PEER REVIEWED

A case of chronic pain after hip replacement surgery

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A pain specialist and physiotherapist discuss their own particular aspect of care of this patient with chronic pain following a total hip replacement.

Case scenario

A 58-year-old woman, who is a keen golfer, had a right hip replacement for bone-on-bone osteoarthritis three years ago resulting in chronic burning pain in the area of the surgical scar. She had a hip manipulation under anaesthesia for adhesions six months ago. Since then she has had broken sleep due to hip pain that wakes her when she rolls over onto the affected side at night. She has changed to a latex mattress but still wakes several times each night. At the age of 23 years, she was a passenger in a 'roll-over' motor vehicle accident.

Current medications include an ACE inhibitor for mild hypertension and pregabalin 300 mg/day. Opioids cause vomiting, and she cannot take NSAIDs due to a past gastric bleed. She has tried temazepam before bedtime and paracetamol throughout the day, with little effect.

Examination reveals some tenderness on deep palpation posterior to the greater trochanter. Bone scans are noncontributory. The orthopaedic surgeon is unwilling to operate, and suggests ultrasound-guided local anaesthetic and cortisone injections; however, the patient is not keen on this treatment.

The patient is keen to return to golf. What other therapies are recommended for this patient?

Key points

- **Risk factors for chronic postsurgical pain following total hip replacement include chronic hip pain before surgery, female sex, increased body mass index, anxiety and depression.**
- **Effective pain management in this case requires a multimodal, multidisciplinary approach.**
- **Consistent communication between healthcare professionals can positively influence outcome in individuals with chronic pain.**
- **Pain management starts with screening for surgical complications and red flag conditions.**
- **Trialling nerve blocks and musculoskeletal injections with local anaesthetic and corticosteroids may help identify and treat 'pain generators' in the hip region.**
- **The patient should be referred to a physiotherapist for functional rehabilitation.**

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Commentary from a pain specialist

By Eric J. Visser

Causes

Chronic postsurgical pain (CPSP) following a total hip replacement occurs in approximately 10% of cases (with 1% having neuropathic pain).[1-3] Causes include occult fracture, prosthetic failure, heterotophic bone growth, neuropathic pain (e.g. scar neuroma, neuropathy of lateral cutaneous nerve to thigh or femoral nerve, lumbar plexopathy, complex regional pain syndrome), myofascial pain (e.g. greater trochanteric bursitis/tendonopathy, iliopsoas tendonopathy), referred pain from surrounding structures (e.g. low back, buttock or knee), infection or tumour.

Not infrequently, a clear-cut cause for chronic pain may not be found when 'pain sensitisation' develops in the nervous system. Such cases often spiral into a futile cycle of investigations and failed treatments, which should be avoided at all costs.

The description in this case of a 'burning' pain (responding to pregabalin) near the surgical scar suggests neuropathic pain, most likely a scar neuroma or neuropathy (entrapment) of the lateral cutaneous nerve to the thigh (meralgia paraesthetica). Tenderness around the greater trochanter suggests greater trochanteric bursitis or tendonopathy (which occurs in 5 to 10% of patients, mainly women, following total hip replacement).[4,5]

Screening for complications and 'red flags'

Risk factors predicting CPSP following a total hip replacement include chronic hip pain prior to surgery, severe acute postoperative pain, female gender, high body mass index, anxiety and depression.[6] At 58 years of age, the patient is relatively young to have a total hip replacement and this could relate to the motor vehicle accident she had at 23 years of age, with the possibility of a hip injury, early arthropathy and chronic pain.

Pain management starts with screening for surgical complications and red flag conditions, in consultation with the orthopaedic surgeon. A bone scan was nondiagnostic and this helps to exclude occult fracture or infection. Other investigations may include radiographs of the hip and pelvis, ultrasound examination of the gluteal-trochanteric region and blood tests for infection (e.g. C-reactive protein, erythrocyte sedimentation rate, full blood picture). The patient should be questioned specifically about neuropathic pain descriptors, such as burning, shooting, stabbing, numbness and allodynia (touch-sensitivity). A pain questionnaire such as the Douleur Neuropathique 4 (DN4) can be used to help diagnose neuropathic pain.[7]

Examination

The affected hip region should be examined for signs of altered nerve function, particularly allodynia and sensory changes in the distribution of surrounding nerves. Point tenderness along the scar suggests a neuroma. Features of complex regional pain syndrome, including temperature, colour and tissue (skin, hair) changes, as well as swelling, should be looked for in the affected leg. Musculoskeletal examination should include the hips, greater trochanter, buttock, knee and low back.

Pain management

Effective pain management in this case requires a multimodal, multidisciplinary approach. The patient should be given appropriate information about the nature of chronic pain, realistic expectations, and advice to avoid unnecessary interventions, including surgery, which may not help the pain. In this case, trialling simple nerve blocks and musculoskeletal injections with local anaesthetic and corticosteroids as 'first-line' therapy may help identify and treat 'pain generators' in the hip region – this should be discussed with the patient given her reluctance to have injections. If there is point tenderness in the scar (neuroma), the area should be infiltrated with local anaesthetic and corticosteroid. If this proves effective but is not long-lasting (months), this can be followed up with repeat corticosteroid injections, pulsed radiofrequency treatments, cryoneurotomy or phenol injection (nerve ablation).

If there is altered sensation in the distribution of the lateral cutaneous nerve of the thigh (meralgia paraesthetica), an ultrasound-guided local anaesthetic and corticosteroid injection can be considered. This could be followed up by pulsed radiofrequency treatments, cryoneurotomy or phenol injection. An ultrasound-guided local anaesthetic and corticosteroid injection should be considered if there is tenderness around the greater trochanter (bursitis/tendonopathy).

NSAID topical gel, 0.075% capsaicin cream or 5% lignocaine patches can be tried if the area of pain is localised. Pregabalin for neuropathic pain and sleep should only be continued at night to reduce side effects during the day. In addition, tricyclic antidepressants (such as amitriptyline, nortriptyline or imipramine), serotonin and noradrenaline reuptake inhibitors (such as duloxetine effective for neuropathic and musculoskeletal pain),[8] tramadol or tapentadol are good analgesic options. Buprenorphine transdermal patches could be considered on a trial basis as a third-line option. Given the history of nausea and vomiting, an antiemetic such as metoclopramide prescribed together with the opioid for the first week can be tried. 'Helpful' tolerance to nausea usually develops after a week. Oral NSAIDs are relatively contraindicated in this case given gastric intolerance and possible renal compromise (as she is taking an ACE inhibitor). Note that 5% lignocaine patch, tricyclic antidepressants, gabapentinoids and duloxetine are all used off label for CPSP.

The Box outlines the principles for managing patients with CPSP following a total hip replacement.

Referrals

The patient should be referred to a physiotherapist for functional rehabilitation, including 'activity-pacing' (such as walking and eventually golf), management of gait and leg length inequality, management of myofascial trigger points and tendonopathy (especially greater trochanteric bursitis, gluteus medius, minimus and piriformis), and trial of transcutaneous electrical nerve stimulation (TENS) over the hip.

Principles for managing chronic postsurgical pain following total hip replacement

- Use a multimodal, multidisciplinary approach and treat the whole person.
- Exclude surgical complications and 'red flags'.
- Identify risk factors for chronic postsurgical pain after a total hip replacement. These include neuropathic pain (scar neuroma, neuropathy), greater trochanteric bursitis/tendonopathy, severe perioperative hip pain, anxiety (fear-avoidance, catastrophising), depression, female gender and increased bone mineral index.
- Do not miss neuropathic pain near the surgical scar, surrounding neuropathy (e.g. lateral cutaneous and femoral nerves) or complex regional pain syndrome.
- Provide an explanation for chronic pain, set realistic outcomes (i.e. pain may not be 'cured'), and emphasise importance of functional and quality of life outcomes.
- Avoid the futile cycle of repeated investigations and failed treatments (especially procedures and surgery).
- Identify pain generators (if possible): if scar neuroma, a peripheral neuropathy or greater trochanteric bursitis/tendonopathy, try local anaesthetic and corticosteroid injections as first-line therapy.
- Use multimodal analgesia: NSAID gel, 0.075% capsaicin cream, 5% lignocaine patch, paracetamol, COX-2 selective inhibitor or NSAID, tramadol, tapentadol, gabapentinoids, duloxetine or buprenorphine transdermal patch. (Note that 5% lignocaine patch, gabapentinoids and duloxetine are used off label for chronic postsurgical pain.)
- Refer patient to a physiotherapist for functional rehabilitation, including activity pacing, management of gait and leg length inequality, management of myofascial trigger points and tendonopathy, and trial of transcutaneous electrical nerve stimulation.
- Identify and manage anxiety, depression, sleep disturbance and impacts on work and recreation.
- Refer patient for early clinical psychology to deal with anxiety, fear avoidance of movements and catastrophisation.

Finally, psychosocial issues associated with CPSP, particularly anxiety, depression, fear avoidance, catastrophising and sleep disturbance, should be identified and managed with early referral of the patient to a clinical psychologist if required.

References

1. Pinto PR, McIntyre T, Ferrero R, Almeida A, Arau´ jo-Soares V. Risk factors for moderate and severe persistent pain in patients undergoing total knee and hip arthroplasty: a prospective predictive study. PLoS ONE 2013; 8: e73917.
2. Beswick AD, Wylde V, Gooberman-Hill R, et al. What proportion of patients report long-term pain after total hip or knee replacement for osteoarthritis? A systematic review of prospective studies in unselected patients. BMJ Open 2012; 2: e000435.
3. Wylde V, Hewlett S, Learmonth ID, Dieppe P. Persistent pain after joint replacement: prevalence, sensory qualities, and postoperative determinants. Pain 2011; 152: 566-572.
4. Lorio R, Healy WL, Warren PD, Appleby D. Lateral trochanteric pain following primary total hip arthroplasty. J Arthroplasty 2006; 21: 233-236.
5. Sayed-Noor AS, Sjoden GO. Greater trochanteric pain after total hip arthroplasty: the incidence, clinical outcome and associated factors. Hip Int 2006; 16: 202-206.
6. Singh JA, Lewallen D. Predictors of pain and use of pain medications following primary Total Hip Arthroplasty (THA): 5,707 THAs at 2-years and 3,289 THAs at 5-years. BMC Musculoskelet Disord 2010; 11: 90.
7. Harifi G, Ouilki I, El Bouchti I, et al. Validity and reliability of the Arabic adapted version of the DN4 questionnaire (Douleur Neuropathique 4 Questions) for differential diagnosis of pain syndromes with a neuropathic or somatic component. Pain Pract 2011; 11: 139-147.
8. Myers J, Wielage RC, Han B, et al. The efficacy of duloxetine, non-steroidal anti-inflammatory drugs, and opioids in osteoarthritis: a systematic literature review and meta-analysis. BMC Musculoskelet Disord 2014; 15: 76.

COMPETING INTERESTS: Dr Visser has received honoraria for education sessions for Mundipharma Australia, Pfizer and Janssen in the past five years.

Commentary from a physiotherapist

By Tim Mitchell

Helping individuals manage CPSP after a total hip replacement is often challenging, with 6 to 12% of affected patients experiencing significant symptoms.[1,2] A multitude of potential factors can interact to produce each individual's pain experience and therefore standard protocols for management are neither possible nor appropriate. Clinical assessment is based on the individual patient presentation, available clinical tools and best evidence. Below is an example of a contemporary physiotherapy planning process for the case described.

What is the patient's perspective?

The primary concerns for this patient are pain around the surgical scar that affects sleep, daily activities and her capacity to play golf. Management should focus on these issues. Her main goal is to return to golf. The patient had a poor outcome from manipulation under anaesthetic and has stated reluctance for a cortisone injection. Given the influence of patient beliefs on treatment outcome,[3] patient perspective should be an important consideration for proposed management options.

Is there a specific diagnosis?

The noncontributory bone scan and orthopaedic review ruling out further surgery suggests no major underlying pathology. Constant burning pain may be indicative of peripheral neuropathic pain. An experienced physiotherapist may use screening questionnaires, pain descriptors and clinical sensory examination as tools to inform the likely presence of neuropathic pain. In such instances, review by a pain specialist would be important in confirming this diagnosis. It is also important to note that in a number of patients presenting with burning pain, a specific diagnosis may not be possible, as such symptoms are also associated with central nervous system sensitisation.[4] In these cases, pursuit of a specific diagnosis may not be helpful and in fact increased focus on specific pathology may become a barrier to recovery.

Similarly, lateral hip tenderness and other nonspecific clinical findings correlate poorly

with clinical pathology,[5] are largely unhelpful in terms of diagnosing pain phenotype and do not match the patient's primary complaint of burning pain around her scar. The relevance of lateral hip tenderness should be considered in context with the functional examination, comparison with the asymptomatic hip and correlation with the primary complaint.

Influence of psychosocial factors (cognitive, affective, social)

Unhelpful pain beliefs, hypervigilance and pain catastrophising often contribute to the patient's chronic pain experience. Simple questioning of the patient regarding how they cope with their pain and their understanding of ongoing symptoms can help inform the likely contribution of these factors to the chronic pain. Cognitive and affective factors can be screened at a basic level using simple questionnaires (e.g. Örebro Musculoskeletal Pain Screening Questionnaire).[6]

Lifestyle considerations

Key lifestyle considerations are sleep and exercise. As sleep is impaired, this will likely impact on the pain experience. Advice regarding sleeping posture or supports as well as sleep hygiene may be useful as an interim measure to help improve sleep, which could have a flow on effect of helping decrease pain sensitivity.

Impact of pain on exercise is also important. Try to differentiate if pain impairs exercise or alternatively if fear of pain is the limiting factor. Exercise (e.g. pool walking, walking or cycling on an exercise bike) is unlikely to be 'harmful' in this instance, and therefore should be encouraged. It will also likely have positive benefits on sleep, mood and cognitive factors. If a specific exercise is creating sustained or progressive symptom aggravation, then alternative exercise options or a more structured pacing approach to increase exercise tolerance may be required.

Functional assessment

Physical examination should focus on the key functional impairments. Consideration is given as to whether pain in these activities or postures is linked to 'adaptive' or 'maladaptive' (more likely in people with chronic disorders) functional behaviours. If unhelpful maladaptive strategies are identified, then these are addressed using a cognitive and functional approach.[7] Aspects such as strength and flexibility will be considered in the context of the functional impairments. It is a common management error to address and overemphasise specific physical examination findings that do not relate to the patient's presenting impairments.

A possible management plan

A possible management plan for this patient, as guided by the identified contributing factors, is summarised below.

- Education of the patient is the first priority. Reassure the patient regarding the benign nature of their symptoms and ensure they understand the positive benefits of a graduated functional retraining approach. This requires a personalised, rather than generalised approach.
- Use of medication and possible targeted procedures for peripheral neuropathic pain as per medical advice.
- Gentle cardiovascular exercise is essential. The patient should aim for 15 to 30 minutes per day and a mode most tolerable and enjoyable for the patient should be chosen. Activity pacing may be required for people who experience symptom flare-ups with any increase in exercise.
- Functional rehabilitation exercises directed at incorporating graduated exposure or retraining of key functional tasks.
- Graded motor imagery is an emerging area for management of some chronic pain disorders and may have a role if cortical processing issues are identified.[8]
- Passive therapies would not be recommended for this patient – unless perhaps used for a short defined period to provide a 'therapeutic window' to increasing exercise.
- A TENS unit could be trialled to provide symptomatic relief and perhaps assist with sleep at night.
- Monitoring of progress using patient specific functional measures at realistic intervals such as every four to six weeks.[9]
- Physiotherapy input on a weekly or fortnightly basis should be sufficient to monitor and progress this targeted active rehabilitation program.

Given the complexity of such patients, one key to successful management is communication – with the individual patient as well as between health care professionals. Although a clear, consistent message from multiple health care professionals can have a powerful positive impact on patient outcomes, it is my experience that conflicting, inconsistent messages from health care professionals often is a key factor in poor outcomes in this patient group. PMT

References

1. Nikolajsen L, Brandsborg B, Lucht U, Jensen TS, Kehlet H. Chronic pain following total hip arthroplasty: a nationwide questionnaire study. Acta Anaesthesiol Scand 2006; 50: 495-500.
2. Wylde V, Hewlett S, Learmonth ID, Dieppe P. Persistent pain after joint replacement: prevalence, sensory qualities, and postoperative determinants. Pain 2011; 152: 566-572.
3. Jensen MP, Turner JA, Romano JM. Changes in beliefs, catastrophizing, and coping are associated with improvement in multidisciplinary pain treatment. J Consult Clin Psychol 2001; 69: 655-662.
4. Woolf CJ. Central sensitization: implications for the diagnosis and treatment of pain. Pain 2011; 152(3 Suppl): S2-15.
5. Fearon AM, Scarvell JM, Neeman T, Cook JL, Cormick W, Smith PN. Greater trochanteric pain syndrome: defining the clinical syndrome. Br J Sports Med 2013; 47: 649-653.
6. Linton SJ, Nicholas M, MacDonald S. Development of a short form of the Örebro Musculoskeletal Pain Screening Questionnaire. Spine 2011; 36: 1891-1895.
7. O'Sullivan P. It's time for change with the management of non-specific chronic low back pain. Br J Sports Med 2012; 46: 224-227.
8. Priganc VW, Stralka SW. Graded motor imagery. J Hand Ther 2011; 24: 164-1648; quiz 169.
9. Horn KK, Jennings S, Richardson G, Vliet DV, Hefford C, Abbott JH. The patient-specific functional scale: psychometrics, clinimetrics, and application as a clinical outcome measure. J Orthop Sports Phys Ther 2012; 42: 30-42.

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