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Original Research Article

To compare the length of stay in post anaesthesia care unit (PACU) for patients undergoing, unilateral knee arthroscopic surgeries under general anaesthesia with ultrasound guided adductor canal block versus general anaesthesia with intravenous analgesic methods.

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Abstract:

Background & Method: The aim of the study is to conclude, after interpretation of data found in this study, rescue analgesia requirement in PACU was found to be 47.5% in morphine group and only 10% in ACB group and antiemetic requirement in PACU was found to be 42.5% in morphine group and only 20% in ACB group. Also it was found that mean CBD time in morphine group was 25.50±10.12 and mean CBD time in ACB group was 14.00±6.72 which was found to be clinically and statistically significant (p value <0.001). Thus USG guided adductor canal block is a newer technique for post-operative analgesia after knee arthroscopy with promising results compared to intravenous analgesia for early functional recovery. However, more RCTs may be needed to confirm the efficacy of ACB.

Result: The mean time based discharge (TBD) time was 60 minutes with no standard deviation and the mean criteria based discharge in morphine group was 25.50±10.12minutes and mean difference was found to be 34.50±10.12 minutes which was statistically significant. Also mean criteria based discharge in block group was 14.00±6.72 minutes and mean difference was found to be 46.00±6.72 minutes which was statistically significant.(P value <0.001). It was noted that rescue analgesia (inj tramadol 50mg) is required in 47.5% of patients in morphine group and in only 10% of patients in block group.

Conclusion: To conclude, after interpretation of data found in this study, rescue analgesia requirement in PACU was found to be 47.5% in morphine group and only 10% in ACB group and antiemetic requirement in PACU was found to be 42.5% in morphine group and only 20% in ACB group. Also it was found that mean CBD time in morphine group was 25.50±10.12 and mean CBD time in ACB group was 14.00±6.72 which was found to be clinically and statistically significant (p value <0.001). Thus USG guided adductor canal block is a newer technique for post-operative analgesia after knee arthroscopy with promising results compared to intravenous analgesia for early functional recovery. However, more RCTs may be needed to confirm the efficacy of ACB.

Keywords: length, (PACU), unilateral, knee & arthroscopic.

Study Designed: randomized, interventional and controlled study.

1. Introduction

Post anesthesia care unit (PACU) is a specially designed area in close proximity to operating rooms (OR) which has been accepted globally as a standard of care.[1] The goal of PACU management is to provide specialized care to the patients emerging from anesthesia by a team of well-trained nurses as per their clinical condition following PACU standards of shifting, monitoring and care of complications, if any. It has been proved to be an effective and cost- efficient mean of decreasing the significantly high incidence of postoperative morbidity and mortality.[2,3]

Post anesthesia care unit (PACU) is generally congested and overburdened in most of the hospitals in our country. Not only is there a shortage of PACU beds, but also, there is improper utilization resulting in burden on the staff and non-availability for deserving or sicker patients.[4] A decreased patient flow due to PACU delays has have been found to have economic implications on the whole system.[5] It is important to identify common causes of delay in PACU discharge. PACU management has to be streamlined with peri-operative strategies eg. anesthetic techniques, discharge criteria, nonclinical factors and various team players have to work together for improving whatever is possible in their domain to increase or hasten turnover.[6]

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Arthroscopic knee surgery is one of the most commonly performed orthopaedic procedures.[7] It refers to a large variety of surgical interventions in the knee, and numerous regimens have been investigated in order to find the best combination of anesthetic techniques and analgesics for these procedures.[8,9]
Acute postoperative pain remains a major problem, resulting in multiple undesirable outcomes if inadequately controlled. Most knee arthroscopy patients spend their immediate postoperative period in the post anesthesia care unit (PACU), where pain management, being unsatisfactory affects early discharge from PACU and further recovery.[10]

2. Material & Method

This study was conducted at Post anesthesia care unit(PACU) in the department of anesthesiology, Indraprastha Apollo Hospital & designed to compare whether procedure specific pain management using ultrasound guided adductor canal block results in early discharge of patient from PACU as compared to intravenous analgesic methods in patients undergoing unilateral knee arthroscopy using modified Aldrete scoring system. This also study the efficacy of modified Aldrete scoring system based discharge criteria as compared to existing time based discharge criteria in decreasing the length of stay(LOS) in same patients.
We have also assessed the benefit of using White‟s fast track scoring system in further saving time of PACU by shifting patients directly to step down recovery.
Patients were divided into 2 Groups. One group received ultrasound guided adductor canal block using 15ml of 0.25% bupivacaine along with general anesthesia before extubation and second group received intravenous morphine 0.1mg/kg body weight before incision with general anesthesia.

INCLUSION CRITERIA

- Patients with age more than 18 years and less than 65 years.
- Patients with American Society of Anesthesiologists (ASA) physical status 1 or 2
- Patients of either sex
- Patients undergoing unilateral knee arthroscopy in operating room under general anesthesia

EXCLUSION CRITERIA

- Patients refusal
- ASA physical status 3 or 4 patients.
- Patients suffering from major co-morbidities for example significant cardiac, hepatic, respiratory, or central nervous system disorders.
- Patients suffering from psychiatric illness
- Patients having intraoperative complications
- Pregnant patients
- Patients requiring ICU care after surgery
- Patients receiving spinal or epidural anesthesia

3. Results

Table 1: Comparison of Mean age between study groups

	Group M	**Group B**	**p value**
	Mean ± SD	**Mean ± SD**	
Age(years)	40.55 ± 12.50	40.60 ± 10.76	0.985

Mean age of patients included in our study in both groups found to be comparable. In Group 1(morphine group)- 40.55± 12.50 Group 2(block group) – 40.60 ±10.76.

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Table 2: Mean value and range of preoperative vitals in Group M and Group B

	Group M	Group B	p value
	Mean ± SD	Mean ± SD	
Systolic BP(mm Hg)	127.25 ± 11.12	126.95 ± 10.49	0.902
Diastolic BP(mm Hg)	76.42 ± 7.23	77.4 ± 7.84	0.565
Mean BP(mm Hg)	92.82 ± 8.02	93.90 ± 5.90	0.497
Heart rate(per minute)	82.9 ± 5.37	82.98 ± 5.49	0.951

Preoperative vitals of all patients were recorded as a baseline which were noted to be stable in each patient. The mean systolic blood pressure was 127.25±11.12 mm Hg in morphine group and mean systolic blood pressure was 126.95±10.49 mm Hg in block group. The mean blood pressure was 92.82±8.02mm Hg and 93.90±5.90mm Hg in morphine and block group respectively.

Table 3: Comparison of mean TBD and CBD between study groups

	Group M	Group B	p value
	Mean ± SD	Mean ± SD	
TBD Time(minutes)	60.00 ± 0.00	60.00 ± 0.00	–
CBD Time(minutes)	25.50 ± 10.12	14.00 ± 6.72	<0.001
TBD-CBD Time(minutes)	34.50 ± 10.12	46.00 ± 6.72	<0.001

The mean time based discharge (TBD) time was 60 minutes with no standard deviation and the mean criteria based discharge in morphine group was 25.50±10.12minutes and mean difference was found to be 34.50±10.12 minutes which was statistically significant. Also mean criteria based discharge in block group was 14.00±6.72 minutes and mean difference was found to be 46.00±6.72 minutes which was statistically significant.(P value <0.001).

Table 4: Correlation of analgesia required in PACU between study groups.

Analgesia required in PACU	Group M		Group B		p value
	Frequency	%	Frequency	%	
N	21	52.5%	36	90.0%	<0.001
Y	19	47.5%	4	10.0%	
Total	40	100%	40	100%	

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It was noted that rescue analgesia (inj tramadol 50mg) is required in 47.5% of patients in morphine group and in only 10% of patients in block group.

4. Discussion

Intravenous opioids are the main analgesic agents in postoperative period after knee arthroscopy surgery, most commonly used opioids in postoperative period are morphine at dose of 0.03-0.15mg/kg and fentanyl at dose of 0.5-1.5mcg/kg. However, opioids remain very effective analgesics, their well-known side effects like sedation, nausea and vomiting, respiratory depression may prevent rapid rehabilitation.[11]

Multimodal analgesia incorporating intravenous nonopioid analgesics and regional anesthetic techniques provide optimum analgesia and minimises the use of opioids. Intravenous nonopioid analgesic such as NSAIDs(diclofenac at dose of 1mg/kg), paracetamol (at dose of 15mg/kg), including various adjuvants such as corticosteroids(dexamethasone 0.1- 0.2mg/kg), alpha 2 agonist clonidine (3mcg/kg), dexmedetomidine(1mcg/kg) and low dose ketamine (0.1-0.5mg/kg) commonly used for postoperative analgesia. There are numerous studies over nonopioid analgesic providing adequate postoperative analgesia and reduces the use intravenous opioids in postoperative period.[12]

In 2005, Elia N, Tramer MR, Studied multimodal analgesia with acetaminophen, NSAIDs, or selective COX2 inhibitors with intravenous morphine and found nonopioid analgesic results in less consumption of opioids in postoperative period and thus reduces adverse effects of opioids. Similar results was found on study of Marret E, Kurdi O, Zufferey P, Bonnet F on comparing effects of nonsteroidal antiinflammatory drugs on patient-controlled analgesia morphine side effects.[13]

Remy C, Bonnet F studied effects of acetaminophen on morphine side-effects and consumption after major surgery, concluded that it minimises the use of morphine in postoperative period and thus reduces adverse effects of morphine.[14]

5. Conclusion

To conclude, after interpretation of data found in this study, rescue analgesia requirement in PACU was found to be 47.5% in morphine group and only 10% in ACB group and antiemetic requirement in PACU was found to be 42.5% in morphine group and only 20% in ACB group. Also it was found that mean CBD time in morphine group was 25.50±10.12 and mean CBD time in ACB group was 14.00±6.72 which was found to be clinically and statistically significant (p value <0.001). Thus USG guided adductor canal block is a newer technique for post-operative analgesia after knee arthroscopy with promising results compared to intravenous analgesia for early functional recovery. However, more RCTs may be needed to confirm the efficacy of ACB.

6. References

1. Ramsay MA, John Snow, MD: Anaesthetist to the Queen of England and pioneer epidemiologist. In Baylor university medical center proceedings. 2006 Jan;19(1):24- 28.
2. Cutugno C. Evolution of post anesthesia care units: a legacy of politics, funding, and patient safety concerns. Policy, Politics, & Nursing Practice. 2013 Aug;14(3-4):142- 50.
3. Bothner U, Georgieff M, Schwilk B. The impact of minor perioperative anesthesia- related incidents, events, and complications on post anesthesia care unit utilization. Anesthesia & Analgesia. 1999 Aug 1;89(2):506-13.
4. Cohen MM, O‟Brien-Pallas LL, Copplestone C, Wall R, Porter J, Rose DK. Nursing workload associated with adverse events in the post anesthesia care unit. Anesthesiology. 1999 Dec 1;91(6):1882-90.
5. Marshall SI, Chung F. Discharge criteria and complications after ambulatory surgery. Anesthesia & Analgesia. 1999 Mar 1;88(3):508-17.
6. McGrath B, Chung F. Postoperative recovery and discharge. Anesthesiology Clinics of North America. 2003 Jun 1;21(2):367-86.
7. asanen P, Paavolainen P, Sintonen H, et al. Effectiveness of hip or knee replacement surgery in terms of quality adjusted life years and costs. Acta Orthopaedica 2007 Jan1; 78(1):108–15.
8. Williams BA, Kentor ML, Williams JP, Vogt MT, DaPos SV, Harner CD, Fu FH. PACU bypass after outpatient knee surgery is associated with fewer unplanned hospital admissions but more phase II nursing interventions. Anesthesiology: The Journal of the American Society of Anesthesiologists. 2002 Oct 1;97(4):981-8.
9. Joshi GP, Schug SA, Kehlet H. Procedure-specific pain management and outcome strategies. Best Practice & Research Clinical Anaesthesiology. 2014 Jun 1;28(2):191- 201.

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10. American Society of Anesthesiologists Task Force on Acute Pain Management. Practice guidelines for acute pain management in the perioperative setting: an updated report by the American Society of Anesthesiologists Task Force on Acute Pain Management. Anesthesiology. 2012 Feb;116(2):248-73.
11. American Society of Anesthesiologists Task Force on Acute Pain Management. Practice guidelines for acute pain management in the perioperative setting: an updated report by the American Society of Anesthesiologists Task Force on Acute Pain Management. Anesthesiology. 2012 Feb;116(2):248-73.
12. Elia N, Lysakowski C, Tramer MR. Does multimodal analgesia with acetaminophen, nonsteroidal anti-inflammatory drugs, or selective cyclooxygenase-2 inhibitors and patientcontrolled analgesia morphine offer advantages over morphine alone? Meta- analyses of randomized trials. Journal of American society of Anesthesiology 2005;103(6):1296-1304
13. Marret E, Kurdi O, Zufferey P, Bonnet F . Effects of nonsteroidal antiinflammatory drugs on patient-controlled analgesia morphine side effects: meta-analysis of randomized controlled trials. Anesthesiology 2005Jun 1;102(6):1249-60
14. Remy C, Marret E, Bonnet F. Effects of acetaminophen on morphine side-effects and consumption after major surgery: meta-analysis of randomized controlled trials. British Journal of Anaesthesia. 2005 Apr 1;94(4):505-13