



• **FACT SHEET No. 14**

Chronic Pain After Joint Surgery

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Osteoarthritis (OA) is the most frequent musculoskeletal diagnosis in the elderly population and the most common cause of disability; 40 percent of women and 25 percent of men ages 60-70 are diagnosed with OA. The end-stage treatment for OA is total joint replacement. Two major joint replacement procedures are total knee replacement (TKR) and total hip replacement (THR). For these procedures, chronic postoperative pain occurs in approximately 20 percent of TKR patients and 10 percent of THR patients.

Risk factors for chronic postoperative pain

There is no definitive explanation for why some patients develop chronic postoperative pain after joint replacement while others have a pain-free recovery. Several preoperative risk factors have been identified that may lead to chronic postoperative pain:

- Low age
- Female gender
- Untreated comorbidities and additional pain problems
- Previous surgery
- Preoperative and acute postoperative pain intensities
- Preoperative depression and pain catastrophizing
- Preoperative sensitization of the nervous system



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Screening before joint replacement

Pain catastrophizing is a maladaptive cognitive style triggered by a patient's anxiety and depression disorders and leading to negative forecasts of future events. Preoperative catastrophizing has been shown to be a risk factor for chronic postoperative pain. A widely used screening tool is the Pain Catastrophizing Scale.

Pressure pain thresholds (PPTs), temporal summation of pain (TSP), and conditioning pain modulation (CPM) are three types of quantitative sensory testing (QST) measurements that have been used to diagnose altered pain processing in patients with hip and knee OA. It is evident that pain and pain sensitization in OA patients before surgery can be normalized after joint replacement, if the patient is pain free.

Increased preoperative TSP and preoperative widespread hyperalgesia (i.e., low PPTs at extrasegmental sites) as indicators for sensitization have been linked to the development of chronic postoperative pain after joint surgery. CPM has been associated with the development of postoperative chronic pain after thoracotomy and abdominal surgery, but this has not been documented in patients with joint pain.

No or small associations are found between radiological OA and pain and pain sensitization mechanisms. Low grad of radiological OA and high pain have been associated with widespread hyperalgesia, facilitated TSP, and less-efficient CPM compared with patients with high grad of radiological OA and low pain. Knee OA patients with low Ahlbeck scores and preoperative high pain have a higher risk of low function and high pain intensities 12 months after joint surgery. Currently, no single measure of sensory, radiological, or cognitive abnormalities can predict the development chronic postoperative pain, and multimodal approaches are recommended.

Chronic pain after revision joint surgery

Revision TKR (re-TKR) surgery has a lower chance of success compared with primary TKR surgery. Patients with pain after re-TKR surgery show widespread hyperalgesia, facilitated TSP, and less-efficient CPM compared with patients with no pain after re-TKR surgery. Re-TKR patients with pain have generally higher pain intensities compared with patients with pain after the primary surgery. This could indicate a continued nociceptive drive, despite the removal of the OA affected joint, further indicating that sensitization could play a key role in the chronification of postoperative pain and suggesting that sensitization should be considered before re-TKR surgery. Re-TKR surgery based solely on pain as indication is not recommended.

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