

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

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ABSTRACT

Background: In the recent past, the use of opioid analgesics post-surgery has markedly increased. This further increased the associated mortality and morbidity associated with opioid intake. Following sinonasal surgery, most of the subjects use opioids where majority used leftovers which makes the use improper.

Aim: The present study aimed to assess the side effects, timings, use, and need for opioid and non-opioid analgesics prescribed following sinonasal surgery.

Methods: The study assessed 140 subjects from both genders that underwent sinonasal surgery in a retrospective manner. The numeric rating scale was used to assess postoperative pain and the need for on-demand opioid and non-opioid analgesics considering the surgical parameters and demographics of the subjects.

Results: Pain scores and drugs used by study subjects postoperatively, the pain scores on the day of surgery, day 1, day 2, day 3, day 4, and day 5 were 1.03 ± 0.65 , 1.12 ± 0.52 , 0.86 ± 1.24 , 0.86 ± 1.24 , 0.68 ± 1.26 , and 0.41 ± 0.86 respectively. The number of opioids used on surgery day, day 1, day 2, day 3, day 4, and day 5 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 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.

Conclusion: The present study concludes that the majority of subjects need opioids on the day of surgery itself with no major complication being associated with opioid or non-opioid analgesics. The study suggests initiation of postoperative therapy with non-opioid analgesics and shifting to opioids based on individual factors.

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

INTRODUCTION

In the recent past, deaths from drug overdose have increased largely on a global scale including in India. Literature data have reported that deaths due to drug overdose have nearly doubled from the data reported in the year 2000.¹ In nearly 60% of all the deaths reported from a drug overdose, the main drug involved was opioids as reported from the data of the year 2014 and 2017. Also, an increase in the incidence of death has been reported from the intake of semisynthetic opioids including hydrocodone, oxycodone, and morphine. These trends have been found similar in the recent few years.²

Following the sinonasal surgeries, the majority of the subjects are managed for the postoperative pain with opioid analgesics where the majority of the prescribed opioids are not utilized and are kept as leftovers. A recent literature study reports that among all the subjects prescribed opioids, nearly 90% of the subjects keep opioids as leftover drugs.³ Among the subjects keeping drugs to themselves, approximately 70% of subjects' leftover opioids are used as leftover drugs. The previously reported data shows that in the majority of opioid abusers and addiction cases, the events were initiated with the use of prescription drugs.⁴

As a consequence, reducing the prescription of opioid drugs after the sinonasal surgeries can markedly reduce the abuse, addiction, and dependence of the subjects on the opioid drugs from the unused pills by using the limited drugs as prescribed.⁵ Previous studies conducted in the literature depict that following the sinonasal surgeries including FESS (functional endoscopic sinus surgery), the use of non-opioid drugs including acetaminophen and NSAIDs (non-steroidal anti-inflammatory drugs) can result in adequate pain control and reduce the risk of dependence.⁶

However, the available literature data is scarce concerning the side effects, timings, use of, and need for opioid and non-opioid analgesics after the sinonasal surgeries.⁷ Hence, the present study aimed to assess the side effects, timings, use, and need for opioid and non-opioid analgesics prescribed following sinonasal surgery.

MATERIALS AND METHODS

The present retrospective clinical study was aimed to assess the side effects, timings, use, and need for opioid and non-opioid analgesics prescribed following sinonasal surgery. The study was done at Department of ENT and HNS, Government Medical College Associated Hospital, Rajouri, Jammu and Kashmir. The study population was comprised of subjects who underwent sinonasal surgery in the ENT department of the Institute.

The study included 140 subjects from both genders that underwent sinonasal surgery with the septoplasty in the institute. The inclusion criteria for the study were subjects that underwent

functional endoscopic sinus surgery to any extent including the full house FESS, maxillary sinus surgery, ethmoidal, or frontal surgery, turbinoplasty, and septoplasty. The exclusion criteria were subjects who underwent septorhinoplasty.

After the final inclusion of the study subjects, postoperative pain was assessed for 3 days to 5 days with the NRS (numeric rating scale). In all the subjects, the need for non-opioid analgesics was assessed and correlated to the surgical parameters and demographic data. The subjects who took analgesics on high pain score of >4 or the demand were also noted. All the postoperative analgesics taken in the postoperative period were counted. For all the subjects, sinonasal complications, procedural data, comorbidities, demographic data, and medical history were recorded and assessed.

For the subjects that underwent septoplasty, splints were given for 7 days, and nasal packing was given to all subjects that underwent FESS for 1 day. The nasal packing comprised of merocele tamponade. The nasal care after the sinonasal surgery was started following the removal of the nasal packing after 1 day with the xylometazoline emulsion and xylometazoline spray following septoplasty and with a topical steroid following FESS.

Xylometazoline is a usual agent used in decongestant nasal spray formulations and is a sympathomimetic agent. The xylometazoline emulsion used also had menthol and dexamethasone which was prescribed as a spray 3 times a day. No analgesic agent was used in the spray and was not an ingredient of the nasal spray used. The required data were gathered from the clinical information system and the data record of the institute.

The primary outcome assessed in the study subjects was a change in the scores of NRS (numeric rating scores) every post-operative day. The secondary outcomes in the study were the complication rates and the amount of opioid and non-opioid analgesics used.

The data gathered were assessed 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 present retrospective clinical study was aimed to assess the side effects, timings, use, and need for opioid and non-opioid analgesics prescribed following sinonasal surgery. The study included 140 subjects from both genders that underwent sinonasal surgeries at the institute that were assessed in a retrospective manner. The demographic and disease data of the study subjects are listed in Table 1. There were 59.28% ($n=83$) males and 40.71% ($n=57$) females in the study. The mean age of the study subjects was 46.17 ± 17.11 years. Chronic pain, depression, nasal polyps, and asthma were the complaints in 12.85% ($n=18$), 3.57% ($n=5$), 38.57% ($n=54$), and 18.57% ($n=26$) study subjects respectively. Among the sinonasal surgeries considered, full house FESS was done in 52.85% ($n=74$), revision surgery in 25% ($n=35$), and sinonasal surgery with septoplasty was done in 35.71% ($n=50$) study subjects respectively. Splints post-surgery were done in 30.71% ($n=43$) of study subjects. Nasal packing was done unilaterally in 18.57% ($n=26$)

study subjects and bilaterally in 80.71% (n=113) study subjects. Postoperative complications were seen in 2.85% (n=4) of study subjects. Septal hematoma that needed coagulation and bleeding was seen in 0.71% (n=1) of study subjects each.

Concerning the Pain scores and drugs used by study subjects postoperatively, the pain scores on the day of surgery, day 1, day 2, day 3, day 4, and day 5 were 1.03 ± 0.65 , 1.12 ± 0.52 , 0.86 ± 1.24 , 0.86 ± 1.24 , 0.68 ± 1.26 , and 0.41 ± 0.86 respectively. The number of opioids used on surgery day, day 1, day 2, day 3, day 4, and day 5 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 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 consumed by study subjects, metamizole was 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) subjects respectively on the day of surgery, day 1, 2, 3, 4, and 5 postoperatively, dexketoprofen was taken by 50.71% (n=71) and 0.71% (n=1) study subjects respectively on the day of surgery and 2nd day postoperatively, ibuprofen was taken by 14.28% (n=20), 25.71% (n=36), 21.42% (n=30), 21.42% (n=30), 11.42% (n=16), and 3.57% (n=5) study subjects respectively on the day of surgery, day 1, 2, 3, 4, and 5 postoperatively. Acetaminophen was consumed by 15% (n=21), 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, 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).

Among the opioid analgesics, tramadol was taken by 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) subjects on the day of surgery, day 1, 2, 3, 4, and 5 respectively, Piritramid was consumed by 55.71% (n=78) and 1.42% (n=2) study subjects on the day of surgery and day 1 postoperative respectively, pethidine was taken by 9.28% (n=13) subjects on the day of surgery and fentanyl was taken by 1.42% (n=2) study subjects on the day of surgery as depicted in table 3.

DISCUSSION

The present retrospective study included 140 subjects from both genders that underwent sinonasal surgeries at the institute that were assessed in a retrospective manner. There were 59.28% (n=83) males and 40.71% (n=57) females in the study. The mean age of the study subjects was 46.17 ± 17.11 years. Chronic pain, depression, nasal polyps, and asthma were the complaints in 12.85% (n=18), 3.57% (n=5), 38.57% (n=54), and 18.57% (n=26) study subjects respectively. Among the sinonasal surgeries considered, full house FESS was done in 52.85% (n=74), revision surgery in 25% (n=35), and sinonasal surgery with septoplasty was done in 35.71% (n=50) study subjects respectively. Splints post-surgery were done in 30.71% (n=43) of study subjects. Nasal packing was done unilaterally in 18.57% (n=26) study subjects and

bilaterally in 80.71% (n=113) study subjects. Postoperative complications were seen in 2.85% (n=4) of study subjects. Septal hematoma that needed coagulation and bleeding was seen in 0.71% (n=1) of study subjects each. These demographic data were comparable to the previous studies of Rudd RA et al⁸ in 2016 and Scholl L et al⁹ in 2018 where authors assessed subjects with demographic and disease data comparable to the present study.

The study results showed that the Pain scores and drugs used by study subjects postoperatively, the pain scores on the day of surgery, day 1, day 2, day 3, day 4, and day 5 were 1.03 ± 0.65 , 1.12 ± 0.52 , 0.86 ± 1.24 , 0.86 ± 1.24 , 0.68 ± 1.26 , and 0.41 ± 0.86 respectively. The number of opioids used on surgery day, day 1, day 2, day 3, day 4, and day 5 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 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. These results were consistent with the previous studies of Wise SK et al¹⁰ in 2005 and Gray ML et al¹¹ in 2018 where authors reported comparable intake of opioid and non-opioid analgesics by their study subjects as depicted in the present study.

It was seen that among the non-opioid analgesics consumed by study subjects, metamizole was 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) subjects respectively on the day of surgery, day 1, 2, 3, 4, and 5 postoperatively, dexketoprofen was taken by 50.71% (n=71) and 0.71% (n=1) study subjects respectively on the day of surgery and 2nd day postoperatively, ibuprofen was taken by 14.28% (n=20), 25.71% (n=36), 21.42% (n=30), 21.42% (n=30), 11.42% (n=16), and 3.57% (n=5) study subjects respectively on the day of surgery, day 1, 2, 3, 4, and 5 postoperatively. Acetaminophen was consumed by 15% (n=21) 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, 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. These results were in agreement with the previous studies of Wu AW et al¹² in 2020 and Svider PF et al¹³ in 2018 where authors reported similar consumption of NSAIDs as the present study by their respective study subjects

The study results showed that for the opioid analgesics, tramadol was taken by 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) subjects on the day of surgery, day 1, 2, 3, 4, and 5 respectively, Piritramid was consumed by 55.71% (n=78) and 1.42% (n=2) study subjects on the day of surgery and day 1 postoperative respectively, pethidine was taken by 9.28% (n=13) subjects on the day of surgery and fentanyl was taken by 1.42% (n=2) study subjects on the day of surgery. These results were in line with the findings of Becker SD et al¹⁴ in 2018 and Riley CA et al¹⁵ in 2018 where the postoperative consumption of opioid analgesics after sinonasal surgeries was in agreement with the results of the present study.

CONCLUSION

Considering its limitations, the present study concludes that the majority of subjects need opioids on the day of surgery itself with no major complication being associated with opioid or non-opioid analgesics. The study suggests initiation of postoperative therapy with non-opioid analgesics and shifting to opioids based on individual factors. However, further longitudinal studies with a large sample size and assessment period are needed for a definitive conclusion.

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TABLES

Characteristics	Frequency (n=140)	Percentage (%)
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)	Subjects taking opioids		Subjects taking non-opioids		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 analgesics					Opioid analgesics			
	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