

## Research Article



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## DECODING THE SIDE EFFECTS, TIMINGS, USE, AND NEED FOR OPIOID AND NON-OPIOID ANALGESICS PRESCRIBED FOLLOWING SINONASAL SURGERY

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### ABSTRACT

**Background:** Following surgery, the usage of opioid analgesics has significantly increased in the recent past. As a result, the mortality and morbidity linked to opioid use grew even more. After sinonasal surgery, the majority of patients use opioids, but most also utilize leftovers, which is improper use.

**Aim:** The purpose of this study was to evaluate the necessity, usage patterns, adverse effects, and dosages of opioid and non-opioid analgesics after sinus surgery.

**Methods:** A retrospective assessment of 140 participants of both genders who had sinonasal surgery was conducted. The study employed a numeric rating scale to evaluate postoperative pain and determine the necessity of on-demand opioid and non-opioid analgesics, taking into account the surgical parameters and patient demographics.

**Results:** The pain scores and medications used by research participants after surgery were  $1.03 \pm 0.65$ ,  $1.12 \pm 0.52$ ,  $0.86 \pm 1.24$ ,  $0.68 \pm 1.26$ , and  $0.41 \pm 0.86$  on the day of surgery, day 1, day 2, day 3, day 4, and day 5. On the day of operation, day 1, day 2, day 3, day 4, and day 5, the amount of opioids utilized was  $7.52 \pm 3.34$  mg,  $17.3 \pm 3.52$  mg,  $12.65 \pm 10.35$  mg,  $21.65 \pm 10.2$  mg,  $15 \pm 0$  mg, and  $15 \pm 0$  mg, in that order. Opioids were taken by 60% (n=84), 0.71% (n=1), 1.42% (n=2), 0.71% (n=1), 0.71% (n=1), and 0.71% (n=1) of the subjects on operation day, day 1, day 2, day 3, day 4, and day 5. 91.42% (n=128), 40.71% (n=57), 34.28% (n=48), 33.57% (n=47), 21.42% (n=30), and 7.14% (n=10) of the research participants were not using opioids.

**Conclusion:** The current study reveals that neither opioids nor non-opioid analgesics are associated with any significant complications, and the majority of participants require opioids on the day of surgery. The research recommends starting non-opioid analgesic postoperative therapy and switching to opioids contingent on patient circumstances.

**Keywords:** sinus surgery, pain, postoperative pain, non-opioids, and opioids.

### INTRODUCTION

Drug-related overdose deaths have significantly increased recently worldwide, especially in India. Data from the literature indicates that the number of deaths from drug overdoses has almost doubled since 2000.<sup>1</sup> According to data from the years 2014 and 2015, opioids were the primary drug implicated in approximately 60% of all drug overdose deaths that were reported. 2017. Additionally, it has been noted that using semisynthetic opioids, such as morphine,

oxycodone, and hydrocodone, increases the risk of death. In recent years, it has been discovered that these tendencies are comparable.<sup>2</sup>

After sinonasal surgeries, most patients have their postoperative pain treated with opioid analgesics; most of the prescribed opioids are not used and are stored as leftovers. According to a recent review of the literature, approximately 90% of all patients who are supplied opioids keep the medications as leftovers.<sup>3</sup> One of the participants who kept medications to About 70% of the residual opioids in subjects are used as leftover medications. According to previously released data, the majority of opioid abusers and addiction cases say that their usage of prescription medicines was the catalyst for their actions.<sup>4</sup>

Therefore, decreasing the amount of opioid prescriptions written following sinus surgery can significantly lower the subjects' abuse, addiction, and reliance on the medicines. the unused pills by taking the prescribed amount of the limited medications.<sup>5</sup> Prior research published in the literature shows that the use of non-opioid medications, such as acetaminophen and NSAIDs (non-steroidal anti-inflammatory drugs), can provide appropriate pain relief and lower the risk of dependence after sinonasal surgeries, such as FESS (functional endoscopic sinus surgery).<sup>6</sup> On the other hand, there is a dearth of information in the literature about the necessity, timing, and adverse effects of using both opioid and non-opioid analgesics following sinus surgery.<sup>7</sup> Therefore, the purpose of the current study was to evaluate the necessity, dosage, timing, and adverse effects of opioid and non-opioid analgesics used after sinus surgery.

## **MATERIALS AND METHODS**

The goal of the current retrospective clinical study was to evaluate the necessity, usage patterns, and adverse effects of opioid and non-opioid analgesics that were recommended after sinus surgery. The Government Medical College Associated Hospital in Rajouri, Jammu and Kashmir's Department of ENT and HNS conducted the study. Subjects who had sinonasal surgery in the department of ENT made up the study population.

One hundred and forty male and female individuals, who underwent septoplasty and sinonasal surgery at the institute, were included in the study. The study's inclusion requirements included participants who had undergone any degree of functional endoscopic sinus surgery, such as maxillary sinus surgery, turbinoplasty, septoplasty, ethmoidal or frontal surgery, and complete house FESS. The participants who had undergone a septorhinoplasty were excluded.

Following the final enrollment of research participants, postoperative pain was measured using the NRS (numeric rating scale) over a period of three to five days. The requirement for non-opioid analgesics was evaluated in each participant and associated with the demographic information and surgical factors. The individuals who used analgesics when the pain score was higher than four or when there was a demand. Every postoperative analgesic that was taken during the recovery period was tallied. Sinonasal problems, procedure information, comorbidities, demographic information, and medical history were all documented and evaluated for each participant.

Splints were administered for seven days to the participants who had septoplasty, and nasal packing was administered for one day to every subject who had FESS. Tamponade made of merocele was used for the nasal packing. After one day, the nasal packing was removed, and the patient began receiving nasal care for the sinonasal surgery. This included using xylometazoline emulsion and spray after septoplasty, as well as topical steroids after FESS.

A common sympathomimetic substance used in decongestant nasal spray formulations is xylometazoline. In addition, the xylometazoline emulsion contained dexamethasone and menthol, which were administered as a spray three times a day. The nasal spray did not contain any analgesic component and did not employ one either. The clinical information system and the institute's data record provided the necessary information. A shift in the study subjects' NRS (numeric rating scores) ratings on each post-operative day was the main outcome measured. The frequencies of complications and the quantity of opioid and non-opioid analgesics used were the study's secondary outcomes.

Using the SPSS software version 21.0 (IBM, NY, USA) and a paired t-test to compare changes in pain levels, the collected data were statistically evaluated. The information was presented using percentages, means, standard deviations, and numbers. A significance threshold of  $p < 0.05$  was maintained.

## RESULTS

The purpose of this retrospective clinical study was to evaluate the necessity, usage patterns, and adverse effects of opioid and non-opioid analgesics that were recommended after sinus surgery. In this retrospective study, 140 participants of both sexes who had sinonasal operations performed at the institute were evaluated. Table 1 contains a list of the study subjects' demographic and illness information. For every 83 participants in the survey, there were 40.71% females and 59.28% males.

The study participants were  $46.17 \pm 17.11$  years old on average. Asthma, nasal polyps, depression, and chronic pain were the complaints of 12.85% ( $n = 18$ ), 3.57% ( $n = 5$ ), 38.57% ( $n = 54$ ), and 18.57% ( $n = 26$ ) of the study participants, in that order. The study individuals who underwent sinonasal operations were divided into three groups: full house FESS ( $n = 74$ ), revision surgery ( $n = 25$ ), and sinonasal surgery with septoplasty ( $n = 50$ ). Of the study participants, 30.71% ( $n=43$ ) underwent splints following surgery. In 18.57% ( $n=26$ ) of the study individuals, nasal packing was done unilaterally; in 80.71% ( $n=113$ ) of the study subjects, it was done bilaterally. In 2.85% ( $n=4$ ) of the study participants, postoperative problems were seen. A septal hematoma requiring coagulation and bleeding was observed in 0.71% ( $n=1$ ) of the participants in each study.

Regarding the postoperative pain scores and medications taken by research participants, the scores were  $1.03 \pm 0.65$ ,  $1.12 \pm 0.52$ ,  $0.86 \pm 1.24$ ,  $0.68 \pm 1.26$ , and  $0.41 \pm 0.86$  on the day of surgery, day 1, day 2, day 3, day 4, and day 5. On the day of operation, day 1, day 2, day 3, day 4, and day 5, the amount of opioids utilized was  $7.52 \pm 3.34$  mg,  $17.3 \pm 3.52$  mg,  $12.65 \pm 10.35$  mg,  $21.65 \pm 10.2$  mg,  $15 \pm 0$  mg, and  $15 \pm 0$  mg, in that order. Opioids were taken by 60% ( $n=84$ ), 0.71% ( $n=1$ ), 1.42% ( $n=2$ ), 0.71% ( $n=1$ ), 0.71% ( $n=1$ ), and 0.71% ( $n=1$ ) of the subjects on operation day, day 1, day 2, day 3, day 4, and day 5. The individuals not using opioids were

Table 2 displays the study subjects as follows: 91.42% ( $n=128$ ), 40.71% ( $n=57$ ), 34.28% ( $n=48$ ), 33.57% ( $n=47$ ), 21.42% ( $n=30$ ), and 7.14% ( $n=10$ ). Among the non-opioid analgesics that study participants took, 55.71% ( $n=78$ ), 15.71% ( $n=22$ ), 11.42% ( $n=16$ ), 7.85% ( $n=11$ ), 5.71% ( $n=8$ ), and 1.42% ( $n=2$ ) subjects took metamizole on the day of surgery, day 1, 2, 3, 4, and 5 postoperatively; 50.71% ( $n=71$ ) and 0.71% ( $n=1$ ) study subjects took dexketoprofen on the day of surgery and the second day postoperatively; 14.28% ( $n=20$ ), 25.71% ( $n=36$ ), 21.42% ( $n=30$ ), 11.42% ( $n=16$ ), and 3.57% ( $n=5$ ) study subjects took ibuprofen on the day of day 1, 2, 3, 4, and 5 following surgery. 15% of the sample ( $n=21$ ) consumed acetaminophen. Naproxen was taken by 0.71% ( $n=1$ ), 0.71% ( $n=1$ ), 1.42% ( $n=2$ ), 1.42% ( $n=2$ ), and 0.71% ( $n=1$ ) of the study subjects on the day of surgery, day 1, 2, 3, 4, and 5 postoperatively. 5.71% ( $n=8$ ), 3.57% ( $n=5$ ), 5% ( $n=7$ ), 4.28% ( $n=6$ ), and 1.42% ( $n=2$ ) study subjects on the day of surgery, day 1, day 2, 3, 4, and 5 respectively.

Among the opioid analgesics, on the day of surgery, days 1, 2, 3, 4, and 5, respectively, 0.71% ( $n=1$ ), 0.71% ( $n=1$ ), 1.42% ( $n=2$ ), 0.71% ( $n=1$ ), 0.71% ( $n=1$ ), and 0.71% ( $n=1$ ) patients used tramadol. On the other hand, 55.71% ( $n=78$ ) and 1.42% ( $n=2$ ) research subjects took piritramid. Table 3 shows that on the day of surgery and the first postoperative day, respectively, 9.28% ( $n = 13$ ) of the participants took pethidine, and 1.42% ( $n = 2$ ) of the study subjects used fentanyl.

## DISCUSSION

In this retrospective study, 140 subjects—of both genders—who had sinonasal operations performed at the institute were evaluated after the fact. For every 83 participants in the survey, there were 40.71% females and 59.28% males. The study participants were  $46.17 \pm 17.11$  years old on average. Asthma, nasal polyps, depression, and chronic pain were the complaints of 12.85% ( $n = 18$ ), 3.57% ( $n = 5$ ), 38.57% ( $n = 54$ ), and 18.57% ( $n = 26$ ) of the study participants, in that order. 52.85% of the sinonasal operations that were taken into consideration involved whole house FESS.

(35.71%;  $n = 50$ ) of the study participants underwent sinonasal surgery with septoplasty, while 25% ( $n = 35$ ) underwent revision surgery. Of the study participants, 30.71% ( $n=43$ ) underwent splints following surgery. In 18.57% ( $n=26$ ) of the study individuals, nasal packing was done unilaterally; in 80.71% ( $n=113$ ) of the study subjects, it was

done bilaterally. In 2.85% (n=4) of the study participants, postoperative problems were seen. A septal hematoma requiring bleeding and coagulation was observed in 0.71% (n=1) of the research participants.

These demographic information was similar to that of earlier research by Rudd RA et al.8 in 2016 and Scholl L et al.9 in 2018, in which the investigators evaluated participants with similar disease and demographic information to that of the current investigation.

The study's findings demonstrated that the postoperative pain scores and medications taken by the research participants were  $1.03 \pm 0.65$ ,  $1.12 \pm 0.52$ ,  $0.86 \pm 1.24$ ,  $0.68 \pm 1.26$ , and  $0.41 \pm 0.86$  on the day of surgery, day 1, day 2, day 3, day 4, and day 5. On the day of operation, day 1, day 2, day 3, day 4, and day 5, the amount of opioids utilized was  $7.52 \pm 3.34$  mg,  $17.3 \pm 3.52$  mg,  $12.65 \pm 10.35$  mg,  $21.65 \pm 10.2$  mg,  $15 \pm 0$  mg, and  $15 \pm 0$  mg, in that order. Opioids were taken by 60% (n=84), 0.71% (n=1), 1.42% (n=2), 0.71% (n=1), 0.71% (n=1), and 0.71% (n=1) of the subjects on operation day, day 1, day 2, day 3, day 4, and day 5. 91.42% (n = 128), 40.71% (n = 57), 34.28% (n = 48), 33.57% (n = 47), and 21.42% of the participants were not using opioids. (n=30) and 7.14% (n=10) research participants, in that order. These findings were in line with earlier research by Wise SK et al. (10 in 2005) and Gray ML et al. (11) in 2018, whose authors found that study participants' intake of opioid and non-opioid analgesics was similar to that of the current study.

It was observed that among the non-opioid analgesics taken by research participants, metamizole was taken on the day of surgery, days 1, 2, 3, 4, and 5 afterward by 55.71% (n =78), 15.71% (n =22), 11.42% (n =16), 7.85% (n =11), 5.71% (n =8), and 1.42% (n =2) of the subjects, respectively. 50.71% (n=71) and 0.71% (n=1) of the study subjects took dexketoprofen on the day of surgery and the second postoperative day, respectively. On the day of surgery, day 1, 2, 3, 4, and 5 postoperatively, 14.28% (n=20), 25.71% (n=36), 21.42% (n=30), 21.42% (n=16), and 3.57% (n=5) of the study subjects took ibuprofen. On the day of surgery, day 1, day 2, 3, 4, and 5 postoperatively, 15% (n=21) 5.71% (n=8), 3.57% (n=5), 5% (n=7), 4.28% (n=6), and 1.42% (n=2) of the study subjects ingested acetaminophen, while 0.71% (n=1), 0.71% (n=1), 1.42% (n=2), 1.42% (n=2), and 0.71% (n=1) of the subjects took naproxen. These outcomes were in accordance with the earlier research conducted by Wu AW et al. in 2020 and Svider PF et al. in 2018, whose authors claimed that the study subjects in each case used NSAIDs at a level comparable to that of the current study.

According to the study's findings, of the participants who took opioid analgesics on the days of surgery, days 1, 2, 3, 4, and 5, respectively, 0.71% (n=1) took tramadol, 0.71% (n=1), 1.42% (n=2), 0.71% (n=1), 0.71% (n=1), and 0.71% (n=1) took piritramid. additionally 1.42% (n=2) study participants took fentanyl on the day of surgery, while 9.28% (n=13) of the subjects took pethidine, and 1.42% (n=2) of the study subjects took it on the day of surgery and the first postoperative day, respectively. These outcomes were consistent with the research conducted in 2018 by Becker SD et al. and Riley CA et al., who found that the postoperative use of opioid analgesics following sinusoidal operations was consistent with the findings of the current study.

## CONCLUSION

Taking into account its limitations, the current study finds that most patients require opioids on the day of surgery and that neither opioids nor non-opioid analgesics are associated with any significant complications. According to the study, non-opioid postoperative therapy should be started. analgesics and switching, according on personal circumstances, to opioids. To draw a firm conclusion, however, more long-term research with a sizable sample size and evaluation duration are required.

## REFERENCE

1. Bicket MC, Long JJ, Pronovost PJ, Alexander GC, Wu CL. Prescription opioid analgesics commonly unused after surgery: a systematic review. *JAMA Surg.* 2017;152:1066-71.
2. Vadivelu N, Kai AM, Kodumudi V, Sramcik J, Kaye AD. The opioid crisis: a comprehensive overview. *Curr Pain Headache Rep.* 2018;22:1-6.
3. Newberry CI, Casazza GC, Pruitt LC, Meier JD, Skarda DE, Alt JA. Prescription patterns and opioid usage in sinonasal surgery. *Int Forum Allergy Rhinol.* 2020;10:381-7.

4. Aulet RM, Trieu V, Landrigan GP, Millay DJ. Changes in opioid prescribing habits for patients undergoing rhinoplasty and septoplasty. *JAMA Facial Plast Surg.* 2019;21:487-90.
5. Miller C, Humphreys IM, Davis GE. Effect of over-the-counter ibuprofen dosing after sinus surgery for chronic rhinosinusitis: a prospective cohort pilot study. *Ann Otol Rhinol Laryngol.* 2020;129:677-83.
6. Stammerschulte T, Ludwig WD, Müllerhlbauer B, Bronder E, Gundert-Remy U. Metamizole (dipyrone)-associated agranulocytosis. An analysis of German spontaneous reports 1990-2012. *Eur J Clin Pharmacol.* 2015;71:1129-38.
7. Coey JG, Whittaker PJ, Williams G, Ikram UH, Page OJR. Fibrin tissue adhesive versus nasal packing in endoscopic nasal surgery: a systematic review and meta-analysis. *Rhinology.* 2019;57:21-31.
8. Rudd RA, Seth P, David F, Scholl L. Increases in drug and opioid-involved overdose deaths—United States, 2010-2015. *MMWR Morb Mortal Wkly Rep.* 2016;65:1445-52.
9. Scholl L, Seth P, Kariisa M, Wilson N, Baldwin G. Drug and opioid-involved overdose deaths—United States, 2013–2017. *MMWR Morb Mortal Wkly Rep.* 2018;67:1419-27.
10. Wise SK, Wise JC, DelGaudio JM. Evaluation of postoperative pain after sinonasal surgery. *Am J Rhinol.* 2005;19:471-7.
11. Gray ML, Fan CJ, Kappauf C. Postoperative pain management after sinus surgery: a survey of the American Rhinologic Society. *Int Forum Allergy Rhinol.* 2018;8:1199-203.
12. Wu AW, Walgama ES, Genc, E, et al. Multicenter study on the effect of nonsteroidal anti-inflammatory drugs on postoperative pain after endoscopic sinus and nasal surgery. *Int Forum Allergy Rhinol.* 2020;10:489-95.
13. Svider PF, Nguyen B, Yuhan B, Zuliani G, Eloy JA, Folbe AJ. Perioperative analgesia for patients undergoing endoscopic sinus surgery: an evidence-based review. *Int Forum Allergy Rhinol.* 2018;8:837-49.
14. Becker SD, Becker DG. Review and update on postoperative opioid use after nasal and sinus surgery. *Curr Opin Otolaryngol Head Neck Surg.* 2018;26:41-5.
15. Riley CA, Kim M, Sclafani AP, et al. Opioid analgesic use and patient-reported pain outcomes after rhinologic surgery. *Int. Forum Allergy Rhinol.* 2018;9:339-44.

**TABLES**

<b>Characteristics</b>	<b>Frequency (n=140)</b>	<b>Percentage (%)</b>
<b>Gender</b>		
Males	83	59.28
Females	57	40.71
<b>Mean age (years)</b>	46.17±17.11	
<b>Chronic pain</b>	18	12.85
<b>Depression</b>	5	3.57
<b>Nasal polyps</b>	54	38.57
<b>Asthma</b>	26	18.57
<b>Type of surgery</b>		
Full house FESS	74	52.85
Revision surgery	35	25
Sinonasal surgery with septoplasty	50	35.71
Sinonasal surgery	140	100
<b>Splints</b>	43	30.71
<b>Nasal packing</b>		
No packing	1	0.71
Unilateral	26	18.57
Bilateral	113	80.71
<b>Septal hematoma</b>	1	0.71
<b>Bleeding</b>	1	0.71
<b>Postoperative complications</b>	4	2.85

**Table 1: Demographic and disease characteristics of the study subjects**

Post-op day	Opioid quantity (mg)	Subjects taking opioids		Subjects taking non-opioids		Pain scores
		n	%	n	%	
<b>Surgery day</b>	7.52±3.34	84	60	128	91.42	1.03±0.65
<b>1</b>	17.3±3.52	1	0.71	57	40.71	1.12±0.52
<b>2</b>	12.65±10.35	2	1.42	48	34.28	0.86±1.24
<b>3</b>	21.65±10.2	1	0.71	47	33.57	0.86±1.24
<b>4</b>	15±0	1	0.71	30	21.42	0.68±1.26
<b>5</b>	15±0	1	0.71	10	7.14	0.41±0.86

**Table 2: Pain scores and drugs used by study subjects postoperatively**

Drugs	Non-opioid analgesics					Opioid analgesics			
	Metamizole n (%)	Dexketoprofen n (%)	Ibuprofen n (%)	Acetaminophen n (%)	Naproxen n (%)	Tramadol n (%)	Piritramid n (%)	Pethidine n (%)	Fentanyl n (%)
<b>Surgery day</b>	78 (55.71)	71 (50.71)	20 (14.28)	21 (15)	1 (0.71)	1 (0.71)	78 (55.71)	13 (9.28)	2 (1.42)
<b>1</b>	22 (15.71)	0	36 (25.71)	8 (5.71)	1 (0.71)	1 (0.71)	0	0	0
<b>2</b>	16 (11.42)	1 (0.71)	30 (21.42)	5 (3.57)	2 (1.42)	2 (1.42)	2 (1.42)	0	0
<b>3</b>	11 (7.85)	0	30 (21.42)	7 (5)	2 (1.42)	1 (0.71)	0	0	0
<b>4</b>	8 (5.71)	0	16 (11.42)	6 (4.28)	2 (1.42)	1 (0.71)	0	0	0
<b>5</b>	2 (1.42)	0	5 (3.57)	2 (1.42)	1 (0.71)	1 (0.71)	0	0	0

**Table 3: Use of opioids and non-opioid analgesics by the study subjects in the postoperative period**