Effect of Analgesia on Complication Free Postoperative Outcome among Day-Care ENT Surgeries in a Tertiary Care Hospital

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ABSTRACT

BACKGROUND

Day-care procedures have become accepted and popular among the surgeons and anaesthesiologists all over the world in recent times especially for ENT surgeries. The economic and financial implications are making them acceptable among the general population also. Alleviating acute pain during immediate postoperative period plays a crucial role in deciding the fitness for discharge of the patient. We wanted to evaluate the pain intensity and observe the role of analgesia in its alleviation in postoperative period following day-care ENT surgeries.

METHODS

96 adult patients undergoing various types of day-care surgeries in the department of ENT were included in this study. The pain scores were measured using Verbal Pain Intensity Score (VPIS) at frequent two hourly intervals. Opioids, and Paracetamol were used as analgesics. Antiemetic Ondansetron was used to combat nausea and vomiting. The effect of analgesics was assessed using mean values and Friedman test for repeated measures.

RESULTS

Out of 96 patients 55 (57.29 %) were males and 41 (42.70 %) were females with a male to female ratio of 1.4:1. The mean age was 31.50 ± 4.15 years. 32 / 96 (33.33 %) ear surgeries, 26 / 96 (27.08 %) nose surgeries, 22 / 96 (22.91 %) throat surgeries and 16 / 96 (16.66 %) head and neck surgeries were performed. Moderate to extremely intense grade pain was noticed in 75 / 93 (80.64 %) patients.

CONCLUSIONS

The prevalence of moderate to extremely intense acute postoperative pain in 75 / 93 (80.64 %) patients was high. But the analgesics prescribed were effective to control the pain and the mean pain intensity was less than 2 in 14 hours, hence 85 / 96 (88.54 %) patients could be discharged in time. The associated symptoms were managed with supportive care and required no additional medications and these patients were discharged after overnight stay.

KEYWORDS

Day-Care Surgery, Analgesia, Opioids, VPIS, Associated Symptoms, Postoperative Pain

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BACKGROUND

Day-care surgeries are increasing in number due to its cost effectiveness, shortening waiting lists, lesser duration of hospital stay and greater efficiency.[1] They also minimize family dislocation and nosocomial infections.[2] The list of ENT surgeries included in day-care procedures are increasing nowadays.[3] Regular out patient pre-anaesthetic evaluations are helpful in the treatment cycle starting from admission to the postoperative anaesthetic approval for discharge.[4] The confidence among surgeons and the anaesthesiologists performing day-care procedures, lies in the advancements happening in anaesthesia and surgical techniques as well as availability of newer drugs.[5] In spite of this there are still many challenges faced by anaesthesiologists and surgeons in carrying out day-care surgeries. The most important among them are proper selection of the patients and identification of suitable day-care procedures which helps in the success of the day-care surgical services.[6] The pre-anaesthetic evaluation is highly essential in deciding the fitness of the patient for day-care anaesthesia and surgery as well as the formulation of various anaesthetic plans and strategies. Postoperative acute pain was the major clinical entity which has to be dealt following day-care surgery. It is more common and is one of the major reasons for unplanned hospital admission.[7] The frequently used oral analgesics used during the postoperative period were Paracetamol alone or in combination with Diclofenac or Tramadol or both.[8] In the recovery room after arrival of the patient the pain was usually evaluated using verbal pain intensity score at frequent two hourly intervals.[9] The aim of this study was to determine the severity of acute pain following day-care surgery and evaluate the effectiveness of postoperative analgesic therapy using opioids on the pain experienced by patients on arrival in the recovery room and on getting discharged from the hospital.

METHODS

The present study was a prospective observational study conducted after approval of Institutional Research Committee and Institutional Ethical Committee in the Department of Anaesthesiology, Government Medical College, Thiruvananthapuram, Kerala, during a period of six months from January 2020 to June 2020. Totally 96 consecutive adult patients undergoing day-care ENT surgeries were included. The patients were aged between 18 and 60 years. An ethical committee approved written consent was obtained from the patients.

Inclusion Criteria

1. Patients of both genders aged 18 to 60 years.
2. Simple and common surgical procedures categorized as ear, nose, throat and head and neck based on the organ parts of the body.
3. American Society of Anesthesiologists [ASA] physical status class 1 patients.

Exclusion Criteria

1. Patients unable to understand the protocol, pain measuring tools and implications of the study.
2. Patients with uncontrolled systemic diseases.
2. Patients with history of drug allergy.
3. Chronic alcoholic patients.
4. Patients who are not able to communicate appropriately.

Sample Size

It was calculated taking the parent study analysis, in which there was an unexpected over-night admission of 13.4 % after day-care surgery. So, applying the formula, sample size $N = 4\ pq / d^2$, $N = 4 \times 86.6 \times 13.4 / (8.66)^2 = 61.89$; 96 patients who fulfilled the eligibility criteria were included in the study.

Data Collection

All the data was collected over a period of 6 months from January 2020 to June 2020. A thorough clinical examination of the patient was carried out by the ENT surgeon as well as the anaesthesiology consultant which included all the systems. They were subjected to complete blood profile (haemoglobin, total count, differential count, ESR and platelet count), X-Ray chest PA (Postero-anterior) view, ECG (Electro-Cardio-Gram), bleeding time, clotting time, fasting blood sugar, S. creatinine and viral markers.

Premedication with Inj. Glycopyrrolate 10 mcg / kg, Inj. Fentanyl 1.5 mcg / kg with Inj. Ondansetron 100 mcg / kg IV (Intra-Venous) slow before surgery. A standard infiltrative and / or topical, regional and / or general anaesthesia were used. Standard ENT surgical techniques were followed. The pain scores were measured using verbal pain intensity score at frequent two hourly intervals. On verbal pain intensity score, class 0: no pain, 1: low pain, 2: mild pain, 3: moderate pain, 4: intense pain and 5: extreme intense pain. The data was analysed to denote the mean and Standard Deviation (SD) for different time intervals for the patients and the classified surgical procedures. The analgesics used and their effect on acute pain in terms of VPIS was depicted using tables and frequency bar charts. A VPIS of less than 2 for all categories of surgical procedures or analgesics group was accepted as satisfactory pain control and thus effective analgesia. The same criteria was used in the decision making for the discharge of the patients. The analgesics used were grouped as Group I: Tramadol (50 mg / mL) IV + Inj. Ondansetron (4 mg / 2 mL) IV, Group II: Inj. Fentanyl (50 micrograms / mL) IV + Inj. Ondansetron (4 mg / 2 mL) IV and Group III: Inj. Paracetamol (750 mg / 75 mL) IV infusion) + Inj. Ondansetron (4 mg / 2 mL) IV. Recovery room anaesthesiology technicians were trained to rate the pain scale to assess pain of the patients on 2 hourly intervals completed in 14 hours. In this study the outcome variable was VPIS score for acute postoperative pain and explanatory variables were sociodemographic characteristics, type of surgery, and analgesic drug administered. A mean pain score of < 2 on VPIS for each category of surgical

procedures or analgesic groups was considered as satisfactory pain control and thus effective analgesia. This was similar to the method adopted by Cander et al.[10]

Statistical Methods

All the data was analysed using www.socialsciencestatistics.com an online website to calculate the mean and SD values; and the Friedman test for repeated measures was used to know the significance of effectiveness of the three groups of analgesics used.

RESULTS

Out of 96 patients included in the study there were 55 (57.29) males and 41 (42.70 %) females with a male to female ratio of 1.4:1. Age of the patients were tabulated in Table 1. It shows that the youngest patient was aged 19 years and the eldest one was aged 60 years with a mean age of 31.50 ± 4.15 years.

The different types of ear, nose, throat and head and neck day-care procedures performed in the study were tabulated in Table 2. 32 / 96 (33.33 %) ear surgeries, 26 / 96 (27.08 %) nose surgeries, 22 / 96 (22.91 %) throat surgeries and 16 / 96 (16.66 %) head and neck surgeries were performed in this study (Table 2). 57 / 96 (59.37 %) of the patients underwent the procedures by Local Anaesthesia (LA) using plain Lignocaine (2 %) or Lignocaine (2 %) with Adrenaline infiltration, 39 / 96 (40.62 %) patients underwent the procedures by General Anaesthesia (Table 2).

Assessment done regarding postoperative pain with VPIS grading in the recovery room is shown in the Fig 1. It shows that the overall pain score among the patients was of moderate to extremely intense severity (VPIS class 3, 4 and 5; 21, 23 and 31 respectively) in 75 / 93 (80.64 %) patients. The pain was of class 2 VPIS in 10 / 93 (10.75 %) patients and it was of low severity with VPIS class 1 in 08 / 93 (08.60 %) patients, (Figure 1). Among the 96 patients there were 03 / 96 (03.12 %) with VPIS scoring of class 0 (no pain).

Observation	Frequency	Percentage
Age		
18 to 27	21	21.87
28 to 37	28	29.16
38 to 47	23	23.95
48 to 57	17	17.70
58 to 67	07	07.29
Marital Status		
Married	21	21.87
Unmarried	75	78.12
Education		
None	04	04.16
Primary	26	27.08
Secondary	38	39.58
Tertiary	28	29.16
Type of Surgery		
Ear	32	33.33
Nose	26	27.08
Throat	22	22.91
Head and Neck	16	16.66

Table 1. Demographic Data of the Patients (n = 96)

Type of Surgery	Total (%)	Procedures	Frequency (%)	L. A 57 (59.37%)	G. A 39 (40.62%)
Ear	32 (33.33)	Myringotomy	04 (04.16)	03	01
		Stapedectomy	04 (04.16)	04	00
		Grommet insertion	05 (05.20)	03	02
		Myringoplasty	04 (04.16)	04	00
		Cortical Mastoidectomy	02 (02.08)	02	00
		Tympanoplasty	04 (04.16)	04	00
		Keratosis obturans	05 (05.20)	02	03
		Foreign body removal	01 (01.04)	00	01
		Osteoma of External ear or Mastoids	03 (03.12)	02	01
Nose	26(27.08)	Septoplasty	06 (06.25)	06	00
		Fracture nasal bones reduction	04 (04.16)	04	00
		FESS	06 (06.25)	04	02
		Nasal polypectomy	07 (07.29)	05	02
		Sinoscopy	03 (03.12)	03	00
Throat	22(22.91)	Tonsillectomy	05 (05.20)	00	05
		Adenoidectomy	03 (03.12)	00	03
		Benign tumours of vocal cord removal	03 (03.12)	00	03
		Foreign body oesophagus removal	04 (04.16)	00	04
		Diagnostic endoscopy under G.A	04 (04.16)	00	04
		Direct Laryngoscopy and biopsy	03 (03.12)	01	02
Head and Neck	16(16.66)	Lymph node biopsy	05 (09.37)	03	02
		Small benign tumours of Thyroid	06 (07.29)	04	02
		Thyroglossal cyst excision	05 (09.37)	03	02

Table 2. Showing the Types of Surgeries and Nature of Anaesthesia followed to Undertake Day-Care Ear, Nose, Throat and Head and Neck Procedures in the Study (n-96)

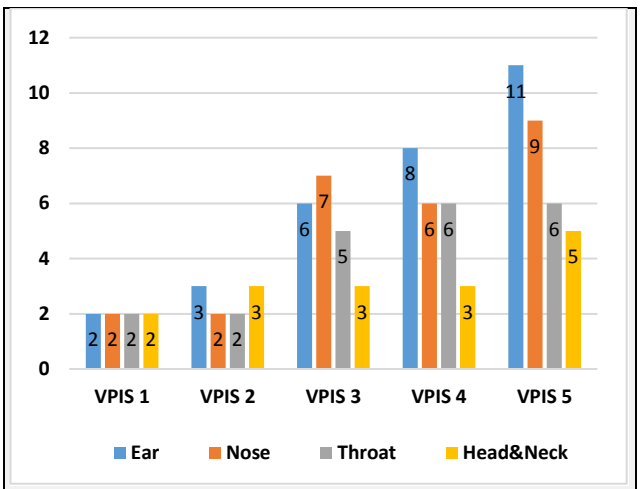

Figure 1. Incidence of Acute Postoperative Pain Graded with VPIS (n = 93)

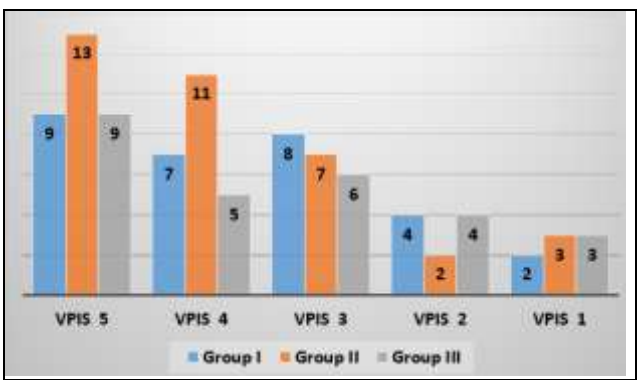

Figure 2. Showing the Group of Analgesics Prescribed for the different Categories of VPIS Graded Acute Postoperative Pain (n-93)

Group I analgesics were used in 30 / 93 (32.25 %) patients, Group II analgesics were used in 36 / 93 (38.70 %) and Group III analgesics were used in 27 / 93 (29.03 %) patients (Figure 2).

The mean and standard deviation values of the pain severity calculated among patients undergoing day-care surgery in different regions of ENT using the three groups of analgesics at 2 hourly intervals were tabulated in Table 3. The initial mean and SD values of pain severity at immediate postoperative period were 4.1 ± 0.76, 4.9 ± 1.4 and 4.45 ± 0.8 respectively for the group I, II and III analgesic groups. After 14 hours all the groups showed mean values below 2. The Friedman test for repeated measures was used to know the significance of effectiveness of the three groups of analgesics used and it was found that the X^{2r} statistic was 1.6 (2, N = 5) and the p value was 0.449 (p taken as significant at < 0.05). It was concluded that all the analgesic groups were equally effective on alleviating pain (Table 3).

Time Interval	Mean ± SD Group I (n = 30)	Group II (n = 36)	Group III (n = 27)
Immediate Postoperative	4.1 ± 0.76	4.9 ± 1.4	4.45 ± 0.8
2 h	3.6 ± 0.4	3.4 ± 0.5	3.35 ± 1.1
6 h	2.30 ± 0.15	2.65 ± 0.25	3.02 ± 0.50
10 h	2.06 ± 0.10	2.10 ± 0.30	2.40 ± 0.15
14 h	1.55 ± 0.10	1.75 ± 0.05	1.40 ± 0.15
Table 3. Mean and SD Values of Pain Intensity			
p value 0.449			

In addition to acute postoperative pain the associated symptoms complained by the patients during recovery period were analysed from this study and tabulated in Table 4. Nausea was observed in 17 (17.70 %), followed by vomiting in 11 (11.45 %), bleeding from surgical sites in 06 (06.25 %) and excessive sweating in 06 (06.25 %) patients. Allergic reactions were reported in 05 (05.20 %), urinary retention in 04 (04.16 %) and sedation in 05 (05.20 %) patients. Hallucinations and odd behaviour were seen among 05 (05.2 %) and 04 (04.16 %) patients respectively. Abdominal cramps were reported in 03 (03.12 %) patients. All the associated symptoms were treated appropriately with supportive care. 11 / 96 (11.45) patients required extension of their stay for another 24 hours due to persistence of their associated symptoms but none of them had persistence of pain as a complaint.

Observation	Ear 32	Nose 26	Throat 22	Head and Neck 16	Patients with Extended Stay 11
Associated Symptoms					
Nausea - 17 (17.70 %)	06	04	05	02	02
Vomiting - 11 (11.45 %)	03	02	03	03	02
Abdominal Cramps - 03 (03.12 %)	01	00	00	02	0
Sweating - 06 (06.25 %)	01	04	00	01	0
Allergic Reactions - 05 (05.20 %)	02	01	01	01	02
Urinary Retention - 04 (04.16 %)	01	02	01	00	02
Bleeding from the Surgical Site - 06 (06.25 %)	01	04	01	00	01
Hallucinations - 05 (05.20 %)	01	02	01	01	01
Sedation - 05 (05.20 %)	02	02	00	01	01
Odd Behaviour - 04 (04.16 %)	01	01	02	00	00
Table 4. Incidence of Associated Symptoms among Patients in the Study (n - 96)					

DISCUSSION

Alleviating postoperative pain in the immediate recovery period following day-care procedures remains the key for timely discharge of patients. If moderate to extremely intense pain persists, it may lead to extended stay in the recovery room. It would also affect sleep, early mobilization and return to normal activity and work. In the present study 93 / 96 (96.87 %) patients had acute postoperative pain of varying degrees requiring analgesics. In a US national survey[11] also 94 % of the health care personnel agreed that pain management is different in day-care cases. Usage of opioid analgesics results in sedation, respiratory depression and postoperative nausea and vomiting which also delays discharge. Hence, to overcome such side effects and to successfully discharge a patient, opioid sparing multimodal balanced analgesics are being used.[12] Out of 96 patients included in the study there were 55 (57.29) males and 41 (42.70 %) females with a male to female ratio of 1.4:1. The mean age was 31.50 ± 4.15 years.

In three similar studies, the overall prevalence of acute moderate to extremely intense pain in the immediate postoperative period was 54.3 %, 68.7 % and 91.4 % respectively and the possible explanation for the wide variation was that, use of plain Lignocaine (2 %) in some instances for LA infiltration, while some surgeons used Lignocaine (2 %) with adrenaline due to lack of unit's protocol or guidelines.[13,14,15] In this study 57 / 96 (59.37 %) of the patients underwent the procedures by LA using plain Lignocaine (2 %) or Lignocaine (2 %) with Adrenaline infiltration, 39 / 96 (40.62 %) patients underwent the procedures by General Anaesthesia. The International Association for the Study of Pain at the International Pain Summit in Montreal, Canada made a declaration, "Relief from pain is a fundamental right of every human being".[16] In the present study, it showed that the overall pain among the patients was of moderate to extremely intense (VPIS class 3, 4 and 5; 21, 23 and 31 respectively) in 75 / 93 (80.64 %) patients. The pain was of class 2 VPIS in 10 / 93 (10.75 %) patients and it was of low severity with VPIS class 1 in 08 / 93 (08.60 %) patients, (Figure 1).

Among the 96 patients there were 03 / 96 (03.12 %) with VPIS scoring of class 0 (no pain). Most patients in the present study were admitted directly for surgery in the surgical ward or the surgical OPD on the day of surgery. In a study by Gramke et al,[17] it was observed that the predictive factors for postoperative pain after day-care surgery were preoperative pain, younger age, and fear of short-term consequences of operation. In this study regular assessment of acute pain was done using VPIS at regular intervals which enhanced the quality of pain management and helped in timely discharge of patients. The initial mean and SD values of pain intensity at immediate post-operative period 4.1 ± 0.76, 4.9 ± 1.4 and 4.45 ± 0.8 respectively for the group I, II and III analgesic groups. After 14 hours all the groups showed mean values < 2. The Friedman test for repeated measures was used to know the significance of effectiveness of the three groups of analgesics used and it was found that the X^{2r} statistic was 1.6 (2, N = 5) and the p

value was 0.449 (p taken as significant at < 0.05). Though this finding may be not correlating with the type of surgery performed and the region of the surgery performed as a day-care procedure. Administration of oral analgesics were also reported to be adequate for the management of the postoperative pain in the day-care surgical procedures.

Analgesics such as oral Paracetamol (PCM), Non-Steroidal Anti-Inflammatory Drugs (NSAIDS) and Tramadol are often prescribed.[18,19] In this study Group I analgesics (Opioid with antiemetic) were used in 30 / 93 (32.25 %) patients, Group II analgesics (Opioid with antiemetic) were used in 36 / 93 (38.70 %) and Group III analgesics (PCM and antiemetic) were used in 27 / 93 (29.03 %) patients. In this study, the administration of opioid, PCM and antiemetic reduced the mean pain score from 4.1 ± 0.76, 4.9 ± 1.4 and 4.45 ± 0.8 to less than 2 by 14 hours. There was no difference in the efficacy of the analgesics in all the three groups at the end of 14 hours follow-up and assessment of pain (p value > 0.05). In addition to acute pain, associated symptoms reported among the patients during postoperative recovery period were analysed in this study and tabulated in Table 4. Nausea was observed in 17 (17.70 %), followed by vomiting in 11 (11.45 %), bleeding from surgical sites in 06 (06.25 %) and excessive sweating in 06 (06.25 %) patients. No specific treatment was given other than analgesics in this study.

CONCLUSIONS

The prevalence of moderate to extremely intense acute postoperative pain in 75 / 93 (80.64 %) patients was high. But the analgesics prescribed were effective in controlling the pain and the mean pain intensity was less than 2 in 14 hours, hence 85 / 96 (88.54 %) patients could be discharged in time. The associated symptoms were managed with supportive care and required no additional medications and these patients were discharged after overnight stay.

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