



FAILED SPINAL ANESTHESIA; THE INCIDENCE IN A POSTGRADUATE TEACHING HOSPITAL

saeeda20022000@yahoo.com

1. MBBS, MCPS, FCPS (Anesthesia).
Consultant Anesthetist
742-D Faisal Town, Lahore
2. MBBS, MCPS
(2nd year resident at the time of
study) 2-WCR Block X New Satellite
Town, Sargodha
3. MBBS, 2nd year resident at the time
of study
House No. 7, Street No.2, Calcutta
House, Katchery Road, Sargodha.
4. MBBS,
2nd year resident at the time of
study, Faiz Memorial Hospital
Chowk, Satellite Town Sargodha

Correspondence Address:
Dr. Mobeen Ikram
MBBS, MCPS, FCPS (Anesthesia).
Consultant Anesthetist
742-D Faisal Town, Lahore
saeeda20022000@yahoo.com

Article received on:

11/01/2016

Accepted for publication:

25/10/2016

Received after proof reading:

00/00/2016

INTRODUCTION

Spinal anesthesia is a common anesthetic technique for infraumbilical surgical patients. It is now routinely practiced in obstetrics surgery.¹ About 25 years back, general anesthesia was preferred over spinal anesthesia in many developed countries of the world including UK. The choice of anesthesia for caesarian section depends on the urgency of surgery, indication of surgery as well as patients desire.²

Failure to achieve an adequate level of anesthesia is not only distressing for the patient but also for the anesthetist.³ In a teaching hospital a large number of doctors are undergoing their postgraduate training and are in different phases of their training. Based on this, it is expected that chances of failed spinal anesthesia will be more as compared to an institution where spinal injection is being given by senior anesthetist themselves. Internationally failure rate of 0.8 to 1% in elective

Dr. Mobeen Ikram¹, Dr. Abdul Samee², Dr. Muhammad Amir³, Dr. Muhammad Imdad⁴

ABSTRACT... Objectives: To determine the frequency of failed spinal anesthesia in patients undergoing caesarean section in a teaching hospital in Pakistan. **Study Design:** It was a cross – sectional study. **Setting:** Department of Anesthesia and Pain Management PAF Hospital Sargodha. **Period:** January 2015 to May 2015. **Methodology:** A total of 293 pregnant patients undergoing caesarean section under spinal anesthesia were included. After prehydration and essential monitoring, all patients were given spinal anesthesia with 25 G spinal needle at L3-L4 or L4-L5 level by 2nd year resident anesthesiologist under indirect supervision using 1.5 ml of hyperbaric spinal injection. Failure to achieve adequate block was managed by different modalities like sedation, analgesia with ketamine, repeat spinal anesthesia or to proceed with general anesthesia. **Results:** Out of total of 293 patients, failed spinal occurred in 9 patients (3.07%). Out of these 9 patients, 02 patients (22.22%) were elective caesarean sections while 07 cases (77.77%) were emergency caesarean sections. **Conclusion:** The chances of failed spinal anesthesia are more in emergency caesarean sections as compared to elective cases and failure rate of spinal anesthesia in PAF teaching hospital Sargodha is 3.07% which is slightly higher than 3%

Key words: Failed spinal Caesarean section Ketamine General Anesthesia.

Article Citation: Ikram M, Samee A, Amir M, Imdad M. Failed spinal anesthesia; the incidence in a postgraduate teaching hospital. Professional Med J 2016;23(12):1527-1530. DOI: 10.17957/TPMJ/16.3246

and 3 to 4.9% in emergency caesarian sections is accepted in skilled hands.⁴

MATERIAL AND METHODS

This study was carried out at PAF Hospital Mushaf, Sargodha from 01 January 2015 to 31 May, 2015 after taking permission from hospital ethical committee. Only obstetric patients who reported to operation theatre for lower section caesarian section (LSCS) were enrolled in the study after informed consent. Both elective and emergency LSCS were included and backup for general anesthesia was ensured. The patients included in this study were between the ages of 18- 40 years, height more than 5 feet 3 inches and weight between 45- 75kg and were ASA I and ASA II. Exclusion criteria included patients with history of sepsis, severe valvular heart disease, congestive heart failure, spinal deformity, skin infection at lumbar region, patient refusal for spinal anesthesia, those who were on anticoagulation

and patients with deranged coagulation profile or with low platelet count.

The post graduate trainees who have had completed one year residency training in anesthesia and have performed at least 200 spinal anesthetics were enrolled in the study so that they can work under indirect supervision while performing spinal block and at all times patients were supervised by senior anesthetist to avoid any complication or breach of patient trust. The students were taught to call for help if they fail to locate subarachnoid space in two attempts and then spinal anesthesia was to be given by senior anesthetist and was to be labelled as failed to locate spinal space in this study.

On arrival in operation theatre in preholding area, patient documents were checked, investigations reviewed and brief preanesthesia assessment was done to rule out any contraindications to spinal anesthesia. Height and weight of each patient was taken and informed consent was obtained.

In the operating room, intravenous line was secured by passing 18 G IV cannula. Essential monitors were attached and vital signs were plotted on anesthesia proforma and included pulse oximetry, noninvasive blood pressure monitoring (NIBP) and electrocardiogram (ECG). Each patient was prehydrated with 10 ml/kg of Ringer solution.

After prehydration, each patient was made to sit on the edge of table with legs hanging down from the other side of the table and resting on the stool. All the sterile precautions were taken and area of lumbosacral spine was draped with pyodine.

2 ml of lignocaine plain 2% was given with 5 cc syringe as local anesthesia at either L3-L4 or L4-L5 level. Then 1.5 ml of bupicaine 0.75% was given in the subarachnoid space at L3-L4 or L4-L5 level with 25 G Quincke spinal needle after withdrawing clear flow of cerebrospinal fluid (CSF) in all four quadrants. Finally antiseptic dressing was done.

The patients were made to lie down supine on the table with slight 5-10 degree head down and with left lateral tilt by placing a wedge under the right buttock. Monitors were reconnected with continuous monitoring of pulse oximetry, NIBP and ECG.

All patients were assessed for effectiveness of spinal anesthesia by pain to pin prick and motor blockage by failure of the patients to raise legs.

All the patients made smooth uneventful recovery and were shifted to post anesthesia care unit (PACU) where they were monitored for another half an hour and supplemental oxygen was given. All the patients were then shifted to gynecology ward after fulfilling the discharge criteria.

RESULTS

In one case where spinal anesthesia could not be given by the trainee nor by the senior anesthetist, was given general anesthesia as this case was elective LSCS and was labelled as failure to locate spinal space.

In two patients spinal anesthesia was given and initially, surgery proceeded as routine. After delivery of the baby, the patient started of complaining pain in the epigastrium which was managed with injection midazolam 1mg and injection Nalbuphine 3mg intravenously with 100% oxygen by face mask. Both of these patients were emergency LSCS.

Four patients complained of pain on incision although they could not lift the legs. These patients were managed with injection ketamine 30mg with 100% oxygen. The patients became comfortable after injection ketamine and surgery proceeded smoothly without patient discomfort. Three of these patients were emergency LSCS.

In two patients, there was no effect of spinal anesthesia and repeat spinal anesthesia was given with half the initial dose in elective surgery. It helped in achieving the desired effect of spinal anesthesia. However, the second patient was emergency LSCS, repeat spinal anesthesia was

not attempted and general anesthesia was given.

One patient complained after surgery that she had been pricked thrice for spinal anesthesia. Although, all patients were briefed about the steps of spinal anesthesia, she was counselled along with her husband that failed spinal can occur even in expert hands and the first prick was of local anesthesia while two attempts were made to locate spinal space. Counselling helped in avoiding litigation.

Thus, in elective cases, 03 cases of failed spinal occurred out of total of 293 cases.

In emergency cases, 06 cases of failed spinal occurred, as labouring patient not cooperated in making proper position for spinal injection and also stress on the postgraduate trainee to be quick in performing lumbar puncture was a contributory factor.

DISCUSSION

Spinal anesthesia was first introduced in 1898 and became popular for infraumbilical surgery.² But later due to large number of complications associated with it like bradycardia, hypotension, post dural puncture headache, backache, cardiac arrest, transient neurological symptoms, it lost popularity.⁵ It was mainly because of inexperienced anesthetist, less knowledge about spinal anesthesia and failure to timely recognize and treat complications. Furthermore wide bore spinal needles and giving spinal at L1-L2 space and causing injury to spinal cord was also associated with high morbidity associated with spinal anesthesia.⁶

In the present era, spinal anesthesia is favored worldwide for obstetrics anesthesia due to avoidance of risk of failed intubation, aspiration pneumonia and better neonatal profile with anesthesia being achieved in 3-5 minutes.² Added advantages include mother being awake can listen cry of the baby at birth, reduced chances of deep venous thrombosis, early immobilization, low cost of spinal anesthesia and shorter hospital stay. The use of small size spinal needles and

better understanding of spinal anesthesia has markedly reduced the morbidity and mortality previously associated with spinal anesthesia.⁵

Although spinal anesthesia has its advantages, failure to achieve adequate level of anesthesia after subarachnoid injection can be very distressing as the patients take it as a complication of spinal anesthesia.⁷ The anesthetist has to weigh whether to counsel the patient and explain that she is aware but will not feel pain, to wait for some time to achieve the effects spinal anesthesia, to sedate the patient, to give ketamine, to repeat spinal or to proceed with general anesthesia.³ Furthermore, the advantages of spinal anesthesia are lost in case of failed spinal and warrants extra care especially of airway.

There are several reports of failed spinal in literature⁸ and common causes include improper technique, septation in spinal cord, wrong labelling of drug, needle half inside and half outside the subarachnoid space and into the subdural space, improper positioning after spinal anesthesia, inadequate dose, prolonged surgery, previous spinal surgery³ and low bupivaine concentration in cerebrospinal fluid in patients with failed spinal anesthesia even in the absence of technical problems.⁹ Repeat spinal anesthesia may have to be given in patients with kyphoscoliosis due to anatomical reasons preventing the spread of local anesthetic¹⁰ and in addicts in whom tolerance to the drug may be the possible explanation as some of the narcotics have local anesthetic properties.¹¹ It thus forces the anesthetist for alternate interventions like repeat spinal or to proceed with general anesthesia which may be less favorable for the patient.

The chances of failed spinal increases when a trainee is asked to give spinal anesthesia urgently for emergency caesarean section as the traditional belief like delay in the readiness of the patient for surgery due to inadequate block affects during the performance of the block.¹² Furthermore over persuading a reluctant mother for spinal anesthesia is also a cause of failed spinal as the patient takes feeling of touch and pressure as

inadequate block and do not cooperate during surgery.¹²

CONCLUSION

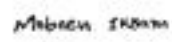

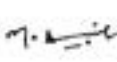
The incidence of failed spinal anesthesia in teaching hospital in Pakistan is 3.07% which is slightly more than target of 3% of Royal College of Anesthetists where all spinal anesthesia is administered by senior skilled anesthetists.

Copyright© 25 Oct, 2016.

REFERENCES

1. Nagata J M. **Failure of Spinal Anesthesia with Marcaine (Bupivaine): Recent Cluster of Cases.** Can J Hosp Pharm 2009 June; 62(3): 255.
2. Siddiqi R, Jafri S A. **Maternal Satisfaction after Spinal Anesthesia for Caesarean Deliveries.** JCPSP 2009; 19 (2) : 77-80.
3. Fettes P W D, Janson J R and Wildsmith J A W: **Failed spinal anesthesia: mechanisms, management, and prevention.** Br J Anesth 2009; 102: 739-48.
4. Kinsella S M. **A prospective audit of regional anesthesia failure in 5080 Caesarean sections.** Association of Anesthetist of Great Britain and Ireland 2008; 63 (8): 822-832.
5. Sikander R I, Haider S. **The Pencilpoint Lumbar Puncture Needles: Are they Worth their Price.** Ann. Pak. Inst. Med. Sci. 2009; 5 (4): 216-219.
6. Javed S et al. **J. Pharm. Sci. & Res 2011 ; 3 (10): 1530-1538.**
7. Robert M Raw Dept of Anesas, **University of Iowa; Ambulatory surgery.** Dec 2010, page 99-102.
8. Harrison DA. **Spinal anesthesia for urological surgery. A survey of failure rate, postdural puncture headache and patient satisfaction.** Anesthesia 1992; 47 (10) : 902-3.
9. Steiner L A et al. **Bupivacaine concentrations in lumbar cerebrospinal fluid in patients with failed spinal anesthesia.** Br J Anesth 2009; 102(6):839.
10. Kumar R, Singh k, Prasad G, Patel N. **Repeat spinal anesthesia after a failed spinal block in a pregnant patient with kyphoscoliosis for elective caesarean section.** J Obstet Anaesth Crit Care 2014; 4: 84-6.
11. Youssef M M I, Abdeilnaim H E. **Failed Spinal anesthesia in addicts: Is it an incidence or coincidence?.** Egyptian Journal of Anaesthesia 2014; 30 (3): 247-253.
12. Ismail S, Shafiq F, Maillk A. **Technique of anesthesia for different grades of caesarean section: A cross – sectional study.** Journal of Pakistan Medical Association 2012; 62 (4): 363-7.

AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author-s Full Name	Contribution to the paper	Author=s Signature
1	Dr. Mobeen Ikram	Original manuscript writing	
2	Dr. Abdul Samee	Active participant, Administered spinal anesthesia, Assistance in typing	
3	Dr. Muhammad Amir	Active participant, Administered spinal anesthesia, Assistance in Graphes and tables	
4	Dr. Muhammad Imdad	Assistance in printing and references	