# Transdermal buprenorphine patch in the management of post-operative pain in orthopaedic patients: a systematic review looking at efficacy, safety, adverse effects and cost–benefit analysis

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## Abstract (300 word limit)

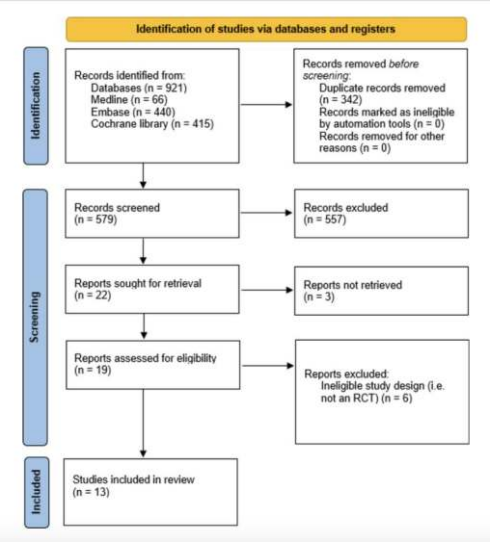
This systematic review evaluates the safety and efficacy of transdermal buprenorphine patches for postoperative pain management in orthopaedic patients, compared to conventional analgesics and placebo. A comprehensive literature search was conducted across Medline, Embase, and Cochrane CENTRAL databases up to September 2024. The review included randomised controlled trials that compared transdermal buprenorphine with standard analgesics such as tramadol, fentanyl, and NSAIDs in patients undergoing orthopaedic surgery.

A total of 921 records were initially identified, of which 579 were screened, and 13 studies met the inclusion criteria. These studies spanned various orthopaedic procedures, assessing key outcomes including pain relief, adverse effects, patient satisfaction, and the need for rescue analgesia. Data extraction and quality assessment were independently performed by two reviewers, with risk of bias assessed using the Cochrane RoB2 tool. Four studies were rated as high risk, five as medium, and four as low.

The findings consistently demonstrated that transdermal buprenorphine provided effective analgesia comparable to other opioids, with added benefits. Notably, it was associated with fewer respiratory and gastrointestinal side effects, particularly in elderly patients, making it a safer option in this demographic. Patients receiving transdermal buprenorphine reported higher satisfaction due to its stable and prolonged analgesic effect, which also led to a reduced requirement for additional analgesics. A retrospective cost–benefit analysis suggested potential economic advantages through reduced need for supplementary medications and lower incidence of side effects.

In conclusion, transdermal buprenorphine is a safe and effective alternative to conventional analgesics for postoperative pain management in orthopaedic surgery, particularly beneficial for elderly patients. Its favourable safety profile, consistent analgesic delivery, and improved patient satisfaction support its broader use. Further high-quality studies are recommended to validate these findings across diverse patient populations and surgical contexts.

## Image




## Recent Publications (minimum 5)

1. The efficacy of combined decompression of carpal and cubital tunnel in the setting of cervical spine stenosis: A retrospective analysis. *Cureus*. **DOI:** 10.7759/cureus.73827.
2. The ORTHOPOD Study: The management of day-case orthopaedic trauma in the United Kingdom. *Bone & Joint Journal*.**DOI:** doi.org/10.1016/j.injury.2023.03.032
3. Machine learning risk prediction of mortality for patients undergoing surgery with perioperative SARS-CoV-2: The COVIDSurg mortality score. *British Journal of Surgery*, 109(9), pp.913–921. **DOI:** 10.1093/bjs/znac232
4. Room R, BaborT, Rehm J (2005) Alcohol and public health. Lancet 365: 519-530.
5. Sullivan EV, Zahr NM (2008) Neuroinflammation as a neurotoxic mechanism in alcoholism: Commentary on “Increased MCP-1 and microglia in various regions of human alcoholic brain”. Experimental neurology 213:10-17.

**Photograph**



## Biography (150 word limit)

**Mr Amr Basha** is a Trauma & Orthopaedics Registrar at Watford General Hospital with a strong academic and clinical background. He completed Core Surgical Training with a focus on T&O in the East Midlands Deanery and has demonstrated proficiency in managing acute trauma cases and performing complex procedures, including neck of femur and ankle fracture surgeries. He holds a PGCert in Medical Education from Cardiff University and is actively involved in undergraduate and postgraduate teaching with Imperial College London and the University of Leicester. Dr Basha is the first author of a systematic review on buprenorphine for postoperative pain and a co-author in multiple orthopaedic publications. His audit and quality improvement projects have been presented nationally and internationally. He has a long-term interest in hip and knee arthroplasty, robotic surgery, and medical education, aiming to contribute to global orthopaedic outreach work in the future.

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**Notes/Comments:**