)
 - gait (N and heel and toe walking)
 - malalignment? hind-foot (varus/valgus); forefoot (great toe/ lesser toes)
- *feel*: Elicit the point of maximal tenderness (joints quite superficial); generalized ligamentous laxity?
- *move/measure*: ROM; instability tests for ankle

FOOT/ANKLE IMAGING

Plain X-rays of three views, preferably standing, will be useful.

A CT scan is quite useful if it shows bony detail, fractures, and the exact site of joint arthritis involvement. An MRI showing nerve or soft tissue disorders, tumours, and infection will also be useful.
