

# Efficacy of Multimodal Analgesia Following Hip Arthroscopy

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- Hip arthroscopy utilization has significantly increased in recent years, with studies reporting a 7 to 25-fold increase in annual rates, depending on geographic location
- Presently, opioid analgesia represents a mainstay of post-operative analgesia following this procedure, as the evidence for adjunctive multimodal analgesia is lacking.
- The use of regional anesthesia and adjunctive peri-operative blocks have been studied in a number of trials <sup>(1-6)</sup>, however, the use of adjunctive oral medications and their efficacy in improving pain control following hip arthroscopy has been poorly studied

- The purpose of this study was to determine whether different regimens of multimodal analgesia will reduce post-operative pain scores, narcotic consumption and hospital length-of-stay
  - Specifically, we aimed to evaluate the efficacy of zopiclone, gabapentin and celecoxib in improving post-operative pain control

- From 2018 to 2021, 132 patients undergoing hip arthroscopy for symptomatic femoroacetabular impingement (FAI) were included in this prospective, single-center randomized controlled trial. Patients were randomized into four treatment groups:
  - Group 1 - Standard of Care (SOC): Opioid medication (Oxycodone-acetaminophen 5 mg/325 mg, 1-2 tabs q6H as needed), Heterotopic ossification prophylaxis - Naprosyn 500 mg twice daily x 3 weeks);
  - Group 2 – SOC + Post-operative sleeping aid (Zopiclone 7.5 mg nightly x 7 days);
  - Group 3 – SOC + Pre-operative and post-operative Gabapentin (600 mg orally, 1 hour pre-operatively; 600 mg post-operatively, 8 hours following pre-op dose);
  - Group 4 – SOC + Pre-medicate with Celecoxib (400 mg orally, 1 hour pre-operatively)

- The primary outcome was pain measured with a visual analogue scale, monitored daily for the first week and every other day for 6 weeks
  - Secondary outcomes included narcotic consumption and hospital length of stay, and associated cost

- Patient characteristics were statistically similar between groups ( $p>0.20$ ).
- There were no statistically significant differences in pain scores between groups at any timepoint after adjusting for intra-operative traction time, intra-operative narcotic administration and pre-operative pain scores ( $p>0.05$ ).
- There were also no significant differences in the number of days that narcotics were taken for ( $p=0.88$ ) and the average daily morphine milligram equivalents consumed ( $p=0.70$ ).

	SOC	Zopiclone	Gabapentin	Celecoxib	p-value
MME per day, median (IQR)	56.3 (112.5)	56.3 (112.5)	56.3 (112.5)	56.3 (56.3)	0.70
Days narcotic taken, median (IQR)	1 (5)	2 (4)	2 (6)	2 (5.5)	0.88

- Similarly, there were no statistically significant differences in length of stay in the experimental groups, compared with the control group ( $p > 0.05$ ).

	Zopiclone	Gabapentin	Celecoxib
Mean difference in length of stay (95% CI), min	10.1 (-22.8 to 43.0)	-6.8 (-39.9 to 26.4)	0.6 (-32.8 to 33.9)

- Lastly, there were no statistically significant differences in associated cost between groups

	Control	Zopiclone	Gabapentin	Celecoxib	P-Value
Total	4714	5028	4780	5580	0.68

- Multimodal analgesia, with the medications included in this study, did not appear to improve post-operative pain scores or reduce length of stay following hip arthroscopy.
- Research efforts should continue to focus on optimizing pain control in order to reduce the necessity for, and consumption of opioids in the post-operative period



1. Dold AP, Murnaghan L, Xing J, Abdallah et al. (2014) Preoperative Femoral Nerve Block in Hip Arthroscopic Surgery: A Retrospective Review of 108 Consecutive Cases. *Am J Sports Med* 42:144–149
2. Garner M, Alsheemeri Z, Sardesai A, et al. (2017) A Prospective Randomized Controlled Trial Comparing the Efficacy of Fascia Iliaca Compartment Block Versus Local Anesthetic Infiltration After Hip Arthroscopic Surgery. *Arthroscopy* 33:125–132
3. Kay J, De Sa D, Memon M, et al. (2016) Examining the Role of Perioperative Nerve Blocks in Hip Arthroscopy: A Systematic Review.. *Arthroscopy* 32:704-715e1
4. Nye ZB, Horn JL, Crittenden W, et al. (2013) Ambulatory continuous posterior lumbar plexus blocks following hip arthroscopy: A review of 213 cases. *J Clin Anesth Elsevier B.V.* 25:268–274
5. Xing JG, Abdallah FW, Brull R, et al. (2015) Preoperative femoral nerve block for hip arthroscopy. *Am J Sports Med* 43:2680–2687
6. YaDeau JT, Tedore T, Goytizolo EA, et al. (2012) Lumbar plexus blockade reduces pain after hip arthroscopy: a prospective randomized controlled trial. *Anesth Analg* 115:968–72