



COVID-19 IMPACTS: RUNNING YOUR COMMUNITY OFFICE SAFELY – INCORPORATING VIRTUAL NEURO AND MUSCULOSKELETAL EXAMINATIONS DURING A PANDEMIC

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Recording and presentation Slides: <https://ubccpd.ca/covid-19-impacts-virtual-neuro-and-musculoskeletal-exams-during-pandemic>

Disclaimer: Information on COVID-19 is changing rapidly and much of the research is preliminary. Assessment and management protocols are suggestions only; they do not take the place of clinical judgement. Please check with your own health authorities and local medical health officers as policies and support for the suggested approaches to patient care may vary between regions.

This summary was prepared by Dr. Birinder Narang and not by the speakers.

Skills Gained:

- Be able to confidently manage focused virtual musculoskeletal examinations
- Be able to identify the parts of physical exams that can be achieved effectively through video-enabled visits
- Discuss the suggested best practices on use of diagnostic imaging during a pandemic

Presentation Notes (See slides for full review)

Virtual Hip Exam

Differentiate between hip joint and non hip pathology on history:

- Hip-related (Intra-articular, Extra-articular)

- Femoro acetabular Impingement (FAI) – accounts for 15% of all groin pain
- Older patients more likely to have Osteoarthritis (OA)
- Females – “Pincer FAI” or dysplasia
- Males – “CAM FAI”
- Non Hip-Related (ie back/hernia/gynecological)

Evaluation of Patient with hip pain

- Location of pain
 - “C sign” – more indicative of intra-articular pathology
- Lateral pain +/- snapping – bursitis/tendinopathy
- Thigh/buttock/radiation - > think spine, or buttock muscles

Virtual Physical Exam Tips

- Assess lumbar spine flexion/extension
- Then lateral flexion
- Single Leg Raise
 - Core stability, Trendelenburg, pain w/ wt bearing, if able to flex hip
- Active squat test
 - Can assess hip knee and ankle ROM this way – assess for pain
- Active Straight Leg Raise – for radiculopathy, can demonstrate hip flexor irritation
- Active + Passive hip flexion
- Hip abduction – camera placement important
- Hip adduction – frog leg, can assess distance from knee to ground, looking for asymmetry
- Lying on back, from knee flexed, straightening of leg, can assess for psoas tightness
- To test for impingement virtually one can go into terminal flexion and do cross body adduction and external rotation, if they have pain, can be sensitive for anterior groin pain

Imaging

- Plain film XR
 - Most important imaging modality
 - MRI will show labral pathology in cases of arthritis, but arthritis is the true pathology
 - Can be useful to differentiate different types of FAI
- MR Arthrogram helpful when XR is normal – to assess for labral and chondral defects
 - Interpret + findings carefully
 - High False Positive Rate
 - 68.1% incidence of asymptomatic labral tear in general population

Management

- Non-operative
 - ACTIVE Physiotherapy → can help with bursitis + extra-articular causes of pain
 - Image guided injections – therapeutic and diagnostic
 - Pain relief supports diagnosis of intra-articular pathology
 - Local anesthetic +/- steroid +/- hyaluronic acid
 - If relief, supports intra-articular pathology
 - Poor prognostic sign for surgery if negative outcome
- Operative
 - Hip Arthroscopy
 - Prognostic factors
 - Higher rate of failure
 - >40-60 yrs of age, osteoarthritis, dysplasia, obesity
 - Goals and outcomes
 - Improve quality of life, what is the functional expectation?
 - Role of surgery as Osteoarthritis prevention is undetermined
 - Hip Arthroplasty
 - Pelvic osteotomy for Dysplasia
 - Hip arthroplasty for Osteoarthritis
- Bring in to office, if unable to obtain clear history, or unable to get a clear exam virtually, or when neurological concern, may need them to come in for manual muscle testing,

Spine Assessment (Virtual Examination)

Spectrum of Spinal Pathology:

- Common
 - Low back pain, neck pain, radiculopathy
- Concerning
 - Myelopathy, progressive, CES, Tumour/Metastatic Disease, Radiculopathy w/ significant weakness.

Axial Back/Neck:

- Acute episodes – primarily due to muscular strain (>90%)
 - Expected resolution in days to weeks
 - Treat with Rx – Activity, avoid excessive resting, gradually returning to activities as tolerated
- Chronic “non-specific” back pain, “mechanical back pain”
 - Physiotherapy + Exercise mainstay of treatment

- Inherently “benign” natural history
- Imaging +specialist referral, is unnecessary unless radiculopathy signs
- Avoid Opiates for non-malignant pain

Spine Telehealth Assessment:

- History
 - Important to assess for appendicular symptoms or neurogenic claudication
- Physical Exam
 - Not absolutely necessary in absence of any red flag symptoms, very unlikely to discover red flag signs in absence of any reported symptoms
 - Required if history reveals any red flags

Virtual Physical Exam:

- General:
 - Have patient stand upright – assess posture from AP/lateral plane
 - Look for sagittal/coronal plane deformity
 - Assess passive ROM of cervical & lumbar spine
- Gait examination
 - Assess cadence
 - Narrow vs wide-based, spasticity or shuffling
 - Heel-toe – assesses balance to higher degree
- Keep dermatome chart on hand when to try and localize pathology
- Motor Exam (Tailor to patient functional status)
 - C5/6 - Lift a known weight – ie a milk jug, a bicep curl, abduct shoulder, wrist curl
 - C7 – Triceps – wall press
 - L3/4 - Quadriceps – single-leg raise from chair, squats
 - S1 – Independent toe raises
- Reflexes – not testable & palpation has limited utility
- Special Tests
 - Straight leg raises– requires assistant, could use family member (to do passive)
 - Usually more useful in acute radiculopathy
 - Spurling – have patient extend neck maximally, radicular pain reproduction with ipsilateral rotation = positive test
 - Lhermitte test – flex/extend neck ask about electrical sensations down spine
- Reference to Choosing Wisely Canada spine recommendations
 - See resources

Guidelines for interpreting spine imaging reports:

- Eg: L3-L4 “Fairly severe bilateral facet arthropathy”
 - Correlation to symptoms is poor for degenerative changes
- Focus on imaging/report – any high grade, central foraminal stenosis w/ associated spinal cord or nerve root compression
- Key Point
 - Spine surgeon’s focus is on nerve root or spinal cord compression
 - Must correlate to presenting symptoms – severe compression of thecal sac with no radicular symptoms does not necessarily imply need for referral
 - Radiologists have no standardized criteria for “mild/moderate/severe stenosis”
 - Generally, severe stenosis has high concordance between radiologist/surgeon
 - Important to assess for appendicular symptoms or neurogenic claudication

PNS - The Art of the Virtual Consultation

- 3 common referrals
 - Pain/numbness/weakness of arm
 - Pain/numbness/weakness of leg
 - Nerve Trauma
- Triage
 - Neuro vs Ortho vs Vascular cause of symptoms?
- Common Neuro Etiologies
 - Root
 - Plexus
 - Peripheral nerve (compressive)
 - Complex Regional Pain Syndrome

Virtual Limb Exam:

- Observation: Wasting, Skin Colour, Texture (Harder to see)
- Range of Motion
- Functional Tests
- Sensory Loss (distinct from sensory symptoms)
- Arm:
 - Wasting, Winging of Scapula
 - Required if history reveals any red flags
 - ROM C-Spine + Spurlings
 - Phalen’s

- Drift, Finger/Thumb Tap
- Functional – Incline pushups, lean against wall/chair/floor – what they are able to do
- Draw out area of sensory loss
- Leg:
 - Wasting (can be more difficult)
 - ROM – sitting, lifting knee F/E Knee and ankle
 - Seated SLR
 - Functional: Squat, heel/toe, walk or raises
- Assess gait
 - Lighting (oblique), using a laptop (instead of phone), and potentially an assistant is important
 - Important to consider setting, technological knowledge
 - Can look for antalgic gait, foot drop, ataxic gait etc

Nerve Trauma (Lacerations, Crush, Traction, Compartment Syndrome):

- Always a referral for NCS/EMG
- Usually urgent
- 6-month window for nerve repair
- Expedited referral possible – phone call will help, do not sit on this, ensure they are seen

EMG:

- EMG is specific, but not sensitive for isolated limb pain
- Poor screening test for limb pain
- 50% sensitive for radiculopathy
- Better if pt has weakness /numbness
- Better for plexus, nerve, muscle
- Complements clinical exam and imaging
- Refer for:
 - Limb Weakness/ Numbness, suspected plexopathy, compressive mononeuropathy, myopathy, suspected polyneuropathy, nerve trauma
- Do not refer for:
 - Undifferentiated limb pain, spine pain, CRPS

Red Flags:

- Acute onset weakness, non ambulatory (think about Guillian Barre, spinal cord)
- Bilateral weakness
- Proximal weakness
- Bowel/Bladder

- Lhermittes
- Severe wasting
- Fasciculation + Cramps –(think about Motor Neurone Disease)

Question & Answers

Q: How do you differentiate between trochanteric bursitis pain vs hip joint pain virtually?

A: Finger sign (point specific) vs C sign (patients specifically make a C, use hand and wrap it around their hip)

Q: Some orthopedic clinics ask for specific views on Hips, thoughts?

A: Standing AP/Pelvis + Lateral – most important view for family doctor to order, surgeon can order additional views

Q: How long do you imagine these visits take virtually compared to in person visits?

A: Timing can make someone ineffective during virtual visits, seems to take longer. Suggestion to do first visit over telephone, can figure out a lot of plan/intervention over the phone earlier.

Q: Find it very difficult to instruct older patients on movements, any suggestions?

A: Have a range of photos from the internet, and make a series of slides, “use and reuse”.

Q: How do you assess for perceived weakness/hands?

A: Functional tests virtually assess proximal weakness hips/shoulders. Harder for peripheral, a lot of it will be based on history ie how are they with holding/manipulating cups, spoons, chopsticks, pen, texting, shaving, etc. Best you will likely be able to do. Can do some ROM, but subtleties are difficult to assess reliably. Re reflexes/spasticity – also can be important to look at their function of fine motor control virtually.

Q: How well accepted are Dr. Hamilton Patterns of Mechanical Back Pain?

A: Accepted to varying degrees, UBC program, more nuanced and general. Comes down to whether there is isolated axial back pain vs radiculopathy, and concept of worsened by flexion/extension may not be as valuable. The exercise and stretching that are specific to different back pain syndromes, do tend to work better on average.

Q: What to wear for virtual examination?

A: Ask MOA to prepare patient, ie for shoulder exam, tank top may be appropriate, for the hip a pair of shorts.

Q: How to assess for “real limitations for movement”, especially if patient’s agenda is associated with disability?

A: Try not to get too focused on agendas, be as objective as possible-particularly in the language you use. Some patients may truly mangle, but these are relatively uncommon and should always be the LAST item on your differential and only after extensive investigation! More commonly, patients may amplify problems as they don’t want you to “miss” something (eg; give-way weakness). I use the example of pseudo-seizures, where pts usually have an underlying true seizure disorder, in addition to the non-epileptic events they may present with.

Q: How do you assess sensory deficits virtually? IE using pins, cotton?

A: I don’t put a lot of weight on that virtual finding, in general. Is the sensory loss localized? Is it explained by a specific nerve root? You can usually ask patient to map it out for you.

Q: Any functional scores to prioritize who to see? IE Oxford Hip or Oxford knee score?

A: Most commonly used hip scores: hip outcome score and modified hip harris score.

Q: Discussion re: likelihood of imaging findings

A: If you image 70 year old patients, likely 100% will have some element of degenerative disease. Have to reframe discussion of degenerative changes as part of a normal process. Progressive changes in the context of symptoms that match them are pathological.

Q: How do you differentiate radiculopathy vs neurogenic claudication?

A: Neurogenic claudication is a polyneuropathy, is a chronic cauda equina, symptoms involving mostly nerve roots diffusely. Isolated radiculopathy, has usually a single nerve root involved. Distinction between neurogenic and vascular claudication. Patients who have buttock/thigh aching that is worse with standing/walking and takes minutes to slow down – more consistent with neurogenic.

Q: How do you examine for Piriformis Syndrome?

A: Often made as a process of exclusion. Can have buttock discomfort, pain/numbness, go through battery of tests, that common things being common that it isn’t referred back pain, irritated nerve root, trial physiotherapy. If really suspect piriformis, compression test/stretch test elicits response, will do a diagnostic injection into Piriformis to see if alleviates it, then will consider operative repair.

Resources

- **Choosing Wisely Canada:** <https://choosingwiselycanada.org/spine/>
- **BMJ – Visual summary – Managing lower back pain and sciatica:**
<https://www.bmj.com/content/bmj/suppl/2017/01/06/bmj.i6748.DC1/beri151216.w1.pdf>

Thanks to the speakers on the video:

- Panelist: **Dr. Dean Johnston**, Neurologist, Associate Head of the Division of Neurology, Department of Medicine, University of British Columbia
- Panelist: **Dr. Tamir Ailon**, Spinal Neurosurgeon at Vancouver Spine Surgery Institute
- Panelist: **Dr. Fay Leung**, Orthopedic Surgeon, Richmond Hospital
- Moderator: **Dr. Bruce Hobson**, UBC CPD