A COMPARATIVE EVALUATION OF HYPERBARIC ROPIVACAINE WITH DEXMEDETOMIDINE VERSUS HYPERBARIC ROPIVACAINE FOR ELECTIVE SURGERY UNDER SPINAL ANAESTHESIA: A RANDOMISED CONTROLLED STUDY

BY

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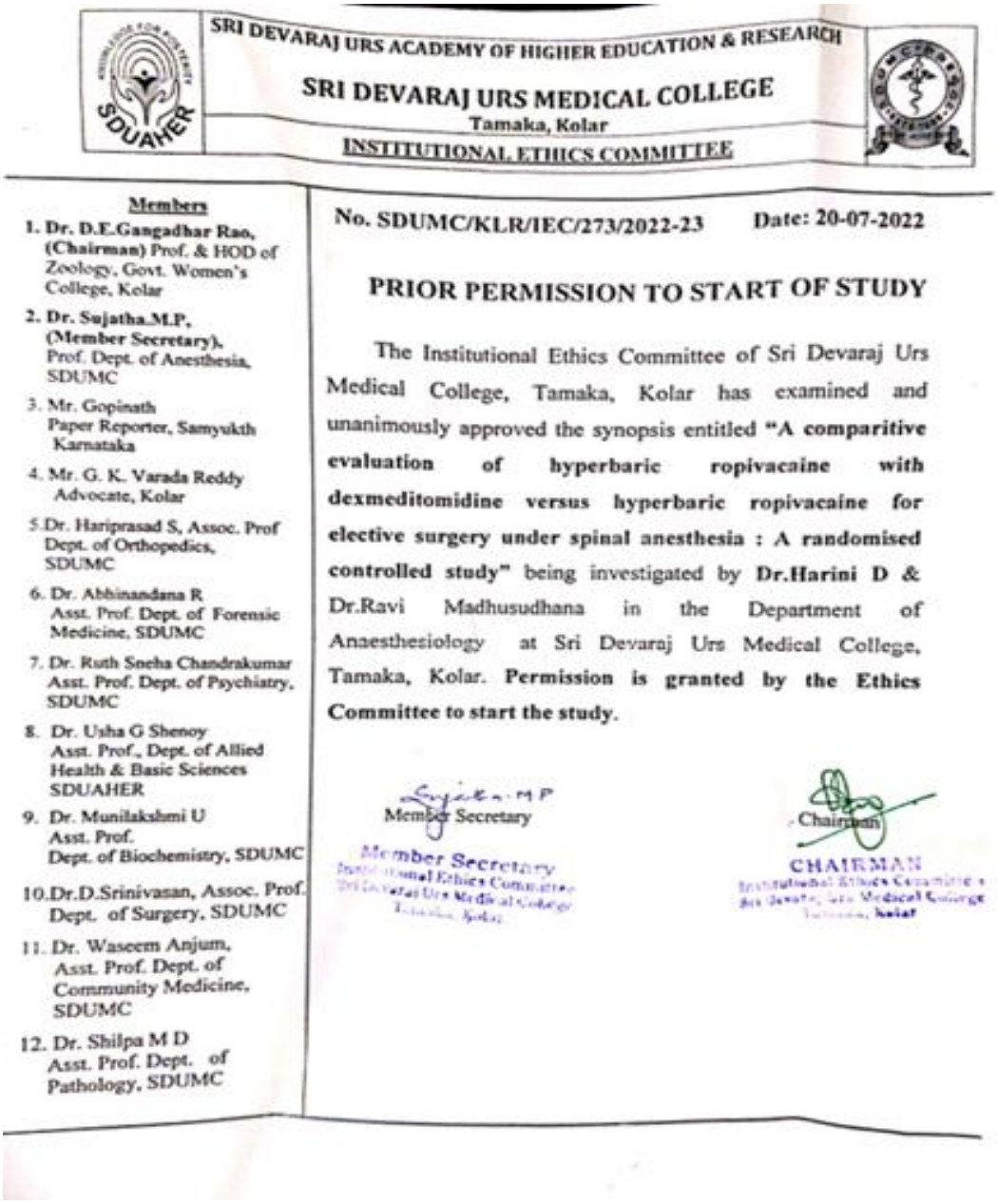

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A COMPARATIVE EVALUATION OF HYPERBARIC ROPIVACAINE WITH DEXMEDITOMIDINE VERSUS HYPERBARIC ROPIVACAINE FOR ELECTIVE SURGERY UNDER SPINAL ANESTHESIA: A RANDOMISED CONTROLLED STUDY I ABSTRACT Background: SA is used for its safety, ease & efficacy in providing rapid, reliable anesthesia and effective muscle relaxation, particularly in lower abdominal surgeries. Ropivacaine, a longactng amino amde, is gaining favor due its lower toxicity risk and shorter action duration compared to other anesthetics. Dexmedetomidine, an α2-adrenergic agonist, enhances analgesia whencombined with LA. This study aims to evaluate efficacy ofhyperbaric ropivacaine (dexmedetomidine) versus hyperbaric ropivacaine in patients undergoing elective surgery under SA. Material & Methods: A double-blind randomized clinical trial were conducted on 80 patient undegoing infraumbilical surgery. Patient was divided into 2 groups: Group A with hyperbaric ropivacaine O.75% combined with dexmedetomidine, while Group B with hyperbaric ropivacaine O.75% alone. Key parameters such as onset, peak, and duraton of sensry & motor blocks, hemodynamic stability, VAS & side effects were assessed. Result: Both groups had comparable demographics, ASA grades, and physical characteristics. Group A showed signifcantly fasteronst of sensory (5.5±0.6 min) and motor (7.0±0.7 min) blockades compard to Grp B (9.2±0.7 mn and 11.9±1.0 min, respectively). The duration of sensory (427.5±10.8 min) and motor (197.3±9.9 min) blocks were signifcantly longerin Group A than Group B (226.5±13.1 min and 126.0±9.8 min, respectively). Group A also had prolonged two-segment regression time (127.8±9.5 min vs. 86.5±8.0 min). Transent reduction in BP & HR were observed .in Group A shortly after administration, but no significant differences were noted at later intervals. GroupA reported reduced pain score(VAS) at 6th hour and required fewer doses of rescue analgesia. Conclusion: Adding dexmedetomidine to hyperbaric ropivacaine significantly enhances onset & duraton of sensory&motor blocks spinal anesthesia, providing improved pain management and hemodynamic stability. This combination offers a superior anesthetic profile for infraumbilical surgeries. Keywords: Dexmedetomidine, Hyperbaric ropivacaine,

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ABSTRACT

Background: Spinal anaesthesia is widely used for its safety, ease, and efficacy in providing rapid, reliable anaesthesia and effective muscle relaxation, particularly in lower abdominal surgeries. Ropivacaine, a long-acting amino amide, is gaining favor due to its lower toxicity risk and shorter action duration compared to other drugs. Dexmedetomidine, an α2-adrenergic agonist, enhances analgesia when combined with local anesthetics. This study aims to evaluate the efficacy of hyperbaric ropivacaine with dexmedetomidine versus hyperbaric ropivacaine alone in patients undergoing eleF7ctive surgery under spinal anaesthesia.

Material & Methods: A double-blind randomized clinical trial was conducted on 80 patients undergoing infraumbilical surgeries. Patients were randomly divided into two groups: Group A received hyperbaric ropivacaine 0.75% combined with dexmedetomidine in normal saline, while Group B received hyperbaric ropivacaine 0.75% alone with normal saline. Key parameters such as the onset, peak, and duration of sensory and motor blocks, hemodynamic stability, pain scores, and side effects were assessed.

Results: Both groups had comparable demographics, ASA grades, and physical characteristics. Group A showed a significantly faster onset of sensory (5.5±0.6 min) and motor (7.0±0.7 min) blockades compared to Group B (9.2±0.7 min and 11.9±1.0 min, respectively). The duration of sensory (427.5±10.8 min) and motor (197.3±9.9 min) blocks was significantly longer in Group A than in Group B (226.5±13.1 min and 126.0±9.8 min, respectively). Group A also had prolonged two-segment regression time (127.8±9.5 min vs. 86.5±8.0 min). Transient reductions in blood pressure and heart rate were observed in Group A shortly after administration, but no significant differences were noted at later intervals.

Group A reported lower pain scores (VAS) at the 6th hour and required fewer doses of rescue analgesia.

Conclusion: Adding dexmedetomidine to hyperbaric ropivacaine significantly enhances the onset and duration of sensory and motor blocks in spinal anaesthesia, providing improved pain management and hemodynamic stability. This combination offers a superior anaesthetic profile for infraumbilical surgeries.

Keywords: Dexmedetomidine, Hyperbaric ropivacaine, Motor block, Pain management, Sensory block, Spinal anaesthesia.

LIST OF ABBREVIATIONS USED

SI.NO	Short form	Full form
1.	α	Alpha
2.	A	Appendicectomy
3.	ASA	American society of Anesthesiologists
4.	C	Cervical vertebra
5.	cc	Cubic centimeter
6.	cm	Centimetre’s
7.	CNS	Central nervous system
8.	CSF	Cerebrospinal fluid
9.	CVS	Cardiovascular system
10.	DBP	Diastolic blood pressure
11.	ECG	Electrocardiogram
12.	G	Grams
13.	HR	Heart Rate
14.	hr	Hours
15.	Inj	Injection
16.	IV	Intravenous
17.	kg	Kilograms
18.	L	Lumbar Vertebra
19.	MAP	Mean arterial pressure
20.	µg	Micrograms
21.	µl	Microliters

22.	ml	Millilitre’s
23.	mg	Milligrams
24.	min	Minutes
25.	mm of Hg	Millimetre of mercury
26.	PR	Pulse rate
27.	RR	Respiratory rate
28.	SBP	Systolic blood pressure
29.	SpO2	Percentage of oxygen saturation
30.	SPSS	Statistical package for the social sciences
31.	T	Thoracic vertebra
32.	VAS	Visual analogue scale

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INTRODUCTION

INTRODUCTION

Spinal anaesthesia is one of the most common used which is safe, easy to perform, economical minimally invasive and effective technique which provides rapid and reliable anaesthesia with effective relaxation of the muscles for the patients who are undergoing lower abdominal surgery and also decreases the pain intra- operative, extending sometimes into postoperative period.[1–4] Wide variety of local anaesthetic is available for spinal anaesthesia such as lignocaine, levobupivacaine, bupivacaine, and ropivacaine. Nowadays, Ropivacaine is gaining increased popularity because of reduced risk of cardiac toxicity and central nervous system toxicity, early ambulation and discharge with good post-operative analgesia.[5]

Ropivacaine is optically pure S enantiomeric form of Parent propivacaine belonging to pipecoloxylidide group of local anaesthesia which was synthesized in 1957.[6] Ropivacaine is a new long acting amino amide with lower lipid solubility and blocks the nerve fibres to a greater degree than those involved in motor functions.[7] It is well tolerated intrathecally and found to have short duration of action than bupivacaine and because of lower incidence of transient neurological symptoms with ropivacaine making it possible alternative to the lignocaine use for ambulatory surgery.[3,5] It blocks the nerve fibres involved in pain transmission (A delta and C fibres) to a greater degree than those controlling motor functions (A beta fibres).[8]

Dexmedetomidine is an S enantiomer of Medetomidine. It is a selective α2 -adrenergic receptor agonist (α2 -AR agonist). It has been found to prolong analgesia when used as an adjuvant to local anaesthetics for subarachnoid block.[9–11]

It has been discovered that dexmedetomidine is eight times more selective than clonidine towards alpha 2 adrenoreceptors, allowing for the administration of greater dosages with less

impact on alpha 1 receptor. It has been discovered to possess properties such as analgesic, neuroprotective, sedative, anxiolytic, hemodynamic stability, and anaesthetic sparing.[9,12,13]

It has more intense motor blockade and cooperative sedation without increasing the incidence of side effects. Analgesic action of α2 -AR agonists is by depressing the release of presynaptic C-fibres transmitters and by hyperpolarization of postsynaptic dorsal horn neurons. Rapid onset of action, reduces the local anaesthetic requirements, reduces the risk of local anaesthetic toxicity, prolongs the sensory block and reduces the duration of motor block, improves the analgesic quality, improves the hemodynamic stability, improves and prolongs duration of postoperative analgesia.

Present study aimed to evaluate hyperbaric ropivacaine with dexmedetomidine and evaluation of hyperbaric ropivacaine without dexmedetomidine.

REVIEW OF LITERATURE

REVIEW OF LITERATURE

Spinal anaesthesia

Since cocaine is the only naturally occurring local anaesthetic, it was the first to be isolated and used in the creation of localised anaesthesia. August Bier invented spinal anaesthesia, the first type of regional anaesthesia, in Germany in 1898. This was the first-time spinal anaesthesia was used in a surgical procedure. Topical ocular anaesthesia and infiltration anaesthesia were the only local anaesthetic therapies available prior to this development.[14]

The central nervous system (CNS) comprises the brain and spinal cord. When a local anaesthetic is administered in or around the CNS, it's termed neuraxial anaesthesia. Spinal anaesthesia is a type of neuraxial anaesthesia involving the direct injection of a local anaesthetic into the intrathecal region, also called the subarachnoid space. This space contains sterile cerebrospinal fluid (CSF), which surrounds and protects the brain and spinal cord. An adult typically has around 130 to 140 mL of CSF, which circulates throughout the day. The body generates approximately 500 mL of CSF daily.[14]

Epidural and caudal anaesthesia are two further neuraxial methods, each with its own set of indications.

Anatomy and physiology[15]

Administering spinal anaesthesia involves positioning the patient correctly and having a comprehensive grasp of neuraxial anatomy. The aim is to accurately deliver anaesthesia into the intrathecal (subarachnoid) space with the right dosage. The spinal column comprises cervical, thoracic, lumbar, and sacral vertebrae, stacked with articulating joints and ligaments, housing the spinal cord within the spinal canal. Spinal nerves exit through lateral openings

formed by vertebrae's pedicles. Spinal anaesthesia is typically administered in the lumbar region, mid to low, to reduce spinal cord injury risk and avoid affecting higher areas. The conus medullaris, marking the spinal cord's caudal end, is usually near the first or second lumbar vertebral body in adults, lower in paediatric patients. Its average location in adults is at the lower part of L1, with variations following a normal distribution and showing no significant gender or age-related differences.[16]

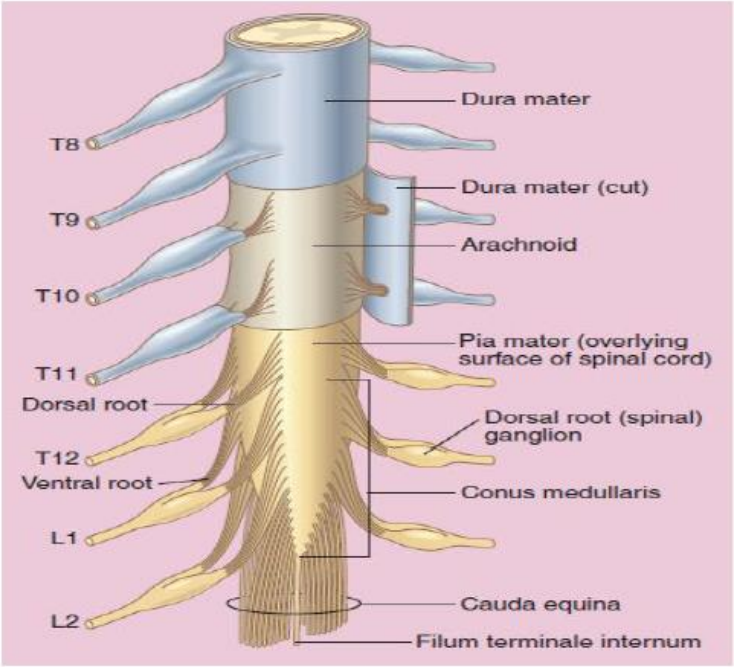


Figure 1: Covering of spinal cord

Typically, the dural sac extends to S2/3. For these reasons, the spinal needle is frequently inserted in the L3/4 or L4/5 interspace for spinal anaesthesia. When adopting higher interspaces, spinal cord injuries is more likely, especially in obese people.[17]

Indications

For surgeries below the neck, neuraxial anaesthesia is a common choice, either alone or alongside general anaesthesia. As previously mentioned, spinal anaesthesia is frequently

utilized for surgeries involving the lower abdomen, pelvis, perineum, and lower limbs, particularly those below the umbilicus.

Patients should receive counselling about the procedure and provide documented informed consent. Given that surgeries often occur while patients are awake or lightly sedated, discussing the rationale for spinal anaesthesia, expectations during its administration, potential risks, benefits, and alternative treatments can help ease anxiety. Spinal anaesthesia is most appropriate for short procedures, whereas general anaesthesia is generally preferred for longer surgeries or those that may affect breathing.

Contraindications[15]

Numerous well-documented contraindications exist for neuraxial anaesthesia (both spinal and epidural).

Absolute contraindications encompass scenarios such as patient non-consent, elevated intracranial pressure (often from an intracranial mass), and surgical site infection, which could lead to meningitis.

- Pre-existing neurological conditions (particularly those that wax and wane, e.g., multiple sclerosis)
- Severe dehydration (hypovolemia) owing to the danger of hypotension hypovolemia, age more than 40 to 50 years, emergency surgery, obesity, chronic alcohol intake, and chronic hypertension are all risk factors for hypotension.
- Coagulopathy or thrombocytopenia (especially with epidural anaesthesia, due to the risk of epidural hematoma)

Relative contraindications include:.[18,19]

Include diseases like hypertrophic obstructive cardiomyopathy, which is characterised by left ventricular outflow blockage, and severe cases of both mitral and aortic stenosis. A thorough re-evaluation is necessary before implementing a neuraxial block in the presence of coagulopathy. Updated recommendations regarding when to provide neuraxial anaesthesia to patients on oral anticoagulants, antiplatelets, thrombolytic treatment, unfractionated heparin, or low molecular weight heparin are provided by the American Society of Regional Anaesthesia (ASRA).[20,21]

PHARMACOLOGY OF ROPIVACAINE[22]

Ropivacaine, a long-acting amide local anaesthetic initially synthesized as a pure enantiomer, operates similarly to other local anaesthetics by temporarily halting sodium ion influx in nerve fibres. Unlike bupivacaine, ropivacaine has lower lipophilicity, diminishing its ability to penetrate large myelinated motor fibres and causing less motor blockade. This aspect of ropivacaine results in a clearer distinction between motor and sensory blockade, which can be beneficial in scenarios where motor blockade is undesired.[23]

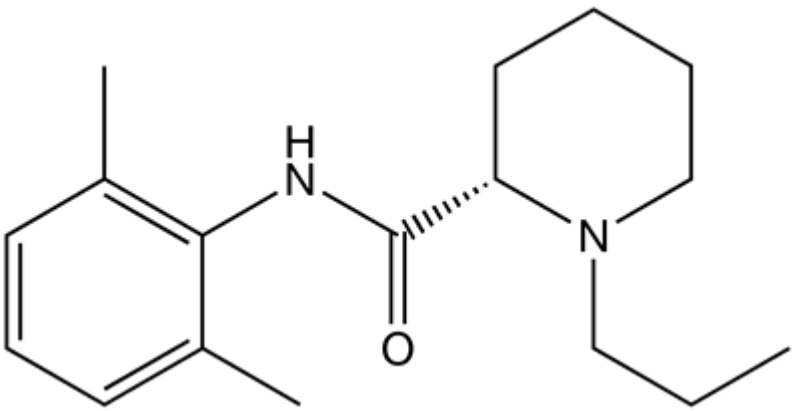


Figure 2: Chemical structure of Ropivacaine

MECHANISM OF ACTION

Ropivacaine induces inhibition (reversible) of sodium ion influx, leading to the blockade of nerve fibre impulse conduction.[23] Potassium channel blockage that is dose-dependent amplifies this impact. Having a lower lipophilicity than bupivacaine, ropivacaine shows less penetration of big myelinated motor fibres, which causes it to selectively affect Aβ and C nerves that convey pain instead of Aβ fibres that are linked to motor function.[24]

PHARMACODYNAMICS

Because ropivacaine is less lipophilic than bupivacaine and has stereoselective qualities, it has a much higher threshold for cardiotoxicity and central nervous system toxicity in both animals and healthy humans.[25] In animal experiments, both isomers of ropivacaine demonstrated less cardio depressant effects compared to the isomers of bupivacaine, a phenomenon attributed to ropivacaine's lower lipophilicity. When human volunteers received intravenous (IV) infusions of local anaesthetic (10 mg/min of ropivacaine or bupivacaine), central nervous system (CNS) effects manifested before the onset of cardiotoxic symptoms, prompting cessation of the infusion. Changes in cardiac function included alterations in contractility, conduction time, and QRS width. Ropivacaine exhibited a notably smaller increase in QRS width compared to bupivacaine.[23,26]

Studies have shown that ropivacaine inhibits aggregation of platelet in plasma at 3.75 and 1.88 mg/mL concentrations (0.375 and 0.188 percent, respectively), which are levels that may be present in the epidural space during infusion.[27] such other anaesthetics, ropivacaine has antibacterial effects in lab conditions by preventing the development of germs such Pseudomonas aeruginosa, Escherichia coli, and Staphylococcus aureus.[28,29]

PHARMACOKINETICS

Plasma levels of ropivacaine are influenced by factors such as the total dosage administered, mode of administration, the patient's hemodynamic and circulatory condition, and the vascularity of the administration site. In individuals receiving intravenous treatment, ropivacaine's pharmacokinetics demonstrated dosage proportionality and linearity up to doses of 80 mg.[30] Within the epidural area, ropivacaine undergoes total absorption in two phases, with the absorbed dose being 150 mg. There's a faster phase with an average absorption half-life of around 4.2 hours and an early phase with an average half-life of about 14 minutes. Ninety-four percent of ropivacaine binds to plasma proteins, primarily to 1-acid glycoprotein. Continuous epidural infusion of ropivacaine increases protein binding, leading to a rise in total plasma concentration and a subsequent decrease in ropivacaine clearance. During epidural administration for a caesarean birth, ropivacaine rapidly crosses the placental barrier, almost completely equilibrating the free fraction in the circulation of both the mother and the fetus.[30–32]

METABOLISM

Ropivacaine metabolism takes place primarily in the liver, facilitated by cytochrome P450 (CYP) enzymes, specifically CYP1ALPHA 2 for aromatic hydroxylation, yielding 3'-hydroxy-ropivacaine, and CYP3A4 for N-dealkylation, forming 2',6'-pipecoloxylidide. Following a single intravenous injection, the kidneys serve as the primary organ for ropivacaine excretion, responsible for eliminating approximately 86% of the drug through urine.[30–32]

TOXICITY

The risk of experiencing cardiotoxicity and CNS toxicity due to an unintentional intravascular injection of ropivacaine seems to be minimal. A pooled analysis of data from 60 clinical studies involving 3000 patients revealed a probable unintended intravenous injection rate of ropivacaine of 0.2 percent (six individuals). Among these patients, only one experienced convulsions, and none exhibited signs of cardiotoxicity.[33]

CLINICAL USE

Numerous clinical studies have examined the effectiveness of ropivacaine in managing postoperative pain, labor pain, and surgical anaesthesia in both adult and paediatric populations. In these studies, ropivacaine has primarily been compared to bupivacaine or levobupivacaine. Additionally, there has been growing interest in the use of ropivacaine for chronic pain management, with various strategies under investigation.

Epidural administration

  - Caesarean section
  - Lower abdomen surgery
  - Hip or lower limb surgery
- Peripheral nerve block
- Intrathecal administrations
- Postoperative pain management

PHARMACOLOGY OF DEXMEDETOMIDINE[34]

Dexmedetomidine, derived from the imidazole subclass of alpha 2 receptor agonists, is the d-enantiomer of medetomidine. It demonstrates remarkable selectivity for the alpha 2 receptor, showing a 1600-fold increase in affinity compared to the alpha 1 receptor, initially introduced to clinical practice. in 1999, dexmedetomidine received FDA approval solely for sedation in mechanically ventilated patients within critical care units. However, its usage beyond the ICU has expanded significantly, encompassing off-label applications such as sedation in the operating room, adjunct analgesia, sedation in diagnostic and procedural units, and various other clinical contexts.

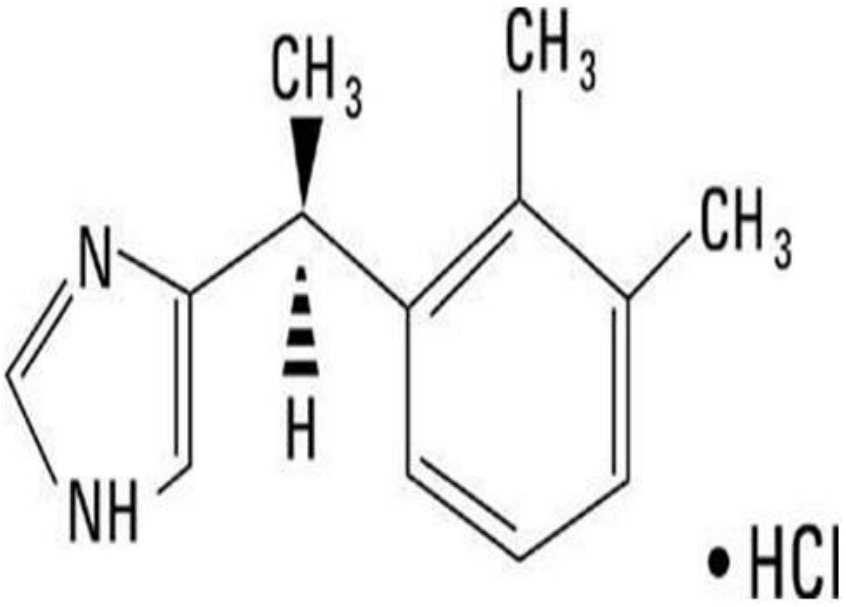
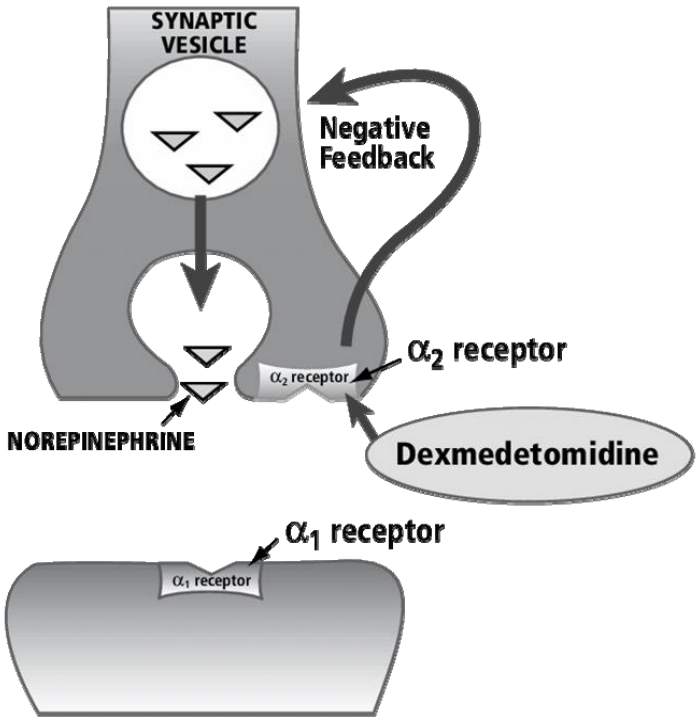


Figure 3: Chemical structure of Dexmedetomidine

MECHANISM OF ACTION

Alpha2 adrenergic receptors, which are G protein-coupled receptors spanning the cell membrane, come in three subtypes in humans: alpha 2A, 2B, and alpha 2C. While alpha 2A receptors are mostly situated in the periphery, alpha 2B and alpha 2C receptors are primarily found in the spinal cord and brain. Postsynaptic alpha 2 receptors in peripheral blood vessels promote vasoconstriction, while presynaptic alpha 2 receptors inhibit the release of norepinephrine, potentially moderating vasoconstriction. These receptors play a role in the sympatholytic, sedative, and antinociceptive effects associated with alpha 2 receptors.



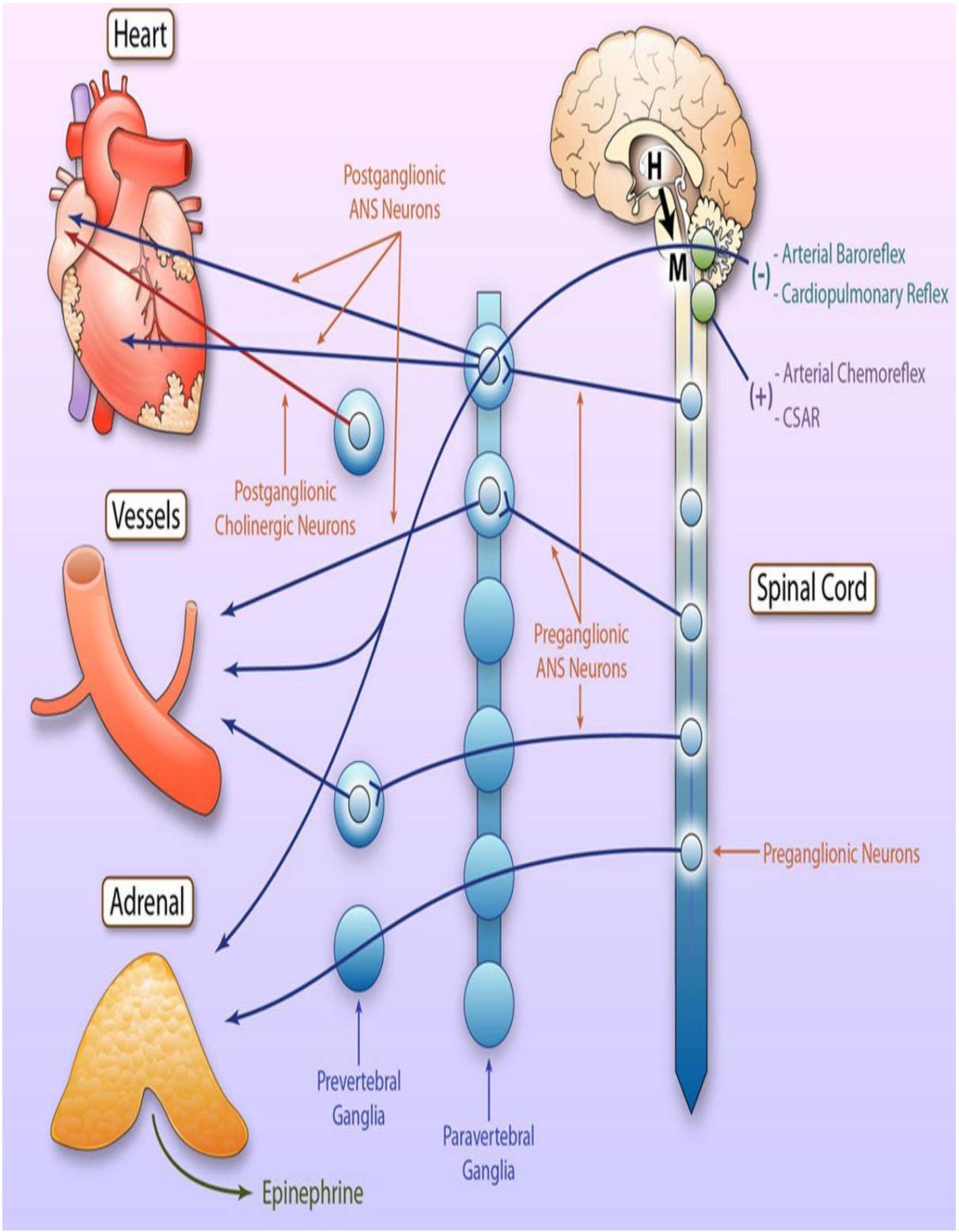


Figure 4: Physiology of alpha -2 adrenoceptors

The alpha – 2 adrenergic receptors are classified into three subtypes in human beings:

SUBTYPE	LOCATION
Alpha 2 A	Periphery
Alpha 2 B	Brain, spinal cord
Alpha 2 C	Brain, spinal cord

PHARMACOKINETICS

Following intravenous administration, dexmedetomidine swiftly disperses throughout the body, mainly undergoing hepatic metabolism and subsequent elimination via urine and feces. Roughly 94% of dexmedetomidine binds to proteins. It features an elimination half-life of around 2 hours, with a context-sensitive half-life spanning from 4 minutes to 250 minutes after an 8-hour infusion. The estimated distribution volume is 118 litres, and the anticipated clearance is 39 litres per hour.

Central nervous system Sedation

Dexmedetomidine acts on alpha 2 receptors located in the locus coeruleus, inducing sedation and hypnosis. Its sedative effect is achieved by modulating endogenous pathways that promote sleep.

Analgesia

Dexmedetomidine-induced analgesia is complex and poorly understood. The principal site of action is assumed to be the spinal cord. When injected into the intrathecal or epidural space, it produces analgesia.

Respiratory system

At doses sufficient to induce significant drowsiness, dexmedetomidine slows respiratory rate while preserving responsiveness to increases in carbon dioxide levels. The alterations in ventilation induced by dexmedetomidine closely resemble those observed during natural sleep.

Cardiovascular system

Dexmedetomidine reduces blood pressure, systemic vascular resistance, heart rate, and myocardial contractility by decreasing cardiac output. Administered as a bolus dose, dexmedetomidine elicits a biphasic response. Rapid infusion of dexmedetomidine at a dosage of 2 µg/kg initially results in a transient increase in blood pressure (22%) and a decrease in heart rate (27%) due to vasoconstriction mediated by activation of peripheral alpha 2 receptors. However, after fifteen minutes, heart rate returns to baseline, and an hour later, blood pressure progressively declines to 15% below baseline.

USES

Dexmedetomidine finds its utility in various clinical settings, serving as a valuable tool for procedural sedation before or during surgery, as well as for sedating patients on mechanical ventilation. Moreover, it plays a crucial role as the primary anaesthetic agent under closely monitored anaesthesia care and as a premedication in the operating room. Additionally,

dexmedetomidine is utilized in combination with local anaesthetics in peripheral nerve blocks, intravenous regional anaesthesia, epidural anaesthesia, and spinal anaesthesia, enhancing their efficacy and providing optimal patient comfort.

Management of postoperative pain,

Used in intensive care and procedural sedations for both adults and children.

As an adjunct to anaesthesia in adult and paediatric patients,

Treatment of cyclic vomiting syndrome,

Withdrawal / Detoxification amelioration in adult and paediatric patients

Treatment of shivering after anaesthesia

Intensive care unit.

When sedating postoperative patients in intensive care units, dexmedetomidine offers several advantages compared to propofol. It reduces opioid usage and results in significantly higher consumption, PaO2/FIO2 ratio, and heart rate in the dexmedetomidine group. Its unique capacity to provide sufficient sedation with less respiratory depression makes it suitable for weaning patients off ventilators.

Anaesthesia

Dexmedetomidine offers multifaceted benefits across various medical scenarios. As a premedication, it decreases the requirement for opioids, volatile anaesthetics, and induction medications, thus facilitating smoother induction of anaesthesia. It effectively mitigates the hemodynamic response induced by intubation and reduces catecholamine release and intraocular pressure, making it a valuable adjunct in ophthalmic disorders. Dexmedetomidine also promotes faster recovery and reduces the need for perioperative analgesics, enhancing postoperative comfort.

Furthermore, in morbidly obese patients undergoing bariatric surgery, dexmedetomidine demonstrates its narcotic-sparing effect during both intraoperative and postoperative phases, contributing to optimized pain management. Beyond its role in anaesthesia, dexmedetomidine has emerged as an effective therapy for withdrawal from alcohol, recreational drugs, benzodiazepines, and narcotics, highlighting its versatility in addressing various clinical challenges.

DOSAGE AND ADMINISTRATION:

In adults, dexmedetomidine is given intravenously with a loading dose of 0.5 to 1 µg/kg administered slowly over ten minutes, followed by a maintenance infusion of 0.2 to 0.7 µg/kg/hr. It should be diluted in 0.9% normal saline for infusion and is typically recommended for infusions lasting up to 24 hours. Dexmedetomidine is freely soluble in water and is also used for procedural sedation in paediatric patients.

ADVERSE EFFECTS:

Major adverse effects include transient hypotension hypertension, haemorrhage, bradycardia, sinus tachycardia, ventricular tachycardia, atrial fibrillation, sinus arrest, myocardial infarction, confusion, delirium, agitation, hallucination, illusion and dry mouth.

Various article discussing the hyperbaric ropivacaine with dexmedetomidine versus hyperbaric ropivacaine for elective surgery under spinal anaesthesia;

In a study conducted by Elcicek K et al., (2010) to assess the dexmedetomidine on spinal ropivacaine anaesthesia. The study compared the effects of intravenously administered dexmedetomidine (group I) with controls (group II) during spinal anaesthesia. Group I

exhibited significant decreases in mean blood pressure compared to group II at 20-, 25-, and 30-minutes post-procedure. Additionally, group I experienced significantly prolonged times for regression of two dermatomes of blockade and complete resolution of motor blockade. Sedation scores were notably higher in the dexmedetomidine group, and there was a significantly higher requirement for atropine in group I compared to group II. The conclusion suggests that dexmedetomidine prolongs spinal anaesthesia duration, induces sufficient sedation, and has minimal adverse effects, although vigilance for bradycardia development is necessary.[35]

In a study conducted by Singh AK et al., (2015) to assess the dexmedetomidine as adjuvant to ropivacaine. In the study, the time to achieve the desired block was shortest in group B and longest in group C. Group B also showed a significantly prolonged sensory-motor blockade compared to the other groups. However, hemodynamic parameters remained stable across all three groups. The conclusion indicates that dexmedetomidine enhances the effectiveness of intrathecal ropivacaine in a dose-dependent manner without any adverse effects. [36]

In a study conducted by Ravipati P et al., (2017) to assess efficacy of the intrathecal ropivacaine with dexmedetomidine. The study evaluated the efficacy of intrathecally administered dexmedetomidine and ropivacaine. Dexmedetomidine combined with ropivacaine resulted in a significantly faster onset of sensory blockade at T10 and prolonged the duration of sensory and motor blockade compared to ropivacaine alone. The onset of motor block was similar in both groups. Dexmedetomidine at a dose of 5 mcg added to 2.5 ml of ropivacaine was found to be effective in providing early sensory blockade and extending the duration of sensory and motor blockade without causing sedation in patients undergoing lower limb surgeries under intrathecal anaesthesia.[37]

In a study conducted by Gautam B et al., (2018) to assess the dexmedetomidine and fentanyl as adjuvant for spinal anaesthesia. In this study, 58 participants completed the research, with similar demographic characteristics and sensory block between the groups. Both groups avoided the need for general anaesthesia. However, significantly more patients in Group A required medications for visceral pain, with a Relative Risk of 2.8. Group A also experienced higher rates of pruritus and shivering, while Group B had more instances of hypotension. Postoperatively, Group B had a significantly longer duration of analgesia. In conclusion, dexmedetomidine proved superior to fentanyl as an intrathecal adjuvant to spinal anaesthesia for abdominal hysterectomy, reducing visceral pain and extending postoperative analgesia. [38]

In a study conducted by Liu X et al., (2019) to assess the bupivacaine along and combination with dexmedetomidine for spinal anaesthesia. In comparison to the control group, the bupivacaine-DEX group in this trial showed a much shorter duration to the maximum sensory block level. Additionally, the bupivacaine-DEX group saw considerably less incidence of shivering during anaesthesia, especially at a dosage of 5 μg DEX. But there were no appreciable variations in symptoms like bradycardia, hypotension, nausea/vomiting, or pruritus. In summary, compared to using bupivacaine alone, adding dexmedetomidine to bupivacaine for spinal anaesthesia during caesarean section greatly speeds up onset time and lowers shivering rates during anaesthesia. [4]

In a study by Tang Y et al., (2020) to assess the ropivacaine co-administered with and without dexmedetomidine. In a study comparing the efficacy of intrathecal dexmedetomidine (5 mcg) combined with hyperbaric ropivacaine for caesarean section, Group D showed a lower ED50 of ropivacaine compared to Group C, as calculated by Dixon and Massay formula (9.4 mg vs. 11.4 mg, respectively) and Probit regression (9.1 mg vs. 11.1 mg, respectively). Shivering was less prevalent in Group D, and there were no significant

differences in onset time of sensory or motor block, or incidence of adverse effects such as hypotension, bradycardia, nausea, vomiting, sedation, or pruritus between the two groups. Therefore, intrathecal dexmedetomidine appears to enhance the analgesic potency of ropivacaine for caesarean section in healthy parturient under combined spinal-epidural anaesthesia, reducing the required dose of ropivacaine by approximately 18%. [39]

In a meta-analysis study by Zhao J et al., (2021) to assess the ropivacaine combined with dexmedetomidine versus ropivacaine alone for anaesthesia. Eleven randomised controlled studies involving 337 patients in the R group and 336 patients in the RD group were included in the meta-analysis. The RD group showed longer anaesthesia duration and a quicker onset of sensory and motor block than the R group. The amount of time needed for rescue did not significantly differ across the groups. In contrast to the RD group, the R group had more stable hemodynamic after 10 minutes, with a higher incidence of shivering and a lower incidence of bradycardia. The combination of ropivacaine and dexmedetomidine may provide superior anaesthetic results for epidural anaesthesia than ropivacaine alone, according to the findings, however caution is urged about safety issues. [40]

In a study conducted by Lee SC et al., (2022) to assess the difference between the ropivacaine and dexmedetomidine sedation among patients. The study found no significant difference in the duration of sensory block regression by two dermatomes between the group receiving hyperbaric ropivacaine alone and the group receiving hyperbaric ropivacaine with intrathecal fentanyl (mean difference: 0.8 minutes). This suggests that hyperbaric ropivacaine by itself is not inferior. Additionally, secondary results did not reveal any notable distinctions between the two groups. In summary, the duration of spinal anaesthesia with hyperbaric ropivacaine alone under intravenous dexmedetomidine sedation was similar to that with hyperbaric

ropivacaine with intrathecal fentanyl. Thus, for patients receiving intravenous dexmedetomidine, intrathecal fentanyl may not be required.[41]

Spinal anaesthesia is safe and a most reliable method used in need for various lower abdominal surgeries which has rapid onset of action.[1] Ropivacaine has lesser onset of action and has better sensory and motor blockade. A more recent and extremely selective alpha 2 adrenergic agonist, dexmedetomidine, has been developed for use in perioperative and critical care settings for a variety of operations. It is a particularly effective adjuvant because of its stable hemodynamic and increased oxygen demand brought on by improved sympathoadrenal stability.[42,43]

Previous research indicates that the administration of dexmedetomidine as an adjuvant enhances the efficacy of spinal anaesthesia, extends the duration of sensory and motor block, decreases shivering, and results in a prolonged postoperative analgesia with negligible side effects when combined with ropivacaine.[44,45]

Since there aren't many research that examine the effectiveness of dexmedetomidine as a supplement to ropivacaine in spinal anaesthesia. In order to investigate the effectiveness of Dexmedetomidine as a supplement to Ropivacaine in terms of the length of sensory and motor block, postoperative analgesia, and adverse effects, we designed prospective double-blind research.

AIMS & OBJECTIVES

AIMS & OBJECTIVES

Aim:

Evaluation of hyperbaric ropivacaine with dexmedetomidine and evaluation of hyperbaric ropivacaine without dexmedetomidine.

Objective

Primary outcome:

- Time of Onset and Duration sensory block and motor block
- Time to 2 segment regression.

Secondary outcome:

- VAS score.
- 24 hours rescue analgesia.

MATERIALS & METHODS

MATERIAL & METHOD

This study will be conducted on patients admitted for infraumbilical surgeries done under spinal anaesthesia at R. L. Jalappa Hospital and Research centre, Tamaka, Kolar,

Study Design: Double blind - Randomized clinical study.

Sample Size: 40 samples in group A and 40 samples in group B.

Sample size estimation:

Total sample size = 80 out of that 40 in each group will be taken.

Based on the previous literature for an outcome variable, duration of motor block with minimum difference to become significant between two groups with difference of 17.0 min and common standard deviation of 32.91, Type 1 error of 5% and Type 2 error of 10%, 90% statistical power, the sample size estimated to be 80 (40 in each group) after adjusting for lost-follow-up and non- response rate of 95% confidence intervals.

Formula:

$$N = \frac{(r + 1)\,(Z\,\alpha/2 + Z\,1\text{-}\beta)2\,\sigma2}{rd2}$$

Where $Z\,\alpha$ = normal deviate at the level of significance

$Z\,1\text{-}\beta$ = normal deviate at 1-β% power with β% Type II error

r = n1/n2 is the ratio of sample size required for 2 groups, generally it is one for keeping equal sample size or 2 groups if r = 0.5 gives the sample size distribution ass 1:2 for 2 groups. σ and d are the pooled standard deviations and difference of mean of two groups.

Inclusion Criteria

- Age 18 to 70 years.
- Both genders.
- ASA grade 1 and 2.
- Patients undergoing infraumbilical surgeries.

Exclusion Criteria

- Patients having absolute contraindications to spinal anaesthesia such as patients who are not willing, local infections, severe hypovolemia, cardiac disease, bleeding diathesis, respiratory diseases and CNS diseases and the patients who are also allergic to drugs.
- Preoperative bradycardia (heart rate [HR] <40 beats/min).
- Renal /Hepatic dysfunction.
- Patient on beta blocker or Clonidine therapy.
- Chronic diseases such as diabetes and hypertension.

Method of collection of data:

- Patients undergoing infraumbilical surgeries under spinal Anaesthesia were selected.
- Informed consent was taken from the patients.
- Result values were recorded using a Proforma.

SAMPLING PROCEDURE

- Detailed history of the patient was taken.
- Complete physical examination was done.
- Routine investigations were checked.

- Intravenous line was secured and IV fluids were connected.
- Patients were divided into two groups randomly.
- Once the patient has undergone appropriate selection, the optimal patient position for the procedure must be established.
- The procedure is usually carried out with the patient in the sitting or lateral decubitus position. The goal of positioning is to help establish a straight path for needle insertion between the spinal vertebrae (intervertebral spaces).
- With the patient positioned in the sitting position he/she should be encouraged to maintain a flexed spine position which helps to open up the interspace. The sitting position is appropriate for spinal anaesthesia with a hyperbaric solution.
- After the patient is in the proper position, Cleaning should be started from T4 space of back region to lower back.
- Allow time for the cleaning solution to dry. In the spinal kit, the drape placement is on the patient's back to isolate the area of access.
- The access site is identified by palpation of Tuffier's line.
- Tuffier's line is a line drawn across the iliac crest that crosses the body of L4 or L4-L5 interspace.
- This landmark is helpful for the placement of spinal anaesthesia which can also be given in L3-L4, L4-L5 interspaces.
- The space between 2 palpable spinous processes is usually the site of entry.
- Strict aseptic technique is always necessary, achievable with chlorhexidine antiseptics with alcohol
- Local anaesthetic (usually about 1 ml 1% lidocaine) is used for skin infiltration, and a wheal is created at the site of access chosen.

- •The spinal needle is introduced into the skin, angled in a cephalad. The needle traverses the skin, followed by subcutaneous fat. As the needle courses deeper, it will engage the supraspinous ligament and then the interspinous ligament; the practitioner will note this as an increase in tissue resistance. Next later will be the ligamentum flavum, and this would present like a "pop." the clinician proceeds with needle insertion until penetration of the dura-subarachnoid membranes, which is signaled by free-flowing CSF. It is at this point that the administration of spinal medication takes place.

The outcome measures will be assessed by surgical field condition, surgeon satisfaction profile, emergence agitation using Aono's scale, Quality of motor blockade will be assessed by Bromage scale, level of sedation will be assessed by Ramsay sedation score, post-operative pain using visual analogue scale (VAS) and post-operative nausea and vomiting using PONV scoring system

- Group A: Patient belonging to the group of hyperbaric ropivacaine 0.75% 3ml + dexmedetomidine 5mcg (0.05 ml) in 0.45 ml normal saline (TOTAL VOLUME 3.5 ml).
- Group B: Patient belonging to the group of only hyperbaric ropivacaine 0.75 % 3 ml + 0.5 ml normal saline (TOTAL VOLUME 3.5 ml).
- Hemodynamic monitoring to be done during the block every 5 mins for first 15 mins and every 10 mins for next 30 mins and once in 15 mins till the end of surgery and postoperatively every hourly employing multi parameter monitor which displays heart rate (HR), systolic blood pressure (SBP) diastolic blood pressure (DBP), mean arterial pressure (MAP), ECG and SpO2.
- Duration of postoperative analgesia and 24 hours analgesics requirement will be monitored.

- Sedation scores and side effects will also be monitored.

PARAMETERS TO BE OBSERVED

- Heart rate
- Mean arterial pressure
- Onset of sensory blockade and motor blockade.
- Maximum level of sensory blockade and time taken for the same.
- Maximum level of motor blockade and time taken for the same.
- Two segments sensory regression time.
- Total duration of sensory blockade and motor blockade.
- Total duration of analgesia.
- Sensory blockade was tested using pinprick method with a blunt tipped 27G needle at every minute for first 5 minutes and every 5 minutes for next 20 minutes.

Does the study require any investigation or intervention to be conducted on patients or other humans or animals? If so, please describe briefly.

No special investigations required.

No intervention on animals required.

Has ethical clearance been obtained from your institution in case of 8.1?

Applied for Institutional Ethical Clearance

STATISTICAL ANALYSIS

All the collected data were coded and entered into an excel data base. All the quantitative measures were presented by (Mean+/-SD), Confidence interval (CI), qualitative measures like gender, ASA Physical status etc. by proportions and CI. Independent sample t-test, Mann-Whitney U-test and chi-square test/Fisher's exact test was considered appropriate to interpret the results. P value <0.05 was considered as statistically significant.

RESULTS

RESULTS

Present study included total of 80 patients, divided into two groups as group A and group B with 40 patients in each group.

Table 1: Comparison of mean age between the groups

	Group A		Group B		p-value
	Mean	SD	Mean	SD	
AGE	45.8	7.6	47.4	8.6	0.395

The mean age between the group was comparable with no significant difference noted.

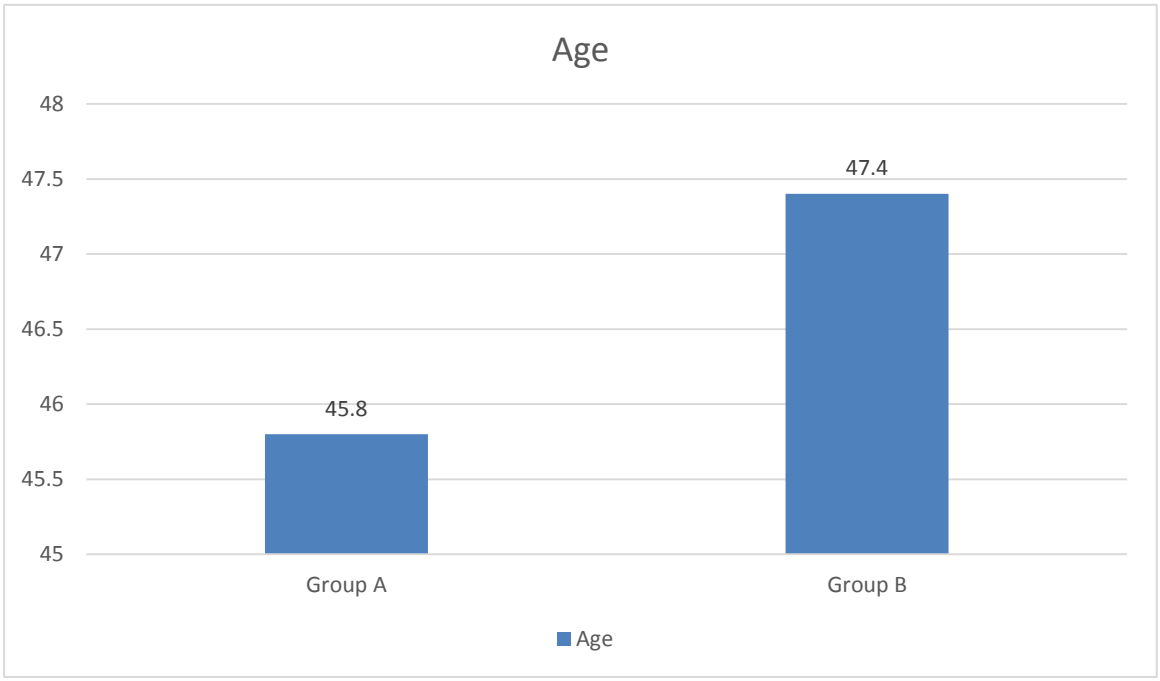


Figure 5: Comparison of mean age between the groups

Table 2: Comparison of the gender and ASA grade between the groups

		Group A		Group B		p-value
		Count	N %	Count	N %	
Gender	Female	19	47.5%	13	32.5%	1.875 (0.171)
	Male	21	52.5%	27	67.5%	
ASA	I	27	67.5%	31	77.5%	1.003 (0.317)
	II	13	32.5%	9	22.5%	

The gender distribution between the group was comparable with overall marginal male preponderance in the study. the ASA grade was found to be comparable between the groups with no significant difference.

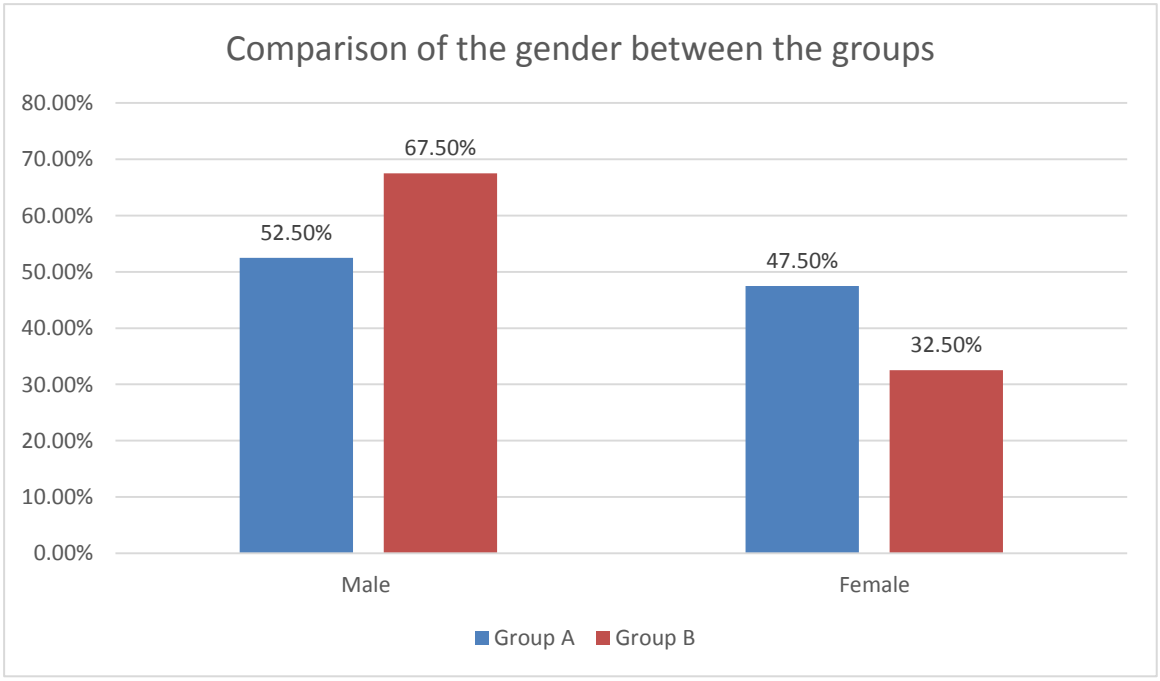


Figure 6: Comparison of the gender between the groups

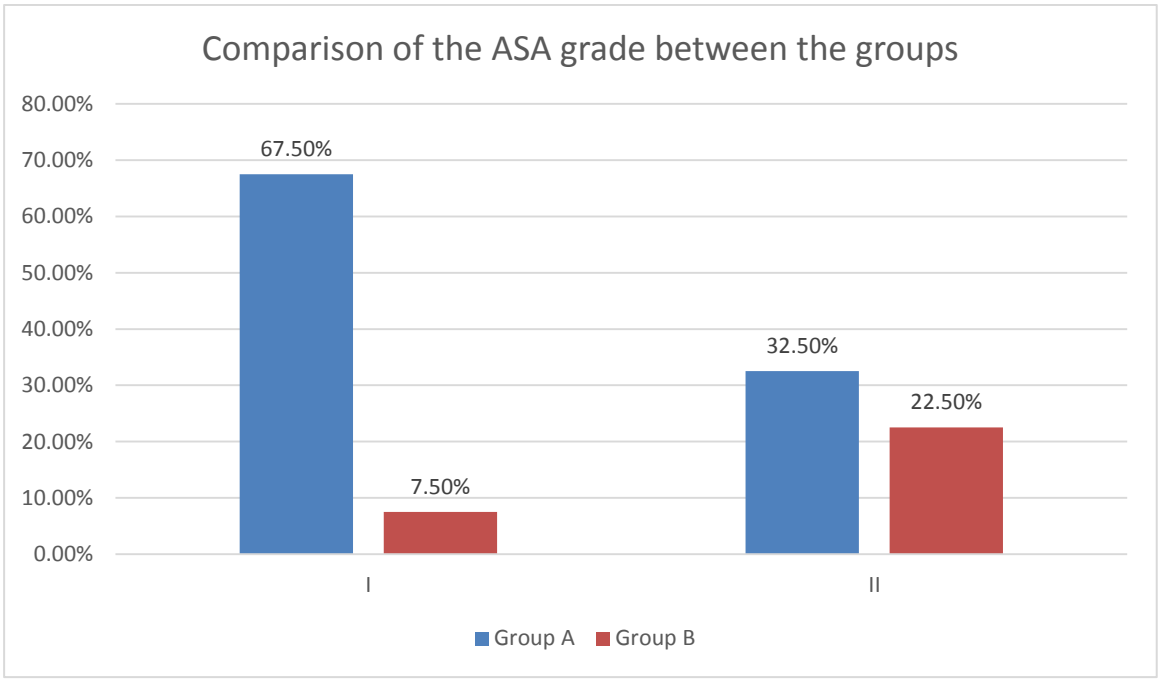


Figure 7: Comparison of the ASA grade between the groups

Table 3: Comparison of the Mallampati grade between the groups

		Group A		Group B		p-value
		Count	N %	Count	N %	
Mallampati	1.0	15	37.5%	17	42.5%	0.459 (0.795)
	2.0	19	47.5%	16	40.0%	
	3.0	6	15.0%	7	17.5%	

The Mallampati grade compared between the group, there is no significant difference noted between the group A and group B.

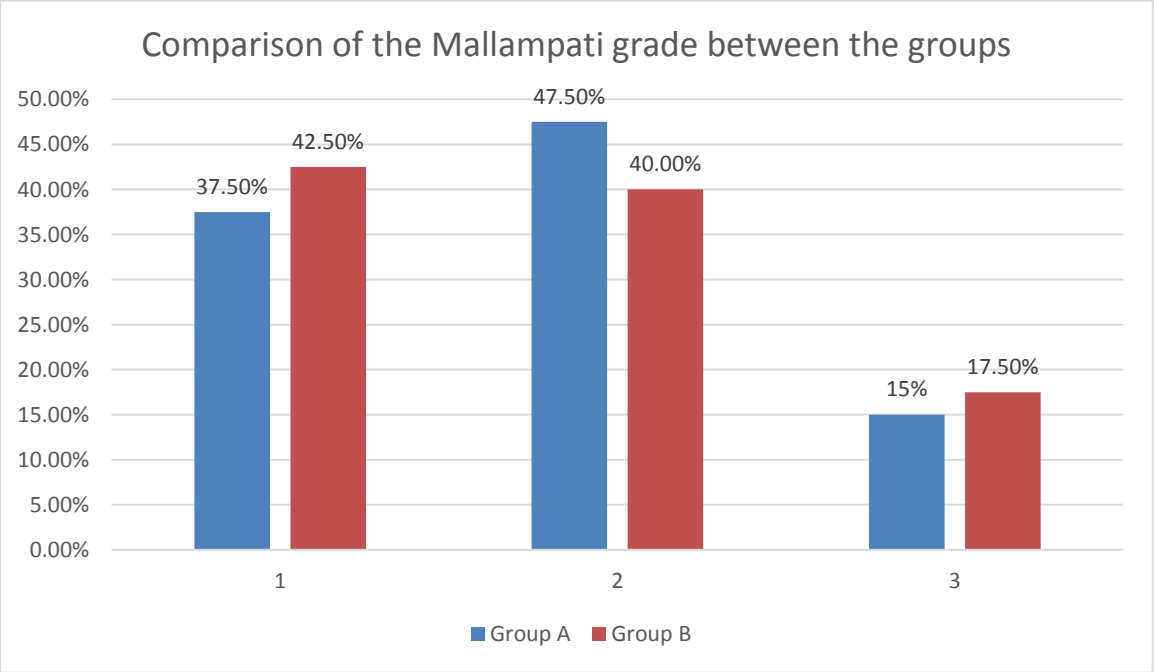


Figure 8: Comparison of the Mallampati grade between the groups

Table 4: Comparison of mean weight and height of the patients between the groups

	Group A		Group B		p-value
	Mean	SD	Mean	SD	
Weight	65.7	5.5	66.4	6.2	0.583
Height	167.0	5.4	167.4	6.2	0.731

The physical characters such as mean height and weight was comparable between the group with no significant difference.

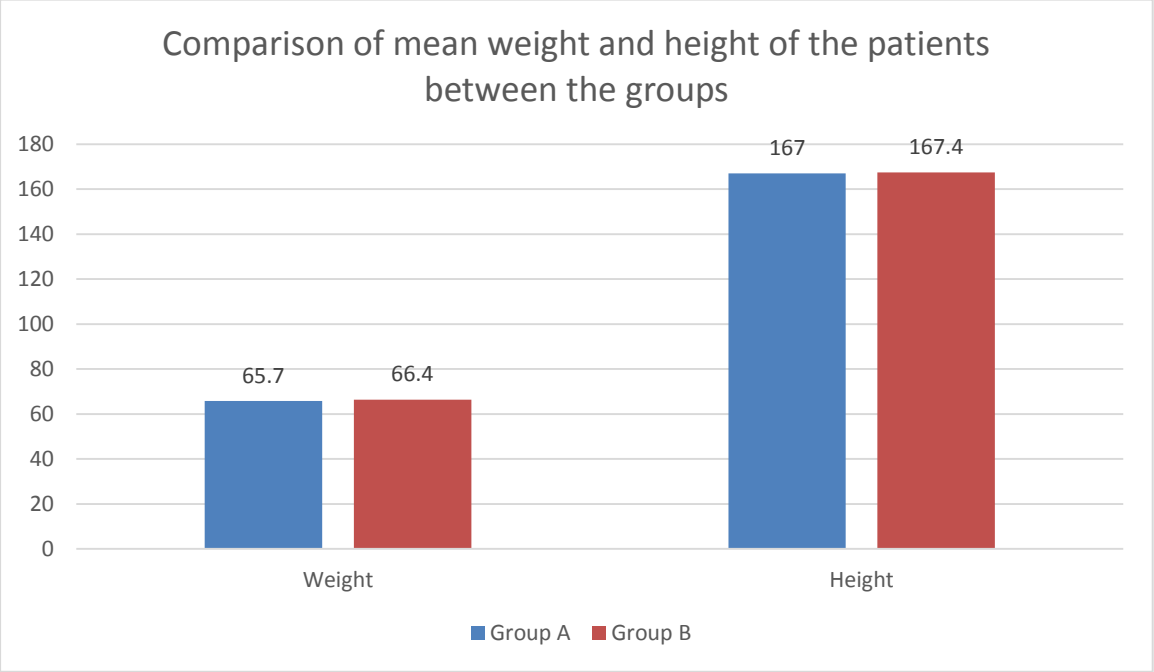


Figure 9: Comparison of mean weight and height of the patients between the groups

Table 5: Comparison of the onset of sensory and motor block between the groups

		Group A		Group B		p-value
		Count	N %	Count	N %	
Onset of Sensory block mins	3.0	14	35.0%	0	0.0%	80.00 (0.01) *
	4.0	18	45.0%	0	0.0%	
	5.0	8	20.0%	0	0.0%	
	6.0	0	0.0%	4	10.0%	
	7.0	0	0.0%	6	15.0%	
	8.0	0	0.0%	17	42.5%	
	9.0	0	0.0%	13	32.5%	
Maximum level of sensory block	T6	13	32.5%	14	35.0%	0.056 (0.813)
	T8	27	67.5%	26	65.0%	
Maximum score of motor block	3.0	2	5.0%	3	7.5%	0.213 (0.644)
	4.0	38	95.0%	37	92.5%	

The onset of sensory block was significantly quick in group A compared to group B patients. However, the maximum level of sensory block and maximum score of motor block was comparable between the group with no significant difference.

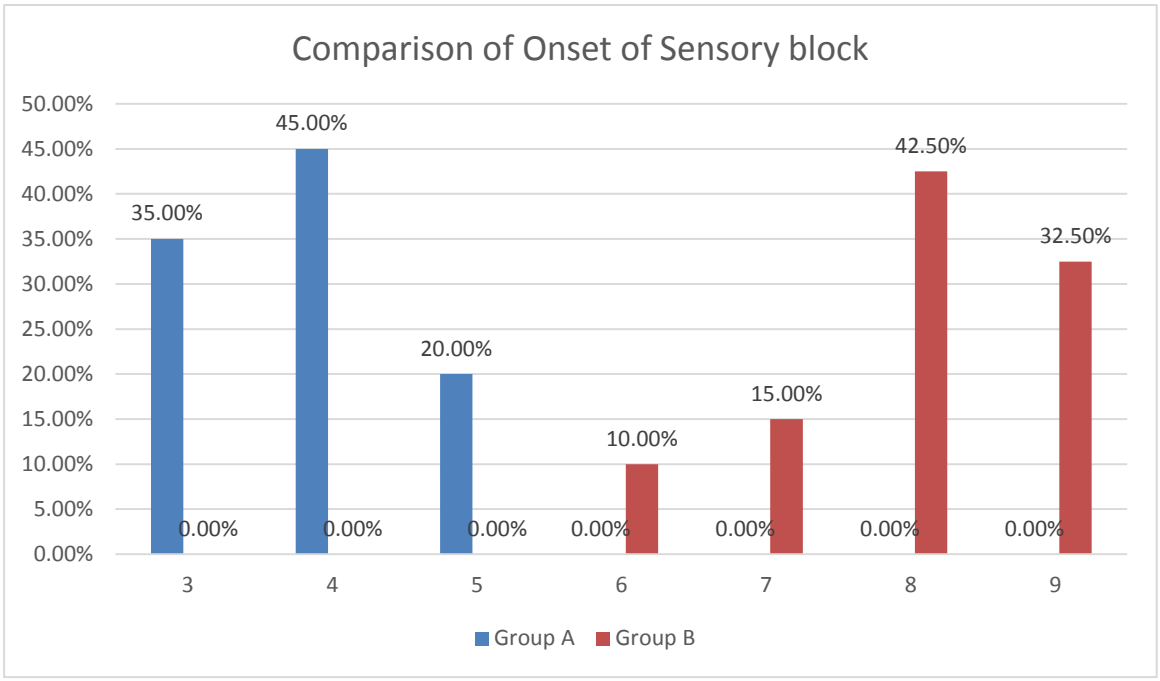


Figure 10: Comparison of Onset of Sensory block

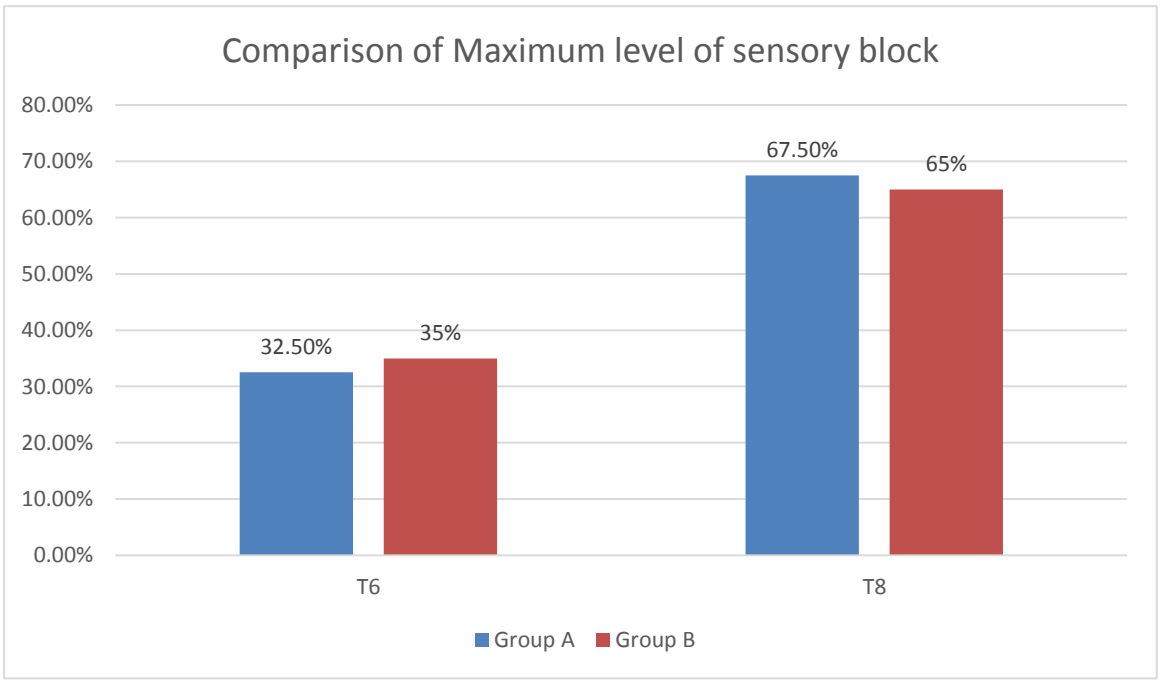


Figure 11: Comparison of Maximum level of sensory block

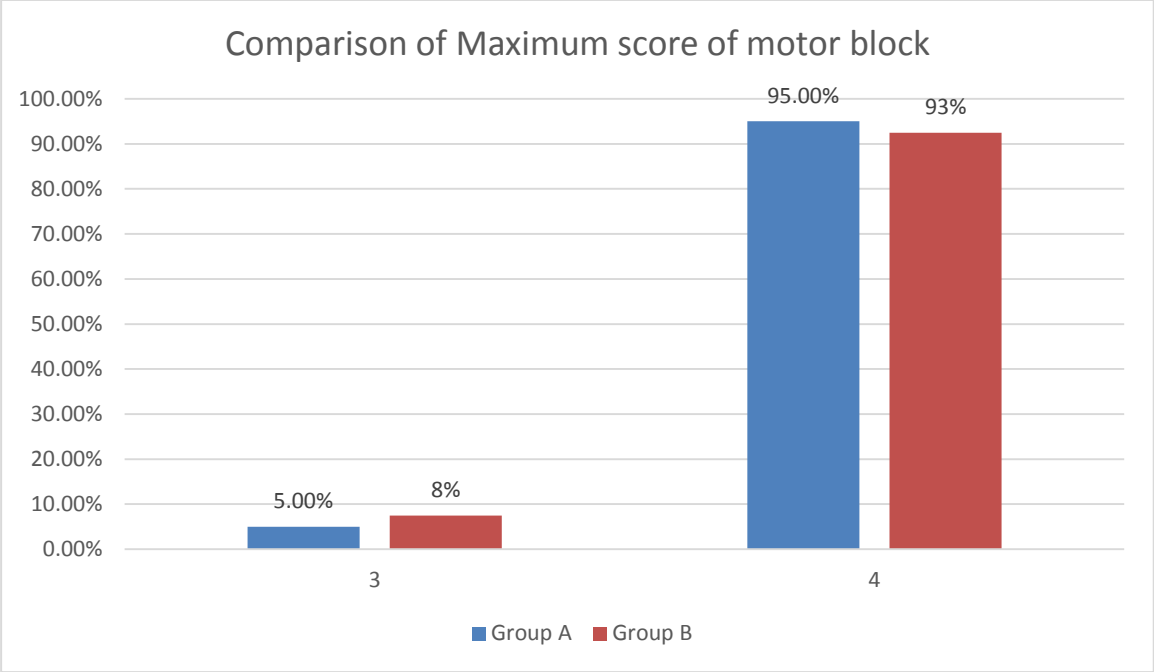


Figure 12: Comparison of Maximum score of motor block

Table 6: Comparison of the sedation parameters between the groups

	Group A		Group B		p-value
	Mean	SD	Mean	SD	
Onset of motor blockade mins	7.0	.7	11.9	1.0	0.01*
Time to peak sensory blockade	5.5	.6	9.2	.7	0.01*
Time to peak motor block	8.4	.7	13.9	.7	0.01*
Duration of sensory block mins	427.5	10.8	226.5	13.1	0.01*
Duration of motor block mins	197.3	9.9	126.0	9.8	0.01*
Two segment regression mins	127.8	9.5	86.5	8.0	0.01*

The onset of motor blockade was significantly quick in group A (7.0±0.7) compared to group B (11.9±1.0) patients. ($p<0.05$)

The time to peak sensory blockade was significantly shorter in group A (5.5±0.6) compared to patients in group B (9.2±0.7)

Time for peak motor blockade is also significant shorter in group A patients (8.4±0.7) compared to patients in group B (13.9±0.7)

The duration of sensory block was found to be significantly longer in group A patients (427.5±10.8) compared to group B patients (226.5±13.1).

The duration of motor block was found to be significantly longer in group A (197.3±9.9) compared to patients in group B (126.0±9.8)

The mean duration of the two-segment regression was found to be significantly longer duration in group A (127.8±9.5) compared to patients in group B (86.5±8.0)

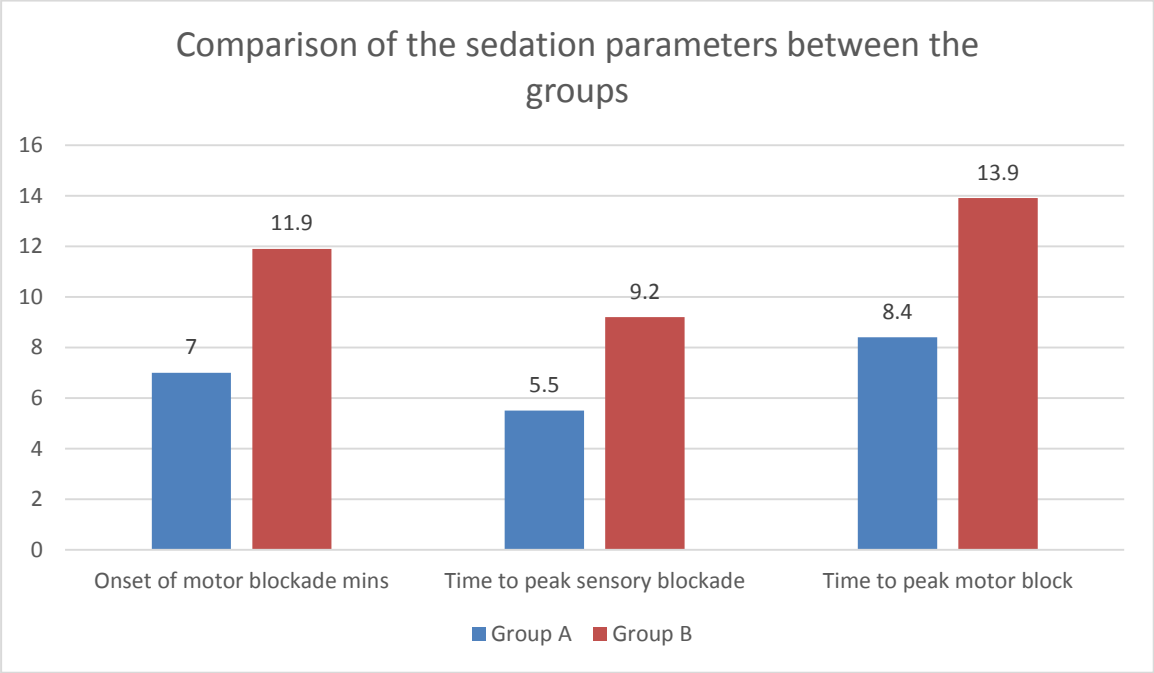


Figure 13: Comparison of the sedation parameters between the groups

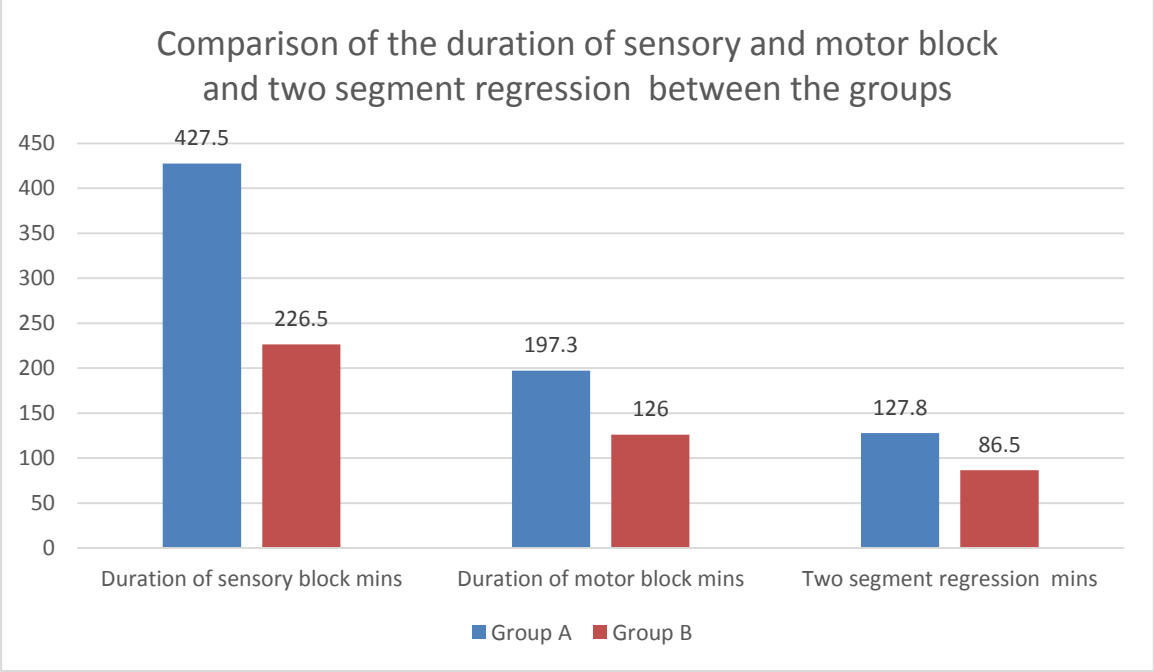


Figure 14: Comparison of the duration of sensory and motor block and two segment regression between the groups

Table 7: Comparison of the mean duration of surgery between the groups

	Group A		Group B		p-value
	Mean	SD	Mean	SD	
Duration of surgery	125.6	31.7	70.8	28.2	0.01*

The duration of surgery was found to be significantly shorter in group B patients compared to group A.

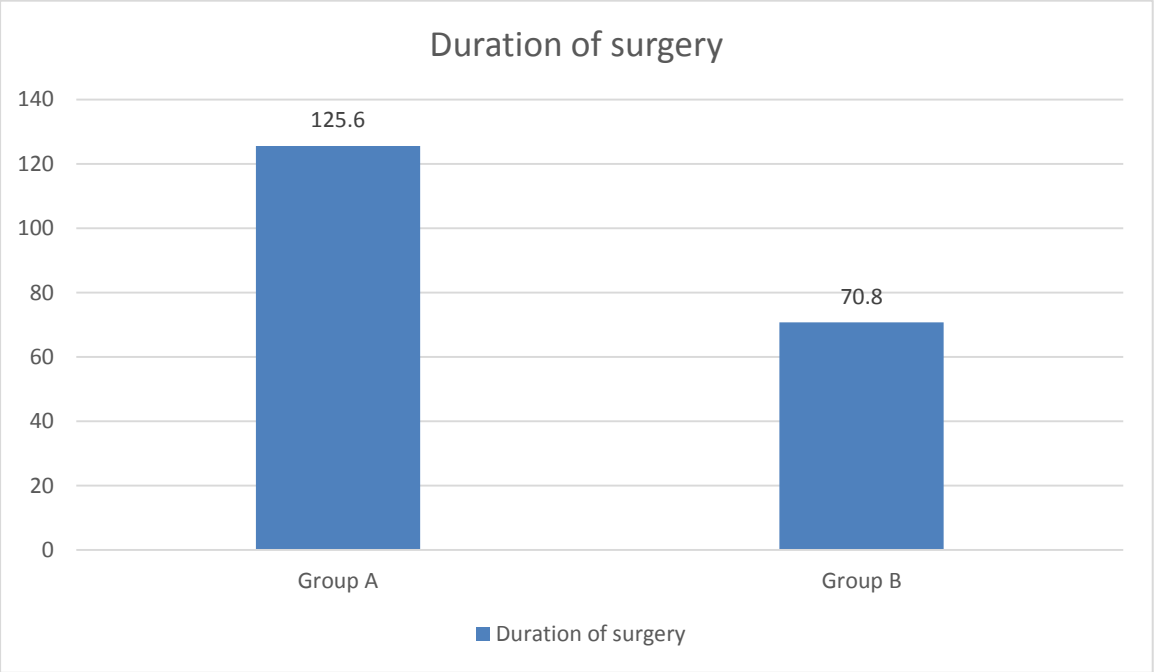


Figure 15: Comparison of the mean duration of surgery between the groups

Table 8: Comparison of systolic blood pressure between the groups

SBP	Group A		Group B		p-value
	Mean	SD	Mean	SD	
Pre-op	116.4	8.3	117.2	10.2	0.952
0 min	110.7	10.7	118.0	11.9	0.05*
1 min	108.4	11.1	115.7	12.0	0.05*
3 mins	106.1	11.1	113.9	12.1	0.05*
5 mins	102.3	12.1	110.3	11.9	0.05*
10 mins	113.4	11.6	109.3	11.8	0.124
15 mins	114.4	11.5	118.8	11.6	0.32
30 mins	114.4	11.6	112.4	11.4	0.21
60 mins	115.1	11.5	111.4	11.5	0.28
120 mins	114.5	11.3	110.3	12.1	0.110
Recovery room	114.8	10.4	110.5	10.9	0.078

On comparison of the systolic blood pressure, it was found to be significantly lower in group A at 0 min to 5th min compared to group B. There was no significant difference in the mean level of systolic blood pressure other interval of time.

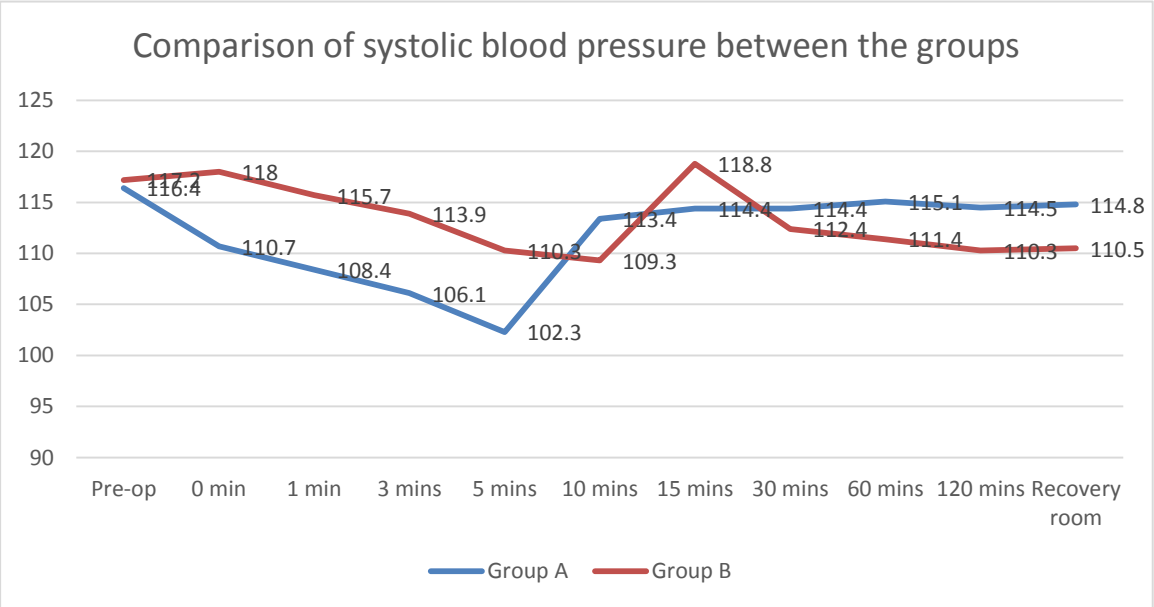


Figure 16: Comparison of systolic blood pressure between the groups

Table 9: Comparison of diastolic blood pressure between the groups

DBP	Group A		Group B		p-value
	Mean	SD	Mean	SD	
Pre-op	78.3	7.7	77.3	7.4	0.554
0 min	70.3	7.6	78.0	8.6	0.05*
1 min	68.9	7.5	76.5	8.6	0.05*
3 mins	70.4	7.1	74.7	8.3	0.05*
5 mins	72.9	7.0	73.6	8.0	0.656
10 mins	71.9	6.5	73.4	7.8	0.53
15 mins	71.6	6.6	72.2	7.6	0.68
30 mins	71.7	5.9	71.9	7.3	0.880
60 mins	71.4	6.3	71.7	7.5	0.822
120 mins	71.9	5.9	70.8	7.1	0.442
Recovery room	72.2	5.8	70.9	7.0	0.367

On comparison of the diastolic blood pressure, it was found to be significantly lower in group A at 0 min to 3rd min compared to group B. There was no significant difference in the mean level of diastolic blood pressure other interval of time.

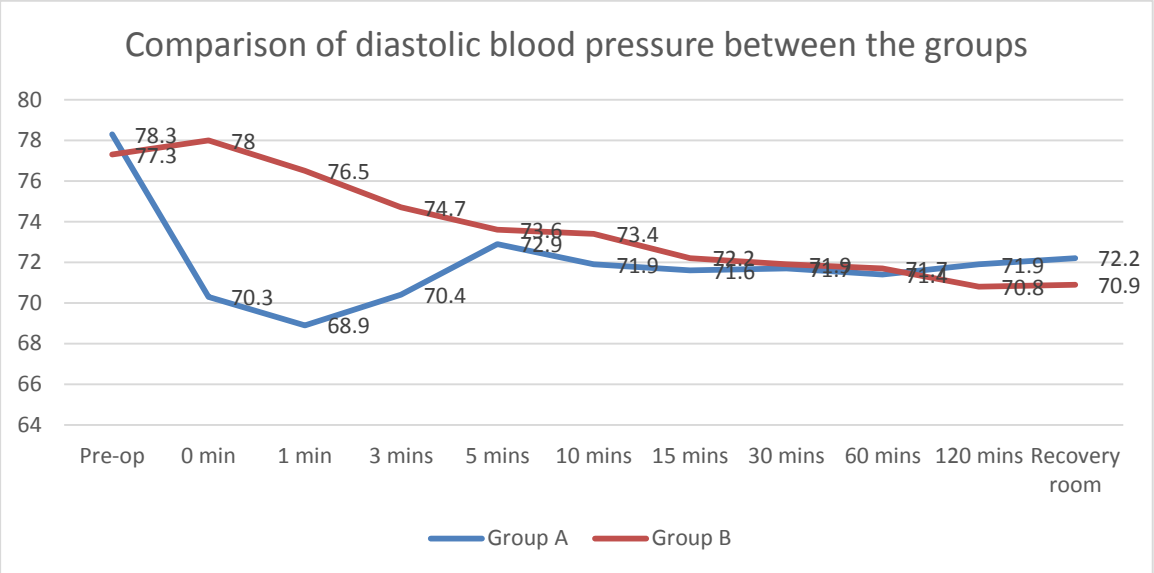


Figure 17;Comparison of diastolic blood pressure between the groups

Table 10: Comparison of the mean arterial pressure between the groups

MAP	Group A		Group B		p-value
	Mean	SD	Mean	SD	
Pre-op	90.3	6.8	94.7	6.7	0.21
0 min	86.4	14.2	91.2	8.9	0.01*
1 min	74.4	7.1	92.5	8.4	0.01*
3 mins	79.9	6.4	87.7	9.0	0.05*
5 mins	86.4	6.1	85.8	8.5	0.706
10 mins	86.1	6.1	85.3	8.3	0.616
15 mins	83.7	13.6	84.4	8.2	0.767
30 mins	85.8	5.9	84.0	8.0	0.265
60 mins	86.0	6.2	84.3	8.3	0.302
120 mins	85.6	5.8	83.9	8.0	0.303
Recovery room	86.5	7.2	84.7	8.2	0.12

On comparison of the Mean arterial pressure, it was found to be significantly lower in group A at 0 min to 3rd min compared to group B. There was no significant difference in the mean level of mean arterial pressure other interval of time.

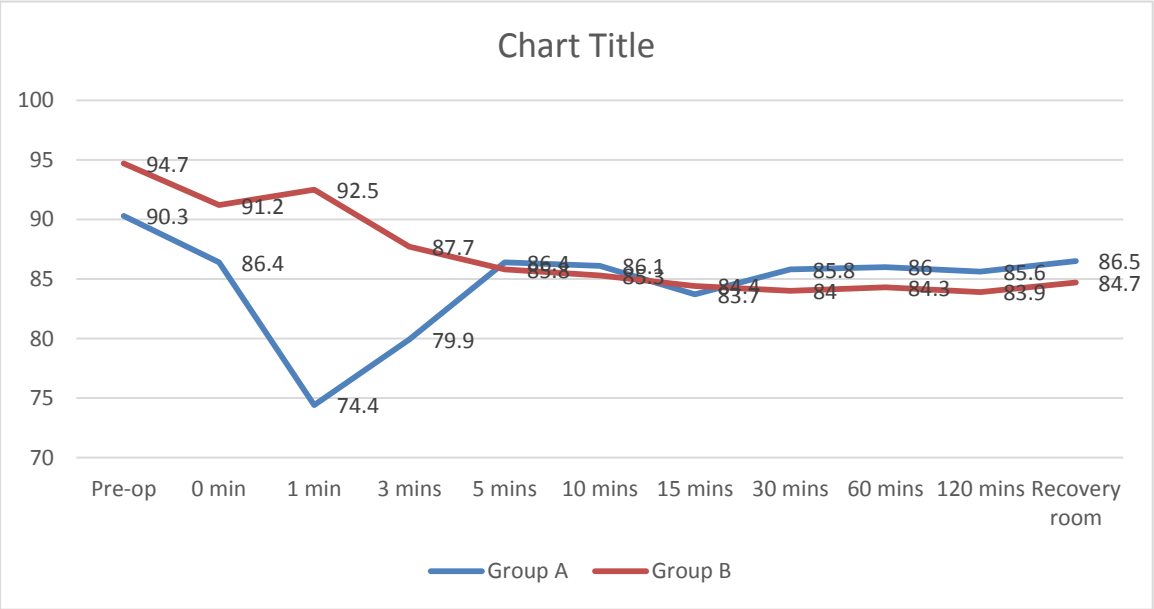


Figure 18: Comparison of the mean arterial pressure between the groups

Table 11: Comparison of the mean heart rate between the groups

Heart rate	Group A		Group B		p-value
	Mean	SD	Mean	SD	
Pre-op	84.2	5.5	87.2	6.9	0.3
0 min	83.9	5.7	88.1	7.4	0.01*
1 min	80.3	7.5	86.9	14.8	0.01*
3 mins	76.1	6.4	83.7	7.3	0.05*
5 mins	79.9	7.2	82.7	7.3	0.263
10 mins	79.2	6.9	81.4	6.7	0.153
15 mins	79.7	7.5	81.5	6.9	0.261
30 mins	79.6	6.9	81.4	7.4	0.277
60 mins	79.9	7.4	81.1	6.9	0.457
120 mins	80.9	4.5	81.5	5.8	0.592
Recovery room	81.0	4.5	81.8	6.6	0.544

On comparison of the mean heart rate, it was found to be significantly lower in group A at 0 min to 3rd min compared to group B. There was no significant difference in the mean level of heart rate at other interval of time.

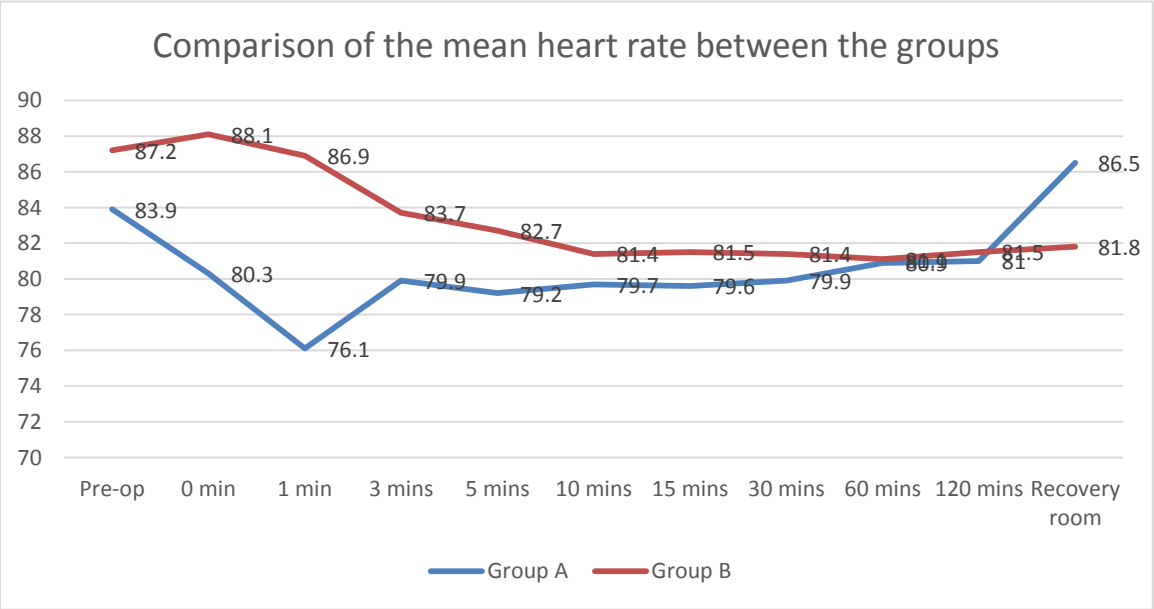


Figure 19: Comparison of the mean heart rate between the groups

Table 12: Comparison of the oxygen saturation between the groups

SpO2	Group A		Group B		p-value
	Mean	SD	Mean	SD	
Pre-op	99.2	.8	99.3	.8	0.78
0 min	99.0	.8	99.3	.8	0.136
1 min	99.0	.8	99.4	.7	0.21
3 mins	98.8	.8	99.4	.7	0.26
5 mins	98.9	.7	99.5	.7	0.23
10 mins	98.8	.8	99.4	.8	0.27
15 mins	98.8	.7	99.7	.5	0.134
30 mins	98.7	.7	99.3	.8	0.141
60 mins	98.8	.8	99.5	.7	0.149
120 mins	98.8	.8	99.4	.7	0.21
Recovery room	98.7	.8	99.4	.8	0.32

There was no significant difference in the oxygen saturation level between the groups.

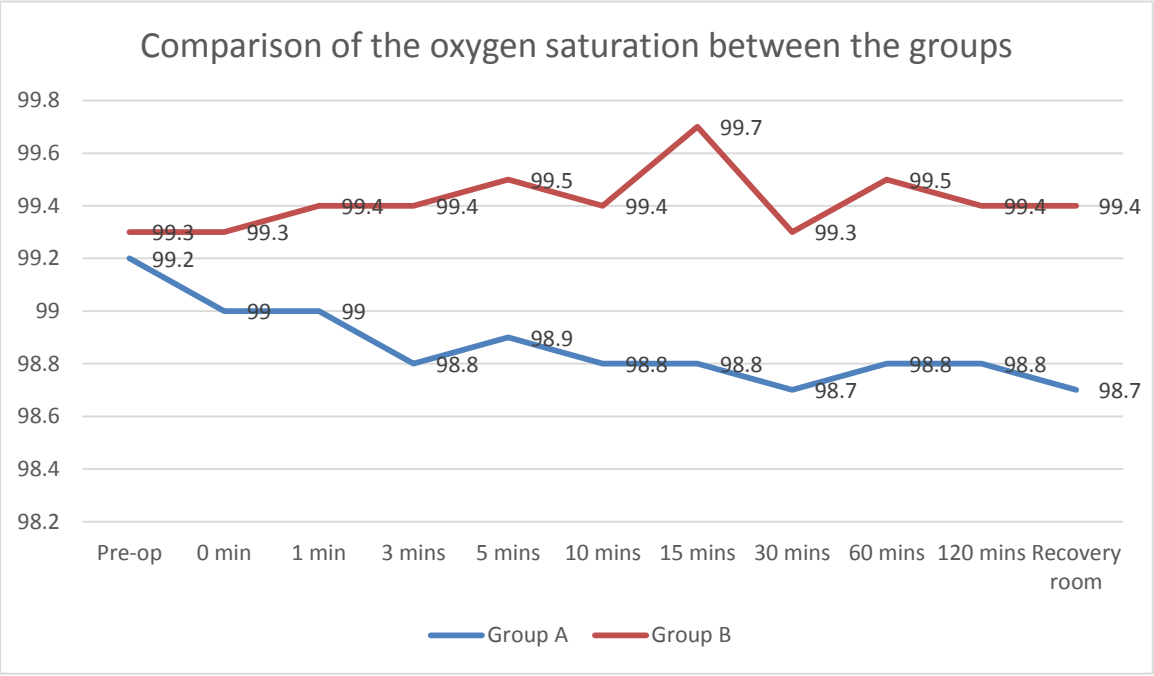


Figure 20: Comparison of the oxygen saturation between the groups

Table 13: Comparison of the respiratory rate between the groups

Respiratory rate	Group A		Group B		p-value
	Mean	SD	Mean	SD	
Pre-op	13.2	.9	13.3	1.0	0.418
0 min	13.2	.9	13.2	.9	0.903
1 min	13.2	.9	13.3	.9	0.903
3 mins	13.2	.9	13.2	.9	0.905
5 mins	13.2	.9	13.1	.9	0.812
10 mins	13.2	.9	13.1	.9	0.719
15 mins	13.0	1.0	13.2	.9	0.418
30 mins	13.1	1.0	13.2	.9	0.640
60 mins	13.1	1.0	13.1	.9	0.816
120 mins	13.2	.9	13.1	.9	0.719
Recovery room	13.2	.9	13.1	.9	0.810

There was no significant difference in the mean respiratory rate between the groups.

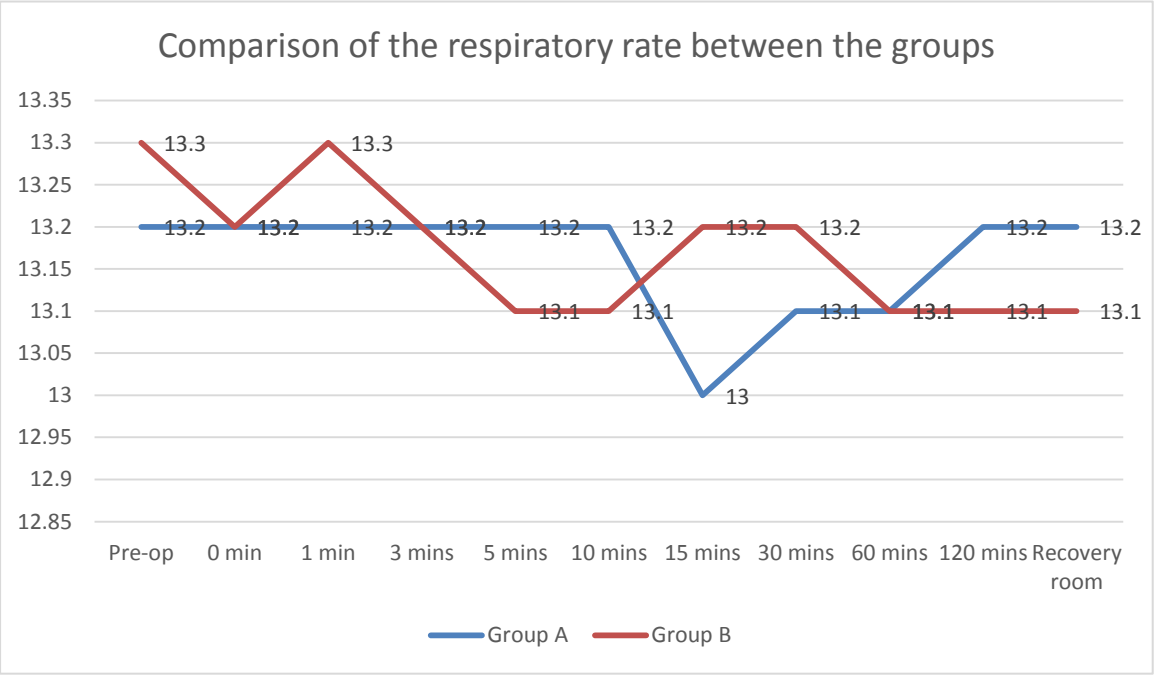


Figure 21: Comparison of the respiratory rate between the groups

Table 14: Comparison of the number of analgesic dose and ANOS scale between the groups

		Group A		Group B		p-value
		Count	N %	Count	N %	
24hr rescue analgesia Number of doses given	1.0	13	32.5%	13	32.5%	3.47 (0.17)
	2.0	23	57.5%	17	42.5%	
	3.0	4	10.0%	10	25.0%	
ANOS scale	1.0	16	40.0%	15	37.5%	1.413 (0.493)
	2.0	22	55.0%	20	50.0%	
	3.0	2	5.0%	5	12.5%	

There was no significant difference in 24hr rescue analgesia number of dose given between the groups. However, the higher number of doses were given in group B compared to group A.

Also, there is no significant difference in the ANOS scale between the groups.

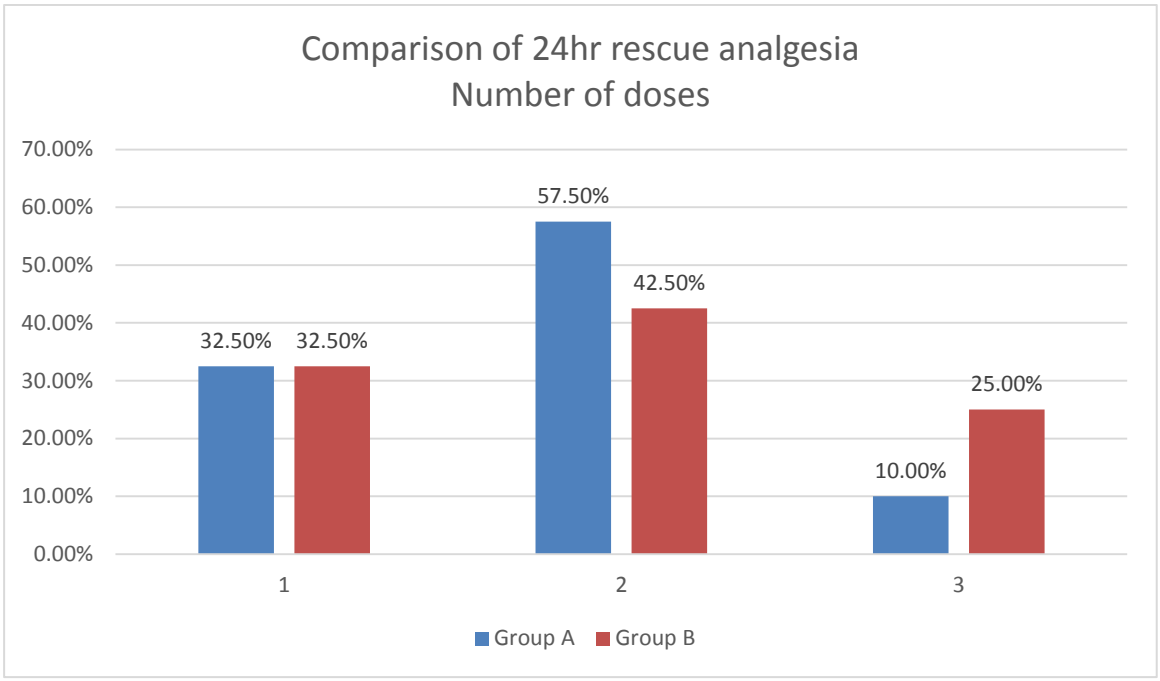


Figure 22: Comparison of 24hr rescue analgesia

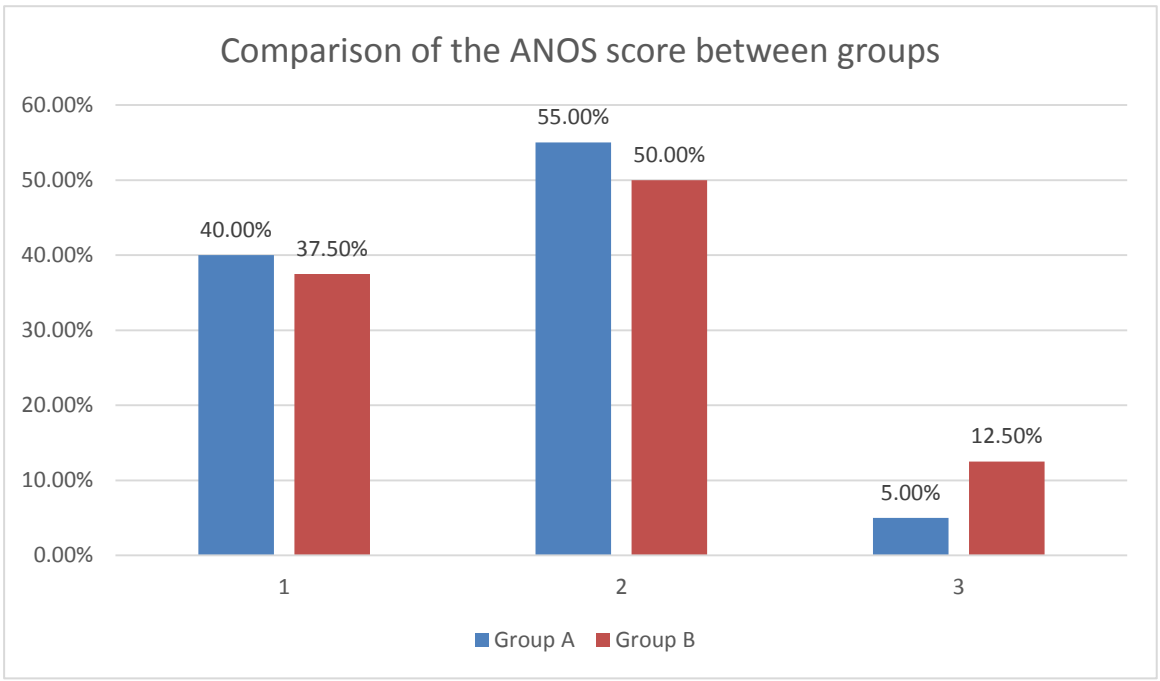


Figure 23: Comparison of the ANOS score between groups

Table 15: Comparison of the modified Bromage scale and modified Ramsay sedation score between the groups

		Group A		Group B		p-value
		Count	N %	Count	N %	
Modified Bromage Scale	1	10	25.0%	25	62.5%	11.42 (0.05) *
	2	30	75.0%	15	37.5%	
Modified Ramsay's Sedation Score	1	0	0.0%	8	20.0%	18.98 (0.01) *
	2	13	32.5%	19	47.5%	
	3	18	45.0%	13	32.5%	
	4	9	22.5%	0	0.0%	

On assessment of modified bromage scale, there is significant higher score among group A patients compared to group B patients. ($p<0.05$) similarly on assessment of modified Ramsay's sedation score, the higher level of 4 was achieved in 22.5% of the patients in group A compared to group B patients.

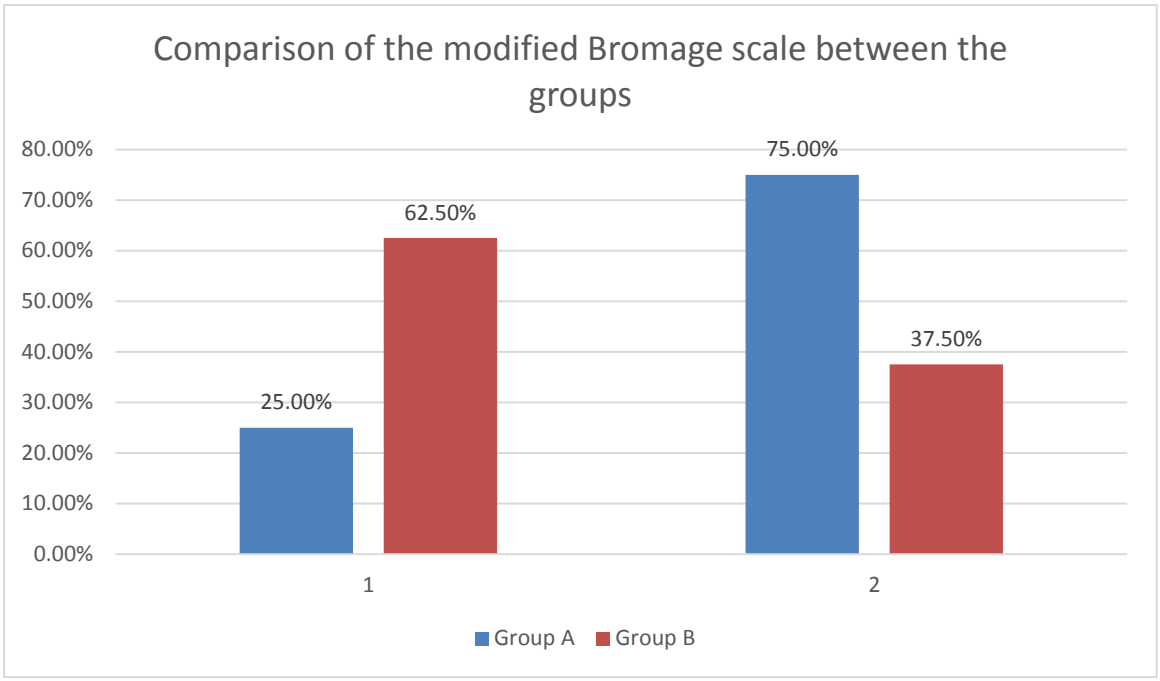


Figure 24: Comparison of the modified Bromage scale between the groups

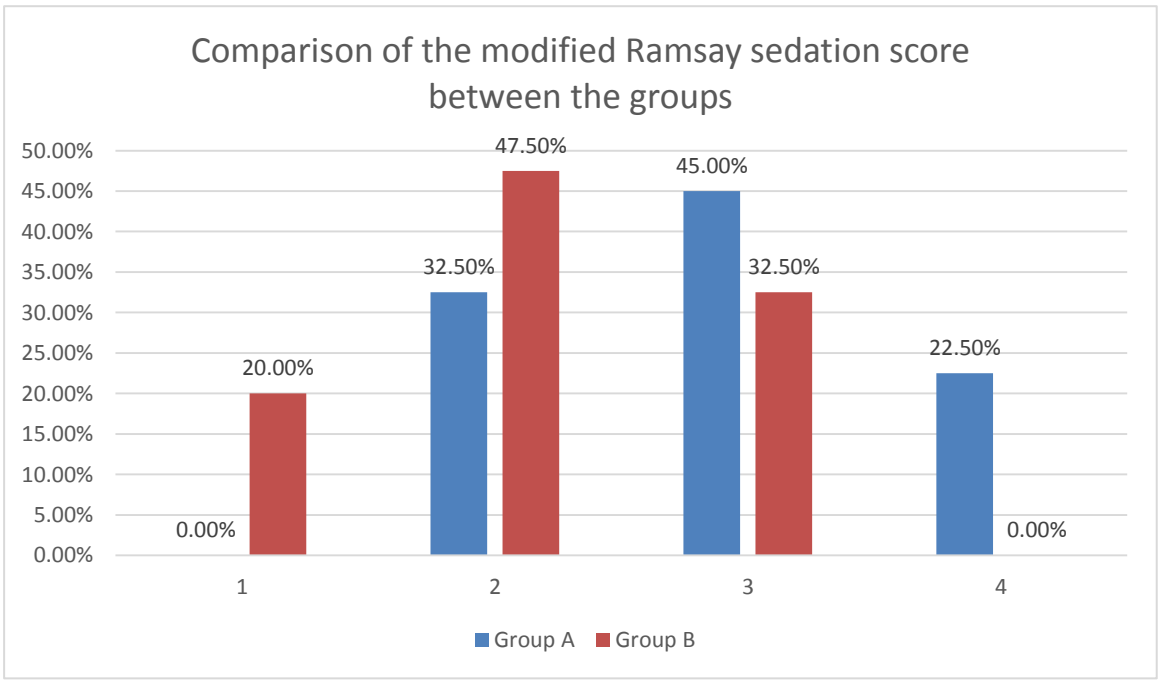


Figure 25: Comparison of the modified Ramsay sedation score between the groups

Table 16: Comparison of the mean VAS score between the groups

	Group A		Group B		p-value
	Mean	SD	Mean	SD	
VAS 6hr	3.3	1.0	3.8	1.3	0.05*

There is significant lower mean VAS score at 6th hour in group A patients compared to group B patients.

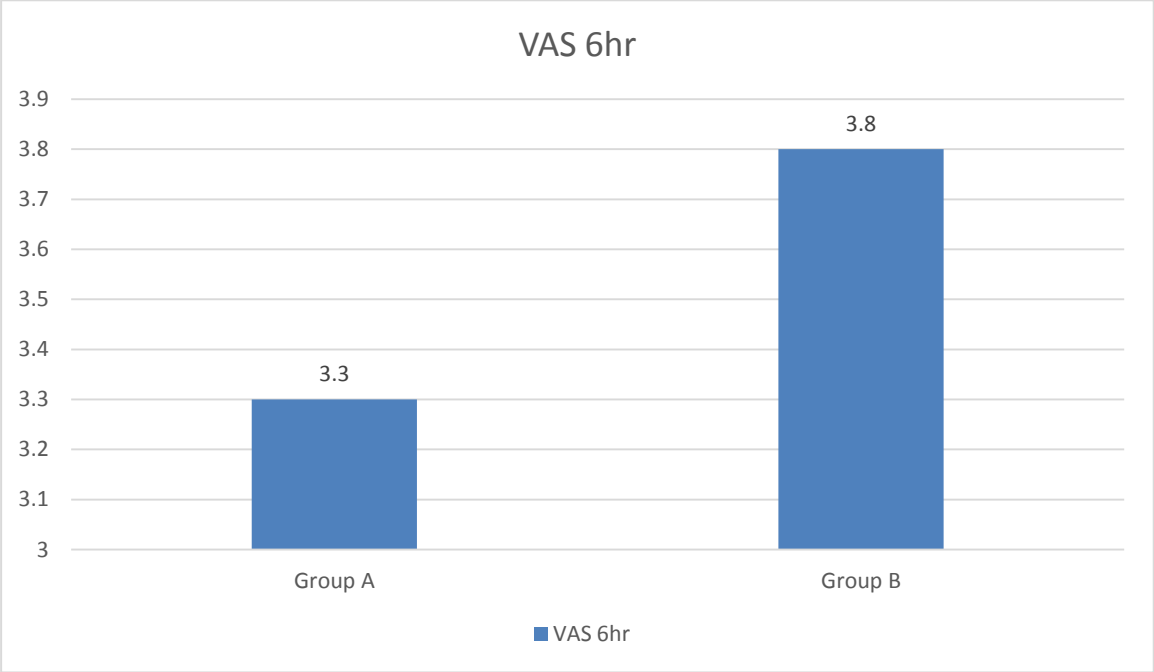


Figure 26: Comparison of the mean VAS score between the groups

Table 17: Comparison of the PONV between the groups

		Group A		Group B		Chi-square
		Count	N %	Count	N %	(p-value)
PONV	.0	22	55.0%	12	30.0%	5.15 (0.07)
	1.0	14	35.0%	21	52.5%	
	2.0	4	10.0%	7	17.5%	

On assessment of side effects, there is similar distribution of number of post operative nausea and vomiting among the patients in both the group.

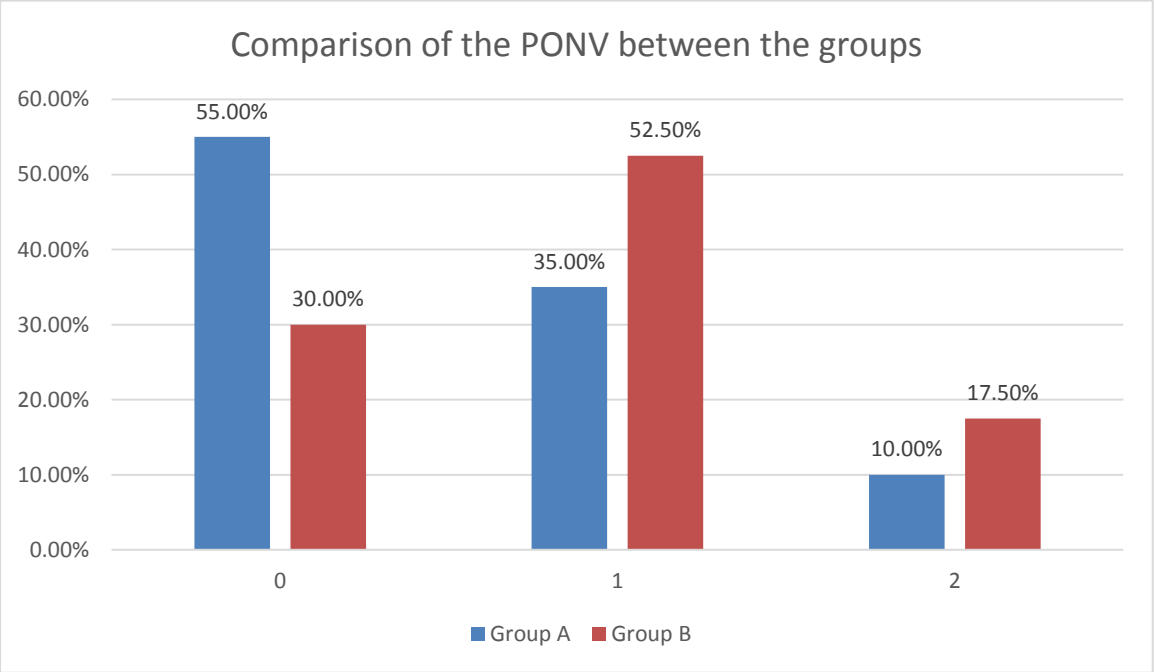


Figure 27: Comparison of the PONV between the groups

DISCUSSION

DISCUSSION

Spinal anaesthesia, a preferred technique for many elective surgical procedures, relies on the administration of local anaesthetics into the subarachnoid space to achieve targeted sensory and motor blockade. Hyperbaric ropivacaine, an amide-type local anaesthetic, has gained attention for its favourable pharmacokinetic profile and reduced cardiovascular and central nervous system toxicity compared to other local anaesthetics like bupivacaine.

To enhance the efficacy and safety of spinal anaesthesia, adjuncts such as dexmedetomidine, a highly selective alpha-2 adrenergic agonist, are increasingly used. Dexmedetomidine can potentiate the effects of local anaesthetics, providing improved analgesia, prolonged duration of anaesthesia, and enhanced patient comfort without significantly increasing adverse effects. The synergy between hyperbaric ropivacaine and dexmedetomidine might offer an optimized balance of anaesthesia depth, duration, and patient recovery outcomes.

Present study included total of 80 patients, divided into two groups as group A (hyperbaric ropivacaine with dexmedetomidine) and group B (hyperbaric ropivacaine without dexmedetomidine) with 40 patients in each group. The mean age between the group was comparable with no significant difference noted. The gender distribution between the group was comparable with overall marginal male preponderance in the study. ASA grade, physical characters were comparable between the groups.

In study by Singh AK et al., documented comparable mean age of the patients, gender distribution, presence of comorbidities and physical characters between the groups.[36] In line another study by Kathuria S et al., documented comparable mean age between the groups and also the physical character such as height and weight between the groups.[46]

In another study by Kaur H et al., documented comparable mean age of the patients between the group and also the ASA grade, weight of patients between the groups.[47]

In present study group A showed significant quick onset of sensory block, onset of moto blockade, peak sensory blockade, time for peak moto blockade compared to group B. also the duration of sensory block and motor block was significantly longer in group A patients compared to group B.

In study by Elcicek K et al., documented dexmedetomidine group experienced significantly prolonged times for regression of two dermatomes of blockade and complete resolution of motor blockade. [35] Ravipati P et al., found that the Dexmedetomidine combined with ropivacaine resulted in a significantly faster onset of sensory blockade at T10 and prolonged the duration of sensory and motor blockade compared to ropivacaine alone. The onset of motor block was similar in both groups. Dexmedetomidine at a dose of 5 mcg added to 2.5 ml of ropivacaine was found to be effective in providing early sensory blockade and extending the duration of sensory and motor blockade without causing sedation in patients undergoing lower limb surgeries under intrathecal anaesthesia.[37]

Another study by Zhao J et al., documented that compared to the Ropivacaine group, the RD group exhibited a shorter time to onset of sensory and motor block and a longer duration of anaesthesia. There was no significant difference in the time to rescue between the groups. [40]

The onset of sensory and motor block was significantly quicker in dexmedetomidine group in study by Kathuria S et al. also, the duration of sensory and motor block was significantly prolonged in dexmedetomidine group.[46]

On assessment of hemodynamic characteristics, there was significant lower mean blood pressure, mean arterial pressure and heart rate in patients of group at 0min to 5th min

compared to group B mean. The patients were stabilized with no significant difference in mean level at other interval of time.

In similar to present study Elcicek K et al., documented significant decrease in mean blood pressure in dexmedetomidine group compared to other groups. [35] In singh AK et al., there was comparable hemodynamic stability across all the group of patients. [36]

Kathuria S et al., documented Bradycardia occurred intraoperatively in a patient from group D-IV and was managed with a 0.6 mg IV dose of atropine sulphate. Hypotension was noted in two patients from group D and two from group D-IV, all of whom were successfully treated with 3 mg IV boluses of mephentermine administered incrementally.[46]

In similar, study by Kaur H et al., documented significant reduction in the mean hear rate and blood pressure in patients with dexmedetomidine as adjuvant compared to other group. [47] Dexmedetomidine may lead to side effects such as hypotension and bradycardia with increased dosage, along with its effects such as sedation and anxiolysis.

There was significant higher score of modified Bromage scale and Modified Ramsay's sedation score among group A patients compared to group B patients. The requirement of the rescue analgesia was lower in group A patients.

In concordance to present study Elcicek K et al., documented Sedation scores were notably higher in the dexmedetomidine group, and there was a significantly higher requirement for atropine in group I compared to group II. The conclusion suggests that dexmedetomidine prolongs spinal anaesthesia duration, induces sufficient sedation, and has minimal adverse effects, although vigilance for bradycardia development is necessary.[35] Gautam B et al., documented that dexmedetomidine proved superior to fentanyl as an intrathecal adjuvant to spinal anaesthesia for abdominal hysterectomy, reducing visceral pain and extending

postoperative analgesia. [38] On assessment of side effects such as nausea, vomiting the incidence was comparable between both groups with no significant difference noted.

In concordance to present study Liu X et al., documented no significant differences were observed in symptoms such as hypotension, bradycardia, nausea/vomiting, or pruritus. [4] Dexmedetomidine while administrated as an adjuvant it improves the effectiveness of spinal anaesthesia and prolongs the duration of sensory and motor block, reduces the shivering and also produces a prolonged postoperative analgesia with minimal side effects when added to ropivacaine.[44,45]

In this study of 80 patients undergoing elective surgery, divided into two groups (Group A: hyperbaric ropivacaine with dexmedetomidine; Group B: hyperbaric ropivacaine alone), key findings were as follows: The demographic characteristics (age, gender, ASA grade, Mallampati grade, height, and weight) were comparable between the groups. Group A exhibited significantly faster onset of sensory and motor block, and shorter times to peak sensory and motor blockade compared to Group B. Additionally, Group A experienced a longer duration of both sensory and motor blocks, and a prolonged two-segment regression time. Hemodynamic parameters revealed lower systolic, diastolic, and mean arterial pressures in Group A during the initial minutes post-anaesthesia, but no significant differences thereafter. Group A also had lower heart rates in the first 3 minutes post-anaesthesia. Oxygen saturation and respiratory rates were similar between groups, though Group B required more doses of 24-hour rescue analgesia. Modified Bromage and Ramsay sedation scores were higher in Group A, reflecting deeper sedation and motor block. Group A reported significantly lower VAS pain scores at the 6th hour postoperatively. Side effects, including postoperative nausea and vomiting, were similar between the groups.

SUMMARY

SUMMARY

- Present study included total of 80 patients, divided into two groups as group A (hyperbaric ropivacaine with dexmedetomidine) and group B (hyperbaric ropivacaine without dexmedetomidine) with 40 patients in each group.
- The mean age between the group was comparable with no significant difference noted.
- The gender distribution between the group was comparable with overall marginal male preponderance in the study. the ASA grade was found to be comparable between the groups with no significant difference.
- The Mallampati grade compared between the group, there is no significant difference noted between the group A and group B.
- The physical characters such as mean height and weight was comparable between the group with no significant difference.
- The onset of sensory block was significantly quick in group A compared to group B patients. However, the maximum level of sensory block and maximum score of motor block was comparable between the group with no significant difference.
- The onset of motor blockade was significantly quick in group A (7.0±0.7) compared to group B (11.9±1.0) patients.($p<0.05$)
- The time to peak sensory blockade was significantly shorter in group A (5.5±0.6) compared to patients in group B (9.2±0.7)
- Time for peak motor blockade is also significant shorter in group A patients (8.4±0.7) compared to patients in group B (13.9±0.7)
- The duration of sensory block was found to be significantly longer in group A patients (427.5±10.8) compared to group B patients (226.5±13.1).

- The duration of motor block was found to be significantly longer in group A (197.3±9.9) compared to patients in group B (126.0±9.8)
- The mean duration of the two-segment regression was found to be significantly longer duration in group A (127.8±9.5) compared to patients in group B (86.5±8.0)
- The duration of surgery was found to be significantly shorter in group B patients compared to group A.
- On comparison of the systolic blood pressure, it was found to be significantly lower in group A at 0 min to 5th min compared to group B. There was no significant difference in the mean level of systolic blood pressure other interval of time.
- On comparison of the diastolic blood pressure, it was found to be significantly lower in group A at 0 min to 3rd min compared to group B. There was no significant difference in the mean level of diastolic blood pressure other interval of time.
- On comparison of the Mean arterial pressure, it was found to be significantly lower in group A at 0 min to 3rd min compared to group B. There was no significant difference in the mean level of mean arterial pressure other interval of time.
- On comparison of the mean heart rate, it was found to be significantly lower in group A at 0 min to 3rd min compared to group B. There was no significant difference in the mean level of heart rate at other interval of time.
- There was no significant difference in the oxygen saturation level between the groups.
- There was no significant difference in the mean respiratory rate between the groups.
- There was no significant difference in 24hr rescue analgesia number of dose given between the groups. However, the higher number of doses were given in group B compared to group A.
- Also, there is no significant difference in the ANOS scale between the groups.

- On assessment of modified bromage scale, there is significant higher score among group A patients compared to group B patients.($p<0.05$) similarly on assessment of modified Ramsay's sedation score, the higher level of 4 was achieved in 22.5% of the patients in group A compared to group B patients.
- There is significant lower mean VAS score at 6^{th} hour in group A patients compared to group B patients.
- On assessment of side effects, there is similar distribution of number of post operative nausea and vomiting among the patients in both the group.

CONCLUSION

CONCLUSION

The study demonstrated that the addition of dexmedetomidine to hyperbaric ropivacaine significantly enhances the efficacy of sensory and motor blockade in spinal anaesthesia, evidenced by quicker onset and prolonged duration of both blocks in Group A compared to Group B. Hemodynamic stability was well-maintained, with transient reductions in blood pressure and heart rate observed shortly after administration in Group A. Pain management benefits were also superior in Group A, as indicated by lower VAS scores and reduced need for rescue analgesia. Overall, the combination of dexmedetomidine with hyperbaric ropivacaine provides a more effective and stable anaesthetic profile, making it a preferable choice for spinal anaesthesia in surgical procedures.

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BIBLIOGRAPHY

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ANNEXURE

ANNEXURE - Ⅰ – PROFORMA

A COMPARATIVE EVALUATION OF HYPERBARIC ROPIVACAINE WITH DEXMEDETOMIDINE VERSUS HYPERBARIC ROPIVACAINE FOR ELECTIVE SURGERY UNDER SPINAL ANAESTHESIA: A RANDOMISED CONTROLLED STUDY

Investigator: Dr Harini. D

1. Name of the patient: **2. Age/Sex:**

3. IP No: **4. Ward:** **5. ASA grade:** **6. Mallampati score:**

General physical examination:

Height: Weight: Baseline Pulse rate: Baseline BP:

Pallor/icterus/cyanosis/clubbing/lymphadenopathy/oedema

Systemic examination: RS - **CVS –**

CNS - **P/A –**

Investigations:

Blood group	
Haemoglobin / WBC	
Platelets	
RBS	
Blood urea / Serum Creatinine	
Sodium / Potassium	
PT / APTT / INR	
ECG CHEST X RAY AND ECHOCARDIOGRAM	

Diagnosis and Surgery:

Group A: Patient belonging to the group of hyperbaric ropivacaine 0.75% 3 ml + dexmedetomidine 5 mcg (0.05 ml) in 0.45 ml normal saline (TOTAL VOLUME 3.5 ml)

Group B: Patient belonging to the group of only hyperbaric ropivacaine 0.75 % 3 ml + 0.5 ml normal saline (TOTAL VOLUME 3.5 ml)

Characteristics of subarachnoid block (SAB):

Observations of SAB	Group A (n = 40) Patient belonging to the group of hyperbaric ropivacaine + dexmedetomidine 5mcg in normal saline.	Group B (n = 40) Patient belonging to the group of hyperbaric ropivacaine and normal saline only.
Onset time of sensory block (min)		
Time to peak sensory block (min)		
Duration of sensory block (min)		
Time to complete motor blockade (min)		
Duration of motor blockade (min)		
Bromage grade 3 (n, %)		
Bromage grade 2 (n, %)		
Bromage grade 1 (n, %)		
Bromage grade 0 (n, %)		
24 Hours Rescue Analgesia (VAS >4) Total number of doses given		

Baseline vitals:

HR: BP: MAP: SPO2:

TIME	• **Group A:** Patient belonging to the group of hyperbaric ropivacaine with dexmedetomidine in normal saline.	• **Group B**: Patient belonging to the group of hyperbaric ropivacaine and normal saline.	Heart rate	Blood pressure	MAP	SP02
10 min before spinal anaesthesia						
At time of spinal anaesthesia						
1 min after spinal anaesthesia						
3 min after spinal anaesthesia						
5 min after spinal anaesthesia						
10 min after spinal anaesthesia						
15 min after spinal anaesthesia						
30 min after spinal anaesthesia						
60 min after spinal anaesthesia						
120 min after spinal anaesthesia						
30 min interval till shifting from recovery room						

	Group- A Patient belonging to the group of hyperbaric ropivacaine with dexmedetomidine in normal saline	Group-B Patient belonging to the group of hyperbaric ropivacaine with normal saline only
Aono's scale		
Bromage Scale		
Modified Ramsay Sedation Score		
VAS at 6 h		
PONV		
24 hrs Rescue Analgesia		

Aono's scale for post-operative emergence agitation

1- Calm

2- Not calm but could be easily calmed

3- Moderately agitated or restless

4- Combative, excited, disoriented

A) Simultaneously motor block was evaluated using the Modified Bromage Scale as follows:

GRADE 1 – Free movement of legs and feet

GRADE 2 - The patient is unable to move the hip, but is able to flex his knee and ankle.

GRADE 3 - The patient is unable to move the hip and knee, but with free movement of ankle.

GRADE 4 - The patient is unable to move the hip, knee, and ankle

C) Patient's anxiety and sedation level was evaluated by **Modified Ramsay Sedation Score** as follows:

Modified Ramsay Sedation score is as below:

1. Patient is anxious, agitated or restless.

2. Patient is co-operative, oriented and tranquil alert.

3. Patient responds to Commands.

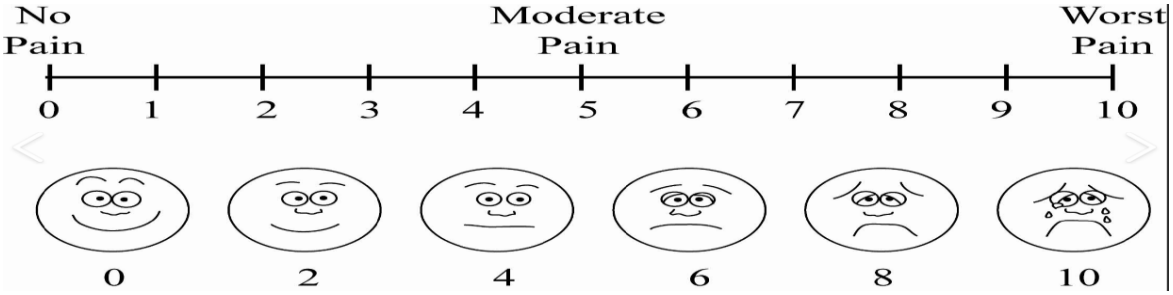
4. Asleep, but brisk response to light glabellar tap or loud auditory stimulus.

5. Sluggish response to light glabellar tap or loud auditory stimulus.

6. No response.

D) Post-operative pain

10cm visual analogue scale (VAS)



TIME	GROUP A	GROUP B
Immediate post op		
1 hr		
4hr		
8hr		
12hr		

E) Post-operative nausea and vomiting scoring system

0-No emetic symptoms

1-Nausea

2-Vomiting

ANNEXURE - Ⅱ

PATIENT INFORMATION SHEET

STUDY: A COMPARATIVE EVALUATION OF HYPERBARIC ROPIVACAINE WITH DEXMEDITOMIDINE VERSUS HYPERBARIC ROPIVACAINE FOR ELECTIVE SURGERY UNDER SPINAL ANAESTHESIA: A RANDOMISED CONTROLLED STUDY

Investigators: Dr Harini

Study location: R L Jalappa Hospital and Research Centre attached to Sri Devaraj Urs Medical College, Tamaka, Kolar.

Details - All Patients posted for lower abdominal surgery under spinal anaesthesia will be included in this study. Patients with co morbid conditions will be excluded from the study.

This study aims to compare the Hyperbaric Ropivacaine with Dexmedetomidine versus Plain Hyperbaric Ropivacaine which has an effective intraoperative sensory, motor blockade with an early ambulation after surgery and an effective postoperative analgesia. Any side effects like hypotension will be treated with IV fluid bolus. Test dose will be given during PAE visit, any allergic reactions will be treated with Inj. HYDROCORTISONE 100 mg and Inj. AVIL 25 mg and DEXMEDITOMIDINE causes sedation which will also be monitored intraoperatively.

Patient and the attenders will also be completely explained about the procedure being done.

Please read the information and discuss with your family members. You can ask any question regarding the study. If you agree to participate in the study we will collect information. Relevant history will be taken. This information collected will be used only for dissertation and publication.

All information collected from you will be kept confidential and will not be disclosed to any outsider. Your identity will not be revealed. Participation in this study doesn't involve any added cost to the patient and the cost for the study will be owned by me. There is no compulsion to agree to this study. The care you will get will not change if you don't wish to participate. You are required to sign/ provide thumb impression only if you voluntarily agree to participate in this study.

For further information contact

Dr. HARINI.D.

(Post graduate in Dept of Anaesthesia, SDUMC Kolar)

Mobile no: 8870047248

ANNEXURE - Ⅲ

INFORMED CONSENT FORM

A COMPARATIVE EVALUATION OF HYPERBARIC ROPIVACAINE WITH DEXMEDETOMIDINE VERSUS HYPERBARIC ROPIVACAINE WITH NORMAL SALINE FOR ELECTIVE SURGERY UNDER SPINAL ANAESTHESIA: A RANDOMISED CONTROLLED STUDY

Date:

I, _____ aged _____, after being explained in my own vernacular language about the purpose of the study and the risks and complications of the procedure, hereby give my valid written informed consent without any force or prejudice for using Ropivacaine and Dexmedetomidine. The nature and risks involved have been explained to me to my satisfaction. I have been explained in detail about the study being conducted. I have read the patient information sheet and I have had the opportunity to ask any question. Any question that I have asked, have been answered to my satisfaction and I also have been informed the participation in this study doesn't involve any added cost to me and the cost for the study will be owned by me. I consent voluntarily to participate as a participant in this research. I hereby give consent to provide my history, undergo physical examination, undergo the procedure, undergo investigations and provide its results and documents to the doctor / institute for academic and scientific purpose the operation / procedure, etc. may be video graphed or photographed. All the data may be published or used for any academic purpose. I will not hold the doctors / institute etc. responsible for any untoward consequences during the procedure / study.

A copy of this Informed Consent Form and Patient Information Sheet has been provided to the participant.

_____

(Signature & Name of Patient / patient Attendant)

Witness 1:

Witness 2:

_____

(Signature & Name of Research person /doctor)

ಮಾಹಿತಿ **ಮತ್ತು** ಕಾನ್ಸೆಂಟ್ ಫಾರ್ಮ್

ಬೆನ್ನುಮೂಳೆಯ ಅರಿವಳಿಕೆ ಅಡಿಯಲ್ಲಿ ಚುನಾಯಿತ ಶಸ್ತ್ರಚಿಕಿತ್ಸೆಗಾಗಿ ಹೈಪರ್ಬೇರಿಕ್ ರೋಪಿವಕಾಯಿನ್ ವಿರುದ್ಧ ಡೆಕ್ಸ್ಮೆಡಿಟೊಮಿಡಿನ್ ಜೊತೆಗೆ ಹೈಪರ್ಬೇರಿಕ್ ರೋಪಿವಕಾಯಿನ್ ತುಲನಾತ್ಮಕ ಮೌಲ್ಯಮಾಪನ.

ದಿನಾಂಕ:

ನಾನು, _____ ವಯಸ್ಸಿನ _____, ಅಧ್ಯಯನದ ಉದ್ದೇಶ ಮತ್ತು ಕಾರ್ಯವಿಧಾನದ ಅಪಾಯಗಳು ಮತ್ತು ತೊಡಕುಗಳ ಬಗ್ಗೆ ನನ್ನ ಸ್ವಂತ ಭಾಷೆಯಲ್ಲಿ ವಿವರಿಸಿದ ನಂತರ, **ರೋಪಿವಕಾಯಿನ್, ಡೆಕ್ಸ್ಮೆಡಿಟೊಮಿಡಿನ್** .ಷಧಿಯನ್ನು ಬಳಸುವುದಕ್ಕಾಗಿ ಯಾವುದೇ ಬಲ ಅಥವಾ ಪೂರ್ವಾಗ್ರಹವಿಲ್ಲದೆ ನನ್ನ ಮಾನ್ಯ ಲಿಖಿತ ತಿಳುವಳಿಕೆಯ ಒಪ್ಪಿಗೆಯನ್ನು ಈ ಮೂಲಕ ನೀಡುತ್ತೇನೆ. ಒಳಗೊಂಡಿರುವ ಸ್ವರೂಪ ಮತ್ತು ಅಪಾಯಗಳನ್ನು ನನ್ನ ತೃಪ್ತಿಗೆ ವಿವರಿಸಲಾಗಿದೆ. ನಡೆಸುತ್ತಿರುವ ಅಧ್ಯಯನದ ಬಗ್ಗೆ ನನಗೆ ವಿವರವಾಗಿ ವಿವರಿಸಲಾಗಿದೆ. ನಾನು ರೋಗಿಯ ಮಾಹಿತಿ ಹಾಳೆಯನ್ನು ಓದಿದ್ದೇನೆ ಮತ್ತು ಯಾವುದೇ ಪ್ರಶ್ನೆ ಕೇಳುವ ಅವಕಾಶ ನನಗೆ ಸಿಕ್ಕಿದೆ. ನಾನು ಕೇಳಿದ ಯಾವುದೇ ಪ್ರಶ್ನೆಗೆ ನನ್ನ ತೃಪ್ತಿಗೆ ಉತ್ತರಿಸಲಾಗಿದೆ. ಈ ಸಂಶೋಧನೆಯಲ್ಲಿ ಪಾಲ್ಗೊಳ್ಳಲು ನಾನು ಸ್ವಯಂಪ್ರೇರಣೆಯಿಂದ ಒಪ್ಪುತ್ತೇನೆ. ನನ್ನ ಇತಿಹಾಸವನ್ನು ಒದಗಿಸಲು, ದೈಹಿಕ ಪರೀಕ್ಷೆಗೆ ಒಳಗಾಗಲು, ಕಾರ್ಯವಿಧಾನಕ್ಕೆ ಒಳಗಾಗಲು, ತನಿಖೆಗೆ ಒಳಗಾಗಲು ಮತ್ತು ಅದರ ಫಲಿತಾಂಶಗಳು ಮತ್ತು ದಾಖಲೆಗಳನ್ನು ವೈದ್ಯರಿಗೆ / ಸಂಸ್ಥೆಗೆ ಒದಗಿಸಲು ನಾನು ಈ ಮೂಲಕ ಒಪ್ಪಿಗೆ ನೀಡುತ್ತೇನೆ, ಮತ್ತು ಈ ಅಧ್ಯಯನದಲ್ಲಿ ಭಾಗವಹಿಸುವಿಕೆಯು ನನಗೆ ಯಾವುದೇ ಹೆಚ್ಚುವರಿ ವೆಚ್ಚವನ್ನು ಒಳಗೊಂಡಿಲ್ಲ ಎಂದು ನನಗೆ ತಿಳಿಸಲಾಗಿದೆ ಮತ್ತು ಅಧ್ಯಯನದ ವೆಚ್ಚವು ನನ್ನ ಒಡೆತನದಲ್ಲಿರುತ್ತದೆ. ಶೈಕ್ಷಣಿಕ ಮತ್ತು ವೈಜ್ಞಾನಿಕ ಉದ್ದೇಶಕ್ಕಾಗಿ ಕಾರ್ಯಾಚರಣೆ / ಕಾರ್ಯವಿಧಾನ ಇತ್ಯಾದಿಗಳನ್ನು ವೀಡಿಯೊ ಗ್ರಾಫ್ ಮಾಡಬಹುದು ಅಥವಾ ಛಾಯಾಚಿತ್ರ ತೆಗೆಯಬಹುದು . ಎಲ್ಲಾ ಡೇಟಾವನ್ನು ಯಾವುದೇ ಶೈಕ್ಷಣಿಕ ಉದ್ದೇಶಕ್ಕಾಗಿ ಪ್ರಕಟಿಸಬಹುದು ಅಥವಾ ಬಳಸಬಹುದು. ಕಾರ್ಯವಿಧಾನ / ಅಧ್ಯಯನದ ಸಮಯದಲ್ಲಿ ಯಾವುದೇ ಅಹಿತಕರ ಪರಿಣಾಮಗಳಿಗೆ ನಾನು ವೈದ್ಯರು / ಸಂಸ್ಥೆ ಇತ್ಯಾದಿಗಳನ್ನು ಹೊಣೆಗಾರರನ್ನಾಗಿ ಮಾಡುವುದಿಲ್ಲ.
ಭಾಗವಹಿಸುವವರಿಗೆ ಈ ತಿಳುವಳಿಕೆಯುಳ್ಳ ಒಪ್ಪಿಗೆ ನಮೂನೆ ಮತ್ತು ರೋಗಿಯ ಮಾಹಿತಿ ಹಾಳೆಯ ನಕಲನ್ನು ಒದಗಿಸಲಾಗಿದೆ.

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(ಸಹಿ / ರೋಗಿಯ / ರೋಗಿಯ ಹಾಜರಾತಿಯ ಹೆಸರು)

ಸಾಕ್ಷಿ 1:

ಸಾಕ್ಷಿ 2:

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(ಸಹಿ ಮತ್ತು ಸಂಶೋಧನಾ ವ್ಯಕ್ತಿ / ವೈದ್ಯರ ಹೆಸರು)

MASTER CHART

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A COMPARATIVE EVALUATION OF HYPERBARIC ROPIVACAINE WITH DEXMEDETOMIDINE VERSUS HYPERBARIC ROPIVACAINE FOR ELECTIVE SURGERY UNDER SPINAL ANAESTHESIA: A RANDOMISED CONTROLLED STUDY

S.NO	Group	AGE	SEX	ASA	MALLAMPATI	WEIGHT	HEIGHT	DIAGNOSIS	NAME OF THE SURGERY	SPINAL	SENSORY BLOCK	MOTOR BLOCKADE	LEVEL OF SENSORY BLOCK AND TIME TO PEAK SENSORY BLOCK	LEVEL OF SENSORY PEAK	SENSORY MAXIMUM SCORE OF MOTOR BLOCK AND TIME TO PEAK MOTOR BLOCK
1	A	50	M	I	2	71	171	Closed both bone fracture of R leg	ORIF + plating	25G	4	8	T6 and 6 MIN TO PEAK SENSORY BLOCK	T6	6 GRADE 4 and 9 min to peak motor block
2	A	42	F	I	1	62	166	Closed diaplaced fracture of right tibia	ORIF + plating	25G	3	6	T8 and 5 MIN TO PEAK SENSORY BLOCK	T8	5 GRADE 4 and 8 min to peak motor block
3	A	37	M	I	2	73	169	open type II fracture of metatrasals	Wound debridement	25G	4	7	T6 and 6 MIN TO PEAK SENSORY BLOCK	T6	6 GRADE 4 and 9 min to peak motor block
4	A	61	F	I	3	58	160	9 month old nail	Implant removal	25G	4	8	T8 and 6 MIN TO PEAK SENSORY BLOCK	T8	6 GRADE 4 and 9 min to peak motor block
5	A	56	F	II	1	66	165	Closed displaced fracture of L tibia	ORIF + Plate fixing	25G	4	7	T8 and 6 MIN TO PEAK SENSORY BLOCK	T8	6 GRADE 4 and 8 min to peak motor block
6	A	49	M	II	2	61	170	6 yr old Femur IMIL nail	Implant removal	25G	5	7	T8 and 6 MIN TO PEAK SENSORY BLOCK	T8	6 GRADE 4 and 8 min to peak motor block
7	A	51	F	II	2	63	158	Fracture of Femur	ORIF + TENS nailing	25G	3	6	T8 and 6 MIN TO PEAK SENSORY BLOCK	T8	6 GRADE 4 and 7 min to peak motor block
8	A	39	M	I	2	72	167	Closed R shaft of femur fracture	ORIF + IML nailing	25G	5	7	T8 and 6 MIN TO PEAK SENSORY BLOCK	T8	6 GRADE 4 and 9 min to peak motor block
9	A	40	F	I	1	50	156	Closed fracture of both bones right	ORIF +IML nailing of R tibia	25G	4	8	T6 and 6 MIN TO PEAK SENSORY BLOCK	T6	6 GRADE 4 and 9 min to peak motor block
10	A	53	M	I	1	67	174	open type III fracture of metatarsals	Wound debridement	25G	4	7	T6 and 6 MIN TO PEAK SENSORY BLOCK	T6	6 GRADE 4 and 8 min to peak motor block
11	A	58	F	II	3	59	160	Closed fracture of both bones right	ORIF + IML nailing	25G	3	6	T8 and 5 MIN TO PEAK SENSORY BLOCK	T8	5 GRADE 4 and 8 min to peak motor block

12	A	48	F	I	2	64	165	left serous adenoma	TAH+BSO	25G	3	6	T8 and 5 MIN TO PEAK SENSORY BLOCK	T8	5	GRADE 4 and 8 min to peak motor block
13	A	55	F	II	2	67	161	DUB	TAH+BSO	25G	3	7	T6 and 6 MIN TO PEAK SENSORY BLOCK	T6	6	GRADE 4 and 8 min to peak motor block
14	A	43	M	I	1	74	173	Fibroid	TAH +BSO	25G	5	7	T8 and 5 MIN TO PEAK SENSORY BLOCK	T8	5	GRADE 4 and 9 min to peak motor block
15	A	50	M	I	1	67	169	DUB	TAH+BSO	25G	4	7	T8 and 5 MIN TO PEAK SENSORY BLOCK	T8	5	GRADE 3 and 9 min to peak motor block
16	A	60	M	I	1	70	173	Leiomyoma	TAH+BSO	25G	4	6	T6 and 6 MIN TO PEAK SENSORY BLOCK	T6	6	GRADE 4 and 7 min to peak motor block
17	A	44	F	I	1	59	159	Adenomyosis	TAH+BSO	25G	4	8	T8 and 5 MIN TO PEAK SENSORY BLOCK	T8	5	GRADE 4 and 9 min to peak motor block
18	A	51	F	II	2	63	162	AUB	TAH+BSO	25G	3	8	T6 and 5 MIN TO PEAK SENSORY BLOCK	T6	5	GRADE 4 and 9 min to peak motor block
19	A	37	M	I	1	70	175	Grade II UV prolapse	VH	25G	4	7	T8 and 5 MIN TO PEAK SENSORY BLOCK	T8	5	GRADE 4 and 9 min to peak motor block
20	A	43	F	II	2	66	166	AUB	TAH+BSO	25G	5	7	T6 and 6 MIN TO PEAK SENSORY BLOCK	T6	6	GRADE 4 and 9 min to peak motor block
21	A	40	M	I	1	65	168	AUB	TAH+BSO	25G	3	7	T8 and 5 MIN TO PEAK SENSORY BLOCK	T8	5	GRADE 4 and 9 min to peak motor block
22	A	38	F	I	2	53	162	Right ovarian cyst	TAH+BSO	25G	3	6	T8 and 4 MIN TO PEAK SENSORY BLOCK	T8	4	GRADE 4 and 7 min to peak motor block
23	A	51	M	II	2	71	170	Grade III UV prolapse`	VH	25G	4	7	T8 and 6 MIN TO PEAK SENSORY BLOCK	T8	6	GRADE 4 and 8 min to peak motor block
24	A	45	F	II	2	67	166	Grade I UV prolapse	VH	25G	5	8	T8 and 5 MIN TO PEAK SENSORY BLOCK	T8	5	GRADE 4 and 9 min to peak motor block
25	A	39	M	I	3	69	171	P1L2 LCB posted for tuboplasty	Tubal recanalization	25G	3	6	T8 and 5 MIN TO PEAK SENSORY BLOCK	T8	5	GRADE 4 and 7 min to peak motor block
26	A	55	M	I	3	65	175	AUB	TAH +BSO	25G	4	7	T6 and 6 MIN TO PEAK SENSORY BLOCK	T6	6	GRADE 4 and 9 min to peak motor block
27	A	48	M	II	1	70	172	Fibroid uterus.	TAH+BSO	25G	5	7	T8 and 6 MIN TO PEAK SENSORY BLOCK	T8	6	GRADE 4 and 8 min to peak motor block
28	A	50	M	I	2	73	16	Renal calculi	URSL + DJS	25	3	8	T8 and 5 MIN TO PEAK	T8	5	GRADE 4 and 9 min to peak motor

							7			G			SENSORY BLOCK			block
29	A	35	F	I	2	69	166	Stricture urethra	B/L DJS	25G	4	8	T6 and 6 MIN TO PEAK SENSORY BLOCK	T6	6	GRADE 4 and 9 min to peak motor block
30	A	39	F	I	1	65	171	L upper ureteric calculi	L URSL + DJS	25G	4	8	T8 and 5 MIN TO PEAK SENSORY BLOCK	T8	6	GRADE 3 and 9 min to peak motor block
31	A	31	M	II	2	61	170	6 yrs. old Femur IMIL nail	Implant removal	25G	5	7	T8 and 6 MIN TO PEAK SENSORY BLOCK	T8	6	GRADE 4 and 8 min to peak motor block
32	A	51	F	II	2	63	158	Fracture of Femur	ORIF + TENS nailing	25G	3	6	T8 and 6 MIN TO PEAK SENSORY BLOCK	T8	6	GRADE 4 and 7 min to peak motor block
33	A	39	M	I	2	72	167	Closed R shaft of femur fracture	ORIF + IML nailing	25G	5	7	T8 and 6 MIN TO PEAK SENSORY BLOCK	T8	6	GRADE 4 and 9 min to peak motor block
34	A	42	F	I	1	62	166	Closed displaced fracture of right tibia	ORIF + plating	25G	3	6	T8 and 5 MIN TO PEAK SENSORY BLOCK	T8	5	GRADE 4 and 8 min to peak motor block
35	A	37	M	I	2	73	169	open type II fracture of metatarsals	Wound debridement	25G	4	7	T6 and 6 MIN TO PEAK SENSORY BLOCK	T6	6	GRADE 4 and 9 min to peak motor block
36	A	44	F	I	1	59	159	Adenomyosis	TAH+BSO	25G	4	8	T8 and 5 MIN TO PEAK SENSORY BLOCK	T8	5	GRADE 4 and 9 min to peak motor block
37	A	51	F	II	2	63	162	AUB	TAH+BSO	25G	3	8	T6 and 5 MIN TO PEAK SENSORY BLOCK	T6	5	GRADE 4 and 9 min to peak motor block
38	A	37	M	I	1	70	175	Grade II UV prolapse	VH	25G	4	7	T8 and 5 MIN TO PEAK SENSORY BLOCK	T8	5	GRADE 4 and 9 min to peak motor block
39	A	39	M	I	3	69	171	P1L2 LCB posted for tuboplasty	Tubal recanalization	25G	3	6	T8 and 5 MIN TO PEAK SENSORY BLOCK	T8	5	GRADE 4 and 7 min to peak motor block
40	A	55	M	I	3	65	175	AUB	TAH +BSO	25G	4	7	T6 and 6 MIN TO PEAK SENSORY BLOCK	T6	6	GRADE 4 and 9 min to peak motor block
41	B	43	M	I	1	70	166	necrotizing fasciitis of thigh	Fasciotomy and WD	25G	8	13	T8 and 9 MIN TO PEAK SENSORY BLOCK	T8	9	GRADE 4 AND 14 MIN TO PEAK MOTOR BLOCK
42	B	40	M	I	1	72	173	Appendicitis	open appendicectomy	25G	7	10	T8 and 8 MIN TO PEAK SENSORY BLOCK	T8	8	GRADE 4 AND 13 MIN TO PEAK MOTOR BLOCK
43	B	32	F	II	1	62	161	Necrotizing fasciitis of left leg	Fasciotomy and WD	25G	8	12	T8 and 9 MIN TO PEAK SENSORY BLOCK	T8	9	GRADE 4 AND 14 MIN TO PEAK MOTOR BLOCK
44	B	60	M	I	2	58	160	Necrotizing fasciitis of left leg	Fasciotomy and WD	25G	8	12	T6 and 10 MIN TO PEAK SENSORY BLOCK	T6	10	GRADE 4 AND 14 MIN TO PEAK MOTOR BLOCK

45	B	49	M	I	2	74	178	Appendicitis	open appendicectomy	25G	9	11	T8 and 10 MIN TO PEAK SENSORY BLOCK	T8	10	GRADE 4 AND 13 MIN TO PEAK MOTOR BLOCK
46	B	56	F	II	2	60	164	Perianal abscess	I & D	25G	7	11	T6 and 9 MIN TO PEAK SENSORY BLOCK	T6	9	GRADE 4 AND 13 MIN TO PEAK MOTOR BLOCK
47	B	46	M	I	2	68	169	Appendicitis	open appendicectomy	25G	8	13	T8 and 9 MIN TO PEAK SENSORY BLOCK	T8	9	GRADE 4 AND 15 MIN TO PEAK MOTOR BLOCK
48	B	50	F	II	2	60	156	Right inguinal hernia	hernioplasty	25G	8	11	T6 and 9 MIN TO PEAK SENSORY BLOCK	T6	9	GRADE 4 AND 14 MIN TO PEAK MOTOR BLOCK
49	B	57	M	I	1	49	158	Pilonidal sinus	Excision	25G	6	10	T6 and 8 MIN TO PEAK SENSORY BLOCK	T6	8	GRADE 4 AND 13 MIN TO PEAK MOTOR BLOCK
50	B	55	M	I	1	76	174	Diabetic foot	Fasciotomy and WD	25G	9	13	T8 and 10 MIN TO PEAK SENSORY BLOCK	T8	10	GRADE 4 AND 14 MIN TO PEAK MOTOR BLOCK
51	B	60	F	I	2	70	172	Post inflammatory raw wound	SSG	25G	7	12	T8 and 9 MIN TO PEAK SENSORY BLOCK	T8	9	GRADE 4 AND 13 MIN TO PEAK MOTOR BLOCK
52	B	57	M	I	1	65	167	Post op BKA	Flap closure	25G	8	12	T8 and 9 MIN TO PEAK SENSORY BLOCK	T8	9	GRADE 4 AND 13 MIN TO PEAK MOTOR BLOCK
53	B	54	F	I	2	70	169	Torsion testis	Exploration	25G	9	13	T8 and 10 MIN TO PEAK SENSORY BLOCK	T8	10	GRADE 4 AND 15 MIN TO PEAK MOTOR BLOCK
54	B	38	F	I	1	69	173	Non healing ulcer of L foot	Wound debridement	25G	6	11	T6 and 8 MIN TO PEAK SENSORY BLOCK	T6	8	GRADE 3 AND 13 MIN TO PEAK MOTOR BLOCK
55	B	60	M	II	3	65	159	Necrotizing fasciitis of Right leg	Fasciotomy and WD	25G	8	12	T8 and 9 MIN TO PEAK SENSORY BLOCK	T8	9	GRADE 4 AND 14 MIN TO PEAK MOTOR BLOCK
56	B	44	F	I	3	70	175	Wet gangrene of Right lower limb	Above knee amputation	25G	8	13	T8 and 9 MIN TO PEAK SENSORY BLOCK	T8	9	GRADE 4 AND 14 MIN TO PEAK MOTOR BLOCK
57	B	50	M	II	1	59	158	Right inguinal hernia	hernioplasty	25G	9	12	T6 and 10 MIN TO PEAK SENSORY BLOCK	T6	10	GRADE 4 AND 14 MIN TO PEAK MOTOR BLOCK
58	B	48	M	II	2	68	162	Right inguinal hernia	hernioplasty	25G	9	12	T6 and 10 MIN TO PEAK SENSORY BLOCK	T6	9	GRADE 4 AND 14 MIN TO PEAK MOTOR BLOCK
59	B	36	M	I	1	76	177	Necrotizing fasciitis of left leg	Fasciotomy and WD	25G	8	13	T8 and 9 MIN TO PEAK SENSORY BLOCK	T8	7	GRADE 3 AND 15 MIN TO PEAK MOTOR BLOCK
60	B	42	F	I	2	69	173	umbilical hernia	meshplasty	25G	6	10	T8 and 7 MIN TO PEAK SENSORY BLOCK	T8	9	GRADE 4 AND 12 MIN TO PEAK MOTOR BLOCK
61	B	39	F	I	2	65	16	umbilical hernia	meshplasty	25	7	10	T8 and 9 MIN TO PEAK	T8	9	GRADE 4 AND 13 MIN TO PEAK

							8			G			SENSORY BLOCK			MOTOR BLOCK
62	B	32	M	I	1	54	164	umbilical hernia	meshplasty	25G	7	11	T6 and 9 MIN TO PEAK SENSORY BLOCK	T6	9	GRADE 4 AND 14 MIN TO PEAK MOTOR BLOCK
63	B	51	M	I	2	72	170	Incisional hernia	Mesh repair	25G	9	12	T6 and 10 MIN TO PEAK SENSORY BLOCK	T6	10	GRADE 4 AND 15 MIN TO PEAK MOTOR BLOCK
64	B	55	M	I	1	68	167	Dry gangrene of Left toe	Wound debridement	25G	8	11	T8 and 9 MIN TO PEAK SENSORY BLOCK	T8	9	GRADE 4 AND 13 MIN TO PEAK MOTOR BLOCK
65	B	37	M	I	3	65	166	Closed right tibia fracture	CRIF + IML nailing	25G	8	13	T8 and 9 MIN TO PEAK SENSORY BLOCK	T8	9	GRADE 4 AND 14 MIN TO PEAK MOTOR BLOCK
66	B	45	M	I	2	55	164	L closed bimalleolar fracture	ORIF + malleolar screw	25G	9	13	T8 and 10 MIN TO PEAK SENSORY BLOCK	T8	10	GRADE 4 AND 15 MIN TO PEAK MOTOR BLOCK
67	B	50	F	I	1	71	172	Closed Displaced Fracture of L femur	CRIF + IML nailing	25G	8	13	T8 and 10 MIN TO PEAK SENSORY BLOCK	T8	10	GRADE 3 AND 14 MIN TO PEAK MOTOR BLOCK
68	B	48	F	I	3	73	175	5yr old PFN nail	Implant removal	25G	9	12	T6 and 10 MIN TO PEAK SENSORY BLOCK	T6	10	GRADE 4 AND 15 MIN TO PEAK MOTOR BLOCK
69	B	37	M	I	1	65	168	3yr old PFN nail	Implant removal	25G	9	14	T8and 10 MIN TO PEAK SENSORY BLOCK	T8	10	GRADE 4 AND 15 MIN TO PEAK MOTOR BLOCK
70	B	32	M	I	1	69	171	Closed both bone fracture of R leg	ORIF + plating	25G	7	11	T8 and 9 MIN TO PEAK SENSORY BLOCK	T8	9	GRADE 4 AND 13 MIN TO PEAK MOTOR BLOCK
71	B	38	F	I	1	69	173	Non healing ulcer of L foot	Wound debridement	25G	6	11	T6 and 8 MIN TO PEAK SENSORY BLOCK	T8	8	GRADE 3 AND 13 MIN TO PEAK MOTOR BLOCK
72	B	60	M	II	3	65	159	Necrotizing fasciitis of Right leg	Fasciotomy and WD	25G	8	12	T8 and 9 MIN TO PEAK SENSORY BLOCK	T8	9	GRADE 4 AND 14 MIN TO PEAK MOTOR BLOCK
73	B	44	F	I	3	70	175	Wet gangrene of Right lower limb	Above knee amputation	25G	8	13	T8 and 9 MIN TO PEAK SENSORY BLOCK	T8	9	GRADE 4 AND 14 MIN TO PEAK MOTOR BLOCK
74	B	50	M	II	1	59	158	Right inguinal hernia	hernioplasty	25G	9	12	T6 and 10 MIN TO PEAK SENSORY BLOCK	T6	10	GRADE 4 AND 14 MIN TO PEAK MOTOR BLOCK
75	B	48	M	II	2	68	162	Right inguinal hernia	hernioplasty	25G	9	12	T6 and 10 MIN TO PEAK SENSORY BLOCK	T6	10	GRADE 4 AND 14 MIN TO PEAK MOTOR BLOCK
76	B	60	M	I	2	58	160	Necrotizing fasciitis of left leg	Fasciotomy and WD	25G	8	12	T6 and 10 MIN TO PEAK SENSORY BLOCK	T6	10	GRADE 4 AND 14 MIN TO PEAK MOTOR BLOCK
77	B	49	M	I	2	74	178	Appendicitis	open appendicectomy	25G	9	11	T8 and 10 MIN TO PEAK SENSORY BLOCK	T8	10	GRADE 4 AND 13 MIN TO PEAK MOTOR BLOCK

78	B	51	M	I	2	72	170	Incisional hernia	Mesh repair	25G	9	12	T6 and 10 MIN TO PEAK SENSORY BLOCK	T6	10	GRADE 4 AND 15 MIN TO PEAK MOTOR BLOCK
79	B	55	M	I	1	68	167	Dry gangrene of Left toe	Wound debridement	25G	8	11	T8 and 9 MIN TO PEAK SENSORY BLOCK	T8	9	GRADE 4 AND 13 MIN TO PEAK MOTOR BLOCK
80	B	37	M	I	3	65	166	Closed right tibia fracture	CRIF + IML nailing	25G	8	13	T8 and 9 MIN TO PEAK SENSORY BLOCK	T8	9	GRADE 4 AND 14 MIN TO PEAK MOTOR BLOCK

S.NO	Group	SCORE OF MOTOR PEAR	MOTOR	SENSORY	OF MOTOR BLOCK	SEGMENT REGRESSION	OF	SBP_PREOP	SBP_0 MIN	SBP_1 MIN	SBP_3MINS	SBP_5MINS	SBP_10MINS	SBP_15MINS	SBP_30MINS	SBP_60MINS	SBP_120MINS	SBP_RECOVERY ROOM	DBP_PREOP	DBP_0 MIN	DBP_1 MIN	DBP_3MINS	DBP_5MINS	DBP_10MINS	DBP_15MINS	DBP_30MINS	DBP_60MINS	DBP_120MINS	DBP_RECOVERY ROOM
1	A	4	9	410	190	130	120	110	105	93	100	99	102	100	105	104	106	110	82	80	79	78	76	72	70	70	69	70	71
2	A	4	8	440	210	140	160	120	124	102	120	127	120	118	119	120	116	114	66	62	62	60	62	60	61	66	61	64	64
3	A	4	9	420	200	120	65	125	127	110	122	120	118	118	116	118	121	122	76	70	70	68	67	68	70	68	66	71	70
4	A	4	9	410	200	120	55	130	116	100	111	110	108	109	110	113	106	111	89	83	83	82	84	81	80	82	81	78	80
5	A	4	8	430	210	140	120	130	127	125	125	120	118	120	122	120	120	120	76	74	74	73	75	77	73	72	71	72	71
6	A	4	8	440	190	130	90	126	131	105	130	130	129	130	129	132	128	126	75	75	76	74	72	74	74	76	72	72	71
7	A	4	7	440	180	120	120	110	112	125	110	110	111	116	114	116	110	110	88	85	86	83	85	81	78	75	77	74	73
8	A	4	9	430	190	120	180	120	122	100	121	124	123	127	125	123	120	118	72	72	70	68	70	72	71	70	70	71	70
9	A	4	9	440	200	140	180	100	110	111	108	104	110	112	120	120	120	116	77	75	73	70	70	68	71	71	72	73	74
10	A	4	8	420	180	130	70	124	128	127	126	122	122	123	125	125	124	124	75	68	68	66	61	60	62	63	61	61	62
11	A	4	8	410	190	130	150	120	98	92	95	90	91	92	90	90	99	100	89	85	85	82	80	78	76	78	79	80	78
12	A	4	8	430	190	140	120	110	130	121	126	124	125	125	127	125	127	126	80	79	80	78	78	76	74	70	70	70	72
13	A	4	8	410	200	120	150	130	125	113	120	118	120	122	120	118	120	121	73	68	66	66	65	68	64	62	64	62	64
14	A	4	9	430	200	110	150	130	110	117	110	111	116	114	116	115	108	110	76	74	75	76	70	71	70	70	71	70	72
15	A	3	9	440	210	120	150	120	126	127	124	125	125	127	125	126	126	125	90	84	84	82	80	78	82	83	80	80	82
16	A	4	7	420	190	120	150	110	129	130	126	129	128	130	128	126	125	126	79	80	80	79	75	72	70	68	71	69	67
17	A	4	9	420	210	130	150	100	100	100	98	92	90	93	92	90	90	90	68	66	66	64	64	61	60	63	62	61	62
18	A	4	9	430	200	140	120	110	105	118	100	100	99	102	100	105	100	106	70	65	65	66	67	66	63	65	65	69	71
19	A	4	9	440	180	110	120	110	120	118	116	118	110	110	109	111	114	116	86	84	83	80	83	80	78	79	76	80	78
20	A	4	9	42	20	14	15	12	10	10	10	10	98	10	97	10	10	10	70	68	68	69	70	68	66	70	69	70	70

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21	A	4	9	430	2100	1300	125	1200	1320	1200	1300	1280	1280	1250	1270	1290	1300	1280	64	61	61	61	63	60	60	61	61	63	63
22	A	4	7	440	1900	1200	1500	1100	1190	1300	1111	1100	1090	1005	1100	1114	1122	1100	83	85	84	81	78	75	77	72	74	70	72
23	A	4	8	440	2000	1200	1200	1100	1333	1166	1300	1255	1233	1255	1200	1222	1233	1227	88	82	81	80	78	77	75	74	78	83	84
24	A	4	9	430	2000	1300	125	1100	1006	1227	1000	1001	99	1000	97	1000	1000	1003	89	80	80	78	76	74	78	80	81	80	82
25	A	4	7	420	1900	1200	1300	1200	1191	1122	1122	1100	1100	1111	1166	1144	1155	1110	78	73	73	70	68	70	71	70	72	73	74
26	A	4	9	420	2100	1300	140	1200	1266	1233	1244	1255	1255	1227	1255	1266	1266	1255	89	86	84	82	80	78	80	79	81	78	80
27	A	4	8	410	2000	1400	1200	1200	98	92	92	90	93	92	90	91	90	91	74	74	73	72	73	74	73	70	71	70	73
28	A	4	9	410	2000	1400	90	1244	1311	1255	1255	1222	1224	1211	1200	1244	1255	1288	80	78	76	75	75	72	74	73	76	78	76
29	A	4	9	440	2100	1300	90	1244	1188	1222	1155	1100	1093	1135	1133	1177	1188	1188	79	77	77	76	74	76	76	78	74	74	73
30	A	3	9	430	2000	1400	90	1200	1229	1144	1222	1200	1188	1177	1200	1199	1211	1200	83	81	80	81	78	79	80	78	77	76	74
31	A	4	8	440	1900	1300	90	1266	1311	1055	1300	1300	1299	1300	1299	1322	1288	1266	75	75	76	74	72	74	74	76	72	72	71
32	A	4	7	440	1800	1200	1200	1110	1112	1255	1100	1100	1111	1166	1144	1166	1100	1100	88	85	86	83	85	81	78	75	77	74	73
33	A	4	9	430	1900	1200	1800	1200	1222	1000	1211	1244	1223	1227	1255	1223	1220	1188	72	72	70	68	70	72	71	70	70	71	70
34	A	4	8	440	2100	1400	1600	1200	1244	1022	1200	1227	1200	1188	1199	1200	1166	1144	66	62	62	60	62	60	61	66	61	64	64
35	A	4	9	420	2000	1200	65	1255	1277	1110	1222	1220	1188	1188	1166	1188	1211	1222	76	70	70	68	67	68	70	68	66	71	70
36	A	4	9	420	2100	1300	1500	1000	1000	1000	98	92	90	93	92	90	90	90	68	66	66	64	64	61	60	63	62	61	62
37	A	4	9	430	2000	1400	1200	1110	1055	1188	1000	1000	99	1002	1000	1005	1000	1006	70	65	65	66	67	66	63	65	65	69	71
38	A	4	9	440	1800	1110	1200	1110	1200	1188	1166	1188	1110	1100	1091	1111	1144	1166	86	84	83	80	83	80	78	79	76	80	78
39	A	4	7	420	1900	1200	1300	1200	1191	1122	1122	1100	1100	1111	1166	1144	1155	1110	78	73	73	70	68	70	71	70	72	73	74
40	A	4	9	420	2100	1300	1400	1200	1266	1233	1244	1255	1255	1277	1255	1266	1266	1255	89	86	84	82	80	78	80	79	81	78	80
41	B	4	14	230	1400	900	45	1300	1388	1377	1355	1333	1330	1332	1330	1288	1332	1330	88	90	89	88	83	81	88	87	88	85	82
42	B	4	14	25	11	80	60	12	11	11	10	10	10	10	11	10	10	11	80	85	83	80	81	79	78	80	82	77	80

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43	B	4	14	2400	1300	1000	65	1100	1211	1116	1110	1108	1110	1112	1108	1109	1111	1113	78	78	75	70	68	69	68	70	66	70	71
44	B	4	14	2400	1200	80	55	1000	99	95	93	90	89	90	91	92	89	92	66	70	69	68	68	66	64	66	68	64	66
45	B	4	13	2200	1400	90	50	1100	1006	1004	1002	1000	1002	1000	99	98	1011	1000	68	70	67	67	68	66	68	66	65	61	60
46	B	4	13	2500	1100	70	35	1110	1110	1110	1006	1004	1000	1002	1002	1000	99	99	76	84	83	82	80	78	76	72	70	69	70
47	B	4	15	2100	1400	90	70	1220	1222	1220	1116	1111	1110	1108	1109	1110	1110	1006	81	80	84	74	72	71	70	73	72	71	72
48	B	4	14	2300	1300	80	65	1220	1322	1229	1228	1222	1221	1224	1223	1227	1223	1224	70	88	84	85	83	85	81	78	75	72	74
49	B	4	13	2500	1300	90	60	1110	1118	1115	1110	1002	1000	1003	1006	1000	1000	1003	74	69	68	66	62	60	61	60	61	63	62
50	B	4	14	2200	1200	80	70	1110	1000	95	94	92	90	92	93	92	90	95	80	70	69	68	66	62	60	62	60	66	61
51	B	4	13	2400	1400	90	60	1110	1332	1330	1288	1255	1277	1244	1220	1277	1188	1199	90	90	88	86	84	82	80	78	80	80	82
52	B	4	13	2300	1110	80	45	1120	1199	1177	1188	1110	1044	1000	1055	1027	1070	1110	75	82	81	81	80	80	78	76	72	72	70
53	B	4	15	2100	1400	1000	60	1200	1002	1000	1000	96	96	92	90	94	89	90	72	70	68	66	64	63	66	62	60	62	60
54	B	4	13	2400	1200	90	65	1200	1087	1055	1000	99	1002	1000	1055	1000	1006		82	74	70	72	74	80	71	70	70	71	70
55	B	4	14	2200	1300	90	60	1124	1166	1133	1144	1110	1088	1044	1110	1122	1200	1188	77	88	86	82	80	78	76	80	81	76	78
56	B	4	14	2100	1200	80	70	1124	1244	1222	1220	1188	1177	1166	1110	1177	1110	1099	86	80	80	81	78	76	74	72	70	70	71
57	B	4	14	2300	1300	1000	50	1200	1227	1225	1225	1220	1188	1220	1222	1220	1220	1220	78	78	78	76	74	74	71	70	73	70	71
58	B	4	14	2200	1200	80	55	1138	1144	1112	1110	1108	1110	1113	1108	1110	1200	1200	70	66	64	61	60	62	61	62	63	62	64
59	B	3	15	2200	1400	80	45	1112	1088	1006	1005	1000	1000	99	1002	1000	1004	1000	70	62	62	60	61	63	61	61	60	61	61
60	B	4	13	2100	1300	1000	65	1211	1299	1244	1225	1188	1200	1200	1166	1188	1200	1188	84	73	73	70	68	69	70	70	71	68	69
61	B	4	13	2400	1200	90	50	99	1344	1330	1311	1330	1330	1299	1330	1299	1330	1288	80	81	80	76	75	77	78	75	76	70	73
62	B	4	14	2400	1100	90	65	1006	1002	1000	1000	98	92	90	93	92	91	90	88	63	62	60	61	62	61	60	60	62	62
63	B	4	15	2200	1300	80	45	1110	1233	1233	1171	1110	1110	1006	1000	1006	1099	1110	69	81	80	76	74	73	75	77	73	71	70
64	B	4	13	21	12	90	12	12	13	13	13	12	12	12	12	12	12	12	70	89	89	83	82	84	81	80	82	80	78

				0	0		0	2	7	4	0	8	6	2	2	3	5	0											
65	B	4	14	210	120	80	120	132	129	126	127	122	120	118	118	116	120	121	90	90	84	86	88	84	83	82	81	85	84
66	B	4	15	240	110	90	110	118	98	95	95	90	91	92	90	90	99	100	82	64	62	61	61	63	60	60	61	62	63
67	B	3	14	230	140	70	140	100	106	104	100	101	99	100	97	100	100	103	70	72	70	72	70	71	72	71	72	70	72
68	B	4	15	210	130	80	130	132	119	117	112	110	110	111	116	114	115	110	74	82	82	83	81	80	81	78	79	78	77
69	B	4	15	240	120	100	120	119	120	118	120	116	113	110	112	111	114	113	88	77	77	75	75	74	72	74	74	72	71
70	B	4	13	230	140	90	90	102	133	132	130	126	124	125	125	127	126	127	80	86	86	80	78	81	80	79	77	80	78
71	B	3	13	240	120	90	65	120	108	107	105	100	99	102	100	105	100	106	82	74	70	72	74	80	71	70	70	71	70
72	B	4	14	220	130	90	60	124	116	113	114	110	108	104	110	112	120	118	77	88	86	82	80	78	76	80	81	76	78
73	B	4	14	210	120	80	70	124	124	122	120	118	117	116	110	117	110	109	86	80	80	81	78	76	74	72	70	70	71
74	B	4	14	230	130	100	50	120	127	125	125	120	118	120	122	120	120	120	78	78	78	76	74	74	71	70	73	70	71
75	B	4	14	220	120	80	55	138	114	112	110	108	110	113	108	110	120	120	70	66	64	61	60	62	61	62	63	62	64
76	B	4	14	240	120	80	55	100	99	95	93	90	89	90	91	92	89	92	66	70	69	68	68	66	64	66	68	64	66
77	B	4	13	220	140	90	50	110	106	104	102	100	102	100	99	98	101	100	68	70	67	67	68	66	68	66	65	61	60
78	B	4	15	220	130	80	45	110	123	123	117	110	110	106	100	106	109	110	69	81	80	76	74	73	75	77	73	71	70
79	B	4	13	210	120	90	120	122	137	134	130	128	126	122	122	123	125	120	70	89	89	83	82	84	81	80	82	80	78
80	B	4	14	210	120	80	120	132	129	126	127	122	120	118	118	116	120	121	90	90	84	86	88	84	83	82	81	85	84

S.NO	Group	MAP_PREOP	MAP_0MINS	MAP_1 MIN	MAP_3MINS	MAP_5MINS	MAP_10MINS	MAP_15MINS	MAP_30MINS	MAP_60MINS	MAP_120MINS	MAP_RECOVERY ROOM	HR_PREOP	HR_0 MIN	HR_1 MIN	HR_3MINS	HR_5MINS	HR_10MINS	HR_15MINS	HR_30MINS	HR_60MINS	HR_120MINS	HR_RECOVERY ROOM
1	A	91	8	79	85	85	81	81	81	79	83	84	86	79	82	71	70	69	66	68	65	72	74
2	A	84	81	62	82	81	79	80	84	84	81	81	79	90	90	88	89	90	91	86	88	82	84
3	A	92	87	70	85	84	85	85	85	86	88	89	93	83	74	80	78	76	80	81	80	82	83
4	A	103	92	83	91	92	90	90	92	91	89	91	87	82	80	80	74	70	68	71	70	78	75
5	A	100	91	74	89	89	91	89	88	87	88	88	93	90	86	88	86	89	90	91	92	89	88
6	A	97	93	76	92	91	93	92	94	91	90	97	82	74	79	73	70	74	76	73	78	80	76
7	A	85	93	86	92	94	93	90	89	90	86	85	86	80	72	78	77	78	80	81	83	80	79
8	A	86	88	70	87	88	90	89	87	89	87	87	82	86	90	84	82	80	82	80	81	79	83
9	A	90	86	73	81	83	83	87	87	87	87	88	80	79	83	71	70	69	66	68	65	72	74
10	A	89	87	68	85	81	81	83	84	81	82	81	85	72	82	68	64	67	69	66	68	78	75
11	A	90	88	85	85	84	83	81	82	83	87	86	93	90	90	88	89	90	91	86	88	82	84
12	A	98	95	80	93	94	92	92	88	89	89	90	82	83	74	80	78	76	80	81	80	82	83
13	A	94	85	66	83	83	86	83	81	83	82	82	94	82	80	80	74	70	68	71	70	78	75
14	A	97	86	75	88	85	85	85	85	86	83	83	83	90	90	88	86	89	90	91	92	89	88
15	A	95	97	84	96	95	94	96	97	96	95	96	79	74	78	73	70	74	76	73	78	80	76
16	A	87	95	80	96	93	91	89	87	89	88	86	90	80	89	78	77	78	80	81	83	80	79
17	A	75	77	66	73	73	72	71	72	72	71	72	83	86	87	84	82	80	82	80	81	79	83
18	A	76	77	66	77	78	78	75	78	78	81	89	82	79	70	71	70	69	66	68	65	72	74
19	A	89	95	80	93	92	90	88	90	88	92	100	90	93	89	90	91	88	87	89	87	90	90
20	A	87	79	69	80	79	79	76	80	80	81	81	74	87	78	80	78	79	78	78	80	81	80
21	A	98	84	61	83	85	82	82	84	85	85	84	80	93	74	90	91	89	88	89	88	86	85
22	A	85	94	81	91	88	85	88	86	84	83	92	86	82	86	81	80	78	79	79	78	80	81
23	A	95	98	80	95	93	93	90	90	94	98	108	79	86	70	82	81	78	79	77	79	80	81
24	A	95	87	78	86	84	83	84	87	74	88	89	72	82	77	80	78	79	81	80	82	81	80
25	A	92	86	70	83	82	84	86	85	87	85	93	90	80	82	78	81	79	80	80	78	81	81
26	A	95	99	82	96	95	94	95	95	96	93	96	83	85	70	83	85	81	80	82	81	81	82
27	A	89	80	72	78	80	80	79	77	77	77	81	82	93	64	91	89	89	85	82	80	82	81
28	A	95	91	75	91	90	88	9	90	92	78	93	90	82	89	81	80	78	77	80	81	82	81
29	A	95	88	76	87	87	89	88	90	88	80	88	74	94	78	93	90	90	92	93	94	90	90
3	A	96	93	81	93	91	9	93	78	92	91	89	80	83	74	81	8	7	77	80	7	8	8

0							3										0	8			8	0	1
31	A	97	93	76	92	91	93	92	94	91	90	97	82	74	79	73	70	74	76	73	78	80	76
32	A	85	93	86	92	94	93	90	89	90	86	85	86	80	72	78	77	78	80	81	83	80	79
33	A	86	88	70	87	88	90	89	87	89	87	87	82	86	90	84	82	80	82	80	81	79	83
34	A	84	81	62	82	81	79	80	84	84	81	81	79	90	90	88	89	90	91	86	88	82	84
35	A	92	87	70	85	84	85	85	85	86	88	89	93	83	74	80	78	76	80	81	80	82	83
36	A	75	77	66	73	73	72	71	72	72	71	72	83	86	87	84	82	80	82	80	81	79	83
37	A	76	77	66	77	78	78	75	78	78	81	89	82	79	70	71	70	69	66	68	65	72	74
38	A	89	95	80	93	92	90	88	90	88	92	100	90	93	89	90	91	88	87	89	87	90	90
39	A	92	86	70	83	82	84	86	85	87	85	93	90	80	82	78	81	79	80	80	78	81	81
40	A	95	99	82	96	95	94	95	95	96	93	96	83	85	70	83	85	81	80	82	81	81	82
41	B	102	106	105	103	100	97	103	101	101	100	98	96	99	91	93	90	92	94	91	99	93	93
42	B	100	93	90	89	89	89	87	90	90	86	90	86	106	101	101	98	99	100	100	93	91	90
43	B	86	92	94	83	81	83	83	83	80	84	85	78	88	88	82	80	78	76	80	81	81	82
44	B	90	80	80	76	75	74	73	74	76	72	75	80	93	96	89	85	83	84	86	80	81	88
45	B	95		80	79	79	78	79	77	76	74	73	82	101	86	95	92	90	90	91	89	85	88
46	B	96	93	95	90	88	85	85	82	80	79	80	88	83	78	76	73	74	74	78	73	79	80
47	B	103	93	90	88	85	84	82	85	85	84	83	91	78	80	73	70	71	72	71	70	72	70
48	B	104	103	100	99	96	97	95	93	92	89	91	85	85	82	80	78	78	79	76	81	80	79
49	B	96	85	98	80	75	73	75	75	74	75	76	83	91	88	89	84	83	81	82	80	79	83
50	B	92	78	90	77	75	71	70	72	70	74	62	80	101	91	95	93	91	95	93	93	97	99
51	B	95	103	104	100	98	97	95	92	96	93	94	76	88	85	82	80	78	76	74	77	74	72
52	B	98	94	100	93	90	88	85	86	82	84	83	84	96	83	90	91	89	88	90	91	89	90
53	B	96	81	80	77	75	74	75	71	71	71	70	90	86	8	80	78	77	79	75	80	78	79
54	B	99	85	90	83	83	86	81	80	81	81	82	86	78	78	74	73	76	73	73	71	74	75
55	B	110	97	94	93	90	88	85	90	91	91	91	91	80	90	79	73	73	75	71	73	77	74
56	B	102	95	98	94	91	90	88	84	86	83	84	83	82	86	74	70	72	73	73	71	76	73
57	B	86	94	98	92	89	88	87	87	89	87	87	88	88	91	83	82	81	80	84	81	80	83
58	B	88	81	80	77	76	78	78	77	79	81	83	102	91	83	89	84	88	83	81	82	86	87
59	B	89	77	80	75	74	75	74	75	73	75	74	87	85	88	80	82	81	80	81	78	77	73
60	B	93	92	94	88	85	86	87	85	87	85	85	88	83	102	80	78	77	79	74	78	81	81
61	B	95	88	100	94	93	95	95	93	94	90	91	93	80	87	76	73	72	73	74	77	75	77
62	B	94	75	80	73	73	72	71	71	71	72	71	101	76	99	74	72	74	74	73	76	72	73

63	B	105	95	100	90	86	85	85	85	84	84	83	83	84	106	80	80	81	82	78	79	80	80
64	B	106	104	100	99	97	98	95	94	96	95	92	78	90	88	86	87	84	83	89	87	88	85
65	B	98	102	100	100	99	96	95	94	93	97	96	85	86	93	83	84	82	84	85	85	81	80
66	B	99	75	80	71	71	72	71	70	71	74	75	94	91	101	89	86	85	84	86	88	88	85
67	B	90	84	84	81	80	80	81	80	81	80	82	88	83	83	81	80	78	77	81	81	82	82
68	B		94	98	93	91	90	91	91	91	90	88	90	88	78	83	82	85	85	81	80	82	81
69	B	87	91	96	90	89	87	85	87	86	86	85	105	102	85	100	95	93	95	92	90	89	91
70	B	98	102	100	97	94	95	95	95	94	96	94	88	87	84	81	85	82	86	81	81	84	86
71	B	99	85	90	83	83	86	81	80	81	81	82	86	78	78	74	73	76	73	73	71	74	75
72	B	110	97	94	93	90	88	85	90	91	91	91	91	80	90	79	73	73	75	71	73	77	74
73	B	102	95	98	94	91	90	88	84	86	83	84	83	82	86	74	70	72	73	73	71	76	73
74	B	86	94	98	92	89	88	87	87	89	87	87	88	88	91	83	82	81	80	84	81	80	83
75	B	88	81	80	77	76	78	78	77	79	81	83	102	91	83	89	84	88	83	81	82	86	87
76	B	90	80	80	76	75	74	73	74	76	72	75	80	93	96	89	85	83	84	86	80	81	88
77	B	95		80	79	79	78	79	77	76	74	73	82	101	86	95	92	90	90	91	89	85	88
78	B	105	95	100	90	86	85	85	85	84	84	83	83	84	106	80	80	81	82	78	79	80	80
79	B	106	104	100	99	97	98	95	94	96	95	92	78	90	88	86	87	84	83	89	87	88	85
80	B	98	102	100	100	99	96	95	94	93	97	96	85	86	93	83	84	82	84	85	85	81	80

S.NO	Group	SPO2_PREOP	SPO2_0MINS	SPO2_1 MIN	SPO2_3MINS	SPO2_5MINS	SPO2_10MINS	SPO2_15MINS	SPO2_30MINS	SPO2_60MINS	SPO2_120MINS	SPO2_RECOVERY ROOM	RR_PREOP	RR_0MINS	RR_1 MIN	RR_3MINS	RR_5MINS	RR_10MINS	RR_15MINS	RR_30MINS	RR_60MINS	RR_120MINS	RR_RECOVERY ROOM	ANALGESIA_NUMBER OF	ANOS SCALE	MODIFIED BROMAGE SCALE	RAMSAYS SEDATION	VAS (6hr)	PONV
1	A	100	100	98	99	98	100	100	98	99	100	99	14	13	14	14	14	13	14	14	14	14	14	2	2	GRADE 2	SCORE 2	4	0
2	A	100	100	99	100	100	99	98	98	100	100	99	14	12	12	14	14	14	12	13	12	12	13	1	2	2	3	3	0
3	A	100	100	99	98	99	100	99	99	98	98	100	14	14	14	14	12	14	14	14	14	14	12	2	2	2	3	3	0
4	A	99	99	98	99	100	99	99	100	99	99	98	12	14	12	12	14	12	12	12	12	13	14	2	2	2	4	3	1
5	A	100	100	98	99	99	98	98	98	99	99	99	14	12	14	14	12	14	14	14	14	14	12	1	3	2	3	3	0
6	A	99	99	99	100	100	100	98	99	98	98	99	12	14	12	12	14	12	12	12	12	12	14	2	1	2	3	3	0
7	A	98	98	98	98	99	98	99	99	98	98	98	14	12	12	14	12	14	12	14	12	14	12	1	1	1	3	2	1
8	A	100	100	98	100	98	99	98	98	99	99	98	12	14	12	12	12	12	12	12	12	12	14	2	1	1	2	3	0
9	A	98	98	100	99	100	99	98	98	98	98	99	12	12	14	12	12	12	14	12	14	14	12	2	2	2	2	3	1
10	A	99	99	99	100	98	98	100	99	98	98	98	12	12	14	12	14	12	14	12	14	12	12	2	1	2	2	4	0
11	A	99	99	99	99	99	98	99	98	100	100	98	14	12	12	14	14	14	12	14	12	12	12	3	2	2	2	5	0
12	A	98	98	100	98	99	100	99	98	99	99	100	14	14	14	14	12	14	14	14	14	12	14	2	2	2	3	2	2
13	A	98	98	98	100	98	98	100	100	99	99	99	12	14	14	12	14	12	14	12	14	14	14	3	2	2	3	5	1
14	A	100	100	100	98	98	99	98	99	100	100	99	14	12	13	14	14	14	13	14	13	14	12	2	2	2	4	3	2
15	A	100	98	99	99	100	99	98	99	98	98	100	14	14	14	14	13	14	14	14	14	12	14	3	1	2	3	5	1
16	A	100	99	99	99	98	98	100	100	98	98	98	13	14	12	13	14	13	14	13	12	14	14	2	2	2	3	2	0
17	A	100	99	100	98	99	98	98	98	100	100	98	14	13	14	14	12	14	12	14	14	14	13	1	2	2	3	4	0
18	A	99	98	100	98	99	99	99	98	98	98	100	12	14	14	12	13	12	14	14	14	13	14	2	2	2	4	4	0
19	A	100	98	100	100	98	98	99	100	99	99	98	13	12	12	13	14	13	12	12	12	14	12	1	2	2	3	2	0
20	A	99	99	99	98	98	98	98	98	99	99	99	14	13	14	14	14	14	14	14	14	12	14	2	2	2	2	4	2

21	A	98	98	100	99	99	100	98	99	98	98	99	14	14	14	14	12	14	12	12	14	14	14	1	1	1	2	3	1
22	A	100	98	99	99	98	99	99	99	98	98	98	12	14	13	12	12	12	12	14	13	14	12	2	1	1	2	3	1
23	A	98	100	98	98	98	99	98	98	99	99	98	12	12	14	12	14	12	12	12	14	12	14	2	1	2	4	3	2
24	A	99	99	100	98	100	100	98	98	98	98	99	14	12	14	14	14	14	14	12	14	14	14	3	1	2	2	5	1
25	A	99	99	98	99	99	98	100	99	98	98	98	14	14	12	14	12	14	14	12	12	14	13	2	1	2	2	5	1
26	A	98	100	99	98	99	98	99	98	100	100	98	12	14	14	12	14	12	12	14	14	13	14	2	1	1	4	2	1
27	A	98	98	99	98	100	100	99	98	99	99	100	14	12	12	14	14	14	14	14	12	14	14	1	2	1	3	5	0
28	A	100	100	98	98	98	100	100	99	99	99	100	13	14	12	13	14	14	12	14	12	12	14	2	2	1	4	2	0
29	A	100	99	98	98	99	98	99	100	99	99	98	14	13	14	14	13	13	14	12	14	14	12	1	3	2	2	4	0
30	A	100	99	100	100	99	98	99	98	100	100	99	14	14	12	14	14	14	14	12	12	12	12	1	2	2	4	2	1
31	A	99	99	99	100	100	100	98	99	98	98	99	12	14	12	12	14	12	12	12	12	12	14	2	1	2	3	4	0
32	A	98	98	98	98	99	98	99	99	98	98	98	14	12	12	14	12	14	12	14	12	14	12	1	1	1	3	2	1
33	A	100	100	98	100	98	99	98	98	99	99	98	12	14	12	12	12	12	12	12	12	12	14	2	1	1	2	3	0
34	A	100	100	99	100	100	99	98	98	100	100	99	14	12	12	14	14	14	12	13	12	12	13	1	2	2	3	3	0
35	A	100	100	99	98	99	100	99	99	98	98	100	14	14	14	14	12	14	14	14	14	14	12	2	2	2	3	3	0
36	A	100	99	100	98	99	98	98	98	100	100	98	14	13	14	14	12	14	12	14	14	14	13	1	2	2	3	4	0
37	A	99	98	100	98	99	99	99	98	98	98	100	12	14	14	12	13	12	14	14	14	13	14	2	2	2	4	5	0
38	A	100	98	100	100	98	98	99	100	99	99	98	13	12	12	13	14	13	12	12	12	14	12	1	2	2	3	2	0
39	A	99	99	98	99	99	98	100	99	98	98	98	14	14	12	14	12	14	14	12	12	14	13	2	1	2	2	3	1
40	A	98	100	99	98	99	98	99	98	100	100	98	12	14	14	12	14	12	12	14	14	13	14	2	1	1	4	3	1
41	B	100	100	100	99	100	100	100	99	98	100	100	12	12	12	14	12	13	14	14	12	12	12	2	2	1	2	4	0
42	B	98	99	100	100	100	100	99	100	100	100	99	12	14	14	14	14	12	12	14	14	14	14	1	2	1	2	3	1
4	B	9	1	9	1	1	9	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	2	1	1	5	1

3		9	00	8	00	00	9	00	00	00	00	00	2	4	4	2	4	2	4	2	4	4	4							
44	B	99	100	100	100	99	100	100	99	99	99	100	14	13	12	12	13	14	14	14	13	13	13	3	1	2	2	5	1
45	B	98	100	99	99	100	100	100	100	100	100	99	14	14	14	14	14	14	13	14	14	14	14	1	1	1	3	2	1
46	B	100	99	100	99	100	100	100	100	100	100	100	13	12	14	14	12	13	14	13	12	12	12	1	1	1	2	4	1
47	B	100	99	100	98	99	99	99	99	99	99	100	14	13	13	13	13	14	12	14	13	13	13	1	3	2	2	4	2
48	B	99	100	100	99	99	99	100	99	99	100	98	13	14	14	14	14	12	13	12	14	14	14	3	2	1	2	5	2
49	B	100	100	100	100	98	100	100	98	98	100	99	13	14	12	12	14	13	14	13	14	14	14	2	2	2	3	2	0
50	B	99	100	100	100	100	100	99	100	100	99	98	12	12	13	13	12	14	14	14	12	12	12	2	2	1	1	4	0
51	B	100	98	99	100	100	99	99	100	100	99	100	14	14	14	14	14	14	12	14	14	14	14	2	2	1	2	3	0
52	B	100	99	99	98	100	100	98	100	98	98	98	14	12	14	14	12	12	14	12	12	12	12	3	1	1	2	3	0
53	B	100	99	100	100	100	100	100	100	100	100	98	100	14	14	14	12	14	14	12	14	14	14	14	2	1	2	2	5	0
54	B	98	98	100	99	99	99	100	99	99	100	100	12	12	12	14	12	12	14	12	12	12	12	2	1	1	2	3	1
55	B	100	100	100	100	100	98	100	100	100	100	99	14	12	14	12	12	14	12	14	12	12	12	3	2	2	2	5	1
56	B	99	100	98	100	100	98	100	100	100	100	100	14	12	13	14	12	12	12	12	12	12	12	1	2	1	3	5	1
57	B	100	99	99	99	99	100	99	99	99	99	100	13	14	14	12	14	12	12	12	14	14	14	1	3	1	3	4	2
58	B	100	100	99	99	100	100	100	100	100	98	98	14	14	14	12	14	12	14	12	14	14	14	2	2	2	3	3	2
59	B	99	100	100	98	100	100	100	100	100	100	100	12	13	13	12	12	14	14	14	12	12	12	3	3	2	2	4	0
60	B	99	99	98	100	99	98	99	98	100	99	100	13	14	14	14	14	14	12	14	14	14	14	1	1	2	3	4	1
61	B	98	99	99	98	100	99	100	99	99	100	100	14	13	12	14	14	12	14	12	14	14	14	3	2	1	2	2	0
62	B	100	98	99	100	100	100	100	100	100	100	98	98	14	13	13	12	13	14	14	14	13	13	13	2	1	1	2	5	0
63	B	98	98	98	100	99	100	100	98	100	100	100	12	12	14	14	14	14	13	14	14	14	14	3	1	1	3	2	1
64	B	100	100	100	99	99	99	99	99	99	99	100	14	14	14	14	12	13	14	13	12	12	12	1	2	2	1	4	1
6	B	1	9	1	1	9	9	1	9	1	1	9	1	1	1	1	1	1	1	1	1	1	1	2	2	1	1	3	0

5		00	8	00	00	8	8	00	8	00	00	9	2	4	2	3	3	4	2	4	3	3	3							
66	B	99	100	99	98	100	100	100	100	100	100	100	14	13	14	14	14	12	13	12	14	14	14	2	1	1	2	5	0
67	B	100	99	100	99	100	100	99	99	99	99	100	12	12	12	12	14	13	14	13	14	14	14	2	1	1	2	2	1
68	B	98	100	100	100	100	99	100	99	99	100	99	15	14	14	13	12	14	14	14	12	12	12	2	2	2	1	6	1
69	B	99	98	99	100	98	100	100	98	98	98	99	15	14	12	14	14	14	12	14	14	14	14	2	3	2	1	2	1
70	B	100	99	99	100	99	100	99	100	100	99	98	12	13	13	14	12	12	14	12	12	12	12	1	2	1	3	6	2
71	B	98	98	100	99	99	99	100	99	99	100	100	12	12	12	14	12	12	14	12	12	12	12	2	1	1	2	4	1
72	B	100	100	100	100	100	98	100	100	100	100	99	14	12	14	12	12	14	12	14	12	12	12	3	2	2	2	6	1
73	B	99	100	98	100	100	98	100	100	100	100	100	14	12	13	14	12	12	12	12	12	12	12	1	2	1	3	5	1
74	B	100	99	99	99	99	100	99	99	99	99	100	13	14	14	12	14	12	12	12	14	14	14	1	3	1	3	5	2
75	B	100	100	99	99	100	100	100	100	100	98	98	14	14	14	12	14	12	14	12	14	14	14	2	2	2	3	3	2
76	B	99	100	100	100	99	100	100	99	99	99	100	14	13	12	12	13	14	14	14	13	13	13	3	1	2	2	5	1
77	B	98	100	99	99	100	100	100	100	100	100	99	14	14	14	14	14	14	13	14	14	14	14	1	1	1	3	2	1
78	B	98	98	98	100	99	100	100	98	100	100	100	12	12	14	14	14	14	13	14	14	14	14	3	1	1	3	2	1
79	B	100	100	100	99	99	99	99	99	99	99	100	14	14	14	14	12	13	14	13	12	12	12	1	2	2	1	4	1
80	B	100	98	100	100	98	98	100	98	100	100	99	12	14	12	13	13	14	12	14	13	13	13	2	2	1	1	2	0