Original Article

Postoperative pain management practices and their effectiveness after major gynecological surgery: An observational study in a tertiary care hospital

Samina Ismail, Ali S. Siddiqui, Azhar Rehman

Department of Anaesthesiology, Aga Khan University, Karachi, Pakistan

Abstract

Background and Aims: Despite advances in postoperative pain management, patients continue to experience moderate to severe pain. This study was designed to assess the strategy, effectiveness, and safety of postoperative pain management in patients undergoing major gynecological surgery.

Material and Methods: This observational study included postoperative patients having major gynecological surgery from February 2016 to July 2016. Data collected on a predesigned data collection sheet included patient's demographics, postoperative analgesia modality, patient satisfaction, acute pain service assessment of numeric rating scale (NRS), number of breakthrough pains, number of rescue boluses, time required for the pain relief after rescue analgesia, and any complication for 48 h.

Results: Among 154 patients reviewed, postoperative analgesia was provided with patient-controlled intravenous analgesia in 91 (59.1%) patients, intravenous opioid infusion in 42 (27%), and epidural analgesia in 21 (13.6%) patients with no statistically significant difference in NRS between different analgesic modalities. On analysis of breakthrough pain, 103 (66.8%) patients experienced moderate pain at one time and 53 (51.4%) at two or more times postoperatively. There were 2 (0.6%) patients experiencing severe breakthrough pain due to gaps in service provision and inadequate patient's knowledge. Moderate-to-severe pain perception was irrespective of type of incision and surgery. Vomiting was significantly higher ($P = 0.049$) in patients receiving opioids.

Conclusion: Adequacy of postoperative pain is not solely dependent on drugs and techniques but on the overall organization of pain services. However, incidence of nausea and vomiting was significantly higher in patients receiving opioids.

Keywords: Acute pain service, gynecological surgery, pain scores, postoperative pain management, practices

Introduction

Patients undergoing major surgical operations continue to experience pain with an overall reported incidence of 29.7% for moderate-to-severe pain and 10.9% for severe pain.[1] Even in developed countries, 86% of patients experience postsurgical pain and 75% of those who reported pain described its severity as moderate-to-severe during the immediate postoperative period.[2]

Persistent pain after major abdominal surgery can lead to shallow breathing which facilitates retention of secretion with eventual development of pneumonia contributing to organ dysfunction and prolonged convalescence.[3,4] Therefore, ineffective postoperative pain management has physiological, psychological, ethical, and financial consequences.

Major abdominal surgical operations ideally require the Acute Pain Management Service (APMS) for regular pain assessment and timely management of breakthrough pains and complications in the postoperative period. Evidence

Address for correspondence: Dr. Samina Ismail, Department of Anaesthesiology, Aga Khan University Hospital, Stadium Road P.O. Box 3500, Karachi - 74800, Pakistan.
E-mail: samina.ismail@aku.edu

Access this article online

Quick Response Code:

Website: www.joacp.org

DOI: 10.4103/joacp.JOACP_387_17

How to cite this article: Ismail S, Siddiqui AS, Rehman A. Postoperative pain management practices and their effectiveness after major gynecological surgery: An observational study in a tertiary care hospital. J Anaesthesiol Clin Pharmacol 2018;34:478-84.

has suggested that APMS has improved morbidity and reduced the duration of hospital stay.[5] However, this service has limitations as documented from one survey from the United Kingdom stating that acute pain services are struggling to survive and physicians agreed on the need for a better organizational approach rather than new treatment and delivery techniques.[6] In addition, the Audit Commission report states that patients still "slip through the net" as they continue to experience pain postoperatively due to wide variability in the efficiency of acute pain service, not only between hospitals but also between wards within the same hospitals.[7]

The rational of this study is to assess pain management practices and their effectiveness after major gynecological surgery in a tertiary care hospital having a 24 h acute pain service. The primary objective of the study was to assess effectiveness of pain management after major gynecological surgery. Effectiveness of pain management was judged from the overall incidence of pain intensity measures through the numeric rating scale (NRS) in two ways: the percentage of patients who experienced moderate-to-severe pain and the percentage of patients who experienced moderate-to-severe pain more than once during the first 48 h. The secondary objectives were to assess safety and tolerability of pain management modalities used for postoperative pain management.

Material and Methods

This prospective observational study was conducted for a period of 6 months from February 2016 to July 2016 after approval from the institutional ethics review committee. The inclusion criteria for the study included female patients belonging to the American Society of Anesthesiologists (ASA) physical Class I to III status, undergoing elective major gynecological surgery under general anesthesia. The major gynecological surgery included those having open intra-peritoneal dissection and removal of organ either by transverse or vertical incision. The exclusion criteria included patients not consenting to be a part of the study, undergoing emergency surgery, having chronic pain conditions or on pain medications, psychiatric problems, language barrier, or not able to communicate. Patients fulfilling our inclusion criteria were approached for written informed consent. Those patients consenting to be a part of the study were enrolled and were briefed about the pain assessment involving verbal NRS assessment and satisfaction scoring with pain management strategies.

Information was entered in a predesigned data collection sheet which included patient's medical record number, demographics, ASA grading, type of surgery and incision, surgical duration, postoperative pain management modality details, use of co-analgesia, NRS assessment in the post-anesthesia care unit (PACU) at 30 and 60 min and then in the ward at 4, 8, 12, 24, and 48 h postoperatively. In addition, any incident of breakthrough pain with NRS ≥4 at any time for 48 h and complications like sedation, cardiovascular instability, nausea, vomiting, and prolonged motor block in case of regional analgesia technique were also noted down. The type, number of rescue boluses, and time required for the pain relief were also noted down. All the assessment was done by the trained nurses of APMS in PACU at 30 and 60 min and in the ward at 4, 8, 12, 24, and 48 h postoperatively.

Pain was assessed using the NRS of 0–10, where 0 is no pain and 10 represents worst pain imaginable. NRS was chosen as it is the institution-wide pain assessment scale in the institution where this study was carried out. Complications observed were sedation, nausea, vomiting, and motor block (if epidural analgesia was used). Observer's assessment of alertness/sedation was used to assess sedation on a scale of 1–5 (5= responds readily to spoken words in normal tone, 4= lethargic response to name spoken in normal tone, 3=response only after spoken loudly and repeatedly, 2= responds after mild probing or shaking, 1=does not respond to mild probing or shaking). Nausea and vomiting were assessed on a scale of 0–3 (0 = none, 1 = mild nausea on inquiry, 2 = moderate nausea/vomiting – treatment required, and 3 = vomiting unresponsive to simple antiemetic). When epidural was used, modified Bromage score was used to assess the motor block (0 = no block, 1 = unable to raise straight leg, able to flex knee, 2 = unable to flex knee, able to move ankle and toes, 3 = unable to move the lower limb). Patient satisfaction with the pain relief was determined after 48 h or at the time of discharge, whichever comes first. Patients were asked to rate their satisfaction with pain management as excellent, good, fair, or poor. All patients were followed for the study till 48 h postoperatively.

Statistical analysis

Statistical analysis was performed using the Statistical Packages for Social Science version 19 (SPSS Inc., Chicago, IL, USA). Mean and standard deviation were estimated for numeric characteristics of patients. Frequency and percentage were computed for anesthetic characteristics, surgical incision, analgesic technique and co-analgesia requirement, satisfaction of patients regarding postoperative pain management, and complication of patients. Chi-square test was applied to compare pain intensity, complication, and patient experience regarding postoperative pain management among analgesic techniques. $P \leq 0.05$ was considered as significant.

Results

During the study period, 171 major gynecological surgical procedures were done, 165 fulfilled our inclusion criteria and approached for participation in the study, out of which 11 patients declined. Therefore, the sample was collected on 154 patients who consented to participate in the study. Demographic characteristics, duration of surgery, and the ASA status are shown in Table 1. The most commonly performed surgery during the study period was total abdominal hysterectomy with bilateral salpingophorectomy in 115 (74.6%) patients. The most frequent incision used was Pfannenstiel incision in 78 (50.6%) patients, vertical up to the umbilicus in 62 (40.2%) patients, and vertical up to the xiphoid in 14 (9%) patients.

Analgesic modalities for postoperative pain

Postoperative analgesia orders were appropriately entered in the patient's files for all patients. Postoperative analgesia was provided with patient-controlled intravenous analgesia (PCIA) in 91 (59.1%) patients, intravenous (IV) opioid infusion in 42 (27%) patients, and epidural analgesia in 21 (13.6%) patients. Use of different analgesic modalities in major gynecological surgery performed during the study period is shown in Figure 1. There were 147 (95%) patients who received co-analgesia postoperatively; among them IV paracetamol was used in 89 (57.8%), ketorolac in 6 (4.8%), oral paracetamol together with diclofenac suppositories in 52 (33.7%) patients, and transversus abdominis plane (TAP) block in 9 (5.8%) patients. The opioids used were tramadol, morphine, and nalbuphine. Commonly used opioid for IV infusion was tramadol. Morphine was the most commonly used opioid for PCIA in 94.5% of patients. In all patients receiving epidural infusion, the drug used for the infusion included bupivacaine 0.1% with fentanyl 2 μg/ml. The rate of infusion was titrated according to the response and kept between 6 and 12 ml/h. The level of epidural insertion was above the twelfth thoracic (T_{12}) level in all patients. Epidural was continued for 24 h postoperatively in 18 patients and 36 h postoperatively in 3 patients.

Table 1: Demographic characteristics, duration of surgery, and ASA status

Quantitative variables	Mean±SD
Age (years)	44.8±11.1
Weight (kg)	70.9±14.4
Height (cm)	156.6±5.8
BMI (kg/m^2)	28.9±5.8
Duration of surgery (h:min)	2:4±00:6
*ASA status [number (%)]	
ASA I	36 (23)
ASA II	88 (57)
ASA III	30 (20)

*SD=Standard Deviation; *ASA=American Society of Anesthesiologists*

Effectiveness of postoperative analgesia

Comparison among different analgesic techniques for static and dynamic pain score at different times of pain assessment is shown in Figures 2 and 3. No statistically significant

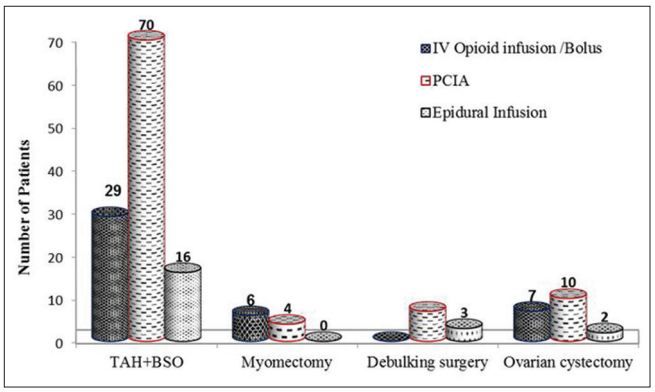

Figure 1: Analgesic modalities used in different surgeries

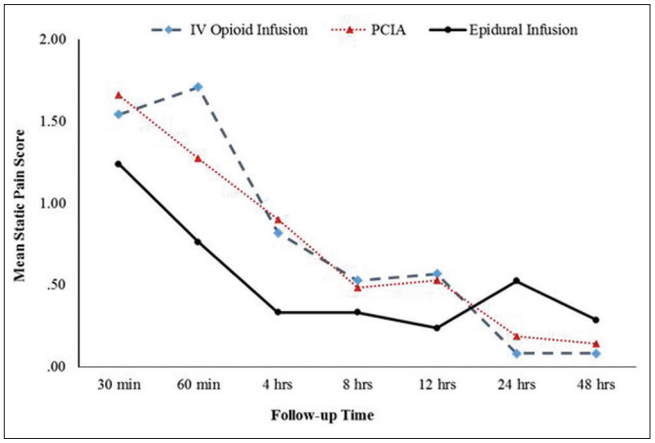

Figure 2: Comparison of static pain score among different analgesic modalities with respect to follow-up time

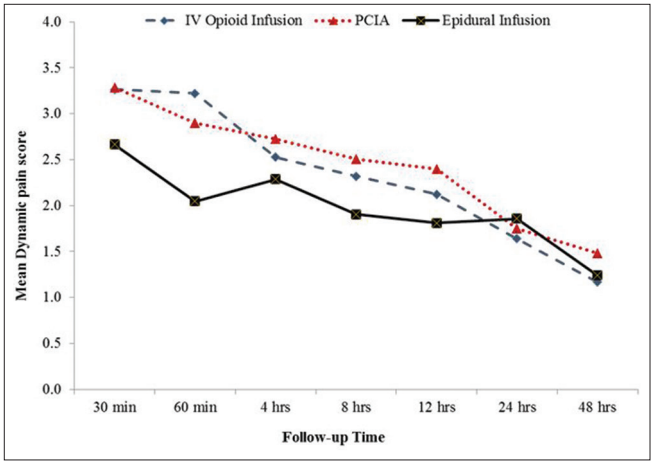

Figure 3: Comparison of dynamic pain score among different analgesic modalities with respect to follow-up time

difference was observed in the occurrence of zero-to-mild pain or moderate-to-severe pain among the different analgesic modalities both at rest and on movement ($P > 0.05$).

Moderate pain perception was irrespective of type of incision and surgery. Around 73% (57/78) patients with Pfannenstiel incision had moderate pain at some time postoperatively. There were two patients (0.6%) who experienced severe pain in PACU; one had received total abdominal hysterectomy with Pfannenstiel incision and PCIA morphine as the postoperative analgesic modality while other patient had de-bulking cancer surgery with midline incision up to umbilicus (or xiphoid), who received continuous epidural analgesia as postoperative analgesic modality.

This study revealed that breakthrough pain of moderate pain intensity was felt once in 103 (66.8%) patients and more than once in 53 (51.4%) patients within 48 h postoperatively. Breakthrough pain was treated by additional bolus of opioid if patients were on opioid infusion or PCIA. While those having epidural infusion as postoperative analgesic modality received 5 ml boluses 0.125% bupivacaine for rescue analgesia. None of the patient receiving epidural as postoperative analgesic modality required opioid boluses for breakthrough pain or conversion to IV opioid analgesia. Patients were reassessed at 15 min and 30 min after rescue boluses. Breakthrough pain occurring in 103 (66.8%) patients was relieved with one bolus of rescue analgesia within 15 min in 41 (39.8%) patients. However, more than one rescue bolus was required in 62 (60.1%) patients which was relieved within 30 min. The severity of the pain scores decreased with passage of time both at rest and movement as shown in Figures 2 and 3.

Side effects

There were 32 patients in whom complications were reported as shown in Table 2. Vomiting was significantly higher in patients receiving opioids either in IV infusion/bolus ($P = 0.049$). There were 4 patients who had Grade 1–2 nausea in the PACU and 26 patients complained of Grade 1–2 nausea and vomiting in the ward between 6–12 h postoperatively. None of the patients receiving TAP blocks or epidural had complication of persistent limb weakness. Patients receiving epidural had Bromage scale of 1–2 in the ward.

Patient's satisfaction score

The comparison of outcome of experience of postoperative pain management among different analgesic technique showed no significant difference in the satisfaction score among three postoperative analgesic modality used. There were 42 patients who received opioid intravenous infusion; out of which 21 (50%) patients rated their experience as excellent, 20 (47.6%) rated as very good, and 1 (2.4%) rated it as good. Among 91 patients receiving PCIA, 54 (59.3%) patients rated their experience as excellent, 29 (31.9%) as very good, and 8 (8.8%) as good. Patients receiving epidural were 21, out of which 12 (57.1%) rated their experience as excellent, 8 (38.1%) as very good, and 1 (4.8%) as good. Overall satisfaction score was rated as excellent by 87 (56.5%) patients, very good by 57 (37%), and good by 10 (6.5%) patients. None of the patients rated their experience as poor.

Discussion

This study demonstrated an incidence of 67.8% of breakthrough pain requiring the need of rescue analgesia within 48 h postoperatively compared to the quoted incidence of 85.9% from a study done in the same institution.[8] Evidence has shown that despite the introduction of new drugs and techniques, postoperative pain management is often suboptimal with 80% of patients experiencing moderate-to-severe postoperative pain.[9-11] Previous literature from other parts of the world have also shown a high incidence of moderate-to-severe pain after surgery of moderate-to-major category with incidence ranging from 41–69%.[12,13] The common reasons suggested for inadequate pain control include poor routine evaluation of pain severity, discrepancies in its assessment between different health care personnel, poor education of patients, and inadequate training of health care personnel.[14]

This study did not find any statistical difference in the intensity of pain among different analgesic modalities, probably as all patients undergoing major gynecological surgery were under

Table 2: Comparison of complications among different analgesic modalities

Complication	*n*	IV opioid infusion/bolus (*n*=42) (%)	PCIA (*n*=91) (%)	Epidural infusion (*n*=21) (%)	*P*
Overall	32	13 (31.0)	18 (19.8)*	1 (4.8)	0.051
Vomiting	13	7 (16.7)	6 (6.6)	0 (0)	0.049
Nausea	17	6 (14.3)	10 (11)	1 (4.8)	0.52
Sedation	1	0 (0)	1 (1.1)	0 (0)	0.70
Anxiety	2	0 (0)	2 (2.2)	0 (0)	0.49
Hypotension	1	0 (0)	1 (1.1)	0 (0)	0.70

**Some patients had multiple complications. IV=Intravenous; PCIA=Patient-Controlled Intravenous Analgesia*

the APMS and were provided analgesia on a continuous and not on "as required" basis. However, older studies have shown wide variation in the incidence of moderate-to-severe pain among different analgesic techniques where pain relief was provided mainly by intramuscular (IM) route and "as required."[1] The review published by Dolin *et al*. on the incidence of moderate-to-severe pain after major surgery with different analgesic techniques showed that the incidence of pain altered between 1973 and 1999.[1] In the early part of the analysis, IM analgesia was the most frequently reported technique, where as in the later part of analysis, when other techniques were introduced, there was a significant fall in the overall incidence of moderate-to-severe pain ($P < 0.0001$) by 1.9% per annum.[1]

Therefore, in the present era, where APMS is available; adequacy of postoperative pain is not dependent on drugs and techniques but on the overall organization which includes optimal utilization of available drugs, techniques and resources, patients' education, and health care workers' training to improve the quality of postoperative pain relief.[15,16]

PCIA was the most common analgesic modality in this study and the literature has shown clear benefit as patient satisfaction is improved.[17] This technique allows patients to have control to self-administer boluses of analgesics, titrating it according to the need, and enhancing responsiveness in analgesic requirement. However, patient education in the use of PCIA is very important to get adequate pain relief, as the reason for severe pain in one of the patient in this study was her poor understanding in the use of PCIA. Analgesics effectiveness of several opioids administered via PCIA has been evaluated with no significant differences on postoperative pain scores, side effects, and patient satisfaction.[18,19] This further proves the fact that proper use and education of patient are more important than the specific drug or technique.

Epidural technique was used in only 21 (13.6%) patients in this study despite the evidence that epidural technique is the most effective in providing dynamic pain relief after major surgical procedures and reducing surgical stress responses.[20,21] However, like with any technique; proper communication, adequate training, and education is the key to success. In this study the second patient having severe pain in PACU had epidural in place and the reason for breakthrough pain was delay in the restart of epidural in the PACU after stopping the epidural infusion in the operating room for shifting the patient to PACU.

Another factor that is important in the effective management of postoperative pain management is the delivery of rescue analgesia when required. Escape criteria such as the need for additional "rescue" analgesia have been reported in some studies.[1] All the patients in this study having the NRS ≥4 were given rescue analgesia either in the form of opioid bolus or a bolus of epidural infusion depending on the postoperative analgesic modality used on the patient. Previous study from the same institution revealed that 35% of the patients required action by the APMS and improvement was seen in all the patients.[8]

Action and adjustments by the APMS may not only be required for rescue analgesia but also for the management of side effects. This study assessed the safety by measuring the incidence of respiratory failure and hypotension and tolerability by the occurrence of side effects like nausea, vomiting, sedation, anxiety, and pruritus. The common side effects observed were nausea and vomiting which occurred in patients receiving intravenous opioids as compared to those receiving epidural analgesia. Previous studies have also shown a high incidence of nausea and vomiting with the use of opioids as compared to epidural techniques.[22,23]

As compared to the previous two studies from the same institution the incidence of motor block from epidural requiring APMS intervention has gone to almost zero.[8,23] The reason could be the use of thoracic epidural in all patients receiving epidurals. Previous studies have reported statistically higher incidence of motor block in patients receiving lumbar epidural compared to patients with thoracic epidural for postoperative pain management.[24,25]

Multimodal analgesia is needed for acute postoperative pain management to reduce the dose of opioid analgesics and their associated adverse effects like nausea and vomiting, which can impede recovery.[18] In this study, multimodal analgesia either in the form of non-steroidal inflammatory drugs, paracetamol, and TAP block were used in 95% of the patients. However, TAP block was used only in 5.8% of the patients even though, as a component of a multimodal analgesic regimen, it has been shown to provide superior analgesia than placebo for up to 48 postoperative hours after elective total abdominal hysterectomy.[26]

It was noticed in this study that patient satisfaction was high even in the presence of moderate-to-severe pain, which is consistent with the previous studies.[27,28] However; patient satisfaction is complex and has contribution from other aspects of perioperative care including how breakthrough pain and side effects were managed. This apparently could be the reason of high patient satisfaction score, as patients are apparently satisfied by the fact that their health care providers are attempting to provide pain relief measures.

The limitation of this study is a small sample size limited to one center only. Multicenter approach would have given a more holistic view of overall pain management of patients undergoing major gynecological surgery. However, this study has given the future direction to do a national multicenter study to assess the overall postoperative pain management strategies and pain control in this group of patients.

The strength of the study is covering many aspects of assessing pain control, including the details of postoperative analgesic modalities used, percentage of patients experiencing breakthrough pain once or more than once, rescue analgesia used, and time taken for the pain to subside.

Conclusion

In conclusion, this study showed no difference in the intensity of pain experienced by the patient having different postoperative analgesic modalities, having different type of gynecologic surgery, or type of incision. This indicates that adequacy of postoperative pain is not solely dependent on drugs and techniques but also on the overall organization of pain services This study showed improvement in the incidence of pain relief as compared to previous study from the same institution but patients still continue to experience moderate pain. High incidence nausea and vomiting was observed in patients on opioids as compared to those on whom regional technique was used for postoperative analgesia, therefore there is a need to utilize more regional technique.

As major gynecological surgery is one of the commonest among abdominal surgery; proper strategy needs to be formulated to provide a uniform pain control care to these patients. Defined clinical pathways need to be made to create an optimal regimen for postoperative pain management. These pathways would outline steps to be taken at right times by anesthesiologist, nurses, surgeons, and other health care personnel for optimum care for postoperative patients. Regular audits will help in evaluating the practices of pain management of surgical patients and guide the anesthesiologist, APMS team, and nurses to evaluate their preferred strategies in terms of optimum pain control with minimum or no side effects.

Acknowledgements

The authors wish to acknowledge the support and assistance of Syed Amir Raza – Research Coordinator, Department of Anaesthesiology in data analysis, Asma Hasnain – Associate, Department of Anaesthesiology, Aga Khan University for editing the manuscript, and Rozina Kerai (APMS nurse) for data collection.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Dolin SJ, Cashman JN, Bland JM. Effectiveness of acute postoperative pain management: I. Evidence from published data. Br J Anaesth 2002;89:409-23.
2. Gan TJ, Habib AS, Miller TE, White W, Apfelbaum JL. Incidence, patient satisfaction, and perceptions of post-surgical pain: Results from a US national survey. Curr Med Res Opin 2014;30:149-60.
3. Sydow FW. The influence of anesthesia and postoperative analgesic management of lung function. Acta Chir Scand Suppl 1989;50:159-65.
4. Ferreyra G, Long Y, Ranieri VM. Respiratory complications after major surgery. Curr Opin Crit Care 2009;15:342-8.
5. 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;116:248-73.
6. Powell AE, Davies HT, Macrae WA. Rhetoric and reality on acute pain services in the UK: A national postal questionnaire survey. Br J Anaesth 2004;92:689-93.
7. Kitching AJ, O'Neill SS. Fast-track surgery and anaesthesia. Contin Educ Anaesth Crit Care Pain 2009;9:39-43.
8. Ahmed A, Yasir M. Role of acute pain service in optimizing postoperative pain relief in a tertiary care teaching hospital. J Pak Med Assoc 2015;65:1164-8.
9. White PF, Kehlet H. Improving postoperative pain management: What are the unresolved issues? Anesthesiology 2010;112:220-5.
10. White PF. Pain management after ambulatory surgery - Where is the disconnect? Can J Anaesth 2008;55:201-7.
11. Apfelbaum JL, Chen C, Mehta SS, Gan TJ. Postoperative pain experience: Results from a national survey suggest postoperative pain continues to be undermanaged. Anesth Analg 2003;97:534-40.
12. Sommer M, de Rijke JM, van Kleef M, Kessels AG, Peters ML, Geurts JW, *et al*. The prevalence of postoperative pain in a sample of 1490 surgical inpatients. Eur J Anaesthesiol 2008;25:267-74.
13. Cadavid-Puentes AM, Gonzales-Avendano JS, Mendoza JM, Berrío MI, Gomez ND, Villalba AM, *et al*. Impact of a clinical pathway for relieving severe postoperative pain at a university hospital in South America. J Anesthesiol Clin Research 2013;2:31-5.
14. Zalon ML. Nurses' assessment of postoperative patients' pain. Pain 1993;54:329-34.
15. Rawal N. Acute pain services revisited: Good from far, far from good? Reg Anesth Pain Med 2002;27:117-21.
16. Bardiau FM, Taviaux NF, Albert A, Boogaerts JG, Stadler M. An intervention study to enhance postoperative pain management. Anesth Analg 2003;96:179-85.
17. Ballantyne JC, Carr DB, Chalmers TC, Dear KB, Angelillo IF, Mosteller F. Postoperative patient-controlled analgesia: Meta-analyses of initial randomized control trials. J Clin Anesth 1993;5:182-93.
18. Stanley G, Appadu B, Mead M, Rowbotham DJ. Dose requirements, efficacy and side effects of morphine and pethidine delivered by patient-controlled analgesia after gynaecological surgery. Br J Anaesth 1996;76:484-6.

19. Karamanlioglu B, Turan A, Memis D, Türe M. Preoperative oral rofecoxib reduces postoperative pain and tramadol consumption in patients after abdominal hysterectomy. Anesth Analg 2004;98:1039-43.
20. Wheatley RG, Shug SA, Watson D. Safety and efficacy of postoperative epidural analgesia. Br J Anaesth 2001;87:47-61.
21. Kehlet H, Holte K. Effect of postoperative analgesia on surgical outcome. Br J Anaesth 2001;87:62-72.
22. Gerbershagen HJ, Rothaug J, Kalkman CJ, Meissner W. Determination of moderate-to-severe postoperative pain on the numeric rating scale: A cut-off point analysis applying four different methods. Br J Anaesth 2011;107:619-26.
23. Ahmed A, Latif N, Khan R. Post-operative analgesia for major abdominal surgery and its effectiveness in a tertiary care hospital. J Anaesthesiol Clin Pharmacol 2013;29:472-7.
24. Chisakuta AM, George KA, Hawthorne CT. Postoperative epidural infusion of a mixture of bupivacaine 02% with fentanyl for upper abdominal surgery. A comparison of thoracic and lumbar routes. Anaesthesia 1995;50:72-5.
25. Königsrainer I, Bredanger S, Drewel-Frohnmeyer R, Vonthein R, Krueger WA, Königsrainer A, *et al*. Audit of motor weakness and premature catheter dislodgement after epidural analgesia in major abdominal surgery. Anaesthesia 2009;64:27-31.
26. Carney J, McDonnell JG, Ochana A, Bhinder R, Laffey JG. The transversus abdominis plane block provides effective postoperative analgesia in patients undergoing total abdominal hysterectomy. Anesth Analg 2008;107:2056-60.
27. Niemi-Murola L, Poyhia R, Onkinen K, Rhen B, Makela A, Niemi TT. Patient satisfaction with postoperative pain management-Effect of preoperative factors. Pain Manag Nurs 2007;8:122-9.
28. Donovan B. Patient attitudes to postoperative pain relief. Anaesth Intensive Care 1983;11:125-9.

CONFERENCE CALENDAR October-December 2018

Name of conference	Dates	Venue	Name of organising Secretary with contact details
ISNACC 2019	15th-17th February 2019	Gurugram India	www.isnacc2019.com
22nd IACTACON 2019 22nd Annual National Conference of Indian Association of Cardiovascular Thoracic Anaesthesiologists	22nd -24th February 2019	Swabhumi The Heritage, Kolkata, West Bengal, India	Dr. Rahul Guhabiswas Org Secretary CIMGlobal India Pvt. Ltd BB – 31, Ground Floor, Salt Lake City, Sector – I Near Punjab National Bank, Kolkata – 700064 Mr. Gaurav Sinha Email: gaurav@cimglobal.in iacta2019@gmail.com
29th Annual National Conference of the Research Society of Anaesthesiology Clinical Pharmacology	29th -31st March 2019	PGIMS , Rohtak	Prof Dr Savita Saini Prof & Head, Deptt of Anesthesiology & Critical Care, PGIMS, Rohtak Email: www.rsacpcon2019@gmail.com Website: www.rsacpcon2019.com
PRAC 2019	5th -7th April 2019	Hyatt Pune	Dr Sandeep Diwan PRAC in-Charge, Academic Director, Dept of Anesthesia Sancheti Hospital, Pune Email: Sandeep.prac@gamil.com www.pracsancheti.com
9th National Conference of the Academy of Regional Anesthesia, India	4th -7th July 2019	Coimbatore	Dr. Balavenkatasubramanian Dr. Maheshwari S Kumar Conference Secretariat Address: Ganga Medical Centre & Hospitals Pvt. Ltd. 313, Mettupalayam Road, Saibaba Koil, Coimbatore,Tamil Nadu 641043, India. Mobile : + 91 98422 45757 Phone : + 91 422 2485000 Fax : + 91 422 2451444 Email: registration@aoraindia2019.com www.aoraindia2019.com