An-Najah National University

Faculty of Graduate Studies

IMPACT OF PERINEURAL DEXAMETHASONE ADDED TO BUPIVACAINE FOR TRANSVERSUS ABDOMINIS PLANE BLOCK IN POST-CESAREAN DELIVERY PAIN CONTROL. A PROSPECTIVE, RANDOMIZED, DOUBLE-BLIND, CONTROLLED TRIAL

By

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Dedication

I dedicate this thesis to my precious daughter, Pearl, my husband, Adham , who has been a constant source of support and encouragement .

This work is also dedicated to my parents, Fadia and Jamal, who have always loved me unconditionally and whose good examples have taught me to work hard for the things that I aspire to achieve.

I also dedicate this work to my homeland Palestine, to the great martyrs, prisoners in Israeli jails, the symbol of sacrifice, and finally for every anesthesiologist and every CRNA nurse who has taught me as a CRNA student.

Acknowledgment

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My ultimate thanks is dedicated to my beloved Mother Fadia, M, Father, Jamal, and for their endless support, love, and prayer. I also would like to thank my sister and brothers; who have given me plentiful help and support in completing this thesis. Also, huge thanks go to my best friends in Nursing Department for every single moment of joy and sorrow we cherished together since the first time we stepped into our campus up to this very second. Also, I would like to express my thanks to all my friends and all persons who helped me in completing this thesis whose names cannot be mentioned one by one for their help and support.

The last but not the least, my special thanks go to my beloved family; my husband, Adham who always supports me in every condition and my daughter, who has fought with me from the first letter of this thesis was written. Finally, I have a great expectation that my study will be beneficial and useful for anyone who is interested in reading this final project.

Declaration

I, the undersigned, declare that I submitted the thesis entitled:

IMPACT OF PERINEURAL DEXAMETHASONE ADDED TO BUPIVACAINE FOR TRANSVERSUS ABDOMINIS PLANE BLOCK IN POST-CESAREAN DELIVERY PAIN CONTROL. A PROSPECTIVE, RANDOMIZED, DOUBLE-BLIND, CONTROLLED TRIAL

The work provided in this thesis, unless otherwise referenced, is the researcher's own work, and has not been submitted elsewhere for any other degree or qualification.

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Date: 18.10.2022

List of Contents

List of Tables

List of Figures

List of Appendices

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Abstract

Background: Acute pain after Cesarean delivery (CD) is one of the most important outcomes that an obstetric anesthesiologist can influence.

Aim: The major aim of the present study is to compare the efficacy of perineural dexamethasone as an adjuvant for bupivacaine versa bupivacaine alone on bilateral transverse abdominis plan block for pain control after cesarean section for patients undergoing spinal anesthesia.

Method: This prospective, randomized, double-blinded, placebo-controlled trial, 80 women ASA II scheduled for caesarean section, followed by TAP block. The participants were randomized into two groups, Group (1) received mixture of 1ml dexamethasone (4 mg) added to 20 ml bupivacaine 0.25% for each side. Group (2) received 1ml normal saline 0.9% added to 20 ml bupivacaine 0.25% for each side, then the patients were observed postoperatively for 24 h for first rescue analgesic requirement, total rescue analgesic consumption, pain scores on the visual analogue scale (VAS), and the incidence of other complications (nausea, vomiting and shivering).

Results: Data on demographics are comparable between the TABD and the TABA groupings. The first request analgesia mean in minutes in the TABA group (359.08 ± 12.86) is considerably lower than the first request analgesia mean in the TABD group (mean = 521.25), with a *P*-value of 0.001 for the test. When compared to the TABA group, the postoperative VAS score at rest was considerably lower in the TABD group.

The findings indicate that, over the entire study period, the TABA group's mean VAS scale at rest (mean = 3.1) is substantially greater than the TABD group's mean VAS scale (mean = 2.2), *P* = 0.001. In addition, the TABA group's mean VAS score (mean = 3.19) when coughing is substantially greater than the TABD group's mean (mean = 2.39), with a *P*-value of 0.001 for the test.

Conclusion: In patients undergoing cesarean section under spinal anesthesia, perineural dexamethasone 8 mg given to bupivacaine (40 ml (20 ml each side), 0.25%) is an effective adjuvant to bupivacaine on bilateral TAP block with extended and powerful analgesia that delayed the time to the first analgesic request and decreased the intensity of postoperative pain without side effects.

Keywords: Cesarean Section; Dexamethasone; Pain; Transversus Abdominis Plane Block.

Chapter One
Introduction

Pain is defined as a sensory or emotional unpleasant feeling linked to existent or potential tissue damage (Pozza et al., 2021). Women who have a lower segment caesarean section experience moderate to severe postoperative pain following the procedure. The anesthesiologist has a difficult time making their patients completely pain-free. For women undergoing CS, pain must be appropriately managed with minimal impact and consequences in order to ensure that these mothers are aware and relaxed enough to care for their infants (Sun & Pan, 2019). By reducing pain as measured by postoperative visual analogue scale, decreasing the incidence of nausea, shortening post-anesthesia care unit hospitalization times, and increasing patient satisfaction, peripheral nerve blocking has become increasingly popular (Alotaibi et al., 2021).

Controlling postoperative pain effectively is a crucial part of caring for surgery patients. The risk of morbidity and death rises if pain is not well managed (Naziri et al., 2013). It has been shown that the more intrusive the operation, the more the immune system is compromised as a result of the anaesthesia and surgical procedures (Murali Krishna et al., 2008). The beneficial effects of analgesia can mitigate this undesirable side effect. Effective postoperative pain management has many benefits, including patient satisfaction and comfort, earlier mobilisation, fewer pulmonary and cardiac complications, a lower risk of deep vein thrombosis, a more rapid recovery without the onset of neuropathic pain, and lower overall healthcare costs (Michael and Ramsay, 2000). Due to its low cost and ease of administration, spinal anaesthetic is the method of choice for most caesarean sections. When compared to general anaesthesia, it decreases the risk of death during a caesarean by a factor of 16. There are fewer chances of complications such aspiration of stomach contents, trouble with airway management, and newborn respiratory distress with spinal anaesthetic instead than general (Naziri et al., 2013).

There is now no pharmaceutical available that can be used to exclusively manage pain without causing other undesirable effects (Naziri et al., 2013). Longer-lasting sedation and pain relief can be achieved with peripheral nerve blocks when corticosteroid drugs

are used. Dexamethasone, given either orally or intravenously (IV), also helps a great deal with postoperative discomfort (Bisgaard et al., 2003). Intrathecal and epidural steroid injections are used to treat persistent pain (Price et al., 2005). Intrathecal dexamethasone has been shown to lengthen the effects of sensory blockade and postoperative analgesia in certain research (Bani-Hashem et al., 2011). In spite of the widespread use of intrathecal dexamethasone for the treatment of chronic pain, very few research have examined the relationship between sensory block and postoperative pain in surgical patients (Bani-Hashem et al., 2011).

For many years, abdominal field blocks have been around and widely used because to their simplicity and ease of use. Hebbard was the first to describe an ultrasound-guided technique to the transverse abdominis plane block (Hebbard, 2008). For the TAP block, ultrasound was incorporated to increase the rate of success. This ultrasonic treatment is conducted by placing a high-frequency (5–13 MHz) probe on the lateral abdominal wall between the costal border and the anterior axillary line. Internal and transverse abdominis muscles are separated by an injection of local anaesthetic solution in a plane between them. The thoracolumbar, ilioinguinal, and iliohypogastric nerves can be found in this plane (Kagwa et al., 2015). It give a sensory barrier for the skin, muscles, and parietal peritoneum of the anterior abdominal wall. Visualizing the needle and the local anaesthetic distribution in the "fascial plane," which is parallel to the ultrasound probe, is made simple by real-time ultrasonography (Di Bella et al., 2021). A new approach to extending analgesia past the pharmacological lifespan of local anaesthetics has been developed recently.

Adjuvants such as Epinephrine, 2 agonists (i.e. Clonidine), Midazolam, or Corticosteroids – Dexamethasone – can also be used in conjunction with the Local anaesthetics (Akkaya et al., 2014).This technique can be quite effective and give analgesia for several days, but it is restricted by difficulty in placing and removing or, occasionally, with infection of the catheter. Perineural catheter techniques Dexamethasone is thought to enhance the quality and duration of local anaesthetics when taken as a supplement. Inflammatory mediators are thought to be reduced, ectopic neuronal discharge is reduced, and potassium channel-mediated C-fibre discharge is inhibited(Chen et al., 2018).

Without the side effects of opioids and NSAIDS, the transverse abdominis plane block has revolutionized the treatment of acute pain in post-cesarean patients. Analgesia can last longer when dexamethasone is given to the local anaesthetic. No one knows how dexamethasone, when injected intravenously, works on peripheral nerves (Gupta et al., 2019). Desmet et al. (2013) determined that intravenous (intravenous) injection of Dexamethasone is equal to perineural injection of Dexamethasone in terms of extending the analgesic duration of Ropivacaine single-shot interscalene block(Desmet et al., 2013). Perineural, but not systemic, Dexamethasone has been found to prolong the duration of interscalene block by Kawanishi et al. Bupivacaine and dexamethasone (perineural or intravenous) vs ultrasound-guided bilateral transverse abdominis plane block for postoperative pain relief after caesarean delivery(Kawanishi et al., 2014).

CS It is the most common surgical procedure in the world. According to the WHO research, the global average CS rate climbed from 12.4% in 1990-2014 to 18.6% in the current year (2015 data). The Caribbean and Latin America have the greatest CS rates (40.5 percent), followed by North America (32.3 percent). CS rates were found to be the lowest in Asia (19.2%) and Africa (7.3%) (Betrán et al., 2016).

Anesthesia for CS is developed by weighing the preferences of the mother against the risks and benefits of the procedure for both mother and infant. Spinal anaesthetic is becoming more popular and is being used more frequently in both elective and emergency CS surgeries in both developed and developing countries(Afolabi & Lesi, 2012).

Patient-centered outcomes such as pain following caesarean delivery (CD) can be greatly improved by an anesthesiologist. Patients' discontent, slower healing, lengthened hospital stay and postponed return to regular activities are all a result of severe acute pain following CD. A higher rate of prolonged post-surgical pain and post-partum depression has also been found to be linked to the presence of this gene(Eisenach et al., 2013).

For lower abdominal surgery, TAPB is an effective analgesic approach that delivers good analgesia (Kagwa et al., 2015). Belavy employed ultrasound-guided TAPB for analgesia following CD for the first time in 2009 and was satisfied with the outcomes(Belavy et al., 2009).

There have been a variety of adjuvants added to local anaesthetic in an attempt to extend the duration of the block (e.g. opioids, Dexmedetomidine, clonidine, dexamethasone, and epinephrine). Presently recent systematic studies have revealed that perineural dexamethasone prolongs analgesia by around 8-10 hours compared to placebo, making it a potential adjuvant to the transversus abdominis plane (TAP) block, but its application as an adjuvant to the TAP block is still up for debate(Jæger et al., 2016).

1.1 Cesarean section

In a caesarean section, a foetus is delivered through an abdominal and uterine incision. It can save both the mother and the foetus' lives if used appropriately and can prevent adverse obstetric outcomes(Maskey et al., 2019).

World Health Organization (WHO) research (2022) shows that caesarean section use continues to climb internationally, accounting for more than one in five (21 percent) of all childbirths. According to the findings of this study, caesarean sections will be used to deliver nearly a third (29 percent) of all babies by the year 2030. Caesarean sections can be life-saving, but if performed when there is no medical need, they can put both the mother and the baby at risk for both short- and long-term health issues(WHO, 2022).

In both emerging and developed countries, the number of caesarean sections (CS) has steadily increased. Ten percent to fifteen percent is recommended by the World Health Organization (WHO). All regions above the WHO guideline rates are without explanation, according to World Health Organization (WHO,2010).

According to a new annual study from the Palestinian Ministry of Health (MoH) (Alshawish & Zaidan, 2021),since 2009, the frequency of caesarean sections in the West Bank and Gaza Strip has risen to 4.8%, while in 2011, there were 14,511 caesarean operations in the region, Palestinians will have 25.8% more babies being born through caesarean in 2020,. In addition, according to the Palestinian Ministry of Health's annual report for 2013, the overall number of births in 2013 was 40,058, including 7,533 caesarean sections. According to the Palestinian Ministry of Health's mid-annual report for 2015, the percentage of caesarean sections in Palestinian hospitals in mid-2015 was 24.4 percent (Zaidan, 2016).

Persistent pain following CS varies, although it is far less common than following other procedures. Persistent pain following caesarean section (CS) affects many otherwise healthy young women, even if the rate of caesarean section is declining. Preventing and treating chronic pain in women after CS may be made easier by taking into account the pathophysiology of the condition as well as the risk factors that put them at risk for developing it. Chronic pain following injury or surgery may have new avenues for therapy now that the peripartum state and oxytocin have been found to protect against it. Patients at high risk of acute or chronic pain can be identified and targeted using predictive methods, however the predictive correlations of these measures are often poor to low, and many are either not practically practicable or take too much time to implement. Chronic pain has been linked to opioid exposure and the intensity of acute postoperative pain(Sun & Pan, 2019).

The frequency of moderate to severe post CS was found to be 78 percent in a Brazilian research. Anxiety before surgery also raises the danger factor. An effective pain reliever was intrathecal morphine with Fentanyl mixed together with Bupivacaine (Borges et al., 2017).

For caesarean sections, spinal anaesthetic is chosen because it is easy to administer, inexpensive, and provides a quick onset of anaesthetic and muscular relaxation. Low neonatal depression and aspiration pneumonitis are reduced, and the medication dosages are reduced as a result. A set anaesthetic duration, post-Dural puncture headache and hypotension, and a lack of control over block height are all side effects of spinal anaesthesia (Okur et al., 2021).

Suspension of the sodium channel is the mechanism of action of Bupivacaine, a moderate local anaesthetic. Long-acting local anaesthetic with high potency (3- 4 hours). It is frequently used in combination with fentanyl, which enhances its effects and extends its duration of action to six hours. Cesarean section delivery is the most common usage for it. As long as the dose is between 0.5% and 10%, it is OK(Xue et al., 2022).

Preoperatively, dexamethasone is commonly used to alleviate acute and chronic pain, prevent postoperative nausea and vomiting (PONV), and reduce airway and cerebral

edema. Dexamethasone is a synthetic glucocorticosteriod with low mineralocorticoid action(Singh et al., 2011).

Anti-inflammatory effects reduce tissue swelling, which prevents nerve compression by inflammatory tissue. These are some theories for how glucocorticoids work; however, the mechanism is not fully understood. They include the following: inhibiting inflammatory mediator production (prostaglandin, bradykinin), inhibiting potassium channel-mediated discharge from C fibers(Shahraki et al., 2013).

Peripheral nerve blocks are commonly used to relieve postoperative pain; however, the short block duration restricts the efficacy of a single injection. Dexamethasone, clonidine, Dexmedetomidine, Opioids, and Epinephrine have all been used as adjuvants to local anaesthetic in order to extend the duration of the block. Current research suggests that perineural dexamethasone prolongs analgesia by roughly 8–10 hours compared to placebo, making it the most promising of these adjuvants (Jæger et al., 2016).

Analgesia for the parietal peritoneum, skin, and muscles of the anterior abdominal wall can be provided via the transverse abdominis plane (TAP) block. There are two ways to do this procedure: using a blind approach or using ultrasonic guidance. For some reasons, this caused a "double pop" in my abdominal muscles (external and internal obliques) as soon as the blunt needle is passed through them. These needles are used in all anatomical landmark-based TAP techniques to increase tactile sensitivity and the ability to identify unique "pop" sensations(Young et al., 2012).

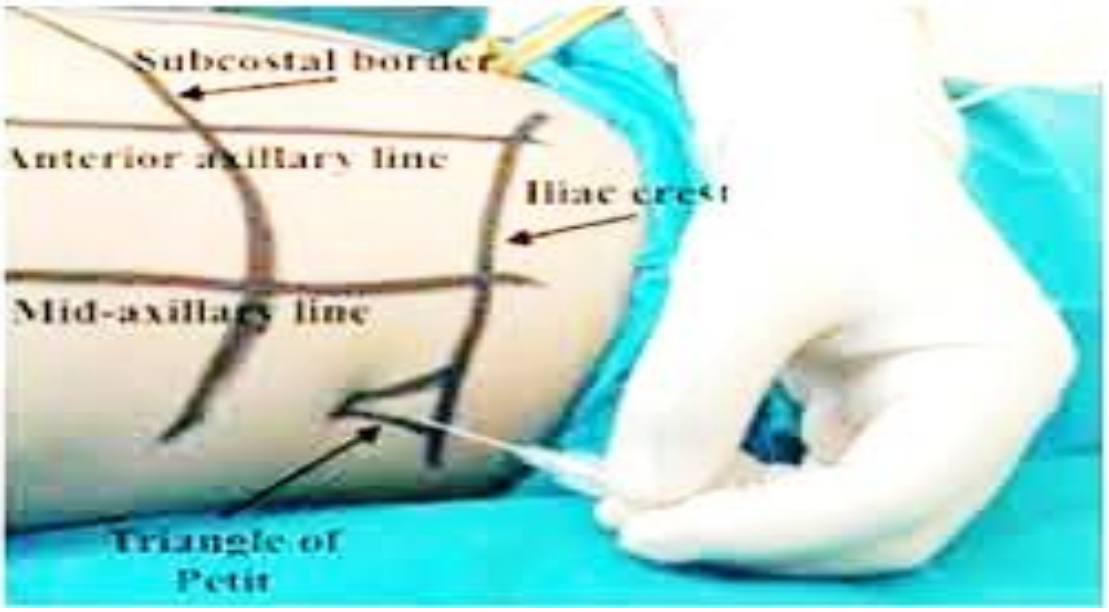
1.2 Transverse Abdominis Plane Block

1.2.1 Blind Injection

The lumbar triangle of petit is the entry point for the blind TAP block. This method is based on feeling two main "pops" as the needle passes through the external and internal obliques. Loss of resistance is exacerbated by a dull needle(Huang et al., 2016).

Figure 1.1

The triangle of petit, bound posteriorly by the latissimus dorsi musule ,anteriorly by the external oblique ,with the iliac crest forming the base



1.2.2 Ultrasound Guided

Positioning the patient in a supine position performed. The ultrasonic probe is securely positioned above and parallel to the iliac crest with sterile technique. An in-plane method is used to insert a 21-gauge, 10-cm insulted needle a few millimeters medial to the probe. It is common to witness bowel movement immediately below the transverse abdominis muscle layer. 15 to 20 ml is progressively administered under ultrasound guidance after negative aspiration (Belavy et al., 2009).

ERAS, a multidisciplinary approach to evidence-based procedures to improve postoperative recovery, is currently being advocated by peri-operative medicine for both humanistic and economic reasons. ERAS programs for caesarean sections are being established because postpartum mothers are eager to recover quickly (Settmacher, 2021). ERAS programs emphasize post-operative pain management since it has a detrimental impact on healing (Lam et al., 2021). Pain on movement after caesarean section remains under-appreciated, even though it is more severe than pain at rest and may require different analgesics, as is the case with other surgical procedures (Eisenach et al., 2013). Understanding the influence of post-c-section pain on a woman's recovery is essential to the implementation of ERAS programs after a C section if they are to be effective. Acute and chronic pains have a substantial impact on a variety of aspects of

rehabilitation. In addition, pain reduces the amount of time a woman can spend nursing her baby (Jin et al., 2016).

Using activity trackers, a new study has assessed the impact of surgical birth (i.e., caesarean section) vs vaginal delivery. Despite receiving the best possible post-operative analgesics, a 44% reduction in early ambulation was seen after a caesarean section. The first to systematically measure caesarean section recovery by utilizing a questionnaire called Quality of Recovery (QoR-15) (Myles et al., 2016). Cesarean section patients also exhibited lower 24h QoR-15 ratings than those who delivered vaginally despite the use of multimodal analgesia. Patients who had a caesarean section had considerably lower scores on measures of physical well-being and independence. Pain management is usually correlated with Quality of Life (QoL). While vaginal birth and caesarean section populations had equal pain levels in this study. Several objective measures of physical recovery showed clinically significant differences between the two delivery methods (Marcus et al., 2015).

In the obstetric population, such an observation may cast doubt on the significance of utilizing pain ratings and opioid intake as the primary quality care markers. Findings show that pain and analgesia usage must be correlated with functional recovery indicators (Borges et al., 2016). Various than discomfort, caesarean section healing and ambulation might be hindered by other circumstances. Premature exhaustion is the most prevalent physical complaint following labor, with cesarean-section women reporting more postpartum fatigue than women who gave birth naturally (Borges et al., 2016). Only few studies have looked at postpartum pain and functional recovery after 72 hours. In 213 healthy primiparas, researchers have tracked the onset of pain relief and functional improvement over time. There was a lot of variation amongst patients according to the researchers. For pain relief and functional recovery to prepartum levels, the median time after CS was 21 (IQR 14–27) and the median time after vaginal birth was 19 (IQR 11–24) days, respectively (*P* 0.05 with CS). The pain load was 1.7 times larger following a caesarean section due to both the increased intensity and the extended duration of the pain(Komatsu et al., 2017).

1.3 Persistent Pain Following Caesarean Delivery: Incidence and Features

When other potential causes, such as postoperative chronic infection or preexisting chronic pain issues, have been ruled out, the International Association for the Study of Pain (IASP) defines persistent pain as clinical discomfort persisting longer than two months after surgery (Komatsu et al., 2017).

The International Classification of Diseases (ICD-10), ICD-10 defines related length as greater than three months after surgery, with pain intensity greater than or having different features than pre-operative pain(Treede et al., 2015).

After releasing from the hospital, 12 percent of patients continue to have significant pain. According to IASP, year of 2017 was the 'Year Against Pain after Surgery. According to a study of Marcus et al., (2015), 50 523 patients from 105 hospitals, caesarean section ranks ninth in terms of the level of pain experienced on the first postoperative day. For the highest pain levels [interquartile range (IQR) 4.5–8.0; median numeric rating scale (NRS) of 6], post-cesarean pain competed with orthopedic trauma or operations, even though it is not a significant surgery. The "worst pain intensity" and "pain upon mobilization" were higher after a caesarean section than after any of the three forms of hysterectomy (Marcus et al., 2015).In addition. Pregnancy-related discomfort is more common in prospective cohort studies than randomized controlled trials (Eisenach et al., 2013). This is because prospective cohort studies include more women and are conducted under more natural settings than randomized trials (Marcus et al., 2015). At least 10.9% of women report significant pain during the first 24 hours following caesarean surgery. Another study of 4000 patients from 16 hospitals in Europe, Southeast Asia, and Africa indicated that 90 percent of women said that they spent 20–100 percent of the first 24 hours following a caesarean section in severe pain (Sun & Pan, 2019).

1.4 Long-Term Complications and Poor Recovery Following Caesarean Section

Both vaginal and caesarean births are associated with an increased risk of health issues that persist or reoccur (Woolhouse et al., 2012). It's been most widely discussed that postpartum depression and chronic pain are linked to acute postpartum pain that is not well-managed (Jin et al., 2016). Caesarean section-related chronic pain has remained consistent in recent years, Nevertheless, acute pain severity, independent of delivery

mode, predicted a threefold increased risk of postpartum depression and a 2.5 fold increased risk of persistent pain 2 months after delivery (Eisenach, et al., 2008). For six months after surgery, pain severity on mobility within 24 hours of caesarean section was determined to be a risk factor. Two recent prospective studies have found that the length of time patients were in acute pain following surgery was a predictor of postoperative pain (Jin et al., 2016; Niklasson et al., 2015).

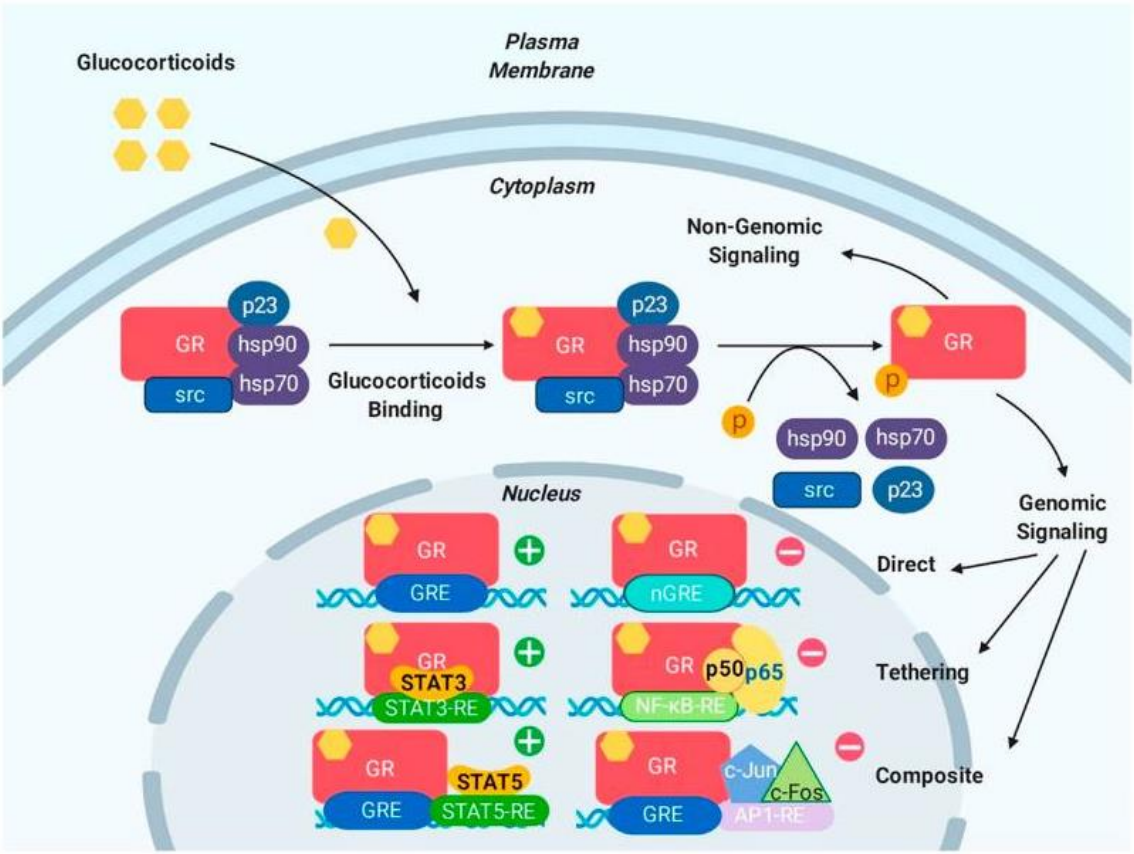
1.5 Dexamethasone

Glucocorticoid receptors (GRs) can function as ligand-dependent transcription factors, and they are expressed by the vast majority of human cells. These nuclear receptor superfamily members exist in the cytosol in their natural, unbound state. It is the interaction of glucocorticoid receptors (GRs) with heat shock proteins that leads to the receptors' high-affinity state for glucocorticoid (GC) binding (Figure1) (Heitzer et al., 2007). Several different types of cortisols, both naturally occurring and synthetically produced, including dexamethasone (DEX), dissociate heat shock proteins from the cytosolic GRs. The GRs undergo conformational modifications during dissociation, allowing them to enter the nucleus. GCs attach to GC response elements in the nucleus of the cell, altering transcription (Figure1). Protein-protein interactions between liganded GRs and other transcription factors in the cytosol are also part of the molecular process by which GCs exert their effects on cells. This is in addition to the interaction and binding of the molecules with target sites in the genes. Consequently, the abilities of other transcription factors to control transcription are altered as a result of these interactions (Desmet & De Bosscher, 2017). Nongenomic processes including mitochondrial translocation, plasma membrane contacts, and signalling cascades also play a significant role as GC targets. 8 Since GCs work through a broad variety of biological pathways, they may be tested for their effects in a variety of physiological processes including apoptosis and cell proliferation and in pathological settings like inflammation. GCs like DEX exert their immunomodulatory effects by acting on B cells and T cells through distinct molecular mechanisms. Interleukin-10 (IL-10) is an anti-inflammatory cytokine that is upregulated and Toll-like receptor signalling is downregulated, both of which have an effect on B cells. By controlling cytokine production and T cell receptor signalling, GCs exert control over T cells. Pro-inflammatory cytokines including IL-1, IL-6, prostaglandin E2, and histamine can all be

blocked by GCs. GRs also have a substantial anti-inflammatory effect through interacting with transcription factors like NF-kB and AP-1, which are important modulators of various signalling pathways involved with B and T cell receptors (Nicolaides et al., 2020).

Figure 1.2

GCs binding the GR mediate genomic and nongenomic signaling. In the genomic pathways, the GR can affect gene expression via activation or repression



The advantages of regional anaesthetic, such as enhanced analgesia, decreased nausea and/or vomiting, and enhanced patient satisfaction, are increasing its popularity (Yarushkina & Filaretova, 2018). There are two methods for administering peripheral nerve blocks (PNBs)—injecting a local anaesthetic all at once, or using a catheter to provide a steady stream of medication. Our clinical experience has shown that the single injection nerve block is more cost-effective than its multi-injection counterpart . The time that a single nerve block can provide adequate pain relief is, however, restricted. There is a limit to how much local anaesthetic may be injected at once due to the maximum hazardous dosage and the local anaesthetics that are now accessible.

Researchers have recently focused on finding adjuvants to the local anaesthetic that can effectively and reliably increase the analgesia duration (Joshi et al., 2016).

Like other glucocorticoids, dexamethasone works by suppressing the immune system by blocking cytokine-mediated pathways, making it a powerful anti-inflammatory agent. The glucocorticoid receptors that dexamethasone binds to allow the steroid to enter the nucleus and exert its effects. Nucleus-bound, it binds to certain DNA sequences to control the expression of inflammatory response-mediator genes. As a consequence, genes involved in inflammatory processes are both activated and silenced. In terms of activating glucocorticoid receptors, dexamethasone is among the most potent ligands. Compared to cortisol and hydrocortisone, it is thirty times as powerful an anti-inflammatory medication (Savage and Levy, 2013).

Among the synthetic glucocorticoids, dexamethasone stands out for its powerful anti-inflammatory and immunosuppressive properties. Perineural dexamethasone 8-10 mg has been shown in many trials to greatly increase the analgesic duration of brachial plexus nerve block. It has been hypothesised that the mechanism of dexamethasone as an adjuvant in peripheral nerve block may be systemic in nature, as perineural and intravenous administration of the steroid have been shown to have similar effects on prolonging the duration of analgesia (Schuster et al., 2020).

There is evidence that local anaesthetics cause a heightened inflammatory response, altered nerve permeability, and myotoxicity. As shown in a dose-dependent manner, bupivacaine can cause apoptosis by rupturing the mitochondrial membrane and triggering caspase. Bupivacaine doses used in the current investigation did not result in statistically significant apoptosis. Local anaesthetics at clinical concentrations can induce axonal dystrophy by changing the endoneural environment, disrupting the integrity of the perineural space, and disrupting the permeability of the nerve endings themselves. The evidence of subperineurial edoema after perineural injection of LA implies that LA disrupts this barrier mechanism, which likely contributes to nerve fibre damage. Subclinical nerve damage may be prevalent in the context of PNB, and the injury may only become clinically significant when other patient- and procedure-related risk factors are present. On day 2 following perineural bupivacaine injection, our investigation indicated higher fibre breakdown and a hazy myelin sheath appearance in

the sciatic nerve compared to a prior study. The interesting thing is that this was back to normal by day 7 after the injection (Kahn et al., 2018).

These cells play crucial roles in peripheral nerve biology, including formation, regeneration, and the upkeep of healthy axons. Wallerian degeneration, in which axonal and myelin-derived pieces are removed and recycled, is a hallmark of the early stages of most neurodegenerative illnesses and may be caused directly by nerve damage. Dedifferentiation occurs in Schwann cells, proliferation occurs (particularly in non-myelinating Schwann cells), and macrophages are recruited into the nerve during this phase. Late in the process of regeneration, Schwann cells that were not myelinating before undergo this transition. Myelination and axon diameter may be connected to S-100 expression, which is selectively localised in Schwann cells. There is some evidence that S100 expression can be used as a biomarker for myelinating Schwann cells and as such, as an indicator of the regeneration stage. abnormal rebound hyperalgesia behaviour, higher percentage of nucleus, and decreased S-100 protein expression on day 2 after plain bupivacaine injection all suggested the early phase of Schwann cells' response, despite the lack of caspase-dependent apoptosis evidence in the Schwann cell. This finding is consistent with the hypothesis that the neurotoxicity of perineural bupivacaine is associated with the distinctive changes of Wallerian degeneration and demyelination seen in degenerating peripheral nerves. Variations in neuron markers have been observed, however the low rates of fibre degradation and Schwann cell response raise serious concerns. It is recommended that further research be conducted to verify and discuss the relevance of such a result (Lee et al., 2020).

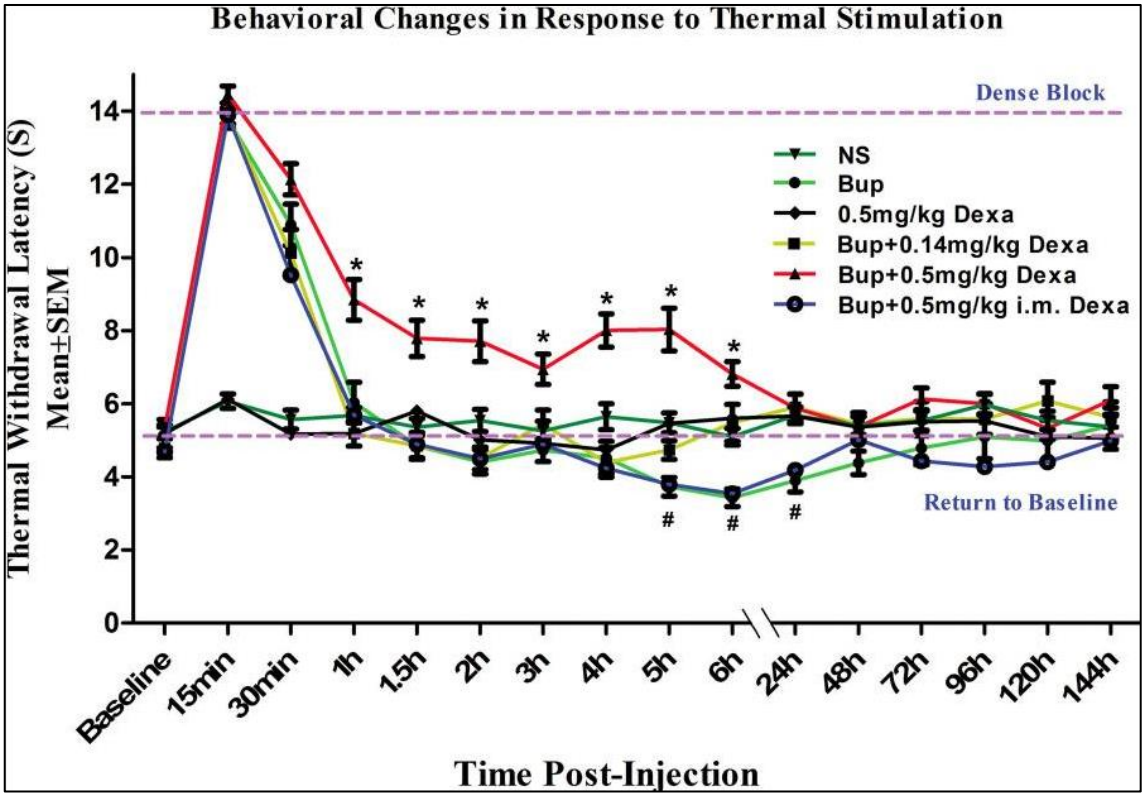
A supratherapeutic dose of clonidine, buprenorphine, dexamethasone, and midazolam alone was significantly less neurotoxic than a therapeutic quantity of ropivacaine alone at 24 hours, according to a recent ex vivo assessment of their effects on rat sensory neurons (Lee et al., 2020). Their ex vivo investigation found no evidence of a synergistic harmful impact between dexamethasone and ropivacaine, providing some evidence for the safe "off-label" usage of these additional compounds. In contrast, intraneural injection of steroids is thought to be necessary for their potential neurotoxic action on peripheral nerve tissue. the addition of dexamethasone to bupivacaine at either low or high dosages perineurally significantly reduced the incidence of bupivacaine-induced short-term rebound hyperalgesia. When preservative-free dexamethasone was

given in conjunction with histomorphologically and S-100 expression pattern-identified neurotoxicity of simple bupivacaine, the neurotoxicity was no longer substantial. Therefore, perineural dexamethasone shows anti-nociceptive and anti-neurotoxic effects in this mouse sciatic nerve block paradigm, possibly by preventing the transitory neurotoxicity of bupivacaine and protecting against demyelination and Schwann cell degeneration.

Myelin figures, in which the myelin and axoplasm are fused into a dark-staining mass indicative of more advanced nerve degeneration, have been used as a profile for aberrant axon and myelin degeneration in previous research. Degeneration profiles were recognised by light microscopy using an inverted microscope (Olympus IX3 Phase; Olympus Optical Co., Ltd., Tokyo, Japan) and were reported as a percentage of demyelinated axons per whole visual field at 200x magnification using ImageJ 1.49a software (NIH, Bethesda, Maryland, USA). In the same way, the proportion of nuclei and the protein immunoreactivity (average optical density, AOD) in each nerve slice were calculated. Analyses were performed on ten nerves from each group (five at 2 days and five at 7 days). They were imbedded in paraffin after being dried in a series of ethanol solutions. Using a 0.1% toluidine blue (Arlington, TX, USA) stain, a cleaved Caspase-3 (Asp175) (5A1E) rabbit mAb (1:400, Cell Signaling Technology, Danvers, MA, USA), an S-100 protein rabbit polyclonal antibody (1:200, Vector Laboratories, Inc., Burlingame, CA, USA), and hematoxylin for nuclei, we (Fisher Scientific, Pittsburgh, PA, USA). The University of Pennsylvania's Abramson Cancer Center's Cancer Histology Core processed and interpreted all samples as a paid service. The results of staining with toluidine blue, caspase-3, and S-100 were analysed in accordance with the standards established by the providing service. The extremely low frequency of positive results for caspase-3 staining was verified by doing additional positive control experiments on mouse hippocampus.

Figure 1.3

Compared to control normal saline, plain bupivacaine, low-dose perineural dexamethasone with bupivacaine, and plain bupivacaine with intramuscular dexamethasone.



1.6 Dexamethasone added to local analgesia

Extending the effects of local anaesthetics and improving the quality of peripheral nerve blocks are two areas of particular interest in regional anaesthesia for extending the duration of surgical anaesthesia and analgesia. Dexamethasone is one glucocorticoid that has been tested extensively with positive results. In the literature review, we'll look at the numerous investigations that have led to the suggested theories. It has been determined that dexamethasone inhibits the activity of the potassium channels on unmyelinated c-fibers, known to transport nociceptive information, hence decreasing stimulus transmission along these fibres. The patient's perception of pain will go down as a result. The second theory is that because dexamethasone induces some vasoconstriction to the tissues, the local anaesthetic will be absorbed more slowly and the patient would feel its effects for a longer period of time.

Lastly, dexamethasone enhances the production of antiinflammatory mediators, which in turn reduces postoperative pain, and it has a strong anti-inflammatory impact that

prevents the release of inflammatory mediators such interleukins and cytokines. Dexamethasone's analgesic effects, when taken in conjunction with a local anaesthetic in a peripheral nerve block, have been shown to last longer, although the specific science and mechanism of action remain unknown. Dexamethasone has been shown to be an effective adjuvant to local anaesthetic in peripheral nerve blocks, hence extending the duration of analgesia in surgical patients, according to a review of the relevant literature.

1.7 Perineural Dexamethasone

Aga, et al., (2021) conducted prospective cohort study during a TAP block in order to investigate if the addition of perineural dexamethasone to bupivacaine will give appropriate pain relief without causing any side events. 58 individuals had spinal anesthesia for elective surgery. A systematic random sample procedure was used to split the patients into two groups randomly. As an alternative to the TAP block, bupivacaine 0.25 percent 40 ml was given to patients in one group while perineural additive drug 8 mg of dexamethasone was given to the other patients group (Group TAPD) (Group TAPA). The initial outcome is postoperative pain relief drug and the numerical rating scale (NRS) pain intensity ratings after 2hrs, 6hrs, 12hrs, and 24 hrs. Following surgery are the key outcomes. On the first postoperative day, tramadol and diclofenac analgesia requirements are compared, as well as occurrences of adverse effects. In order to be statistically significant, the *p*-value must be less than 0.05. Time to first analgesic request in the TAPD group was 8.5 hours (8.39–9.79 hours) while in the TAPA group was 5.3 hours (5.23–5.59). This is statistically significant with a *p* value of 0.001. As early as six hours following surgery, a substantial reduction in the median NRS scores was seen in the TAPD compared to the control groups in the TAPA group (p-values 0.001). In Group TAPD, the total amount of analgesics consumed in the first 24 hours after surgery was lower than in Group TAPA (p 0.05). During bilateral TAP block for elective CS surgery under spinal anaesthesia, researchers found that 8 mg of perineural dexamethasone additive agent offered superior pain alleviation on postoperative day 1 than the control group(Aga et al., 2021).

Vetriselvan, et al., (2019) conducted a study in which patients who underwent laparoscopic gynecological procedures under general anaesthesia were compared to those who received a transverse abdominis plane block (TAP) with dexamethasone as

an adjuvant and local anaesthetic alone (GA). The trial was double and includes a randomized, parallel-treatment design. Random number tables created by computers and sealed opaque envelopes were used to randomly assign forty patients to the PN or IV groups. One 15 ml 0.25 percent levobupivacaine + 4 mg (1 ml) dexamethasone TAP block was administered to the PN group after GA was instigated on each side of the body. With 15 cc of 0.25 percent levobupivacaine and 8 mg IV dexamethasone, the patients in the IV group obtained a TAP block on both sides. It took 6.63 1.5 hours for PN patients to request their first rescue analgesia, while it took 5.04 1.7 hours for IV patients to do the same. Both groups had similar pain levels. TAP block with 0.25 percent levobupivacaine and dexamethasone provided comparable analgesic qualities, regardless of the route of administration. (Vetriselvan et al., 2019).

USG-guided TAP block for inguinal hernia surgery with 0.5% ropivacaine and dexamethasone: a randomized controlled experiment with blinded assessment of post-operative analgesia. Sixty patients having a physical status I or II, as defined by the American Society of Anesthesiologists, had inguinal hernia surgery. Patients in Group RS were given 0.5 percent ropivacaine (20 ml) and dexamethasone for USG-guided tibial artery puncture (TAP) Block on the same side after inguinal hernia surgery under spinal anaesthesia (2 ml, or 8 mg), whereas patients in Group RD received 0.5 percent ropivacaine (20 ml) and dexamethasone (2 ml, or 8 mg). Comparisons were made between the use of Tramadol and VAS ratings, as well as the time it took to request an analgesic for the first time. Four to twelve hours after surgery, patients in Group RD had significantly lower VAS scores than those in Group RS, according to the data. There was a substantial difference between Group RD and Group RS in the duration of analgesia (P 0.001). Group RD required much less intravenous tramadol (223.33 56.83 mg) than Group RS (293.25 25.71 mg) (P 0.001). According to studies of (Sharma et al., 2018), the combination of ropivacaine and dexamethasone significantly reduces post-operative pain and enhances the duration of analgesia following surgery, hence reducing the need for analgesics.

Thakur, et al., (2019) conducted a study in which Dexmedetomidine and dexamethasone were evaluated as an addition to bupivacaine in ultrasound-guided TAP block for postoperative analgesia in caesarean section patients. An ASA I or II patient population was randomized into three groups using a computer-generated random

number generator, with each group receiving a different combination of bupivacaine, dexmedetomidine, or dexamethasone during an ultrasound-guided transabdominal block. Subarachnoid anaesthesia was being used to perform caesarean sections on the women undergoing planned and emergency procedures. Ten cm visual analogue scale (VAS) scores were used to assess pain at rest and movement, time to first analgesic request, number of analgesic requests, nausea or vomiting, and sedation at 0 hours, 2, 4, 6, 12, 18, 24 hours postoperatively. Compared to groups BDM and BDX, group B's VAS score was substantially higher, while group BDX's VAS score was greater than that of group BDM. It was shown that the duration of analgesia in group BDM was much longer than in groups B and BDX. In compared to groups B and BDX, the total number of rescue analgesic requests was much lower in group BDM. Group BDM had a better sedation and contentment score than groups B and BDX combined. Adding dexmedetomidine and dexamethasone to bupivacaine as an adjunct to TAP block in patients undergoing caesarean section under subarachnoid block reduced postoperative pain, prolonged analgesia, decreased the demand for additional analgesics, and provided better maternal satisfaction as compared to the plain bupivacaine group in TAP block. Dexmedetomidine exhibited a longer-lasting analgesic effect than the dexamethasone group when compared to the other two drugs (Thakur et al., 2019).

Jemal et al. (2020) conducted a prospective cohort research at a hospital to examine the efficacy of perineural and intravenous dexamethasone as an adjuvant to bilateral transversus abdominis plane block for post caesarean birth pain control. On 87 cases, the systematic random sample method was utilized. A number of data collection techniques are employed, including preoperative file review, intraoperative observation, and postoperative patient evaluations at the 4th, 6th, 8th, 12th, and 24th hour. Using ANOVA and the chi-square test, socio-demographic data were analyzed. The after-operative pain severity score and cumulative analgesic consumption were compared using Kruskal Wallis with post hoc analysis. Utilizing the Kaplan-Meier survival analysis with log rank, the time until the first analgesic request was made was determined. categorical variables were examined utilizing chi square. TAP-IVD and TAP-PD were found to have significantly longer times to the initial analgesic request than TAP alone (p 0.05). During resting or coughing, the TAPPD and TAP-IVD groups had significantly lower postoperative NRS values than the TAP group alone (*p* 0.05).

The TAP-IVD and TAP-PD groups used much less analgesics in the first twenty-four hours than the TAP group alone (p 0.05). According to the research of (Jemal et al., 2020), Dexamethasone 8 mg intravenously and perineurally is an effective adjuvant to bupivacaine for bilateral TAP block, resulting in long-lasting and potent analgesia and decreased analgesic consumption.

Buluc, et al., (2019) conducted randomized, double blinded controlled trial compared the analgesic efficacy of the TAP block after caesarean section in a prospective. Cesarean sections were allocated into two groups of thirty patients overall. Patients in Group T (n=15) who received a total of 60 cc of 0.25 percent bupivacaine during a TAP Block under USG supervision. Group C patients (n=15) received 60 ml of 0.9 percent NaCl, 30 ml on each side with USG supervision. Patient-controlled analgesia devices were used to monitor post-operative meperidine use. First-time analgesia use was substantially greater in the control group than in the experimental group (Group C). More meperidine, tenoxicam, and paracetamol were used in Group C for analgesia. Each group had the same nursing and mobilization start timings. USG-TAP block with 0.25 percent bupivacaine 60 ml (30 ml on each side) considerably decreased post-operative pain in patients after caesarean section, according to the results of a clinical trial (Buluc et al., 2019).

Patients undergoing lower segment caesarean section in India were randomized to receive either dexamethasone or clonidine in addition to bupivacaine in a TAP block, and the results showed that the average VAS score was significantly lower in the dexamethasone group (1.51) than in the clonidine group (1.95) with a P value of 0.0001. Dexamethasone-induced analgesia lasted an additional 151 minutes. In addition, the analgesia lasted between two and four hours in the vast majority of patients (84 percent) who took clonidine in combination with TAP. The analgesic effect lasted 6-8 hours in 37% of participants who also got dexamethasone (Falia & Kulkarni, 2016).

In another randomized clinical comparison study, VAS scores were comparable in all three groups (20ml of 0.125 percent Bupivacaine with Dexamethasone (4mg), Clonidine (25g), and Saline (2ml) on each side in the first 12 hours ($p>0.05$). All three groups had longer lag times before the initial analgesic request. After 12 hours, the clonidine and dexamethasone group required significantly less tramadol than the control group. Using

clonidine or dexamethasone in addition to the TAP block for postoperative analgesia in CS patients will help alleviate somatic pain for an extended period of time, resulting in a significant improvement in the quality of pain care and breast-feeding experience. The use of either clonidine or dexamethasone as adjuvants in the TAP block is therefore equally effective in alleviating post-operative pain (Raghukumar & Majigoudar, 2017).

A randomized controlled trial (RCT) was carried out in Egypt to see how adding dexamethasone to bupivacaine affected transversus abdominis plane block for abdominal hysterectomy. The pain VAS score was significantly lower at the postoperative 2 hour (4.9 vs. 28.1, *P*=0.01), 4 hour (12.2 vs. 31.1, P=0.01), and 12 hour (15.7 vs. 25.4, *P*=0.02) when compared to TAP Even so, the dexamethasone group needed painkillers much longer (459.8 vs. 325.4 min, P=0.002) and had less nausea and vomiting (6 vs. 14, *P*=0.03) in the 48 hours after surgery (Ammar & Mahmoud, 2012).

Using dexamethasone as a perineural adjuvant for the TAP block, a meta-analysis found that the impact of LA on the TAP block lasted longer [mean difference (MD): 2.98 h; 95 percent confidence interval (CI): 2.19 to 3.78] and reduced VAS ratings at 2, 6, and 12 h postoperatively. Using perineural dexamethasone was also linked to decreased analgesic use and a lower incidence of nausea and vomiting on the first day following surgery (odds ratio: 0.28; 95 percent CI: 0.16 to 0.49)(Chen et al., 2018).

According to a study by Fouad and his colleagues, preemptive dexamethasone combined with bupivacaine in ultrasound-guided TAP blocks for postoperative analgesia following inguinal herniorraphy resulted in lower VAS scores at 4, 8, 12, 16 and 20 hours after surgery when compared to TAP alone. This difference was statistically significant in each of these time points. The TAP with dexamethasone group showed improved patient satisfaction and a reduction in nausea and vomiting, as well as a delay until the first opioids were required (Fouad et al., 2016).

Patients who received 8mg dexamethasone along with ropivacaine for TAP block had a significantly longer time to their first analgesic than those who received ropivacaine alone. According to another randomized control trial conducted in India (time to first analgesic was 5.92 hours longer with dexamethasone than without, *P* 0.0001). Post-operatively, their need for Tramadol was also lower (100,000 0 vs. 140, 00 50, 26 mg, *P* = 0.046). When it came to nauseousness and vomiting, the dexamethasone group (57.14

percent to 25.71 percent vs. 82.86 percent vs. 97.14 percent, $P = 0.038$) was found to have a decreased incidence ($P = 0.02318$) (Sachdeva & Sinha, 2016).

Adding Dexamethasone to Ropivacaine in TAP blocks for inguinal hernia repair and Spermatocelectomy did not result in a statistically meaningful extension of analgesia, despite a one-point decline in pain score at 12 hours post block (Wegner et al., 2017).

Researchers conducted an experiment to examine the effects of dexamethasone on the onset and duration of general anaesthesia in patients with low volume supraclavicular brachial plexus block (SCB). Sixty patients were split into two groups of 30 each, and the results were randomised. Compared to the control group, the dexamethasone group was shown to be experiencing a sensory and motor block earlier (10.36 1.99 and 12 1.64) minutes into the supraclavicular brachial plexus block compared to the control group (12.9 2.23 and 18.03 2.41) minutes. Sensory and motor blockade in the dexamethasone group was longer than the control group (366 28.11 and 337.33 28.75) minutes, respectively. Dexamethasone's VAS score was considerably lower after 210 minutes in comparison to the control group. And thus the conclusion was reached, with less local anaesthetic agent, that adding dexamethasone to the supraclavicular brachial plexus block causes analgesia to begin earlier and last longer than without it (Alarasan et al., 2016).

As Cummings et al. (2011) shown, ropivacaine or bupivacaine-induced analgesia from interscalene blocks can be maintained for longer with the addition of Dexamethasone. The ropivacaine had a stronger effect, but the block lasted longer than the normal bupivacaine. Dexamethasone and each medication had nearly identical analgesic effects for about the same 22 hours when used together (Cummings III et al., 2011).

An experimental study carried out by Yadav on the effectiveness of adding neostigmine or dexamethasone to a local anaesthetic (Lidocaine) to provide peri-operative analgesia for brachial plexus block found that the duration of analgesia in the dexamethasone group was 454 minutes, compared to 225 minutes in the neostigmine group, and that the difference was statistically important. In the 12 hours following surgery, the mean VAS was considerably lower in the dexamethasone group (Yadav et al., 2008).

Dexamethasone has been used as an adjuvant to local anesthetics in several trials to extend post-operative analgesia. An investigation on the effects of adding Dexamethasone to Bupivacaine for transversus abdominis plane block for abdominal hysterectomy was conducted by Amany et al in 2016.It was a randomized, controlled research in which 60 patients received either 20 mL of bupivacaine hydrochloride 0.25 percent + 2 mL saline 0.9 percent (control group, n=30) or 20 mL of bupivacaine hydrochloride 0.25 percent + 2 mL dexamethasone "8 mg" (n=30). Visual analogue scale (VAS) for post-surgical pain evaluation was the major result, while the secondary objectives were the time to initial analgesia, morphine intake, and the occurrence of nausea, vomiting or somnolence were the secondary outcomes in this study. When it came to postoperative pain, there was a substantial decrease at 2 hours (28.1 *P*=0.01), 4 hours (12.2 P=0.01), and the 12th hour (15.7 P=0.02). Additionally, the dexamethasone group had a longer time to initial analgesia (459.8 vs. 325.4 min, *P*=0.002), lower postoperative morphine needs (4.9 vs. 21.2 mg, *P*=0.003), and a lower incidence of nausea and vomiting (6 vs. 14, *P*=0.03) than the control group. It was found that adding Dexamethasone to Bupivacaine in the TAP block increased its duration and reduced nausea and vomiting.

Cummings et al. (2011) conducted a double-blind experiment on the effect of dexamethasone on the duration of interscalene nerve blocks with ropivacaine or bupivacaine, Each of the following four groups was randomly assigned to its respective set of patients: There are four types of Ropivacaine: 0.5 percent Ropivacaine, 0.5 percent Bupivacaine, 0.5 percent Dexamethasone 8 mg, and 0.5 percent each of Bupivacaine and Dexamethasone. When patients were discharged from the post-anaesthesia care unit, the time it took for them to seek their first painkiller was taken into account as the major outcome measure. In the Ropivacaine Dexamethasone group, analgesia lasted 22.2 hours, compared to 11.8 hours in the Ropivacaine group, with a P 0.001 difference. In the Bupivacaine Dexamethasone group, analgesia lasted 14.8 hours, compared to 22.4 hours in the plain Bupivacaine group. Ropivacaine and Dexamethasone both sustained analgesia more than Bupivacaine, according to this study. Nearly twenty-two hours' analgesia was achieved when Dexamethasone was combined with the local anaesthetic (Cummings III et al., 2011).

When Dexamethasone was given to Lignocaine, the study found that the analgesia lasted longer when the axillary nerve was blocked. There were 30 patients scheduled to receive either 34 mL Lidocaine 1.5 percent with isotonic saline chloride (the control group) or 34 mL Lidocaine 1.5 percent and 8 mg dexamethasone (the dexamethasone group), both of which were given at random to patients scheduled for elective hand and forearm surgery under axillary brachial plexus block. All four nerves were blocked for five, fifteen, and thirty minutes after they were blocked throughout this study's performance of the block. The beginning of the sensory and motor blockage was defined as the period between the last injection and the full elimination of the pinprick response and complete paralysis. The time gap between the injection of the local anaesthetic and the first postoperative pain and the complete recovery of motor functions was evaluated as the duration of sensory and motor blockages. According to the findings, there was no significant difference in the beginning of sensory and motor blockage between the two groups Lignocaine with Dexamethasone lasted 134 minutes longer than pure Lignocaine in terms of sensory blockage duration. A 180-minute gap existed between the two groups in terms of the time it took to reach complete motor blockage. In the dexamethasone group, blockage lasted much longer than in the lignocaine group, as shown by the statistically significant *P* value of 0.01(Cummings III et al., 2011).

Intravenous dexamethasone and perineural dexamethasone were studied in 2013 by Desmet et al. to see if they may extend the analgesic duration of a single-shot interscalene block with Ropivacaine. After being randomly assigned into one of three groups for arthroscopic shoulder surgeries using the Interscalene Block, patients were given the option to choose between three different concentrations of local anaesthetic: 0.5 percent ropivacaine, 0.5 percent dexamethasone, or 0.5 percent ropivacaine plus dexamethasone 10 mg intravenously. In this study, analgesia duration was defined as the time period from when a patient requested analgesia and when the block was performed. Sensory deprivation lasted on average 1405 minutes with intravenous dexamethasone and 1275 minutes with perineural. There was a statistically significant difference between the Ropivacaine and Dexamethasone groups (*P* 0.0001). This study found that intravenous Dexamethasone is just as effective as perineural Dexamethasone at extending analgesia. A dosage of 0.1 to 0.2 kilograms of intravenous Dexamethasone

may have a comparable analgesic effect and obviate the need for perineural injections (Desmet et al., 2013).

Intravenous and perineural dexamethasone were used by Kawanishi, et al in 2014 to study the duration of interscalene brachial plexus block in patients undergoing arthroscopic shoulder surgery. Patients undergoing arthroscopic shoulder surgery with an Interscalene Block were administered Ropivacaine 0.75 percent, Ropivacaine 0.75 percent plus perineural Dexamethasone 4 mg, and/or Ropivacaine 0.75 percent plus intravenous Dexamethasone 4 mg as part of this prospective, randomized, placebo-controlled study. For this study, analgesia duration was defined as the period between the block's performance and the patient's first analgesic request. Perineural Dexamethasone provided median sensory block duration of 18.0 hours, whereas intravenous Dexamethasone provided a median sensory block time of 14.2 hours. Analgesia following a single-shot Interscalene Block with Ropivacaine 0.75 percent can be effectively maintained for longer when Dexamethasone is administered perineural rather than intravenously, according to this study (Kawanishi et al., 2014).

In 2011, De Oliveira, GS et al. published meta-analysis for patients under regional anaesthesia, conducted a comprehensive search for randomized controlled trials investigating the impact of perineural Dexamethasone blockade on postoperative pain outcomes. As a random effect model was used, a meta-analysis was carried out Study participants were drawn from nine randomized trials that included a total of 760 participants. Perineural Dexamethasone was shown to have a weighted mean difference (99 percent) of 473 minutes in analgesia duration across seven trials (nine comparisons) comparing it to a control. Analyzed comparisons came from two separate researches, each with two different comparisons in each. In conjunction with brachial plexus blocks, perineural Dexamethasone has been shown to enhance postoperative pain outcomes, and no instances of permanent nerve damage have been linked to this drug's perineural administration (De Oliveira et al., 2011).

No long-term alterations to nerve structure or function have been reported by (Bailard et al., 2014)in their animal investigations following local steroid injection. Dexamethasone injections can cause nerve damage, but this is extremely rare, according to research. Contrary to popular belief, medicine injections are much less likely than needle sticks to

result in injury. For retroperitoneoscopic donor kidney transplantation, BEENA et al conducted a research in 2013 4 to evaluate the analgesic effectiveness of ultrasound-guided transverse abdominis plane block. 60 patients receiving laparoscopic donor nephrectomy were randomized into two groups using a closed envelope approach in this prospective randomized double-blinded trial. Each patient had an ultrasound guided transverse abdominis plane block administered at the conclusion of surgery. There was a difference between the study group (group S) and the control group (group C). All groups were administered intravenous tramadol (1 mg/kg) as a rescue analgesic if the Visual Analog Scale (VAS) was more than 3. Assessment of analgesic effectiveness included a visual analogue score at rest and movement, time to first rescue analgesic dosage, cumulative tramadol dosage, sedation and nausea scores recorded at 30 minutes postoperatively as well as 2, 4, 6, 12, 18 and 24 hours later. Tramadol usage throughout the course of a 24-hour period was also evaluated. As a result, patients in group S had a considerably lower Visual analogue score and had a longer delay until the first dose of rescue analgesia, as well as reduced tramadol intake (103.8 mg vs. 235.8 mg) in 24 hours.

For transversus abdominis plane blocks, the landmark-based "double-pop" approach was used in an investigation by McDermott et al. in 2012 to determine the best location for the needle tip and local anaesthetic to be administered. After general anaesthesia was administered, 36 adult patients underwent bilateral transverse abdominis plane blocks using the usual landmark-based approach. The exact needle location and local anaesthetic dissemination were then documented using ultrasonography. They were unable to see the ultrasound pictures while they were doing the block. Adults with a transverse abdominis plane (TAP) needle were only discovered in 17 of the 36 participants in this investigation. A significant incidence of peritoneal implantation was seen in the conventional blind transverse abdominis plane black (McDermott et al., 2012).

According to a study published in 2013, peri-operative single dose systemic Dexamethasone was found to reduce postoperative pain in Waldron et al. Although Dexamethasone-treated patients had greater blood glucose levels after 24 hours, there was no evidence that their risk of infection or wound healing was elevated. There have been fourteen investigations into the frequency of wound infection (1,449 patients). In

11 cases, there was no evidence of a connection between the use of Dexamethasone or the administration of a placebo in treating patients with infection. Among the two hundred and thirty-five patients in the final three investigations, there was no rise in infection rates among those using Dexamethasone. Neither Dexamethasone nor a placebo had any effect on the rate of wound healing in nine different investigations including 1020 individuals. Single dosage of Dexamethasone, rather than long-term usage, has not been linked to delayed wound healing and increased risk of infection. The following is a possible method of action, according to the hypothesis: In unmyelinated C-fibers, known to transport nociceptive information, dexamethasone inhibits potassium channel function, reducing stimulus transmission. As a result, the local anaesthetic is absorbed more slowly, resulting in longer-lasting analgesia for the patient. Inflammatory mediators, such as interleukins, cytokines, and tumour necrosis factor (TNF), are all inhibited by it. As a result, it reduces post-operative pain by increasing the release of anti-inflammatory mediators(Waldron et al., 2013).

1.8 Statement of Problem

Caesarean section is linked with the greatest number of unfavorable clinical outcomes, including pain. As a result of pain, the body's autonomic nervous system can be stimulated, increasing heart rate (HR) and cardiac output, as well as hypertonia and spasm of straight muscle (Kerai et al., 2017).

The post-operative phase is a critical time for pain treatment, since it improves patient happiness and well-being. As one of the most often performed major surgical operations, Caesarean section (CS) has a high rate of complications and a long recovery period (Zhao et al., 2021).

Ambulation, nursing, and even mother-child bonding can be harmed by inadequate postoperative pain treatment following a Caesarean birth (CS), which can lead to chronic pain syndromes and a lower standard of living (Abdallah et al., 2012).

When it comes to post-operative pain following a caesarean section, opioids are typically employed as either an intrathecal or parenteral component of a multimodal approach to analgesia throughout the postoperative period(Li et al., 2015). Itching, nausea, vomiting, drowsiness, and the possibility of delayed maternal respiratory

depression are all common side effects of opioids administered intravenously or systemically, and they all contribute to a lower level of satisfaction for the patient as a whole (Li et al., 2015). As a result of these opioid-related side effects, babies may have difficulties nursing and connecting with their mothers (Jani et al., 2019).

Supplementary analgesics such as non-steroidal anti-inflammatory drugs (NSAIDs) and paracetamol are not sufficient on their own. Regional field blocks such as the Transversus Abdominis Plane (TAP) block and iliohypogastricilioinguinal nerve blocks are becoming increasingly popular. Additionally, catheters for wound infiltration are in demand (Lochel et al., 2021).

Corticosteroids with anti-inflammatory effects, such as dexamethasone, have a lengthy and effective structure. In peripheral blocks, it acts as an adjuvant for local anesthetics, prolonging analgesia and contributing to the TAP block (Akkaya et al., 2014).

Dexamethasone administered intravenously has been found to minimize post-operative pain both at rest and when moving, as well as the need for opioids(De Oliveira et al., 2011).

1.9 Significant of Study

Increase patient satisfaction and decrease hospital stay by improving analgesia duration; lowering post-operative pain and intensity; permitting early mobilization; promoting mother-fetal bonding; minimizing post-operative complications and analgesia consumption.

These results may be utilized as a starting point in additional research on postoperative pain control in caesarean section patients, and they may also point to possible analgesic methods and alternate channels for improving the quality and duration of TAP block in West Bank nations.

1.10 Aims of the Study

The aims of present study are to compare the efficacy of perineural dexamethasone as an adjuvant for bupivacaine versa bupivacaine aloneon bilateral transverse abdominis plan block for pain control after cesarean section for patients undergoing spinal anesthesia. Secondary aim is to compare the time elapsed before the first request of

analgesia between dexamethasone and bupivacaine group versus bupivacaine alone group, and the incidence of other complications (nausea, vomiting and shivering) between the perineural dexamethasone with bupivacaine group versa bupivacaine alone group.

1.11 Research Hypothesis

HO1: There is no statistically significant difference at 0.05 level related to time to the first analgesic request measured by minutes between groups. HO2: There is no statistically significant difference at 0.05 level related to the incidence of postoperative pain between groups.

HO2: There is no statistically significant difference at 0.05 level related to the intensity of postoperative pain measured by VAS between groups.

HO3: There is no statistically significant difference at 0.05 level related to analgesic consumption between groups.

HO4: There is no statistically significant difference at 0.05 level in the incidence of nausea between groups.

HO5: There is no statistically significant difference at 0.05 level in the intensity of nausea measured by Likert scale (0-6) between groups.

HO6: There is no statistically significant difference at 0.05 level in the frequency of vomiting between groups.

HO7: There is no statistically significant difference at 0.05 level in the incidence of shivering between group.

Chapter Two

Methodology

A description of the researcher's methods and procedures was provided in this chapter: determining the methodology, study design, population, and sampling of the study, as well as a description of the procedure used by the researcher in executing the study and the statistical treatment used in data analysis.

2.1 Research design

A prospective, randomized controlled double-blind design employed for this study. Women undergoing elective CS under spinal anesthesia were randomized to bilateral TAP block with perineural dexamethasone (8 mg) added to bupivacaine 0.25%40 ml (20 ml each side) , versa bilateral TAP block with bupivacaine 0.25% 40 ml (20 ml each side)alone. The patients were assessed by a blinded observer for occurrence and severity of pain at first 24 hours post-operative starting from admission to recovery room. The reporting of pain was evaluated by an unbiased observer who was not aware of the participants' identities.

2.2 Study Population

Patients in the American Society of Anesthesiologists ASA II risk category represented the study population. According to the American Society of Anesthesiologists (ASA) classification in obstetric anesthesiology guidelines, pregnancy is classified as ASA II. Patients with Physical Status II, aged between 18 and 45 years, and at the appropriate gestational week to undergo an elective C-section with spinal anaesthesia were randomly and blindly allocated to either of the two study groups.

2.3 Sampling of the Study

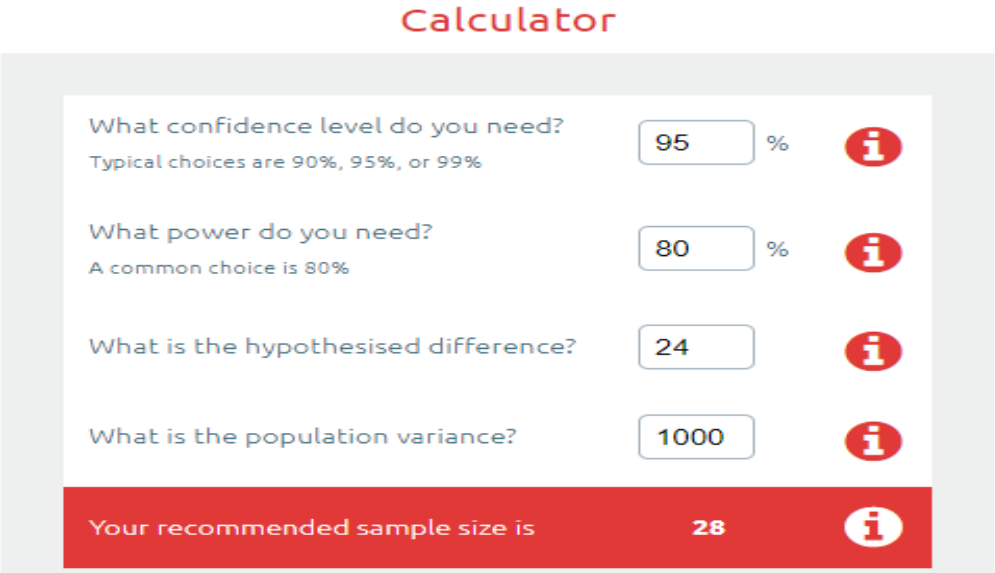
An estimate of the required sample size was based on the predicted reduction in pain occurrence when perineural dexamethasone was combined with bupivacaine during spinal anaesthesia.

The sample size calculator recommends the number of samples necessary to detect a difference between two means. Based on a study conducted by Zemedkun (Zemedkun

et al., 2020)which showed statistically significant variations in NRS scores between TAP-PD and TAP (mean ranking = 35.47)with bupivacaine alone (mean ranking = 59.48), *P* = 0.001). The difference between two means in this study is 24. Comparison of two means - Calculation of sample size was used which shows that we need 28 patients in each group. 10% will be added to each group to cover dropouts, there will be 31 patients in each group. It is also taken into account the sample size in previous studies. 40 patients were decided to recruit in each group.

Figure 2.1

Calculation of the sample size



2.4 The Primary Outcome Measures

Incidence and severity of Post-operative Pain

2.5 The Secondary Outcome Measures

- Amount of analgesics medication consumption in 24 hrs.
- Occurrence and severity of nausea
- Occurrence of vomiting
- Occurrence of shivering

2.6 Pre- employment assessment

Every participant employed in the study must have done complete blood count to check hemoglobin level and platelet count to exclude thrombocytopenia (a low platelet count (less than 100 x 10 3), to avoid any spinal complication of increased risk of spinal epidural hematoma.

2.7 Randomization

The study sample consisted of (80 patients) that was 40 patients in each group which was chosen from patients who were operated elective CS in Salfit Governmental hospital, and they were chosen by randomization.

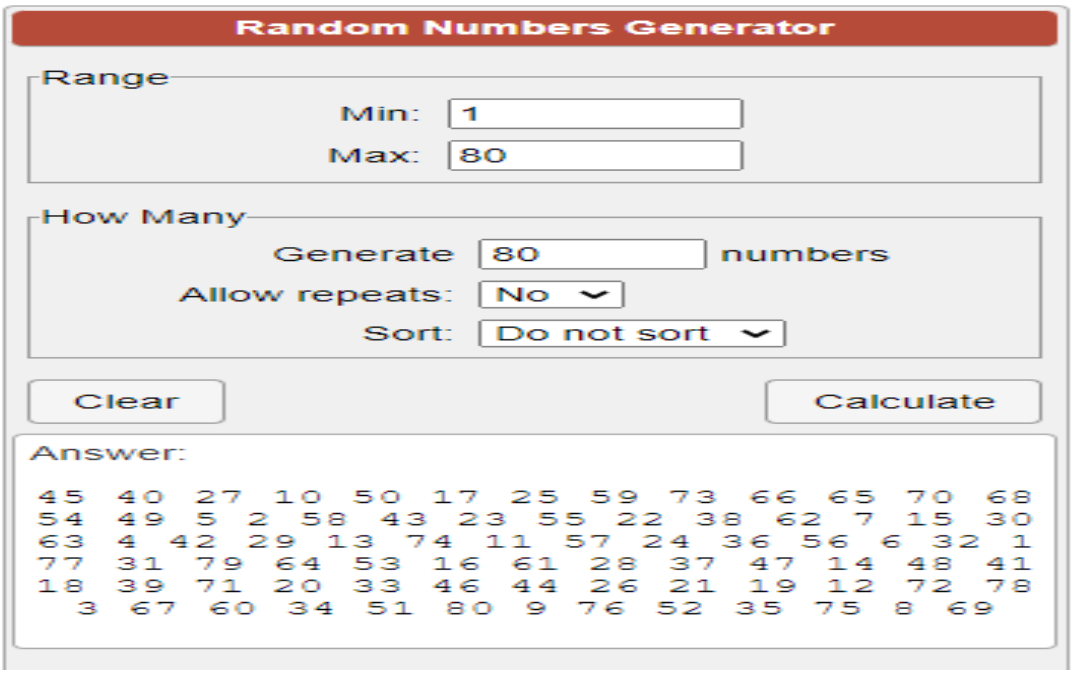
Group (1) n= 40 patients who had perineural dexamethasone 8mg added to bupivacaine (40 ml (20 ml each side), 0.25%).

Group (2) n= 40 patients had bupivacaine alone (40 ml (20 ml each side), 0.25%).

The study was a controlled, randomized double blinded study. The participants were randomized to receive perineural dexamethasone added to bupivacaine (experimental group) or routine anesthesia care (bupivacaine alone) (control group). All other peri-operative care components were managed. Randomization was conducted using airtight and securely sealed envelopes. Utilizing a computer, sequence numbers were generated. The number engraved on envelopes and the group type was drawn on the label together with the serial number. When the participants landed, the envelopes were opened to reveal the designated group. Randomization was implemented using computer-generated data. Random lists, which were subsequently converted into sealed envelopes and placed in the theatre for the audience to approach, were used.

Figure 2.2

Random number generator



2.8 Blindness

The trial is double-blind, which means that neither the patient knows which group will be randomly chosen nor the caregivers who will be assigned to care for the participants after the operation. They were blind to the medication that was administered and only the anesthesiologist who administered the medication is aware of which medication was given and was not included in the patient's care after surgery. Medications are prepared in syringes of the same size and color by the anesthesiologist.

2.9 Inclusion Criteria

All ASA II parturient who undergoing elective caesarean delivery under spinal anesthesia at full term gestational week.

2.10 Exclusion Criteria

Pregnant women with eclampsia, preeclampsia, a history of chronic opioid use, a history of medical illness, diabetes mellitus, patient refusal, use of other adjuvants, use of adjuvants for spinal anaesthesia bleeding abnormalities and patients with a body mass index (BMI) greater than 30 were excluded from the study.

2.11 Study Measures (Variables)

(a) Dependent variables: incidence and intensity of postoperative pain

(b) Independent variables: dexamethasone, bupivacaine, Spinal anesthesia**,** TAB block.

2.12 Instruments of Data Collection

*Post-operative pain incidence and intensity were measured by VAS (0-10) where is 0 no pain to 10 intolerable pains. Indication for rescue medication is when VAS ≥4 or above. Recue medication for pain is paracetamol 1000mg (IV) or pethidin according to weight (1-2mg per kg).

*Nausea was measured by Likert scale (0-6) where 0=no nausea, 1= very mild, 2= mild, 3=moderate, 4= severe, 5= very severe, 6= intolerable. Rescue antiemetic is metoclopramide (Pramin)10mg I.V. when Likert scale is ≥3 on (0-6 scale) or/and frequency of vomiting two times and above,Likert scale (0-6) is titled Morrow Assessment of Nausea and Emesis(Morrow 1984).

*Vomiting was measured by frequency

*The bed side shivering assessment scale (BSAS) was used to quantify shivering. The BSAS gives a quick and straightforward 4-point scale that enables broad distinction of graded metabolic responses to shivering thermogenesis (Badjatia et al. 2008). The inter-rater reliability of the BSAS has been determined to be adequate based on previous studies and its widespread usage in clinical practise. At intervals, trembling is evaluated using a four-point scale.

Figure 2.3

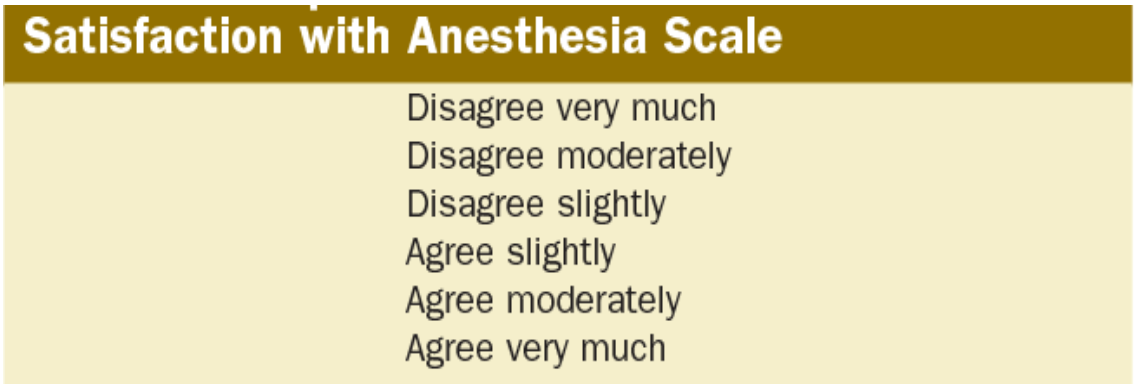
Classification of shivering

Grade	Clinical signs
0	No shivering
1	Mild fasciculations of face or neck
2	Visible tremor involving more than one muscle group
3	Gross muscular activity involving the entire body

Patients' satisfaction was measured by Lowa Satisfaction Anesthesia Scale (ISAS) is the most commonly used score for evaluating patient satisfaction after each anesthesia procedure, as an important parameter for quality control and continuous improvement in hospitals care (Barnett., et al.2013)

Figure 2.4

Patient Satisfaction assessment scale with anesthesia



2.13 Data Sheet

Data sheet was developed in many section which covered demographic information including (age, weight, height and BMI), Duration of surgery,ASA, hemodynamic variables (Heart rate, blood pressure, peripheral arterial oxygen saturation (SpO2)), previous caesarean delivery, the total number of doses of analgesics that were used and episodes of pain were obtained, and incidence and intensity of other complications (shivering, vomiting, nausea).

2.14 Validity of the Data Sheet

For verifying the validity of the data sheet and knowing if the data sheet with its sections really measure what they are designed to be measured. Data sheet was presented to two arbitrators having Ph.D. researcher, two anesthesiologist, two PACU nurses, and one statistician. The items were adopted after being accepted by arbitrators, and there was unanimity on the tool of the study as well as acceptance of the modifications made by the researcher on the data sheet.

2.15 Preparation of Medication

A nurse who did not take part in data gathering or data analysis prepared the medication.

Group (1) syringe20ml: mixture of 1ml dexamethasone (4 mg) added to 20 ml bupivacaine 0.25% for each side.

Group (2): syringe 20ml: mixture of 1ml normal saline 0.9% added to 20 ml bupivacaine 0.25% for each side.

2.16 Procedure

More than 80 patients who were scheduled to undergo elective CS were enrolled in the study following approval by the Institutional Review Board of An-Najah National University and written informed consent from all participants. Following a review of Relative articles and statistical analysis, population elections were held.

Upon arrival of patients to the post recovery room physical assessment was done by anesthesiologist, lab test was checked for any abnormalities, fasting of the patients for 6 hours before operation was confirmed, vital signs (blood pressure, heart rate, and SPO2

saturation) taken and recorded then demonstration of intravenous fluids normal saline 0.9% 1000ml for 30 minutes. the patient then transferred to the operation room.

2.17 Anesthesia Protocol

Before beginning spinal anaesthesia, patients were given (2-3) ml of 0.5 percent bupivacaine via a 25 or 26-Gauge spinal needle, depending on the preference of the responsible anesthetists, using the standard hospital monitoring protocol. All patients were then placed in a supine position and evaluated for sensory and motor block. After that, statistics such as blood pressure, SPO2 saturation, and heart rate were recorded during the procedure. Group one had a bilateral TAP block with bupivacaine (40 ml (20 ml each side), 0.25 percent) with dexamethasone (8mg) after the baby was successfully delivered and the wound was closed, Group two given Bupivacaine (0.25 percent) in 40 ml (20 ml each side) was used as the sole control.

After the skin had been closed, a conventional landmark technology was used to perform the block. TAP blocks have been performed by anesthetists on patients lying supine in aseptic technique after the lumbar triangle of Petit was identified as an access point to the neurofascial plane. Using a 22G blunt needle, a "click" or "pop" can be heard when an oblique muscle is punctured, and another "click" or "pop" can be heard when an internal oblique muscle is punctured. After aspiration, 20 ml of bupivacaine with 4 mg (for one side) is injected into the facial plane (TAP). The procedure was completed with a thorough aspiration. On the opposite side, the identical operation is carried out. Patients were transferred to the PACU after the same procedure was performed on them using only bupivacaine in the control group.

A VAS score was used to gauge postoperative discomfort in all groups. At 2 hours, 4 hours, 6 hours, 8 hours, 12 hours and 24 hours into the procedure, a VAS score was recorded for the first time. Each patient's first request for analgesia and the total amount of analgesia consumed were recorded from the patient's chart. The heart rate, mean arterial blood pressure, respiratory rate, and systolic blood oxygen saturation (SPO2) were all measured during the course of the pain evaluation. Symptoms of post-operative nausea and vomiting, as well as shivering, were noted and reported to the Likert scale-assessors (0-6). Vomiting was assessed by frequency, shivering was assessed by BSAS

scale (4 points scale), Patients' satisfaction was assessed by satisfaction with anesthesia scale and blood pressure and heart rate were documented.

Rescue analgesia was pethidin 50 mg IM or paracetamol 1000mg iv if VAS ≥4, Rescue antiemetic was Metoclopramide (Pramin) 10mg I.V if the patient has nausea ≥ 3 on Likert scale ,Rescue medication for shivering was Meperidine50 mg (Pethidine) when patients reached grade 3 shivering.

2.18 Ethical Considerations

It was carried out in conformity with the Declaration of Helsinki, drafted by the World Medical Association (WMA) as a statement of ethical standards for human medical research (2018). In light of the sensitive nature of research, the researcher is aware of the importance of adhering to ethical standards such as respect, informed consent, beneficence, non-maleficence, honesty, and fairness, as well as explaining the research to the patient and the IRB.

An-Najah National University's Institutional Review Board (IRB) gave its clearance to this research before data collecting began.

Identifiers were assigned to each patient in order to reduce bias and ensure the privacy of all participants. It was possible to eliminate the use of any patient or provider identifiers such as the name and/or medical record number by employing these identification numbers. For this trial, there were no known dangers of participation. Patients undergoing surgery were greeted by the researchers in the surgical ward the day before their procedure. Each patient was informed of the study's goals, his or her position in it, the importance of confidentiality, and his or her right to refuse. At that time, the study was open to any patients who met the eligibility requirements.

2.19 Statistical Methods

Data analysis is carried out using SPSS Version 20. This study used descriptive statistics, such as percentages, means and standard deviations. Assuming that the *P*-value 0.05 is considered significant, the following tests and methods were used:

1. Chi-Square test: tests the differences in percentages between the study groups of patients for qualitative variables such as: Pain Analgesia Intra-operative and vomiting frequency.
2. Two Independent Samples T test: tests the differences in means between the study groups for quantitative variables such as: Demographic data, First Request Analgesia, Postoperative VAS Scales, Consumption of Analgesia, Shivering BSAS Scale, Nausea Likert scale, Satisfaction, and Vital Signs.

Chapter Three

Results

In this chapter, analysis of data obtained is divided according to descriptive and inferential statistics, data will be presented according to frequencies and percentage of each item with Mean ± standard deviation.

Table 3.1

Comparisons between TABA group and TABD group regarding demographic data (N=80)

Variable	TABA (N=40)	TABD (N=40)	Total (N=80)	P-value*
Age in years	26 ± 3.35	26 ± 3.9	26 ± 3.61	1.000
Wight in Kg	72.38 ± 3.84	70.75 ± 4.78	71.56 ± 4.39	0.098
Height in cm	157.73± 2.82	156.68 ± 2.49	157.2 ± 2.7	0.082
Duration of surgery	50.63 ± 5.19	48.65 ± 2.9	49.64 ± 4.29	0.039
Previous cesarean section	1.13 ± 1.07	1.38 ± 1.08	1.25 ± 1.07	0.301
Body mass index	25.13 ± 1.23	25.31 ± 1.33	25.22 ± 1.27	0.525
Gestational Age (weeks)	39.23 ± 0.8	39.05 ± 0.9	39.14 ± 0.85	0.362

***** The *P*-values are related to the Two Independent Samples T-test and the numbers in the table represent (Mean ± Standard deviation).

The results in the table above show that there are no significant differences at 0.05 level between TABA group and TABD group in all demographic data except in the duration of surgery. The results show that the mean of the duration of surgery in TABA group (Mean=50.63) is significantly higher than the mean of the duration of surgery in TABD group (Mean=48.65), the *P*-value of the test is 0.039<0.05.

Table 3.2

Comparisons between TABA group and TABD group regarding incidence of Pain intra-operative

Variable	TABA (N=40)	TABD (N=40)	Total (N=80)	P-value*
Pain analgesia intra-operative:				
No	36(90%)	37(93%)	73(91%)	0.692
Yes	4(10%)	3(8%)	7(9%)	
Frequency	1 ± 0	1 ± 0	1 ± 0	1.000
Intensity (VAS)	1.75 ± 0.96	2.33 ± 0.58	2 ± 0.82	0.398
Analgesia needed (Vas > 4)	0	0	0	----

***** The *P*-values are related to the Two Independent Samples T-test test for quantitative variables and the Chi-square test for qualitative variables, the numbers in the table represent (Mean ± Standard deviation) or n (%).

The results in the table above show that there are no significant differences at 0.05 level between TABA group and TABD group in all the measures of incidence of pain intra-operative. All the *P*-values are higher than 0.05, and all the mean values or percentages of TABA group are not significantly differ from the corresponding mean values or percentages of TABD group. Also, there were no cases with analgesia needed (Vas > 4).

Table 3. 3

Comparisons between TABA group and TABD group regarding the first request analgesia in minutes

Variable	TABA (N=40)	TABD (N=40)	Total (N=80)	P-value*
First request analgesia (min) minutes	359.08 ± 12.86	521.25 ± 44.56	440.16 ± 87.87	<0.001

***** The *P*-value is related to the Two Independent Samples T-test and the numbers in the table represent (Mean ± Standard deviation).

The results in the table above show that there are significant differences at 0.05 level between TABA group and TABD group in the first request analgesia in minutes. The results show that the mean of the first request analgesia in TABA group (Mean=359.08) is significantly lower than the mean of the first request analgesia in TABD group (Mean=521.25), the *P*-value of the test <0.001.

Table 3.4

Comparisons between TABA group and TABD group regarding the post-operative VAS Scale in the rest

Postoperative VAS Scale in the rest	TABA (N=40)	TABD (N=40)	Total (N=80)	P-value*
2hrs	0.55 ± 0.5	0.15 ± 0.36	0.35 ± 0.48	<0.001
4hrs	2.55 ± 0.5	1.55 ± 0.88	2.05 ± 0.87	<0.001
6hrs	3.58 ± 0.5	2.4 ± 0.5	2.99 ± 0.77	<0.001
12hrs	4.4 ± 0.5	3.43 ± 0.5	3.91 ± 0.7	<0.001
24hrs	4.4 ± 0.5	3.48 ± 0.51	3.94 ± 0.68	<0.001
Total	3.1 ± 0.32	2.2 ± 0.23	2.65 ± 0.53	<0.001

***** The *P*-values are related to the two independent samples T-test and the numbers in the table represent (Mean ± Standard deviation).

The results in the table above show that there are significant differences at 0.05 level between TABA group and TABD group in post-operative VAS Scale in the rest at all-time stages. All the *P*-values are less than 0.05, and all the mean values of TABA group are significantly higher than the mean values of TABD group.

At time 2hrs, the results show that the mean of the VAS scale in TABA group (Mean=0.55) is significantly higher than the mean of the VAS scale in TABD group (Mean=0.15), the *P*-value of the test is <0.001.

At time 4hrs, the results show that the mean of the VAS scale in TABA group (Mean=2.55) is significantly higher than the mean of the VAS scale in TABD group (Mean=1.55), the *P*-value of the test is <0.001.

At time 6hrs, the results show that the mean of the VAS scale in TABA group (Mean=3.58) is significantly higher than the mean of the VAS scale in TABD group (Mean=2.4), the *P*-value of the test is <0.001.

At time 12hrs, the results show that the mean of the VAS scale in TABA group (Mean=4.4) is significantly higher than the mean of the VAS scale in TABD group (Mean=3.43), the *P*-value of the test is <0.001.

At time 24hrs, the results show that the mean of the VAS scale in TABA group (Mean=4.4) is significantly higher than the mean of the VAS scale in TABD group (Mean=3.48), the *P*-value of the test is <0.001.

Finally, at the total time, the results show that the mean of the VAS scale in TABA group (Mean=3.1) is significantly higher than the mean of the VAS scale in TABD group (Mean=2.2), the *P*-value of the test is <0.001.

Figure 3.1

Graphical comparison of changes in mean of VAS scale in the rest between group TABA and group TABD

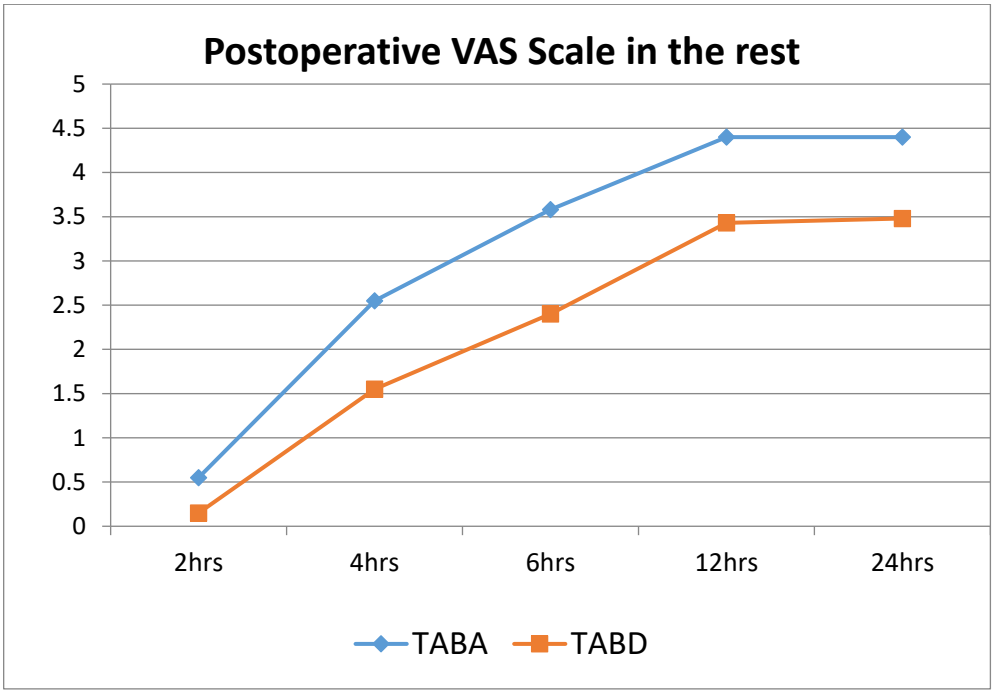


Table 3.5

Comparisons between TABA group and TABD group regarding the post-operative VAS Scale in the movement or coughing

Postoperative VAS Scale in the Movement or Coughing	TABA (N=40)	TABD (N=40)	Total (N=80)	P-value*
2hrs	0.6 ± 0.5	0.18 ± 0.38	0.39 ± 0.49	<0.001
4hrs	2.63 ± 0.49	1.85 ± 0.95	2.24 ± 0.85	<0.001
6hrs	3.68 ± 0.53	2.63 ± 0.49	3.15 ± 0.73	<0.001
12hrs	4.5 ± 0.51	3.73 ± 0.45	4.11 ± 0.62	<0.001
24hrs	4.53 ± 0.51	3.58 ± 0.5	4.05 ± 0.69	<0.001
Total	3.19 ± 0.24	2.39 ± 0.26	2.79 ± 0.47	<0.001

***** The p-values are related to the Two Independent Samples T-test and the numbers in the table represent (Mean ± Standard deviation).

The results in the table above show that there are significant differences at 0.05 level between TABA group and TABD group in Postoperative VAS Scale in the movement or coughing at all-time stages. All the *P*-values are less than 0.05, and all the mean values of TABA group are significantly higher than the mean values of TABD group.

At time 2hrs, the results show that the mean of the VAS scale in TABA group (Mean=0.6) is significantly higher than the mean of the VAS scale in TABD group (Mean=0.18), the p-value of the test is <0.001.

At time 4 hrs., the results show that the mean of the VAS scale in TABA group (Mean=2.63) is significantly higher than the mean of the VAS scale in TABD group (Mean=1.85), the *P*-value of the test is <0.001.

At time 6hrs, the results show that the mean of the VAS scale in TABA group (Mean=3.68) is significantly higher than the mean of the VAS scale in TABD group (Mean=2.63), the *P*-value of the test is <0.001.

At time 12hrs, the results show that the mean of the VAS scale in TABA group (Mean=4.5) is significantly higher than the mean of the VAS scale in TABD group (Mean=3.73), the *P*-value of the test is <0.001.

At time 24hrs, the results show that the mean of the VAS scale in TABA group (Mean=4.53) is significantly higher than the mean of the VAS scale in TABD group (Mean=3.58), the *P*-value of the test is <0.001.

Finally, at the total time, the results show that the mean of the VAS scale in TABA group (Mean=3.19) is significantly higher than the mean of the VAS scale in TABD group (Mean=2.39), the *P*-value of the test is <0.001.

Figure 3.2

Graphical comparison of changes in mean of VAS scale in the movement or coughing between group TABA and group TABD

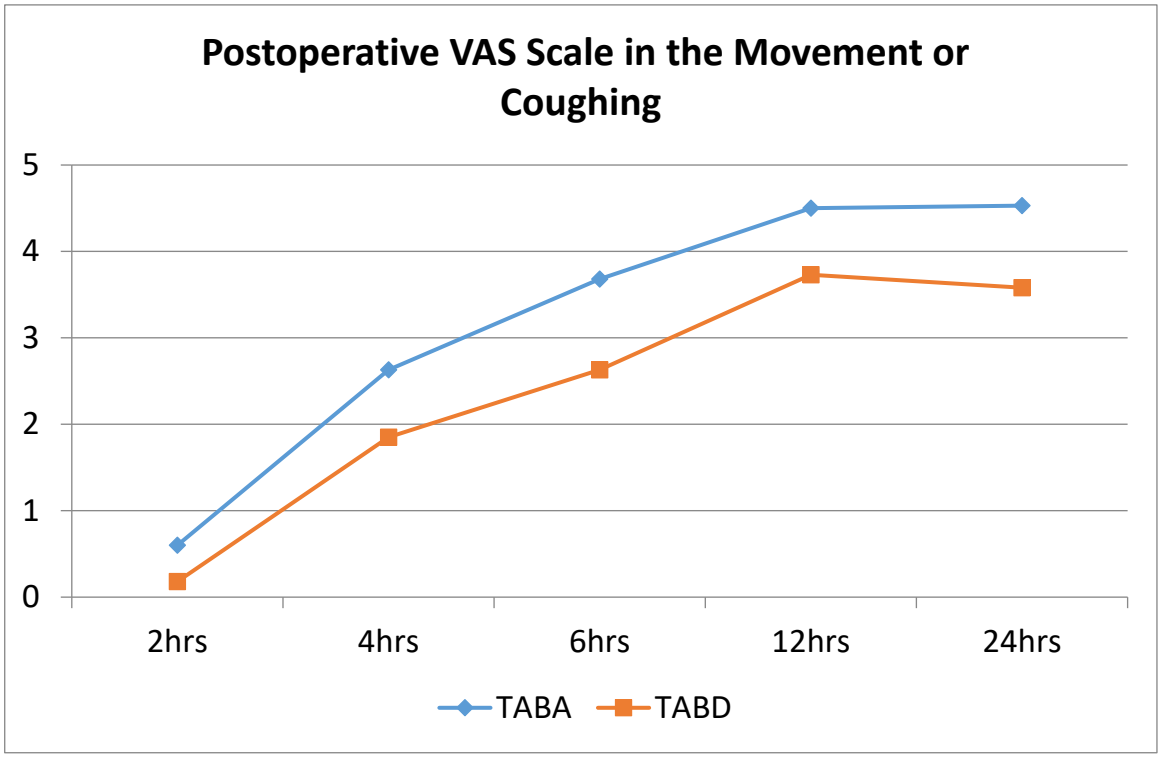


Table 3.6

Comparisons between TABA group and TABD group regarding consumption of analgesia.

Consumption of Analgesia	TABA (N=40)	TABD (N=40)	Total (N=80)	P-value*
Paracetamol 1000mg IV	1350 ± 483.05	1300 ± 464.1	1325 ± 471.33	0.638
Pethidine 50mg IM	72.5 ± 25.19	72.5 ± 25.19	72.5 ± 25.03	1.000

***** The p-values are related to the Two Independent Samples T-test and the numbers in the table represent (Mean ± Standard deviation).

The results in the table above show that there are no significant differences at 0.05 level between TABA group and TABD group in consumption of analgesia (Paracetamol and Pethidine). All the *P*-values are higher than 0.05, and all the mean values of TABA group are not significantly differed from the corresponding mean values of TABD group.

Table 3.7

Comparisons between TABA group and TABD group regarding post-operative incidence of complication

Postoperative Incidence of Complication	TABA (N=40)	TABD (N=40)	Total (N=80)	P-value*
Shivering BSAS Scale	1.38 ± 1.13	1.4 ± 1.03	1.39 ± 1.07	0.918
Nausea Likert scale	1.03 ± 0.97	0.95 ± 0.99	0.99 ± 0.97	0.733
Vomiting frequency: 0	36(90%)	34(85%)	70(88%)	0.499
1	4(10%)	6(15%)	10(13%)	
Satisfaction	5.15 ± 0.7	5.05 ± 0.81	5.1 ± 0.76	0.558

***** The *P*-values are related to the Two Independent Samples T-test test for quantitative variables and the Chi-square test for qualitative variables, the numbers in the table represent (Mean ± Standard deviation) or n (%).

The results in the table above show that there are no significant differences at 0.05 level between TABA group and TABD group in all postoperative incidence of complication measures. All the P-values are higher than 0.05, and all the mean values or the percentages of TABA group are not significantly differ from the corresponding mean values or percentages of TABD group.

Table 3.8

Comparisons between TABA group and TABD group regarding vital signs

Vital Signs	TABA (N=40)	TABD (N=40)	Total (N=80)	P-value*
Preoperative				
SPO2	98.1 ± 0.87	98.48 ± 0.75	98.29 ± 0.83	0.042
SBP	107.9 ± 9.99	109.78 ± 10.22	108.84 ± 10.08	0.409
DBP	63.45 ± 7.2	63.85 ± 5.79	63.65 ± 6.49	0.785
PULSE	86.58 ± 4.14	88.7 ± 4.68	87.64 ± 4.52	0.035
Intraoperative				
SPO2	98.35 ± 0.77	98.3 ± 0.82	98.32 ± 0.79	0.780
SBP	109.5 ± 10.37	109.13 ± 9.49	109.31 ± 9.88	0.866
DBP	66.1 ± 7.52	63.63 ± 5.19	64.86 ± 6.54	0.091
PULSE	83.02 ± 4.24	86.55 ± 5.45	84.79 ± 5.16	0.002
Postoperative				
SPO2	98.38 ± 0.74	98.3 ± 0.65	98.34 ± 0.69	0.631
SBP	107.4 ± 10.99	104.13 ± 7.06	105.76 ± 9.33	0.117
DBP	66.55 ± 7.01	64.75 ± 6.04	65.65 ± 6.56	0.222
PULSE	83.23 ± 5.01	83.08 ± 4.99	83.15 ± 4.97	0.894

***** The *P*-values are related to the Two Independent Samples T-test and the numbers in the table represent (Mean ± Standard deviation).

The results in the table above show that there are significant differences at 0.05 level between TABA group and TABD group only in (Preoperative SPO2, Preoperative PULSE, and Intra-operative PULSE). The *P*-values are less than 0.05 only for these three measures.

Regarding Preoperative SPO2, the results show that the mean in TABA group (Mean=98.1) is significantly lower than the mean in TABD group (Mean=98.48), the *P*-value of the test is 0.042<0.05.

Regarding Preoperative PULSE, the results show that the mean in TABA group (Mean=86.58) is significantly lower than the mean in TABD group (Mean=88.7), the *P*-value of the test is 0.035<0.05.

Regarding Intraoperative PULSE, the results show that the mean in TABA group (Mean=83.02) is significantly lower than the mean in TABD group (Mean=86.55), the *P*-value of the test is 0.002<0.05.

From the other hand, the results in the table above show that there are no significant differences at 0.05 level between TABA group and TABD group in. The *P*-values are less than 0.05 only for these three measures.

Chapter Four

Discussion

4.1 Demographic Data

In surgeries when parietal pain is the primary source of postoperative pain, TAP block has been shown to be a successful and versatile choice for multimodal post-operative analgesia (Alotaibi et al., 2021). The results of this study indicated that all TAP blocks carried out were satisfied, and the contributing factors like body mass index, demographic variables, and ASA status were analogous between the groups, except in the Duration of surgery. The results show that the mean of the duration of surgery in TABA group (Mean=50.63) is significantly higher than the mean of the duration of surgery in TABD group.

4.2 First Analgesia Request Time

Numerous studies have shown how adding Dexamethasone to a local anesthetic can increase the duration of analgesia and decrease the need for rescue analgesics. This anti-inflammatory action, as well as the reduction in C fibre pain transmission that Dexamethasone causes, has been attributed to a variety of processes. The first request analgesia mean in the TABA group (Mean=359.08) is considerably lower than the first request analgesia mean in the TABD group (Mean=521.25), with a significant value of 0.0001 between TABA group and TABD group, according to the results of this study. This is in line with a number of research findings. For supraclavicular brachial plexus block, Abdallah and colleagues in 2012 compared adding 8 mg dexamethasone intravenous and 8 mg dexamethasone perineural in the control group, Intravenous and perineural Dexamethasone groups experienced longer analgesia than the other group (13.1 hours), P-value was<0.0001 for both groups (Abdallah et al., 2012).Similar to finding of this study, Desmet, In the TAPD group, the median time for the first analgesic request significantly exceeded than of the TAPA group ($p = 0.00$) (Desmet et al., 2013). Also studies done by (Aga et al., 2021; Fouad et al., 2016; Sachdeva & Sinha, 2016; Sharma et al., 2022)found that after abdominal incisions and CS under spinal anaesthesia, the TAPD group's mean time to initial analgesic requests was statistically significantly longer than the TAPA group's. (P-values < 0.05).

In the contrary, a study conducted by Rahangdale and colleaguesto investigated the duration of ropivacaine analgesia after an interscalene block with a single injection which was found to be the same for both intravenous and perineural Dexamethasone, with the median sensory block time being 1405 minutes for the former and 1275 minutes for the latter. Using 0.5 percent Bupivacaine and epinephrine 1:300,000 (0.45 mg/kg) as a sciatic nerve blocker, Analgesic duration and latency to initial toe movement were studied in 2014 by Rahangdale and colleagues using perineural and intravenous dexamethasone. Between the perineural and intravenous dexamethasone groups, there were no statistically significant differences (P>0.05) (Rahangdale et al., 2014).In contrast to the current study's findings, the time to the initial analgesic request did not differ significantly (P-value > 0.05). (Huang et al., 2021). They offer a block in their inquiry following general anesthesia. In our study, the block is provided after spinal anesthesia.

4.3 Severity of Postoperative Pain

The results in this study shows that there are significant differences at 0.05 level between TABA group and TABD group in post-operative VAS Scale in the rest and on coughing at all-time stages. All the P-values are less than 0.05, and all the mean values of TABA group are significantly higher than the mean values of TABD group. The results of the current study are consistent with those of Aga's study, which discovered that the TAPD group significantly outperformed the TAPA group in terms of postoperative pain severity at the 6 hour, 12 hour, and 24 hour marks (p 0.05). (Aga et al., 2021).Additionally, the postoperative pain severity on the VAS was statistically significantly (p-values 0.05) lower in the group TAPD groups compared to the control groups (Zemedkun et al., 2020).

Unlike our investigation, a study by Fouad et al found no difference in VAS scores between the TAP-alone and TAP with perineural dexamethasone groups at 24 hours after inguinal herniorrhea surgery (Fouad et al., 2016). Due to differences in surgical procedure, design, and follow-up intervals, this may be the case. Dexamethasone added to bupivacaine for transversus abdominis plane block decreased VAS scores at 2 hours (4.9 vs. 28.1, P=0.01), 4 hours (12.2 vs. 31.1, P=0.01), and 12 hours (15.7 vs. 25.4, P=0.02), but not at 24 hours (P=0.02). Another trial in Egypt found the same result. (p=0.41) (Ammar & Mahmoud, 2012). Perhaps the bupivacaine dose was different, the

population was different, or the study design was different (they only used 20ml). A study by Robert Wegner and his colleagues in Texas found that 8mg of dexamethasone added to ropivacaine in TAP blocks for inguinal hernia repair and Spermatocelectomy had no effect on pain severity within 24 and 48 hours of treatment. Following a process ($p>0.05$) (Wegner et al., 2017).

4.4 Consumption of Analgesia

In the current study consumption of analgesia (Paracetamol and Pethidine) between two groups are not significant differences and all the mean values of TABA group are not significantly differ from the corresponding mean values of TABD group, corresponding to our finding a study done by Huang SH et al. There was no a statistically significant difference in post-operative total analgesic consumption. The current study's findings are also consistent with those of Zhao et al, who demonstrated that there were no appreciable changes in postoperative analgesic intake between the two administration routes (intravenous and perineural (Zhao et al., 2021).

In contrast to our data, TAPD patients were observed to use fewer analgesics throughout the course of a 24-hour period than were TAPA patients (Sachdeva & Sinha, 2016; Fouad et al., 2016; Deshpande et al., 2017). Additionally, the findings of the present investigation are inconsistent with those of a study by Aga et al., which demonstrated that the TAPD group had considerably lower 24-hour cumulative doses of diclofenac and tramadol than the TAPA group (p-values 0.05). (Aga et al., 2021).

The current study's findings do not agree with those of Ammar and Mahmoud's investigation. The authors showed that using dexamethasone in addition to bupivacaine for a TAP block during an abdominal hysterectomy considerably decreased the overall amount of morphine consumed during the first 24 hours following surgery. In the dexamethasone group, morphine use was reduced by 19.2 (8.1-24.2) vs. 4.1 (1.7-6.2), $p=0.01$ Ammar and Mahmoud, 2012)

In a randomised control experiment in Asmara, Eritrea, Kahsay, et al. found that the mean ± SD of Diclofenac intake was 87.21 ± 51.20 lower than control group in which 99.11 ± 41.26 (Kahsay et al., 2017). Different study designs, dexamethasone dose variability, pain management protocol variances, and surgical procedure variances

might all contribute to this discrepancy. Using a long-acting opioid (pethidine) intra-operatively may have contributed to this discrepancy, as they also included all abdominal surgery patients under general and spinal anaesthetic.

Perineural dexamethasone adjuvant to ropivacaine in Sharma's study of transversus abdominis plane block after spinal anaesthetic indicated a decrease in total tramadol intake in 24 hours when compared to the control group (223.3 56.83 vs 293.33 25.7, p0.001), 50 (0-100) against 100. (100-150) (Sharma et al., 2018).

4.5 The Prevalence of Postoperative Complication

In the current study, there were no appreciable differences in the incidence of postoperative complications between the two groups. In contrast to other research, this indicated that the prevalence of postoperative nausea and vomiting was statistically considerably lower in the TAPD group compared to the TAPA group, (Sachdeva&Sinha, 2016, Ammar& Mahmoud, 2012)

Study results showed incidence of nausea and shivering was lower in the TAPD groups when compared to the TAPA group but not statistically significant. This was comparable with a previous study showing the perineural dexamethasone group had a considerably decreased incidence of nausea compared to the TAP group. (Kartalov et al., 2015). Dexamethasone administration has also been shown to reduce the occurrence of shivering in patients (Wang et al., 2021).

4.6 Conclusion

In patients undergoing cesarean section under spinal anesthesia, perineural dexamethasone 8 mg given to bupivacaine (40 ml (20 ml each side), 0.25%) is an effective adjuvant to bupivacaine on bilateral TAP block with extended and powerful analgesia that delayed the time to the first analgesic request and decreased the intensity of postoperative pain without side effects.

4.7 Limitations

This research was conducted in a single-center. Sample size was adequate to identify variations in pain severity between the two groups of patients. But for better more patients should be included in the study.

4.8 Recommendations

After spinal anaesthesia for caesarean delivery, an anaesthesiologist recommends for using of dexamethasone as an adjuvant to bupivacaine on TAP for pain control. For further research, Studying post-operative complications should be the focus of an additional, randomised control trial.

List of Abbreviations

Abbreviation	Meaning
ASA	American Society of Anesthesiologists
BMI	Body Mass Index
CD	Caesarean Delivery
CS	Caesarean Section
DBP	Diastolic Blood Pressure
HR	Heart Rate
IQR	Inter Quartile Range
ML	Milliliters
Mg/kg	Milligram per Kilogram
Msc	Master of Science
NIBP	Non- Invasive Blood Pressure
NRS	Numerical Rating Scale
NSAID	Non-Steroidal Anti Inflammatory Agents
PNB	Peripheral Nerve Block
PONV	Post-Operative Nausea and Vomiting
RCT	Randomized Control Trial
SBP	Systolic Blood Pressure
TAP	Transversus Abdominis Plane Block
TAP-IVD	Transversus Abdominis Plane Block with Intervenes Dexamethasone
TAP-PD	Transversus Abdominis plane Block with Perineural Dexamethasone

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Appendices

Appendix A

Consent Form

موافقة الاشتراك في البحث العلمي

اسم الباحث: نور جمال احمد شاهين طالبة ماجستير تمريض تخدير – جامعة النجاح الوطنية

د.نور الدين المصري –أخصائي طب تخدير-أستاذ مساعد – جامعه النجاح الوطنية

د.عايدة القيسي- عميد كليه التمريض والقباله – منسق برنامج ماجستير تمريض تخدير – جامعه النجاح الوطنية

أنا الموقع أدناها: ... ...

اقر انه تم شرح طلب المشاركة في مشرع البحث العلمي بعنوان (تأثيراضافة ديكساميثازون حول العصب يضاف إلى بوبيفاكايين في العضلة المستعرضة البطينية في السيطرة على الألم بعد الولادة القيصرية. تجربة مستقبلية عشوائية مزدوجة التعمية ذات شواهد)

لقد أعطيت نسخة من توجيهات الطلب / المشروع واقبل المشاركة في المشروع. لقد تلقيت معلومات شفهية وخطية عن الدراسة، وأنا أدرك أن مشاركتي طوعية. وأنا على علم بأن في أي وقت، دون الحاجة إلى شرح، يمكنني أن انسحب من الدراسة إذا كنت ارغب في ذلك. إذا لزم الأمر يمكنني الاتصال لمقابلة جديدة أو توضيح ..

توقيع المشترك... ... ...

التاريخ:.....

Appendix B

Study Data: (Patient Profile)

Age in years	
Weight in Kg	
Height in Cm	
Duration of Surgery	
ASA	
Previous ceserionscetion	
Body Mass Index	
Gestional Age	

Intra-operative:

Parameter			Time		
Time of TAB block					
Pain analgesia Intra-operative	Yes	No	Frequency	Intensity VAS	Analgesia needed. (Vas > 4)

Post-operative Data:

Incidence of Complication

Parameter	Yes	No	Frequency	Time
Shivering: Measured by BSAS Scale				
Nusea : Nausea Likert scale 0-6 (o no nausea, 6 intolerable),nausea ≥3 will treated by 10 mg metoclopramide iv.				
Vomiting: Vomiting ≥2 times will be treated by 10 mg metoclopramide iv.				
Intensity of Pain :VAS Scale 0-10 0 no pain 10 untolerable.				

Postoperative VAS scale

Time	Vas sacle
2hr	
4hr	
8hr	
12hr	

Consumption of Analgesia:

Parameter	After 12 hrs
Total number of pethidin in mg	
Total number of paracetammolin mg	

Pre op V/S: BP: HR: RR: SPO2: ECG:

V/S TAP Block Administration					
Time	BP	HR	RR	SPO2	ECG
Immediate					
10 min					
20 min					
30 min					
1 hr					

Postoperative V/S					
Time	BP	HR	RR	SPO2	ECG
Immediate post op.					
15 min					
30 min					
45 min					
2 hr					
4 hr					
6hr					
12 hr					

Appendix C

ASA physical Status Classification System for Assessing A Patient Before Surgery

I. Normal healthy patient.

II. Patient with mild systemic disease.

III. Patient with severe systemic disease.

IV. Patient with severe systemic that is a constant threat to life.

V. Moribund patient who is not expected to survive without the operation.

VI. Patient declared brain dead whose organs are to be harvested for donor purposes.

Appendix D

The approval of the Palestinian Red Crescent hospital to conduct the study

An-Najah
National University
Faculty of Graduate Studies
Dean's Office

جامعة
النجـــاح الوطنية
كلية الدراسات العليا
مكتب العميد

التاريخ: 2021/6/29

حضرة الدكتورة عائدة القيسي المحترمة
منسقة برامج ماجستير التمريض

تحية طيبة وبعد،

الموضوع : الموافقة على عنوان الاطروحة وتحديد المشرف

قرر مجلس كلية الدراسات العليا في جلسته رقم (406) المنعقدة بتاريخ 2021/6/20، الموافقة على مشروع الأطروحة المقدم من الطالب/ة نور جمال احمد شاهين، رقم التسجيل 11659402، تخصص ماجستير تمريض التخدير، عنوان الأطروحة:

تأثير اضافة ديكساميثازون حول العصب مع بوبيفاكين في العضلة المستعرضة البطينية في الولادة القيصرية السيطرة على الألم. تجربة عشوائية مستقبلية مزدوجة التعمية ذات شواهد

Impact of Perineural Dexamethasone Added to Bupivacaine for Transversus Abdominis Plane Block in Post-Cesarean Delivery Pain Control. A Prospective, Randomized, Double- Blind, Controlled Trial

بإشراف: 1) د. عائدة القيسي 2) د. نور الدين المصري

ملاحظة: لاعتماد الأطروحة وتسجيلها على الفصل الثاني 2021/2020.

يرجى اعلام المشرف والطالب بضرورة تسجيل الاطروحة خلال اسبوعين من تاريخ اصدار الكتاب. وفي حال عدم تسجيل الطالب/ة للاطروحة في الفترة المحددة له/ا ستقوم كلية الدراسات العليا بإلغاء اعتماد العنوان والمشرف

وتفضلوا بقبول وافر الاحترام ،،،

عميد كلية الدراسات العليا
د. عوني ابو حجلة

نسخة : د. رئيس قسم الدراسات العليا للعلوم الطبية والصحية المحترم
: عميد القبول والتسجيل المحترم
: مشرف الطالب

فلسطين، نابلس، ص.ب 707، هاتف:/2345115، 2345114، 2345113 (09)(972)* فاكسميل:2342907(09)(972)
Nablus, P. O. Box (7) *Tel. 972 9 2345113, 2345114, 2345115 هاتف داخلي (5) 3200
* Facsimile 972 92342907 *www.najah.edu - email fgs@najah.edu

Appendix E

Approval of salfit governmental hospital on the study

State of Palestine
Ministry of Health
General Directorate of Education in
Health and Scientific Research

دولة فلسطين
وزارة الصحة
الإدارة العامة للتعليم الصحي
والبحث العلمي

Ref.: .....
Date:.....

الرقم: ٢٠٢١/٨٩٠/١٦٤
التاريخ: ٢٠٢١/٠٦/١٤

الأخ مدير عام الادارة العامة للمستشفيات المحترم ،،،

تحية واحترام،،،

الموضـــوع: تسهيل مهمة بحث

يرجى تسهيل مهمة **الطالبة: نور شاهين– ماجستير تمريض التخدير– جامعة النجاح،**
وباشراف د. عائدة القيسي، في عمل بحث بعنوان:

" Impact of Perineural Dexamethasone added to bupivacaine for transverses abdominis plane block in post-cesarean delivery pain control. A prospective, randomized, double blind, controlled trial"

من خلال السماح للطالبة بجمع معلومات من قسم التخدير والانعاش في مستشفى سلفيت الحكومي، بعد موافقة رئيس قسم التخدير والانعاش الطبي في المشفى. وذلك في:

– مستشفى سلفيت الحكومي

على ان يتم الالتزام بجميع تعليمات واجراءات الوقاية والسلامة الصادرة عن وزارة الصحة بخصوص جائحة كورونا، وتحت طائلة المسؤولية
على ان يتم تزويد الوزارة بنسخة PDF من نتائج البحث، التعهد بعدم النشر
الباحث يستطيع تقديم طلب بعد انتهاء بحثه للمنافسة على جائزة فلسطين للبحث العلمي
بامكان الباحث تقديم طلب للمشاركة ببحثه في المؤتمر الفلسطيني الدولي للبحث العلمي

مع الاحترام،،،

د. عبد الله القواسمي
مدير التعليم الصحي والبحث العلمي

نسخة: مديرة دائرة التمريض والقبالة المحترمة/ جامعة النجاح

P.O .Box: 14 scientificresearch.dep@gmail.com ص.ب. 14
Telfax.:09-2333901 تلفاكس: 09-2333901

جامعة النجاح الوطنية

كلية الدراسات العليا

تأثير اضافة الديكساميثازون حول العصب مع بوبيفاكين في العضلة المستعرضة البطينية في الولادة القيصرية المسيطرة على الألم. تجربة عشوائية مستقبلية مزدوجة التعمية البطينية ذات شواهد

إعداد

نور شاهين

إشراف

د. عائدة القيسي

د. نور الدين المصري

قدمت هذه الرسالة استكمالا لمتطلبات الحصول على درجة الماجستير في تمريض التخدير، من كلية الدراسات العليا، في جامعة النجاح الوطنية، نابلس- فلسطين.

2022

تأثير اضافة الديكساميثازون حول العصب مع بوبيفاكين في العضلة المستعرضة البطينية في الولادة القيصرية المسيطرة على الألم. تجربة عشوائية مستقبلية مزدوجة التعمية ذات شواهد

اعداد

نور شاهين

إشراف

د. عائدة القيسي

د. نور الدين المصري

الملخص

مقدمة: يعد الألم الحاد بعد الولادة القيصرية أحد أهم النتائج التي يمكن أن يؤثر عليها طبيب التخدير. كتلة المستعرضة هي تقنية فعالة لإغلاق الأعصاب الصدرية القطنية التي تغذي جدار البطن الأمامي الوحشي.

الهدف من الدراسة: الهدف من الدراسة هو مقارنة فعالية ديكساميثازون حول العصب كمساعد للبوبيفاكابيين مقابل بوبيفاكايين وحده على كتلة البطن المستعرضة على الجانبين للسيطرة على الألم بعد العملية القيصرية للمرضى الذين يخضعون للتخدير النخاعي.

الطريقة: هذه التجربة المرتقبة العشوائية والمزدوجة التعمية والمضبوطة بالدواء الوهمي، كان من المقرر إجراء عملية قيصرية ل 80 امرأة من درجة الثانية حسب تصنيف جمعية أطباء التخدير الأمريكية، تليها إعطاء كتلة البطن المستعرضة على الجانبين. تم تقسيم المشاركين بصورة عشوائية إلى مجموعتين، المجموعة (1) تلقت خليط من 1 مل ديكساميثازون (4 ملغم) يضاف إلى 20 مل بوبيفاكيين 52 ,0% لكل جانب. المجموعة (2) تلقت 1 مل من محلول ملحي عادي 0,9 % يضاف إلى 20 مل بوبيفاكيين 52 ,0% لكل جانب، تمت ملاحظة المرضى بعد العملية لمدة 24 ساعة من متطلبات مسكن الألم

الأول، إجمالي استهلاك مسكن الألم، درجات الألم على مقياس التصنيف الرقمي، وحدوث مضاعفات أخرى (الغثيان والقيء والارتعاش).

النتائج: البيانات المتعلقة بالتركيبة السكانية الجغرافية قابلة للمقارنة بين مجموعتين. متوسط طلب المسكن الأول في مجموعة TABA أقل بكثير من متوسط الطلب الأول في مجموعة TABD (المتوسط = 521,25)، مع قيمة P 0.00 للاختبار. عند مقارنتها بمجموعة TABA، كانت درجة VAS بعد الجراحة في حالة الراحة أقل بكثير في مجموعة TABD. تشير النتائج إلى أنه خلال الفترة الدراسة بأكملها، كان متوسط مقياس VAS لمجموعة TABA في حالة الراحة (المتوسط = 3.1) أكبر بكثير من مقياس VAS المتوسط لمجموعة TABD (المتوسط =2.2)، P=0.001 بالإضافة إلى ذلك، فإن متوسط درجة VAS لمجموعة TABA (المتوسط =3.19) عندما يكون سعال يكون متوسط مجموعة أكبر بكثير في TABD (المتوسط 2.39)، مع قيمة P 0.001 للاختبار.

الخلاصة: مجموعة ديكساميثازون 8 ملغرام حول العصب يعطى مع بوبيفاكايين (40 مل (20 مل لكل جانب) ,0.25 %) هو مادة مساعدة فعالة للبوبيفاكايين على كتلة البطيني المستعرض الثنائية مع تسكين ممتد وقوي يقلل من شدة الألم بدون أعراض جانبية .

الكلمات المفتاحية: ديكساميثازون، ألم، كتلة المستعرض الطيني، العملية القيصرية.