

Epidural Anesthesia In High Risk Geriatric Patients Posted For Surgeries Of Femur Fracture

Dr. Gargi Mayur Bhavsar*, Dr. Vishva Darshanbhai Shah**, Dr. Ishita Sanjay kumar Thaker***, Dr. Rohan Ketan Shah****

*Associate Professor, **Tutor, ***3rd Year Resident Doctor, ****1st Year Resident Doctor, Department Of Anesthesia At AMCMET Medical College, LG Hospital, Ahmedabad-380008, India.

Abstract:Background:With advancement in health-care, more numbers of elderly patients are being operated for lower-limb orthopaedic surgeries. As these patients have many physiological differences compared to general population along with severe co-morbidities, general anaesthesia becomes very challenging in preoperative period. Epidural anaesthesia, on other hand, offers very good intra operative anaesthesia along with prolonged postoperative analgesia. Side-effects of general anaesthesia are avoided. Objective of our study is to observe potential and proven benefits of epidural anaesthesia and analgesia in high-risk geriatric patients undergoing surgeries for femur fracture. Material And Methods:After approval from institutional review board, this study was conducted in 30 high-risk elderly patients undergoing elective surgery for femur fracture. They were given epidural anaesthesia with placement of an epidural catheter. 7-10 ml of 1.5% Lignocaine with Adrenaline was given as initial dose. Supplemental dose of 5 ml of 0.5% Bupivacaine as required if surgery lasted for more than 1.5 hours. Patients were monitored in terms of pulse, blood pressure, respiratory rate, SpO₂. Analgesia in postoperative period was assessed by VAS score. Result:Epidural anaesthesia offers several advantages over general anaesthesia like stable preoperative hemodynamics, postoperative analgesia, reduced thromboembolic events. Conclusion:Epidural anaesthesia appears to be safe and beneficial in elderly patients having various comorbidities, however consideration should be given to the health status of the patient and the surgical requirements.[Bhavsar G Natl J Integr Res Med, 2020; 11(5):01-05]

Key Words:geriatric patients, epidural anesthesia, analgesia

Author for correspondence:Dr. VishvaDarshanbhai Shah, 10, Snehsilp Apartment, Opposite Shubhada Society, Jodhpur Gam Road, Satellite Ahmedabad 380015. E-Mail: vishvashah92@gmail.com
Mobile: 9426660809

Introduction:As the health-care facilities are being improved, an increasing number of geriatric patients are being benefited from it. Ageing is related to generalize physical decline because of decreased organ function. Many elderly patients have chronic illnesses and co-morbidities like hypertension, diabetes mellitus, congestive cardiac failure, chronic renal disease, COPD(Chronic obstructive pulmonary diseases)¹. These co-morbidities require critical decision in deciding mode of anaesthesia in elderly patients.

Both epidural and general anaesthesia can be used in high-risk elderly patients for femur fracture surgeries². Over past few decades, epidural anaesthesia has been increasingly used in geriatric population with moderate to severe co-morbid conditions. It provides several advantages over general anaesthesia such as reducing events like preoperative cardiovascular and cerebrovascular accidents, postoperative hypoxia and prolonged postoperative analgesia².

Material & Methods: On approval from institutional review board, we selected 30 high risk (ASA Grade III and IV) geriatric patients, of age 65 years and above, posted for.

Exclusion Criteria:Patient refusal for epidural anaesthesia. Patients with SDH, SAH, IPH, IVH, Cerebral contusion. Patients with coagulopathy Skin infection at site of anaesthesia. Allergy to local aesthetic agent. Spinal deformity.

Anaesthesia Technique: Thorough preoperative evaluation of all patients was done and their comorbidities were assessed in detail. Routine investigations were advised in all patients with special investigation related to associated comorbidities were done All patients were explained the procedure and educated about the VAS scale. Patients and their relatives were informed regarding the study procedure and the purpose of the study, written informed consent was taken for their willingness to participate in our study. All patients were kept nil by mouth for atleast 8 hours. On arrival to the operation theater, 18G venous cannula inserted and IV fluid started according to ASA status Monitors including ECG, NIBP pulse oximeter were applied and baseline vital parameters were noted. Patients were premedicated with Inj. Ondansetron 4 mg IV slowly. Under proper aseptic and antiseptic precautions, with patient in sitting position, local anaesthesia was given

with plain Lignocaine 1% 2 ml at L2-L3 intervertebral space. Epidural space was located with 18G Tuohy needle with the help of hanging drop method at L2-L3 space. Epidural space was confirmed with loss of resistance with normal saline and epidural catheter was inserted and fixed at appropriate length. After fixation of epidural catheter, patients were made supine.

On confirming negative aspiration through epidural catheter test dose of 2 cc Lignocaine with Adrenaline 1.5% was given. On observing stable hemodynamics for 5 min, patients were given additional epidural dose of 7-10 ml of 1.5% Lignocaine with Adrenaline depending on patients' height and weight. Sensory effect was checked by pin-prick method. Surgery was allowed when sensory anaesthesia level of T10 was achieved. Supplementation was done by 5 ml 0.5% Bupivacaine when surgical duration was

extended beyond 1.5 hours. Post-operative analgesia was provided by Inj. 100mg Tramadol via epidural catheter when VAS scale was ≥ 4 . Intraoperatively Pulse, blood pressure, respiratory rate, SpO₂ were recorded.

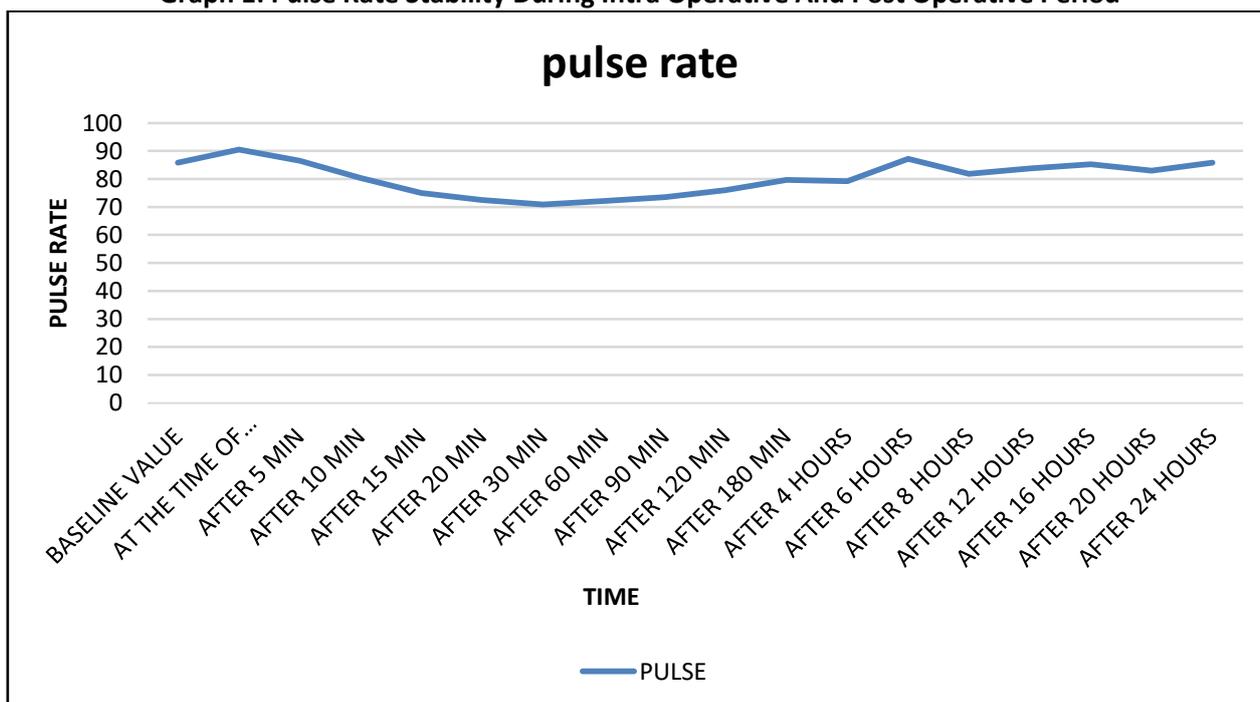
Postoperatively vital parameters and VAS score was recorded till 24 hours. Patients were observed for occurrence of any complications and treated accordingly.

Results : We conducted this study in 30 geriatric patients, of which 33.33% were between 65-69 years of age, 30% patients were between 70-74 years of age, 20% of the patients were in the age group of 75-79 years and 16.66% patients were having age of ≥ 80 years. 60% of the study population was male while 40% were females. Patients belonged to ASA III-IV with various associated comorbidities as follows:

Table 1: Associated comorbidities

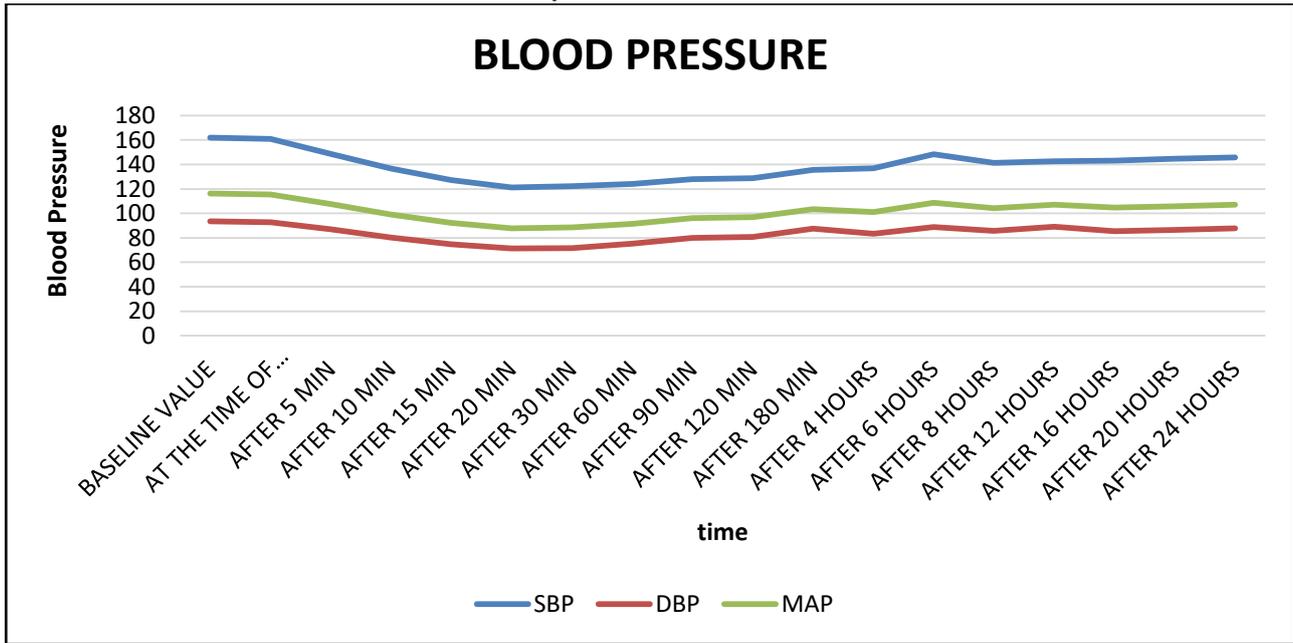
Comorbidities	Number Of Patients
Uncontrolled Hypertension	14
Diabetes Mellitus	10
H/O Ischemic Heart Disease	3
2D ECHO Changes Showing Very Low Ejection Fraction	5
Arrhythmias	4
Anaemia	6
Chronic Obstructive Pulmonary Disease (COPD)	5

Graph 1: Pulse Rate Stability During Intra Operative And Post Operative Period



As shown in the graph, we observed that pulse rate remained stable during intraoperative and postoperative period. Bradycardia requiring treatment with Inj Atropine occurred only in one patient.

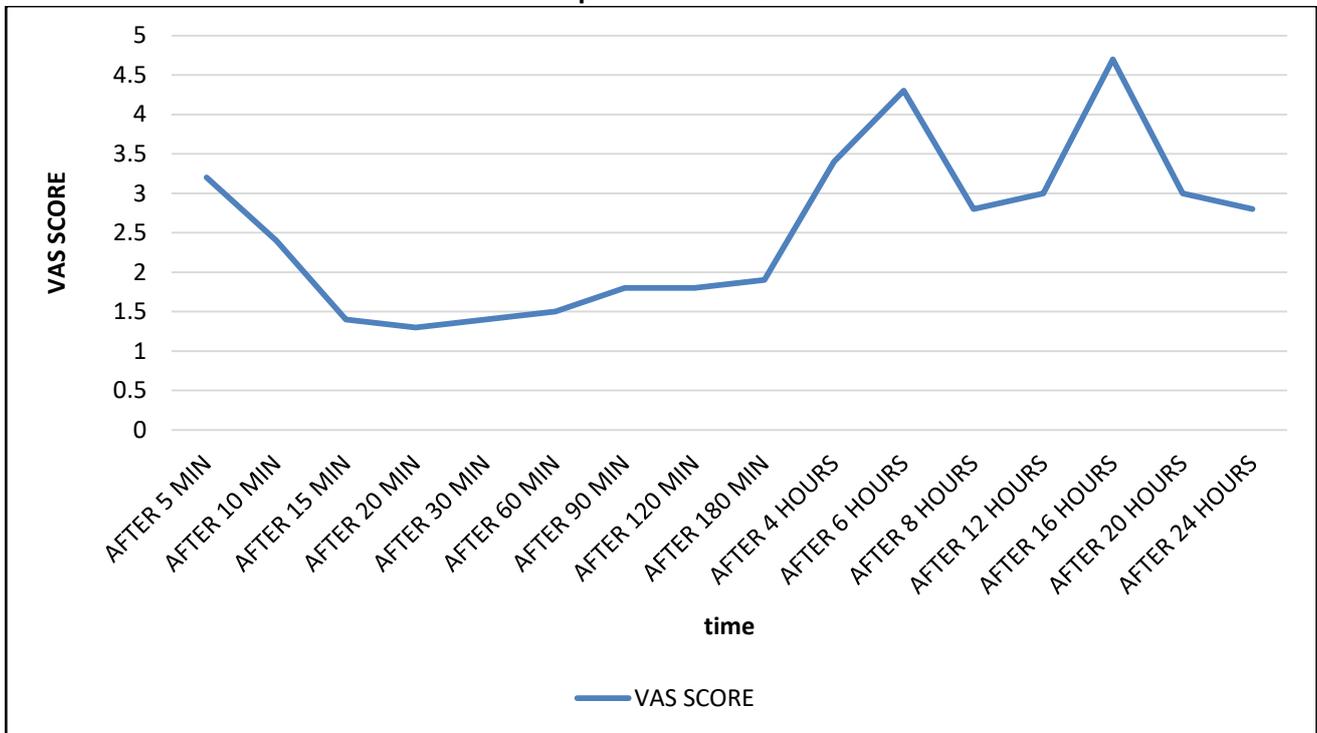
Graph 2: SBP, DBP,MAP



As evident from the above graph that systolic blood pressure decreased after institution of epidural anesthesia however the fall in mean arterial pressure and diastolic blood pressure was not significant. Thus, cardiovascular stability was maintained throughout perioperative period.

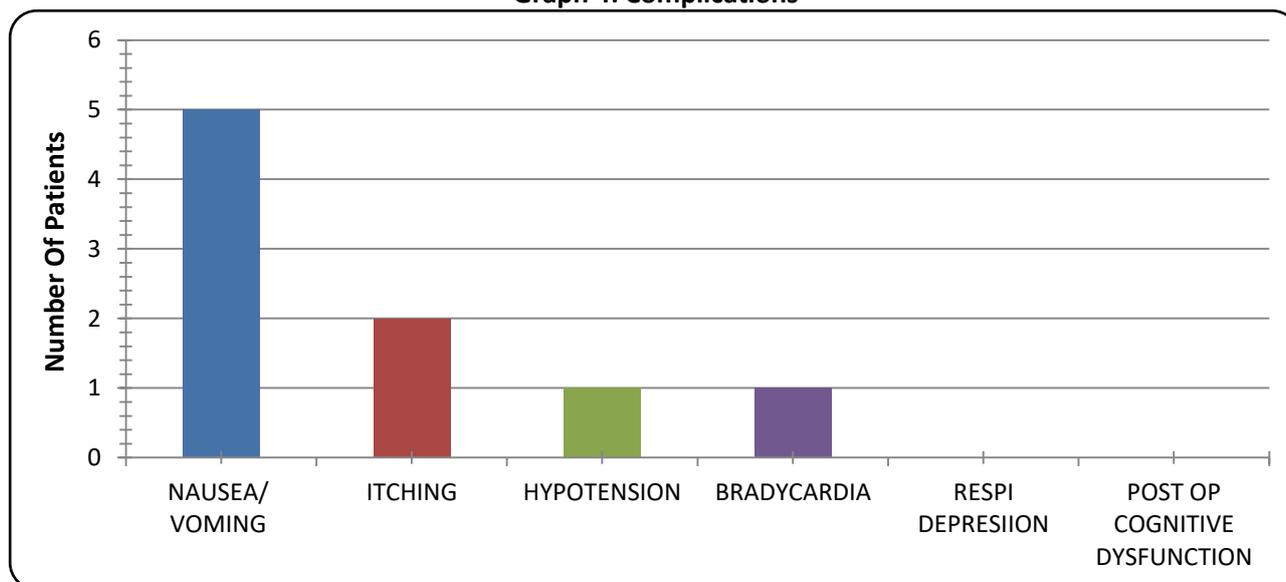
Respiratory rate and SpO2: SpO2 was maintained in all the patients and did not require any oxygen supplementation. No incidence of hypoxia was observed. Respiratory rate remained normal and none of the patient in the study group developed respiratory depression.

Graph 3: VAS Score



From the above graph, VAS score was noted to reach up to 4 around 6 hours postoperatively, suggesting wearing effect of local anaesthetics. At this point, injTramadol 100mg was given

through epidural catheter and VAS score gradually dropped for another 8-10 hours. Again rescue analgesia was given with InjTramadol, when VAS score was >4.

Graph 4: Complications

Discussion: General anesthesia is difficult to perform in geriatric population due to many reasons. With advancing age, patients acquire various diseases which involve multiple organ systems. Mainly cardiovascular, respiratory and cerebrovascular systems are affected in majority of the patients. Also, elderly patients have restricted neck mobility, loose teeth which make intubation difficult.

Due to loss of lower esophageal sphincter tone, delayed gastric emptying, higher incidence of hiatus hernia in elderly, chances of reflux esophagitis and aspiration of gastric content are more in this population. With institution of epidural anesthesia, all these adverse effects of general anesthesia can be avoided.

In our study, we observed that pulse-rate decreased from initial baseline value after institution of epidural anesthesia but incidence of bradycardia was not significant. Systolic blood pressure decreased from baseline value without causing worrisome fall in mean arterial pressure and diastolic blood pressure. Thus, hemodynamics remained stable throughout in intraoperative and postoperative period.

Mark P.Yeager et al³ in their study, observed decreased incidence of cardiovascular side effects including congestive heart failure in group receiving epidural anesthesia compared to that of those who receiving general anesthesia. They concluded that epidural anesthesia was better in decreasing postoperative morbidity and it improved operative outcome. SimantkumarJha et al⁴ observed favorable outcome for cardiac

system and no complications were noted in their study with maintenance of hemodynamic stability along with analgesia in perioperative phase. They concluded that institution of epidural anesthesia in geriatric patients is a reliable anesthesia technique compared to general anesthesia.

None of the patients in our study developed hypoxia or respiratory depression. Joshi V et al⁵ in their study of perioperative management of geriatric patients noted that patients receiving regional anesthesia do not go through any airway instrumentation causing them less vulnerable to develop hypoxia.

Epidural anesthesia offers an advantage of prolonged postoperative analgesia with avoidance of systemic opioid administration. In our study, we kept an epidural catheter in-situ through which InjTramadol 100mg was given VAS score was ≥ 4 . Kampe S. et al⁶ observed decreased pain score in postoperative period after epidural anesthesia compared to that of systemic analgesia.

Elderly patients have higher chances of having cognitive dysfunction postoperatively. In our study none of the patients developed postoperative cognitive dysfunction. Parker MJ et al⁷ noted a lower incidences of confusion in postoperative period in patients who received regional anesthesia. T J Lugoret al² observed a decreased incidence of major complicating events in postoperative period after central neuro axial blockade which was comparable with our study.

Conclusion: Due to various limitations like small sample size, variable comorbidities, lack of comparison with general anesthesia technique, lack of long term follow-up of the patients a definitive conclusion cannot be drawn from our study. From our study results, we found that epidural anesthesia offers several advantages to elderly patients such as post-operative analgesia with minimal adverse effects and perioperative hemodynamic stability.

Epidural anesthesia appears to be safe and beneficial in the elderly patients, however particular consideration should be given to the health status of the patient, the surgery being performed and the expertise of the anesthetist.

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Conflict of interest: None
Funding: None
Cite this Article as: Bhavsar G, Shah V, Thaker I, Shah R. Epidural Anesthesia In High Risk Geriatric Patients Posted For Surgeries Of Femur Fracture. <i>Natl J Integr Res Med</i> 2020; Vol.11(5): 01-05