



A Study on Post Operative Pain Assessment on Arrival Using Vas Score among Urological Procedures after general Anaesthesia vs. Regional Anaesthesia

K. S. Jaya Madhumithra^{1*} and Mohana Priya¹

¹Saveetha Medical College and Hospital, India.

Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

Article Information

DOI: 10.9734/JPRI/2021/v33i47B33164

Editor(s):

(1) Dr. Mohamed Fawzy Ramadan Hassanien, Zagazig University, Egypt.

Reviewers:

(1) Lucy Chan, University Malaya Medical Centre, Malaysia.

(2) Ilario Froehner Junior, University of São Paulo, Brazil.

Complete Peer review History: <https://www.sdiarticle4.com/review-history/75028>

Study Protocol

Received 25 August 2021

Accepted 30 October 2021

Published 04 November 2021

ABSTRACT

Background: A Visual Analogue Scale (VAS) is a measurement that tries to measure a characteristic or attitude that is believed to range across a continuum of values and cannot easily be directly measured [1]. The 100 mm visual analogue scale (VAS) score is widely used to measure pain intensity after surgery. The main objective here is to compare the effectiveness and safety of general anaesthesia (GA) vs. regional anaesthesia (RA) in urological procedures with the help of VAS.

Methods: We enrolled a sequential, unselected cohort of fifty-two patients on arrival from surgery and used a VAS to quantify pain intensity. We compared changes in the VAS among patients who received either GA or RA for urological procedures. Patient's comorbidities, vitals, pain visual analogue scale (VAS) are evaluated. Intraoperative and post-operative complications were recorded.

Results: Vital parameters were maintained at safe values throughout the procedure in both groups. Visual analogue pain score was lower in regional anaesthesia till one hour mark of post-operative period as compared with GA cluster (P <0.05). Patients in regional anaesthesia recorded lower

consumption of analgesics during the post-operative day-0 as compared with GA cluster ($P < 0.05$). Post-operative shivering was higher in RA cluster than GA cluster (8% vs. 2%) whereas nausea and fever was higher in GA cluster than RA cluster (5% vs. 2% and 4% vs. 1% respectively). However, Patients in GA cluster recorded higher overall satisfaction scores than RA cluster.

Conclusion: Both GA and RA were effective and safe in Percutaneous Nephrolithotomy. It is observed that PCNL under RA was associated with significantly shorter operative time and hospital stay. Furthermore, postoperative pain scores were low, lower nausea and/or vomiting, and reduced analgesic requirements were noted in the RA group. However, GA provides heaps of satisfaction for patients.

Keywords: Local anaesthesia; pain assessment; urological procedures.

1. INTRODUCTION

Pain is generally considered as an important postsurgical complication, which may result in serious morbidities if left unaddressed [2].

Postoperative pain management remains a obvious challenge after urological surgery.

Adult patients requiring anaesthesia for renal and genitourinary surgery are often very old, and they may have a host of comorbidities, which pose serious problems before, during, and after surgery and anaesthesia. The choice of anaesthetic technique depends on a myriad of factors, including the patient's pre-existing conditions; type, site, and length of surgery to be performed; skill of the urologist and anaesthesiologist and their intimate knowledge of potential surgical and anaesthetic complications; and predictability and limitations of the surgical and anaesthesia procedures. Based on all of these factors, the ultimate decision of anaesthesia method needs to be the product of a well-informed discussion between the surgeon and the anaesthesiologist [3].

The modern ASA classification system [4], in conjunction with the full preoperative workup data of the patient, provides a degree of perioperative risk stratification that is very useful in choosing the optimal anaesthetic technique for a given patient undergoing a particular surgery.

Medical literature review denoted that there are still controversies whether RA or GA offers better advantages for urological/lower abdominal surgery. Although regarding postoperative pain scores and other complications needs further study, before final conclusion is elucidated. [5,6,7,8,9,10,11]

Other medical literature added that in terms of acceptability and satisfaction level of patients,

G.A is considered superior to that of R.A .In accordance to complications, R.A had fewer complications and good post-operative analgesic effect when compared to G.A .In view of acceptance, R.A is accepted more by anaesthesiologists when compared to G.A since it possess less morbid complications in comparison [12,13,14].

2. METHODOLOGY

The study protocol was conducted at SAVEETHA MEDICAL COLLEGE & HOSPITALS was approved by ICMR, between January 2021 and March 2021, fifty-two patients of either sex, aged from twenty to sixty years underwent urological procedures. This prospective study evaluated adult patients recovering from surgery, using the 10 cm VAS to measure pain. Also, all the pre-surgical analysis as well as careful history taking, physical examination, urine analysis, stool culture, complete blood count (CBC) and liver function tests, ECG and plain chest X-rays of individual patients were studied to exclude patients with any comorbidities. For general anaesthesia, drugs used are Midazolam, Propofol, Fentanyl, Morphine, inhalational isoflurane along with muscle relaxant atracurium. Drugs were chosen/added in accordance with intraoperative findings and complications of individual patients. For spinal anaesthesia, hyperbaric bupivacaine was used.

Patients under chronic treatment with analgesics or corticosteroids, patients with contraindications to regional anaesthesia (coagulopathy, chronic infection), hypersensitivity reaction to topical anaesthetic solutions or opioids, psychiatric disorders were excluded from the study.

Once consent is obtained, patients are carefully selected and listed to receive either general anaesthesia or regional anaesthesia with twenty-

six patients in each group. Patients with history of chronic illness and prior urologic surgery were excluded subsequently. Parameters such as 10 cm Pain Visual Analogue score, any analgesic intake, side effects like fever, shivering, nausea & vomiting, Patient's satisfaction scores were taken into account on arrival till 24 hr mark.

3. RESULTS

Fifty-two patients were listed during this study with 50% males and 50% females in GA cluster and 61% males and 39% females in RA cluster [Fig. 1] Mean age of GA cluster was found to be 46 ± 11 years whereas for RA cluster, it was 40 ± 11 years.

Pain Visual analogue score noted on arrival favours R.A cluster with mean PAS score of 2.01 and p value of 0.627 in comparison to G.A Cluster's 3.5. At 1 hr mark, R.A cluster recorded mean PAS score of 2.56 and G.A cluster recorded 4.67. Even though R.A cluster performed well in VAS till one-hour mark, at two-hour mark both of the R.A & G.A cluster recorded

similar VAS with mean scores of 4.85 & 4.38 respectively [Fig.2]. After 2hr mark, the VAS score becomes insignificant since most of the patients received analgesics. Patients in regional anaesthesia recorded lower consumption of analgesics during the post-operative day-0 as compared with GA cluster ($P < 0.05$).

Post-operative shivering was higher in RA cluster than GA cluster (8% vs. 2%) whereas nausea and fever was higher in GA cluster than RA cluster (5% vs. 2% and 4% vs. 1% respectively) [Fig.3]. However, Patients in GA cluster recorded higher overall satisfaction scores than RA cluster.

4. DISCUSSION

We studied the post-operative pain VAS in a group of 52 patients undergoing urological surgeries in separate clusters of R.A & G.A. In this study we have found out that R.A is more efficient in postoperative period in terms of analgesic requirement, VAS score and less side effects when compared to G.A. And Patients' satisfactory score is more in favour of G.A.

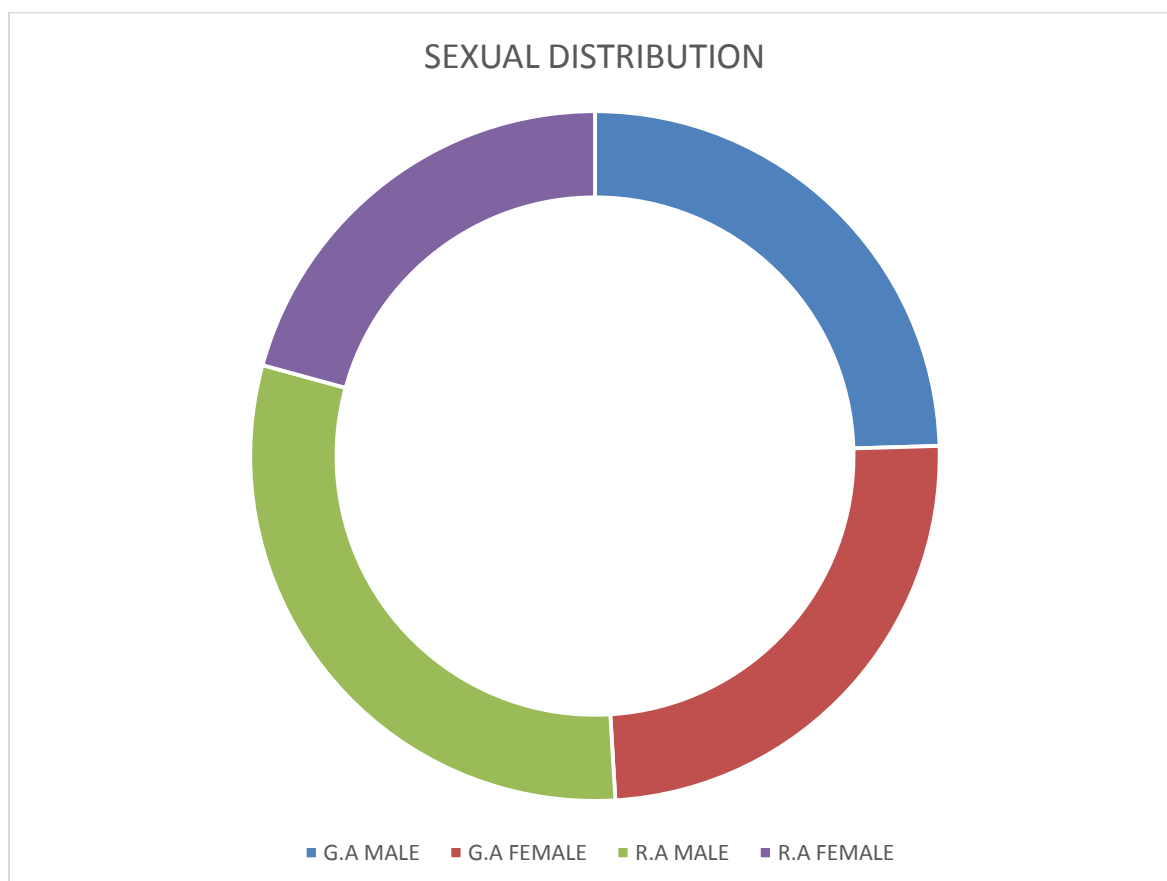


Fig. 1. The pie-chart depicts SEXUAL DISTRIBUTION among both clusters

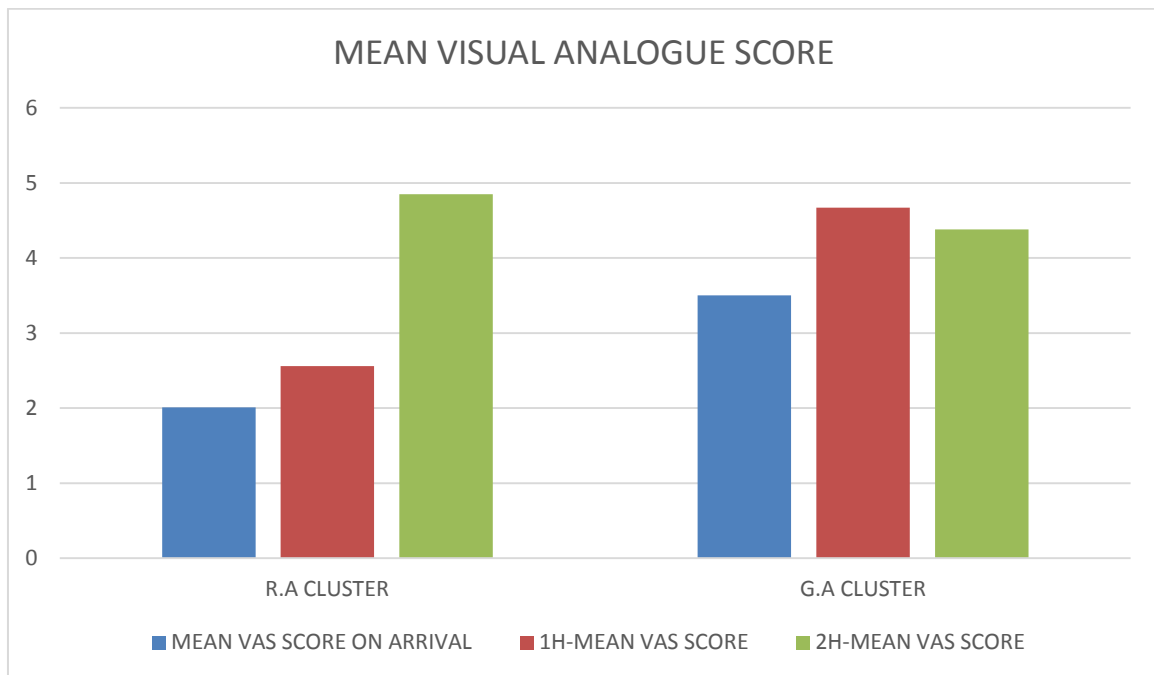


Fig. 2. This bar diagram depicts mean VAS score among both cluster on arrival , 1hr & 2hr mark

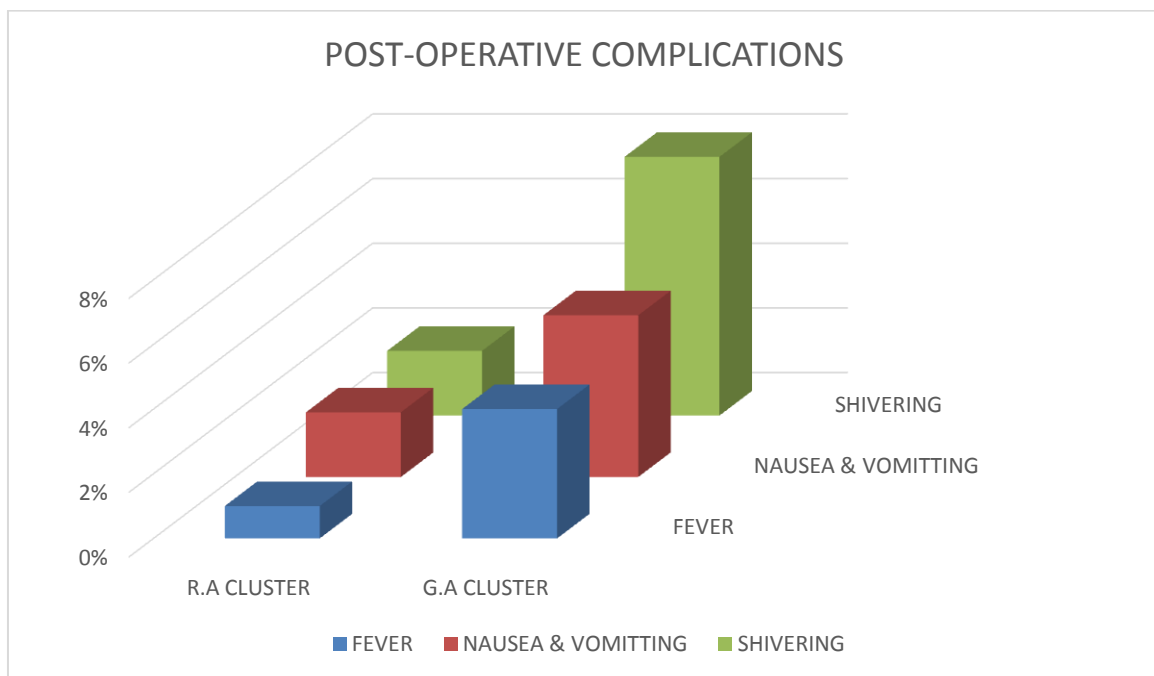


Fig. 3. This clustered bar diagram depicts about post operative complications in both clusters
**each cluster has 26 patients, with remaining patients not developing any complications within 2hrs of surgery*

This study has limitations. Pain is both subjective and multidimensional and so the VAS cannot express the complete pain experience.[15] But clinical correlation and treatment are made on the basis of existing pain scales, and so it is

important to know how much reduction in a VAS score is likely to be noted in different routes of anaesthesia. Certain limitations as such patients' tolerance level, duration of surgery, intraoperative complications are not considered

and may found to be decisive. Despite all that, most of the anaesthesiologists prefer regional anaesthesia for urological surgeries (say PNCL) due to its lesser complications and good analgesic effect.

Though it is noted that patient in G.A cluster recorded much better satisfaction score, anaesthesiologists have to consider post operative complications of the patient and consider R.A especially in geriatric age group.

However, Massicotte and his co-worker used intrathecal analgesic with topical anaesthetic which might cause completely different result on operative pain than our study.[16] In spite of all these literatures we still need lot of research and studies in the areas of pain management and scales/scores measuring it to improve patients' comfort and usage of scores in practice.

5. CONCLUSION

In conclusion, both GA and RA were effective and safe in Percutaneous Nephrolithotomy. It is observed that PCNL under RA was associated with significantly shorter operative time and hospital stay. Furthermore, postoperative pain scores were low, lower nausea and/or vomiting, and reduced analgesic requirements were noted in the RA group. However, GA provides heaps of satisfaction for patients. Further literature and studies should be carried out in mass population with multi-factor parameters taken into account to support the same.

CONSENT

As per international standard or university standard, patient's written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Visual analogue scale (VAS) by N Crichton - J Clin Nurs, 2001 - com-jax-emergency-pami.sites ... [https://com-jax-emergency-](https://com-jax-emergency-pami.sites.medinfo.ufl.edu/files/2015/03/Visual-Analog-Scale-VAS-in-depth.pdf)

2. Nesioonpour S, Akhondzadeh R, Pipelzadeh MR, Rezaee S, Nazaree E, Soleymani M. The effect of preemptive analgesia with bupivacaine on postoperative pain of inguinal hernia repair under spinal anesthesia: A randomized clinical trial. *Hernia*. 2012;10:1007–29. [PubMed] [Google Scholar]
3. Glenn's Urologic Surgery by Graham Sam D. imprinted by Lippincott Williams and Wilkins <https://g.co/kgs/eJcTVJ>
4. American Society of Anaesthesiologists physical status classification by Mohamed Daabiss Department of Anaesthesia, Riyadh Armed Forces Hospital, Riyadh, Kingdom of Saudi Arabia www.ncbi.nlm.nih.gov/pmc/articles/PMC3106380/
5. Heidari SM, Mirlohi SZ, Hashemi SJ. Comparison of the preventive analgesic effect of rectal ketamine and rectal acetaminophen after pediatric tonsillectomy. *Int J Prev Med*. 2012;3:150–5. [PMC free article] [PubMed] [Google Scholar]
6. Safavi M, Honarmand A, Habibabady MR, Baraty S, Aghadavoudi O. Assessing intravenous ketamine and intravenous dexamethasone separately and in combination for early oral intake, vomiting and postoperative pain relief in children following tonsillectomy. *Med Art*. 2012;66:111–5. [PubMed] [Google Scholar]
7. Tzovaras G, Fafoulakis F, Pratsas K, Georgopoulou S, Stamatiou G, Hatzitheofilou C. Spinal vs general anesthesia for laparoscopic cholecystectomy: Interim analysis of a controlled randomized trial. *Arch Surg*. 2008;143:497–501. [PubMed] [Google Scholar]
8. Stavros I, Konstantinos G, Ioanna V, Georgia F. Spinal versus general anesthesia in postoperative pain management. *ISRN Urol*. 2011;11:895–74. [Google Scholar]
9. Gonano C, Leitgeb U, Sitzwohl C, Ihra G, Weinstabl C, Kettner SC. Spinal versus general anesthesia for orthopedic surgery: Anesthesia drug and supply costs. *Anesth Analg*. 2006;102:524–9. [PubMed] [Google Scholar]
10. Kessous R, Weintraub AY, Wiznitzer A, Ziotnik A, Pariente G, Polachek H, et al.

- Spinal versus general anesthesia in cesarean section: The effects on postoperative pain perception. Arch Gynecol Obstet. 2012;286:75–9. [PubMed] [Google Scholar]
11. Imbelloni LE, Fornasari M, Fialho JC, Sant'Anna R, Cordeiro JA. General anesthesia versus spinal anesthesia for laparoscopic cholecystectomy. *Rev Bras Anesthesiol.* 2010;60:217–27. [PubMed] [Google Scholar]
 12. Kehlet H, Jensen TS, Woolf CJ. Persistent postsurgical pain: risk factors and interference. *The Lancet.* 2006;367(9522): 1618–1625.
 13. Horlocker TT, Wedel DJ Neuraxial block and low-molecular-weight heparin: balancing perioperative analgesia and thromboprophylaxis. *Reg Anesth Pain Med* 1998; 23(suppl):164-77. <https://pubmed.ncbi.nlm.nih.gov/9845390/>
 14. Karacalar S, Bilen CY, B. Sarihasan and S. Sarikiya. Spinal anesthesia vs epidural anesthesia in the management of percutaneous lithotripsy. *Journal of Endourology.* 2009;23(10):1591-1597.
 15. Measuring acute postoperative pain using the visual analog scale: the minimal clinically important difference and patient acceptable symptom state P. S. Myles^{1,2,*}, D. B. Myles², W. Gallagher¹, D. Boyd¹, C. Chew¹, N. MacDonald³ and A. Dennis³ ¹ Department of Anaesthesia and Perioperative Medicine, Alfred Hospital and Monash University, Melbourne, Victoria, Australia, ² Department of Epidemiology and Preventive Medicine, Monash University, Melbourne, Victoria, Australia and ³ Department of Anaesthesia, Royal Women's Hospital, Parkville, Victoria, Australia. Available:[https://www.bjanaesthesia.org/article/S0007-0912\(17\)30212-X/pdf](https://www.bjanaesthesia.org/article/S0007-0912(17)30212-X/pdf)
 16. Massicotte L, Chalaoui KD, Beaulieu D, Roy JD, Bissonnette F. Comparison of spinal with general anaesthesia on analgesic demand once abdominal extirpation. *Acta Anaesthesiol Scand.* 2009;53:641–7.

© 2021 Madhumithra and Priya; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Peer-review history:

The peer review history for this paper can be accessed here:

<https://www.sdiarticle4.com/review-history/75028>