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POST OPERATIVE COMPARITIVE EVALUATION OF OPIOID AND NON-OPIOID ANALGESICS AFTER SINONASAL SURGERIES

Dr. Ashok Kumar,[1] Dr. Shubhadeep Sinha[2*]

[1]Assistant Professor, Department of Pharmacology, ICARE Institute of Medical Sciences and Research & Dr. B C Roy Hospital, Haldia, West Bengal – 721645

[2*]Associate Professor, Department of Pharmacology, Gouri Devi Institute of Medical Sciences & Hospital, Durgapur, West Bengal

Corresponding Author

Dr. Shubhadeep Sinha

Email Id- drsinhaaiims@gmail.com

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ABSTRACT

Background: The usage of opioid analgesics following surgery has significantly grown 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 take opioids, but most also utilise leftovers, which is inappropriate usage.

Aim: The purpose of the current study was to evaluate the need, usage patterns, adverse effects, and timing 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 ratings and medications used by research participants after surgery were 1.03±0.65, 1.12±0.52, 0.86±1.24, 0.68±1.26, and 0.41±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 utilised was 7.52±3.34 mg, 17.3±3.52 mg, 12.65±10.35 mg, 21.65±10.2 mg, 15±0 mg, and 15±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 individuals 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: most patients require opioids the day of surgery, and neither opioid nor non-opioid analgesics are linked with any significant complications. The research recommends starting non-opioid analgesic postoperative treatment and switching to opioids contingent on patient circumstances.

Keywords: Analgesic**,** non-opioids, Opioids, pain, postoperative pain, sinonasal surgery.

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 quadrupled since 2000.[1] According to statistics from the years 2014 and 2017, opioids were the primary substance implicated in approximately 60% of all drug overdose deaths that were recorded. Moreover, the use of semisynthetic opioids, such as morphine, oxycodone, and

hydrocodone, has been linked to a higher death rate. Recent years have shown a similarity in these developments.[2] Most of the individuals are treated for postoperative pain with opioid analgesics after sinonasal operations; most of the prescribed opioids are not used and are stored as leftovers. According to a prior research, approximately 90% of patients who are administered opioids keep the medication as leftovers.[3] About 70% of participants who keep their medicines to themselves utilise the remaining opioids as residual drugs. According to previously released data, the usage of prescription medicines was the catalyst for the majority of opioid abusers and addiction cases.[4]

Therefore, by utilising the recommended restricted amount of opioid medicines, it is possible to significantly minimise the misuse, addiction, and dependency of individuals on opioid drugs from the unused tablets following sinus surgery by limiting the prescription of opioid drugs.[5] 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).[6]

Unfortunately, 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.[7] Therefore, the purpose of the current study was to evaluate the need, 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 need, usage patterns, and adverse effects of opioid and non-opioid analgesics that were recommended after sinus surgery. The Department of ENT and HNS conducted the study. Subjects who had sinonasal surgery at the ENT department made up the research population. 140 male and female individuals, who underwent septoplasty and sinonasal surgery at the institution, were included in the research. Subjects who had undergone functional endoscopic sinus surgery in any capacity, such as whole house FESS, maxillary sinus surgery, ethmoidal or frontal surgery, turbinoplasty, or septoplasty, were eligible to participate in the study. The participants who had undergone a septorhinoplasty were excluded.

Following the last research participant enrollment, postoperative pain was measured for 3 days to 5 days with the NRS (numeric rating scale). The requirement for non-opioid analgesics was evaluated in each participant and associated with the demographic information and surgical factors. It was also documented which participants took analgesics when they had a high pain score of >4 or upon request. Every postoperative analgesic that was taken throughout 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 nasal care following the sinonasal surgery was initiated with the xylometazoline emulsion and xylometazoline spray following septoplasty and with a topical steroid following 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 include 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 research 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.

The collected data were evaluated statistically using the SPSS software version 21.0 (IBM, NY, USA) and paired t-test for comparison of the changes in the pain scores. The data were expressed in numbers and percentages and means and standard deviation. The significance levels were kept at $p<0.05$.

RESULTS

The goal of the current retrospective clinical study was to evaluate the need, 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 institution were evaluated. Table 1 contains a list of the research subjects' demographic and illness information. For every 83 participants in the survey, there were 40.71% females and

59.28% men. The research participants were 46.17±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 research participants, in that order.

The research 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 research participants, 30.71% (n=43) underwent splints following surgery. In 18.57% (n=26) of the research 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.

Regarding the postoperative pain scores and medications used by research participants, the scores were 1.03±0.65, 1.12±0.52, 0.86±1.24, 0.68±1.26, and 0.41±0.86 on the day of surgery, day 1, day 2, day 3, day 4, and day 5. The number of opioids used on surgery day, day 1, day 2, day 3, day 4, and day 5 was 7.52±3.34mg, 17.3±3.52 mg, 12.65±10.35mg, 21.65±10.2 mg, 15±0 mg, and 15±0 mg respectively. Subjects who took opioids on surgery day, day 1, day 2, day 3, day 4, and day 5 were 60% (n=84), 0.71% (n=1), 1.42% (n=2), 0.71% (n=1), 0.71% (n=1), and 0.71% (n=1) subjects respectively. The subjects taking non-opioids were 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) study subjects respectively as shown in Table 2.

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 participants took dexketoprofen on the day of surgery and the second day postoperatively; ibuprofen was taken by 14.28% (n=20), 25.71% (n=36), 21.42% (n=30), 11.42% (n=16), and 3.57% (n=5) study participants on the day of surgery, day 1, 2, 3, 4, and 5 postoperatively. On the day of surgery, day 1, day 2, 3, 4, and 5, respectively, acetaminophen was ingested by 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 research individuals and 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) subjects respectively on the day of surgery, day 1, 2, 3, 4, and 5 postoperatively (Table 3).

On the day of operation, day 1, 2, 3, 4, and 5, among the participants using opioid analgesics, 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) used tramadol, respectively. Table 3 shows that on the day of surgery, 55.71% (n=78) and 1.42% (n=2) study participants ingested piritramid and took medication on day 1 postoperatively, respectively. On the day of surgery, 9.28% (n=13) individuals took pethidine, and 1.42% (n=2) study subjects took fentanyl.

DISCUSSION

In this retrospective study, 140 subjects—of both genders—who had sinonasal operations performed at the institution were evaluated after the fact. For every 83 participants in the survey, there were 40.71% females and 59.28% men.

The research participants were 46.17±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 research participants, in that order. The research 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 research participants, 30.71% (n=43) underwent splints following surgery. In 18.57% (n=26) of the research 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 illness and demographic information to that of the current investigation.

The study's findings demonstrated that the postoperative pain ratings and medications used by the research participants were 1.03±0.65, 1.12±0.52, 0.86±1.24, 0.68±1.26, and 0.41±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 utilised was 7.52±3.34 mg, 17.3±3.52 mg, 12.65±10.35 mg, 21.65±10.2 mg, 15±0 mg, and 15±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 individuals 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. These findings aligned with earlier research by Wise SK et al. (2005) and Grey ML et al. (2018), whose authors found that study participants' consumption of opioid and non-opioid analgesics was similar to that of the current study.

Metamizole was seen to be taken 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 study individuals among the non-opioid analgesics they took on the day of surgery, day 1, 2, 3, 4, and 5 postoperatively, 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 paracetamol, while 0.71% (n=1), 0.71% (n=1), 0.71% (n=1), 1.42% (n=2), 1.42% (n=2), and 0.71% (n=1) of the subjects.

These findings were consistent with earlier research by Wu AW et al. in 2020 and Svider PF et al. in 2013, whose study participants used NSAIDs at levels comparable to those of the current study. The study's findings demonstrated that, of the subjects who took opioid analgesics, 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) took tramadol on the day of surgery, day 1, 2, 3, 4, and 5, respectively. 55.71% (n=78) and 1.42% (n=2) study subjects took piritramid on the day of surgery and day 1 postoperatively, respectively; 9.28% (n=13) subjects took pethidine, and 1.42% (n=2) study subjects took fentanyl on the day of surgery.

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 sinusonasal operations was consistent with the findings of the current study.

CONCLUSION

Taking into an 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 linked with any significant complications. The research recommends starting non-opioid analgesic postoperative treatment and switching to opioids contingent on patient circumstances. To draw a firm conclusion, however, more long-term research with a sizable sample size and evaluation duration are required.

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TABLES

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

Table 1: Demographic and disease characteristics of the study subjects

Post-op day	**Opioid quantity (mg)**	**Opioid Group**		**Non-opioid Group**		**Pain scores**
		N	**%**	**n**	**%**	
Surgery day	7.52±3.34	84	60	128	91.42	1.03±0.65
1	17.3±3.52	1	0.71	57	40.71	1.12±0.52
2	12.65±10.35	2	1.42	48	34.28	0.86±1.24
3	21.65±10.2	1	0.71	47	33.57	0.86±1.24
4	15±0	1	0.71	30	21.42	0.68±1.26
5	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 Group					Opioid Group			
	Metamizole n (%)	**Dexketoprofen n (%)**	**Ibuprofen n (%)**	**Acetaminophen n (%)**	**Naproxen n (%)**	**Tramadol n (%)**	**Piritramid n (%)**	**Pethidine n (%)**	**Fentanyl n (%)**
Surgery day	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)
1	22 (15.71)	0	36 (25.71)	8 (5.71)	1 (0.71)	1 (0.71)	0	0	0
2	16 (11.42)	1 (0.71)	30 (21.42)	5 (3.57)	2 (1.42)	2 (1.42)	2 (1.42)	0	0
3	11 (7.85)	0	30 (21.42)	7 (5)	2 (1.42)	1 (0.71)	0	0	0
4	8 (5.71)	0	16 (11.42)	6 (4.28)	2 (1.42)	1 (0.71)	0	0	0
5	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