

BHS SURGICAL STANDARD

Investigation of the Painful Total Hip Replacement

Background & Inclusion

A small but significant proportion of patients have ongoing pain following Total Hip Arthroplasty. Despite routine clinical tests the diagnosis can remain unclear and challenging. This surgical standard includes all patients with persistent pain over 3 months following total hip replacement that have had infection and aseptic loosening ruled out with routine investigations including plain X-rays and CRP. For further guidance on the diagnosis of prosthetic joint infection and aseptic loosening please refer to the respective BHS Surgical Standards.

Diagnosis

1. A comprehensive history and examination is required to arrive at a diagnosis, considering the timing, character and location of the pain combined with gait, hip range of movement, strength and lumbar spine screening.
2. A comparison should be made of the pre-operative to post-operative pain, should it be unchanged then the initial diagnosis for which a THR was performed should be questioned and a referred cause of pain considered.
3. Component loosening or infection only accounts for approximately one third of cases in those with pain following total hip arthroplasty. The remaining are accounted for by a combination of other intrinsic, peri-articular or extrinsic referred causes of pain. Iliopsoas impingement (16-20%), referred pain (9-14%) and greater trochanteric pain syndrome (8-13%) are the most common causes. A table below summarises possible causes to consider¹⁻³.

Intrinsic	Peri-Articular	Extrinsic Referred
Bearing wear	Iliopsoas impingement	Spinal pathology: stenosis or radiculopathy
Trunnionosis	Greater trochanteric pain syndrome (trochanteric bursitis, gluteal tendinopathy or tear)	Neuropathic pain: peripheral nerve injury (lateral cutaneous femoral nerve, femoral nerve, sciatic nerve) or peripheral neuropathy
Unrecognised peri-prosthetic fracture	Heterotopic ossification	Vascular disease e.g. Gluteal claudication
Component impingement or instability without dislocation	Deep gluteal syndrome	Insufficiency fracture e.g. pubic rami
Stem tip pain	Ischial bursitis or hamstring tendinopathy	Inguinal or sports hernia
	Ischiofemoral impingement	Bone pathology e.g. metabolic, Paget's, primary or secondary bone tumour

Investigation

Clinical Symptoms	Clinical Findings	Optimal Radiological Investigation
Anterior groin pain/suspected iliopsoas impingement	Pain reproduced with active hip flexion, e.g. stair climbing, getting into/out of a car, resisted straight-leg raise or hip flexion in seated position.	• Plain X-rays: may demonstrate excessive lateralisation, retroversion or high inclination of the cup. • CT (MARS/dual-energy CT) to assess for anterior cup overhang, which may occur with both cemented & uncemented implants. • USS with guided iliopsoas tendon sheath injection can confirm the diagnosis and provide initial treatment³.
Lateral hip pain/greater trochanteric pain syndrome	Tenderness over the greater trochanter; pain on resisted hip abduction; pain during single-leg stance.	• MARS MRI to assess gluteal tendons. • USS guided Injections can be appropriate for both diagnostic and therapeutic purposes^{3,5}.
Posterior hip / gluteal pain ± radicular pain	Symptoms aggravated by prolonged sitting or reproduced with lumbar spine movement, neural tension testing or resisted hamstring contraction. Ischiofemoral impingement may be suspected when pain is reproduced by compression of the ischiofemoral space (hip extension, adduction and external rotation).	• MRI of the lumbosacral spine and MRI MARS of the pelvis is recommended. • If MRI is inconclusive but clinical suspicion remains, USS-guided injections may help localise and confirm the pain generator^{3,6}.
Neurological deficit	Weakness, altered sensation or paraesthesia may be spinal or local in origin. Most nerve injuries can be diagnosed clinically.	• MRI spine + MR pelvis (MARS – metal artefact reduction sequence) to exclude active compression. • Nerve conduction studies or diagnostic nerve blocks can help localise the level of injury and confirm the diagnosis^{1,7}.
Gluteal or leg pain with suspected vascular origin	Abnormal vascular examination; symptoms suggestive of intermittent claudication or peripheral vascular disease.	• CT angiogram plus onward referral for investigation of peripheral vascular disease.
Persistent pain with unclear cause after initial assessment	Clinical examination and initial investigations fail to identify a clear pain generator.	• Nuclear imaging studies should be reserved for cases where the cause remains unclear despite initial investigations, particularly given their negative predictive value & ability to identify other potential referred sources of pain within the pelvis & lumbar spine⁴.
Pain with no clear cause despite investigation	Repeat clinical examination may reveal evolving or previously unrecognised findings. A small proportion of patients will have no identifiable cause despite thorough investigation.	• Repeat imaging and clinical assessment after an interval may be beneficial where clinically appropriate. • CRPS may be considered as a diagnosis of exclusion after MDT discussion. Diagnosis, treatment & referral guidelines are published by the Royal College of Physicians⁸.

References:

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