

Stanford Acupuncture Opioid Drug Abuse Knee Replacement Finding

Published by [HealthCMi](#) on October 2017



Stanford University researchers conclude that acupuncture reduces and delays the need for opioids after total knee replacement surgery. Over 4.7 million people in the United States have had knee replacement surgery. Conventional post-surgical treatment often includes prescription opioids.

[1] The drugs often provide

pain relief for patients but are ineffective for some. Further, there is a growing concern that the extended use of prescription opioids leads to addiction, further exacerbating epidemic levels of opiate abuse. As a result, finding drug-free interventions that effectively relieve pain and decrease opiate use has become a public health imperative.

Acupuncture, the insertion of fine filiform needles at specific points on the body, has been used for millennia in China to treat disease, and recently the treatment modality is finding its footing in the schema of conventional medicine in the occident. As formal studies satisfy the burden of proof, acupuncture is increasingly recommended as an alternative to, or adjunct for, pharmaceutical patient care. In the meta-analysis conducted at Stanford University, researchers analyzed the results of 2,391 patients over 39 randomized clinical trials comparing the efficacy of five of the most common drug-free interventions for decreasing pain and opiate use after knee replacement surgery: acupuncture, electrotherapy, cryotherapy, preoperative exercise, and continuous passive motion. Among them, only acupuncture and electrotherapy were associated with reduced and delayed opioid consumption. [2]

Osteoarthritis is a major cause of knee pain and, if severe, it can damage the overall quality of life; chronic pain can diminish functional independence, which may lead to psychological afflictions. [3] Thus,

total knee arthroplasty (TKA) is one of the most common elective surgical procedures worldwide. [4] Although the goal of surgery is to decrease pain and restore mobility, TKA is associated with intense postoperative pain, and “there is a high prevalence of patients who report persistent chronic pain and some patients who report chronic pain development subsequent to the procedure.” [5, 6] Since acute postoperative pain slows recovery and may lead to chronic pain, adequate pain control is a major concern for patients undergoing joint replacement surgery. [7]

Opioid Pain Management and Rehabilitation

Patients with total joint arthroplasty rely, in part, on physical therapy for postsurgical rehabilitation. Opioid analgesics to manage acute postoperative pain are less than optimal for these patients because their side effects, especially sedation, can interfere with rehabilitation. [8] “As opioids are recommended for the treatment of osteoarthritis and surgical recovery, patients... are likely to be exposed to opioids for long periods of time, increasing their chance of developing tolerance, hyperalgesia, and other dangerous and potentially costly opioid-related side effects.” [9] Opioids are more effective for patients at rest, but prolonged immobility can inhibit patient mobilization and prolong the length of hospital stays. [10, 11] Additionally, “inadequate postoperative pain management has profound acute effects, including immune system suppression, decreased mobility that increases deep vein thrombosis and pulmonary embolism rates, myocardial infarction, and pneumonia. Long-term influences of poor pain management include transition to chronic pain and prolonged narcotic consumption, which can result in opioid dependence, an epidemic in the United States.” [12]

Functional Improvement

Many patients are concerned about using prescription opioid analgesics. [13] There is a complicated relationship between pain relief and functional improvement that makes it difficult to determine the best course of treatment; “whereas strong opioids in general provided better pain relief than weak opioids or non-opioids, function was improved by weak opioids and nonopioids, but not strong opioids,” forcing patients—or their doctors—to weigh the benefits of pain control against functional mobility. [14] For those who place preference on pain control, a high daily dose (over a 120mg morphine equivalent) is a direct predictor of long-term opiate use, especially because there is no natural endpoint to this pharmaceutical therapy. [15, 16] Indeed, workers treated with opioids were less likely to return to work than those who did not receive opioids. [17]

While side effects, lack of efficacy, or heightened concern causes most patients to discontinue opioid therapy early in their course of treatment, two-thirds of patients that continue using opioids for the first 90 days will remain on the medication years later. [18] “Compared to those whose chronic pain episode was not treated with opioids, those treated with acute high-dose use had 3 times the risk of opioid abuse, while those with chronic high-dose use has 107 times the risk.” [19] Among patients that receive opioids for chronic pain in a primary care setting, the rate of lifetime aberrant drug behavior may be as high as 80%. [20] “The pharmacology of opioids has been extensively studied and the search for non-addictive opioids has been long and fruitless,” so we should not be surprised with such high rates of addiction amongst those with access to prescription pharmaceuticals. [21]

It is not only prescribed opioids that potentially pose iatrogenic harm from long-term use. [22] In 2010, 5% of the general population admitted to using prescription opioids for “non-medical” purposes, and “the majority of these non-medical users obtained their opioids from friends or family, not from drug dealers or the internet.” [23] The mismanagement of long-term pain relief facilitates easy access to these drugs among the general population, and for those who need to satiate an addiction, some individuals turn to heroin when it becomes harder to obtain than prescription opioids. [24] “In Seattle, 40% of patients using heroin report first “getting hooked on” prescription opioids.” [25] The addiction crisis is well-known in hospitals; according to the US Centers for Disease Control and Prevention, 40% of emergency department visits are related to opioid misuse. [26] Thus, identifying suitable non-pharmaceutical alternatives for pain relief is a matter of public health.

Acupuncture

Acupuncture research is promising. Acupuncture is known for its impact on pain relief: in a study conducted at the University of Minnesota School of Public Health on 2,500 patients with total hip or knee replacements, “forty-one percent of patients reported moderate/severe pain prior to receiving acupuncture, while only 15% indicated moderate/severe pain after acupuncture.” [27] Additionally, acupuncture moderates pharmaceutical use: “acupuncture has been shown to reduce the use of opioid analgesics as well as to aid in alleviating post-operative medication side effects including sedation, nausea, vomiting, and dizziness. Of note... was the clinically meaningful finding that acupuncture contributed to lowering pain below the threshold at which patients would receive intravenous narcotics beyond the initial postoperative standard dose.” [28] Since the long-term side effects of opiate use are dose dependent, even a moderate change in acute pain can have a huge impact on long-term care if it tempers early stage opioid use.

The risks of pain mismanagement are extraordinarily high for joint replacement patients. Acupuncture and electrotherapy reduce opioid consumption and improve postoperative pain management outcomes. [29] The results of this study distinguishes acupuncture from a panoply of treatment options. Hopefully, this encourages doctors to include acupuncture in their postsurgical treatment regimens to reduce the incidence of lifelong dependence on opioids.

Notes

1 Maradit, H., Larson, D. R., Crowson, C. S., Kremers, W. K., Washington, R. E., Steiner, C. A., . . . Berry, D. J. (2015, September 02). *Prevalence of Total Hip and Knee Replacement in the United States*. Retrieved October 07, 2017, ncbi.nlm.nih.gov/pubmed/26333733.

2 Tedesco D, Gori D, Desai KR, Asch S, Carroll IR, Curtin C, McDonald KM, Fantini MP, Hernandez-Boussard T. *Drug-Free Interventions to Reduce Pain or Opioid Consumption After Total Knee Arthroplasty: A Systematic Review and Meta-analysis*. *JAMA Surg*. Published online August 16, 2017. doi:10.1001/jamasurg.2017.2872 pg E1.

3 Hinman RS, McCrory P, Pirodda M, Relf I, Forbes A, Crossley KM, Williamson E, Kyriakides M, Novy K, Metcalf BR, Harris A, Reddy P, Conaghan PG, Bennell KL. *Acupuncture for Chronic Knee Pain: A Randomized Clinical Trial*. *JAMA*. 2014;312(13):1313–1322. doi:10.1001/jama.2014.12660 pg 1.

4 Crespin, D. J., K. H. Griffin, J. R. Johnson, C. Miller, M. D. Finch, R. L. Rivard, S. Anseth, and J. A. Dusek. "Acupuncture provides short-term pain relief for patients in a total joint replacement program." *Pain medicine (Malden, Mass.)*. June 2015. Accessed October 07, 2017, pg 9.

5 Tedesco et al, *Drug-Free Interventions to Reduce Pain or Opioid Consumption After Total Knee Arthroplasty*, pg E2.

6 Inacio, Maria C S, Craig Hansen, Nicole L. Pratt, Stephen E. Graves, and Elizabeth E. Roughead. "Risk factors for persistent and new chronic opioid use in patients undergoing total hip arthroplasty: a retrospective cohort study." *BMJ Open*. April 01, 2016. Accessed October 07, 2017, pg 2.

7 Crespin et al, *Acupuncture provides short-term pain relief for patients in a total joint replacement program*, pg 8.

8 *Ibid*, pg 2.

9 Inacio et al, *Risk factors for persistent and new chronic opioid use in patients undergoing total hip arthroplasty*, pg 2.

10 *Ibid*, pg 8.

11 *Ibid*.

12 Tedesco et al, *Drug-Free Interventions to Reduce Pain or Opioid Consumption After Total Knee Arthroplasty*, pg E2.

13 Crespin et al, *Acupuncture provides short-term pain relief for patients in a total joint replacement program*, pg 8.

14 Sullivan, M. D., and C. Q. Howe. "Opioid therapy for chronic pain in the United States: promises and perils." *Pain*. December 2013. Accessed October 07, 2017, pg 3.

15 *Ibid*, pg 6.

16 *Ibid*, pg 10.

17 *Ibid*, pg 4.

18 *Ibid*, pg 6.

19 *Ibid*, pg 8.

20 *Ibid*, pg 5.

21 *Ibid*.

22 *Ibid*, pg 1.

23 *Ibid*, pg 8.

24 *Ibid*.

25 *Ibid*.

26 *Ibid*, pg 7.

27 *Crespin et al*, *Acupuncture provides short-term pain relief for patients in a total joint replacement program*, pg 2.

28 *Ibid*, pg 8.

29 *Tedesco et al*, *Drug-Free Interventions to Reduce Pain or Opioid Consumption After Total Knee Arthroplasty*, pg E10.