

**Assessment of post-operative pain relief with pregabalin in patients operated for joint replacement surgery**

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**Abstract**

**Background:** Post-operative pain is a common problem faced in most surgical cases. It is usually treated with first line analgesics like NSAIDs and opioids. It is commonly seen that patients are not satisfied with post-operative pain relief even after various pain killers. Pregabalin is a relatively newer drug, safe and effective in reducing postoperative pain.

**Material and methods:** This prospective case control study was done on patients who underwent orthopaedic arthroplasty surgery at MGM Medical College and Hospital, kamothe, Navi Mumbai. All patients received 150mg of pregabalin pre-operatively and 6 hours post-surgery including two groups of same no number of patients as case and control group. VAS score was calculated pre-op, 12 hours post-surgery and 24 hours post-surgery. A total of 57 patients were included in this study who underwent joint replacement surgery. Out of 57 patients 35 were males and 22 were females. The mean age was 62.5(28-85years age group).

**Result:** The average VAS score pre-operatively was 5.83. The average VAS score at 12 hours post-op was 3.95 and at 24 hours was 3.05. The pre-operative average VAS score in male was 5.6 and in females was 6.2. The average VAS score in male post-operative patients at 12 hours was 3.8 and in females it was 4.2 while post-operative 24 hour score in males was 2.9 and in females was 3.3. While the average vas score in control group preoperatively was 6.2.

The average vas score post-operatively at 12 hours was 5.5 and post-operatively at 24 hours was 5.1.

Ten patients showed few common side effects of drug pregabalin like dizziness, drowsiness, dry mouth, headache, vomiting which were treated symptomatically.

**Conclusions:** In our study it was seen that pregabalin is effective in reducing post operative pain with few side effects like dizziness, drowsiness, dry mouth.

**Keywords:** Arthroplasty, VAS score, oral pregabalin.

**Introduction**

Postoperative pain is a mixed pain, with nociceptive and neuropathic components. Surgical stimulus causes sensitization of dorsal horn neurons, associated with augmentation of pain. This is referred to as central sensitization and represents the neuropathic component.<sup>1</sup>

Various classes of drugs used for post-operative pain relief includes non-steroidal anti-inflammatory drugs, opioids, and local anesthetics to counter the nociceptive component of postoperative pain. Recent evidence suggests that  $\alpha 2$  d subunit calcium channel ligands, like gabapentin and pregabalin, may aid in providing effective postsurgical analgesia.<sup>2</sup>

Pregabalin is a structural analogue of the inhibitory neurotransmitter gaba-aminobutyric acid, with much more favorable pharmacokinetic profile to patient tolerance with anticonvulsant, anti-hyperalgesic, and anxiolytic properties.<sup>3,4</sup>

Pregabalin reduces central sensitization by calming down hyperexcited dorsal horn neurons. This drug was introduced as anticonvulsants, due to its ability to reduce neurotransmitter release from activated epileptic neurons. Similarly, ability to reduce neurotransmitter release from activated neurons in pain pathways and fear circuits contributes their role in pain management.<sup>4</sup>

Various studies have demonstrated the efficacy of pregabalin in treating acute postsurgical pain. A recent meta-analysis has concluded that pregabalin, at all doses and administration regimens, has opioid-sparing effects thus reducing pain scores postsurgically.<sup>5</sup>

In this study we have assessed post-operative pain relief after 150mg of pregabalin(b.t) and 6 hours post surgery in patients of joint replacement surgery.

**Materials and Methods**

This prospective study was done on patients who underwent joint replacement surgery in the Department of Orthopaedics at MGM Hospital Kamothe in the last 2 years from MAY 2015 to MAY 2017, fulfilling the inclusion criteria. Total of 57 patients were included in the study, out of which 35 were males and 22 were females undergoing joint replacement surgery. All patients received 150 mg of pregabalin preoperatively and 6 hours post-operatively. VAS score was calculated pre-operatively, 12 hours post-surgery and 24 hours post surgery. No opioid drug was used along with pregabalin, injection diclofenac was used along with pregabalin postoperatively for days twice a day. Another control group was taken who received multivitamin tablet in place of pregabalin. Data was collected, assessed and calculated using appropriate statistical analysis

**Methods**

**Inclusion criteria**

**Cases of:**

1. Total hip arthroplasty

2. Total knee arthroplasty
3. Hemiarthroplasty(shoulder replacemnt, hip replacement)
4. Age groups(28-85 years of age) who underwent any replacement surgery
5. Unilateral and bilateral

**Exclusion criteria**

1. Revision surgery
2. Infection
3. Cases other than replacement surgery

**Demographic Table**

No of patients	Hip replacement	Knee replacement	Shoulder replacemnt	Total (n= 57)
Males	15	18	2	35
Females	8	14	0	22

*Visual Analog Scale (VAS)†*

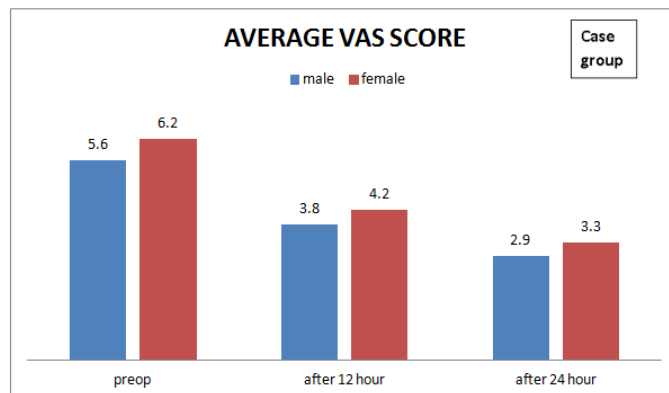


**Result**

This prospective case control study was done on the patients admitted in the orthopaedic ward at MGM Medical college and Hospital, Kamothe, Navi Mumbai. All patients who underwent joint replacement surgery were given 150mg of pregabalin pre-operatively and 6 hours post-operatively. Total of 57 patients were included in this study undergoing different joint replacement surgery. Out of 57 patients 35 were males and 22 were females and same number of patients was taken in a control group who received multivitamin tablet in place of pregabalin. The mean age was 62.5(28-85 years age group). The average vas score pre-operatively was 5.83.

The average vas score post-operatively at 12 hours was 3.95 and post-operatively at 24 hours was 3.05. The pre-operative average vas score in male was 5.6 and in female was 6.2. The average vas score in male post-operative 12 hours was 3.8 and in females it was 4.2 while post-operative 24 hours in male was 2.9 and in female was 3.3. While the average vas score in control group preoperatively was 6.2. The average vas score post-operatively at 12 hours was 5.5 and post-operatively at 24 hours was 5.1.

Few patients showed one or few common side effects of drug pregabalin like dizziness, drowsiness, dry mouth, headache, vomiting and were treated symptomatically.



### Discussion

It is evident that the degree of post-operative pain experienced by patients after different surgical procedures is not universal, and even some approaches might result in unexpectedly high levels of postsurgical pain.<sup>7,8</sup>

Moreover, the analgesic efficacy of different pain medications might also be different in different types of surgery.<sup>9</sup>

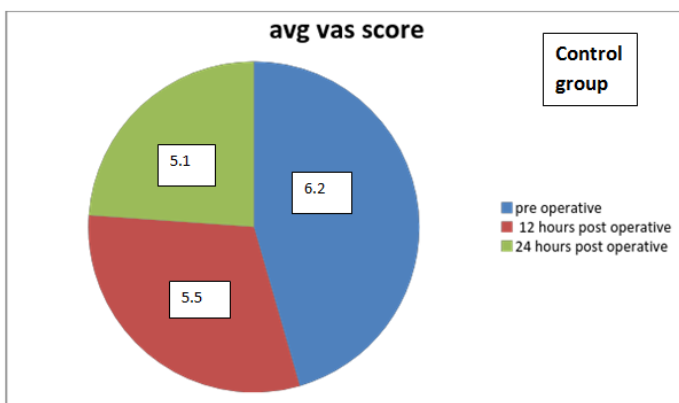
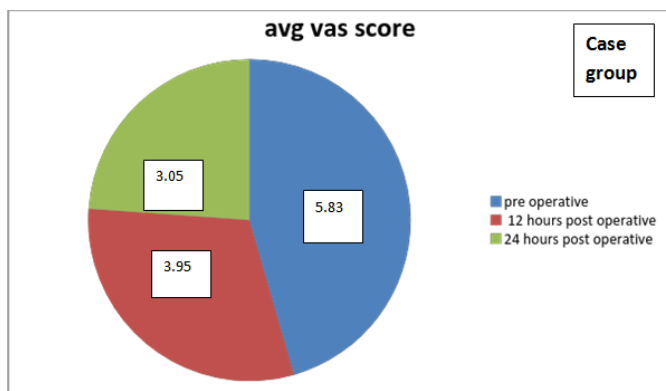
Lee et al.<sup>10</sup> statistically significant decreases in pain scores at 2 hours post-surgery were reported, although the standard difference in mean pain scores between pregabalin and the control group was only <1 point on the VAS pain score.

In recent years, many studies have been carried out to evaluate the effects of pregabalin. However, different conclusions seen in efficacy of pregabalin for post-operative pain management in joint replacement surgery. Jain et al.<sup>11</sup> seen that administration of perioperative pregabalin showed reduced opioid consumption, improved post-operative analgesia, and yielded higher patient satisfaction in joint replacement surgery.

Few studies have used other drugs in combination with pregabalin to relieve post-operative pain.

### Complications

There was no complication seen in any patients. Only few patients showed common side effects of pregabalin like dizziness, dry mouth.



## **Conclusion**

In our study it was seen that pregabalin is effective in reducing post-operative pain with few side effects like dizziness, drowsiness, dry mouth. It has shown good results in patients of joint replacement surgery, relieving post-operative pain. It was clearly seen by comparison of drug pregabalin in reducing pain through case and control group which evidently suggest its pain reducing effects through vas score in case group receiving the drug pregabalin as compared to control group receiving placebo drug as multivitamin tablet. No opioid drug was used along with it. Further, more studies are required to see its effects in trauma patients, along with their comparison to placebo/joint replacement surgery. Further studies are required to see its changing effects in relieving post-operative pain according to doses and timing.

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## **Declarations**

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Conflict of interest: None Declared

Ethical approval: The study was approved by institutional ethics committee

## **References**

1. Pregabalin in neuropathic pain: a more 'pharmacologically elegant' gabapentin? *Am J Geriatr Pharmacother*, 3 (2005), pp. 274-287.
2. J.E. Frampton, R.H. Foster Pregabalin: in the treatment of post-therapeutic neuralgia *Drugs*, 65 (2005), pp. 11-18.
3. Turan A, Kaya G, Karamanlioglu B, Pamukcu Z, Apfel CC. Effect of oral gabapentin on postoperative epidural analgesia. *Br J Anaesth*. 2006;96:242-6.
4. Stahl SM. Anticonvulsants and the relief of chronic pain: Pregabalin and gabapentin as alpha(2)delta ligands at voltage-gated calcium channels. *J Clin Psychiatry*. 2004;65:596-7.
5. Mishriky BM, Waldron NH, Habib AS. Impact of pregabalin on acute and persistent postoperative pain: a systematic review and meta-analysis. *Br J Anaesth* 2015; 114:10-31.
6. *Eur Spine J*. 2006 Jan; 15(Suppl 1): S17-S24.
7. Joshi GP, Bonnet F, Kehlet H. Evidence-based postoperative pain management after laparoscopic colorectal surgery. *Colorectal Dis* 2013; 15:146-155.
8. Gerbershagen HJ, Aduckathil S, van Wijck AJ, et al. Pain intensity on the first day after surgery: a prospective cohort study comparing 179 surgical procedures. *Anesthesiology* 2013; 118:934-944.
9. Gray A, Kehlet H, Bonnet F, et al. Predicting postoperative analgesia outcomes: NNT league tables or procedure-specific evidence? *Brit J Anaesth* 2005; 94:710-714.
10. Lee JK, Chung KS, Choi CH. The effect of a single dose of preemptive pregabalin administered with cox-2 inhibitor: a trial in total knee arthroplasty. *J Arthroplasty* 2015; 30:38-42.
11. Jain P, et al. Evaluation of efficacy of oral pregabalin in reducing postoperative pain in patients undergoing total knee arthroplasty. *Indian J Orthop*. 2012;46(6):646-52.