Hospital Universiti Sains Malaysia:

OBSTETRIC ANAESTHESIA GUIDELINES ON REGIONAL ANAESTHESIA FOR LOWER SEGMENT CAESAREAN SECTION

1st Edition

Initiative By,

Department of Anaesthesiology & Intensive Care and Department of Obstetrics & Gynaecology, School of Medical Sciences, Universiti Sains Malaysia (USM)

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Working Group:

Chairperson:

1. **Dr. S Praveena Seevaunnamtum**

   Consultant Anaesthesiologist (Obstetric Anaesthesia), Department of Anaesthesiology and Intensive Care, School of Medical Sciences, USM

Contributor:

1. **Dr. Sanihah Che Omar**
   Consultant Anaesthesiologist (Pain Specialist and Anaesthesiologist), Department of Anaesthesiology and Intensive Care, School of Medical Sciences, USM

2. **Dr. Kamaruddin Ibrahim**
   Consultant Anaesthesiologist (Pain Specialist and Anaesthesiologist), Department of Anaesthesiology and Intensive Care, School of Medical Sciences, USM

3. **Professor Dr. Shamsul Kamalrujan Hassan**
   Consultant Anaesthesiologist (Pain Specialist and Anaesthesiologist) and Head of Pain Services USM, Department of Anaesthesiology and Intensive Care, School of Medical Sciences, USM

4. **Dr Engku Husna Engku Ismail**
   Specialist Obstetrician & Gynaecologist, Department of Obstetrics & Gynaecology, School of Medical Sciences, USM

Reviewer:

1. **Associate Professor Dr. Wan Mohd Nazaruddin Wan Hassan**
   Consultant Anaesthesiologist (Neuroanaesthesia & Neurocritical Care) and Head of Department, Department of Anaesthesiology & Critical Care, Department of Anaesthesiology and Intensive Care, School of Medical Sciences, USM

2. **Associate Professor Dr. Nik Ahmad Zuky Nik Lah**
   Consultant Obstetrician & Gynaecologist (Maternal Fetal Medicine), Deputy Dean of USM-KLE IMP, Department of Obstetrics & Gynaecology, School of Medical Sciences, USM

USM Guidelines Objective:

This document outlines the standard operating protocol for administration of spinal anaesthesia with intrathecal morphine for elective or emergency Lower Segment Caesarean Section (LSCS).

To ensure all credentialled anaesthetic trainees use one common protocol to provide safe and effective spinal anaesthesia to parturient in Hospital Universiti Sains Malaysia (Hospital USM).

This policy also maps the relationship between functions, work processes and workflows, taking into consideration the operational policies and relevant system functionalities required to support the services.

Preoperative:

We have 2 antenatal wards (2 Akid and 2 Baiduri). Parturient are commonly admitted the day prior for elective LSCS to either of these wards, whilst for emergency LSCS, they come from Labour Room (LR). For most parturient, this would be the first time they are being reviewed for anaesthesia. However, certain high-risk groups of parturient are referred antenatally to anaesthetic clinic for early assessment.

Criteria for referral to anaesthetic clinic for early assessment:

- Might present difficulties should anaesthesia or regional analgesia be required.
- Are at high risk of obstetric complications (e.g. placenta accreta spectrum)
- BMI greater than 40 kg/m^2 at booking
- Have had previous difficulties with, or complications of, regional or general anaesthesia.
- Have significant medical conditions (e.g. cardiac disease in pregnancy)

Relevant Obstetric and Anaesthetic history:

- Indication and urgency for LSCS: Implications on management in terms of length of surgery, pre-eclampsia or estimated blood loss.

- Assess the wellbeing of the mother during pregnancy. Documented blood pressure (BP) during booking, will act as a reference point for BP management during LSCS.

- Risk factors for Postpartum Haemorrhage (PPH) are identified. It can be simplified to 4T (Tone 70%, Trauma 15 -20%, Tissue, Thrombin)(1)

Table 1. Risk factors and the associated levels of risk for PPH

Risk factor	The four Ts	OR (95% CI)
Multiple pregnancy	Tone	3.30 (1.00–10.60)[16] 4.70 (2.40–9.10)[24]
Previous PPH	Tone	3.60 (1.20–10.20)[16]
Pre-eclampsia	Thrombin	5.00 (3.00–8.50)[16] 2.20 (1.30–3.70)[31]
Fetal macrosomia	Tone	2.11 (1.62–2.76)[20] 2.40 (1.90–2.90)[24]
Failure to progress in second stage	Tone	3.40 (2.40–4.70)[23] 1.90 (1.20–2.90)[31]
Prolonged third stage of labour	Tone	7.60 (4.20–13.50)[16] 2.61 (1.83–3.72)[20]
Retained placenta	Tissue	7.83 (3.78–16.22)[20] 3.50 (2.10–5.80)[23] 6.00 (3.50–10.40)[24]
Placenta accreta	Tissue	3.30 (1.70–6.40)[23]
Episiotomy	Trauma	4.70 (2.60–8.40)[16] 2.18 (1.68–2.76)[20] 1.70 (1.20–2.50)[24]
Perineal laceration	Trauma	1.40 (1.04–1.87)[20] 2.40 (2.00–2.80)[23] 1.70 (1.10–2.50)[24]
General anaesthesia	Tone	2.90 (1.90–4.50)[31]

- Placental location: If there has been a previous LSCS, the location of the placenta must be known to ensure it is not overlying the uterine scar. The incidence of accreta with women known to have placenta praevia was 3% on 1st LSCS, 11% on 2nd, 40% on 3rd and 61% on 4th. (2).
- Anticoagulant or antiplatelet medications.

- Airway assessment: It is well recognized that there is a higher incidence of difficulty intubating in the obstetric population.

- Palpate the spine. Identify if this patient requires a preprocedural ultrasound of the spine in theatre later.

- Ensure an appropriate Group Screen and Hold (GSH) or Group and Cross Match(GXM) is ordered. Note if patient has antibodies as this will have implications in transfusion practice. Please follow order accordingly to Hospital USM Maximum Surgical Blood Order Schedule (MSBOS) for Elective Surgery.

Informed Consent

Ability of trainee to seek informed consent is an important skill to acquire. During the consultation, the trainee needs to try to respond to verbal and non-verbal cues, use appropriate language, confirm understanding, demonstrate empathy, listen actively, provide verbal facilitation and non-verbal encouragement, and legitimise the woman's concerns(3).

Inform to the parturient type of anaesthetic technique clearly which is spinal anaesthesia. This conversation is then steered to the following important points, namely:

1. What to Expect
2. Intraoperative Sensations
3. Side Effects and Complications

- **What to expect**

Explain what to expect in theatre. For example: When receiving the spinal anaesthesia, what position to take and what happens. The following is an example of how it can be said in the conversation(4).

Receiving your anaesthetic

- You will be asked to either sit, slouching over a pillow or lie on your side, curling your back.
- The anaesthetist will spray your back with a cold sterilising solution and inject a local anaesthetic into your lower back to numb your skin.
- From this point onwards, you should just feel pressure or pushing on your back. When the anaesthetic is being injected, you may feel tingling going down one leg, it is usually nothing to worry about but you should tell the anaesthetist if this happens. The procedure will take a few minutes but if it is difficult to find the right position for the needle, it may take longer.
- Your bottom and legs will begin to feel warm and heavy or may start to tingle.

- **Intraoperative Sensation**

It is also vital to inform parturient and document during consent taking that during your LSCS with a successful spinal anaesthesia, you may still feel pulling and pressure intraoperatively, but you should not feel pain.

- **Side effects and Complications**

Side effects and complications of the spinal anaesthesia should also be informed with its concomitant risk rates as follows(5).

Side Effects	Frequency	Rate
Low BP post spinal	Common	1: 5
Shivering	Common	
Pruritus/Itchiness	Common	1: 3
Spinal not working requiring pain relief top up	Occasional	1: 20
Spinal not working requiring conversion to GA	Occasional	1: 50
Nerve damage (numb patch on foot/leg, weakness of leg)	Lasting < 6 months: Quite rare Lasting > 6 months: Rare	1: 1000 – 1: 2000 1: 24 000

Premedication

- Prescribe the following aspiration prophylaxis:

1. Mist Na citrate 0.3M 30ml when Operation Theatre (OT) calls
2. T. Pantoprazole 40mg ON and when OT calls (not to use Ranitidine)
3. T. Maxolon 10mg when OT calls

- Also add on the following request on the general anaesthesia (GA) form:

1. IV Paracetamol 1g to OT
2. Insert 2 large bore branula (18G each)

- For parturient with Pregnancy Induced Hypertension/Preeclampsia: Continue anti-hypertensive medication OM of surgery.

- For parturient with Gestational Diabetes Mellitus on insulin:

1. Omit oral hypoglycaemic agents (OHA) and subcutaneous insulin once fasted,
2. Glucometer monitoring 2 hourly once fasted. Aim 6 – 8mmol/L. Start insulin sliding scale accordingly.

Fasting time

Try to minimize unnecessary prolonged fasting and dehydration in parturient awaiting LSCS. For elective LSCS, minimise fasting time by staggering the timing according to the elective list. Maternal OT list starts at 9am on weekdays.

Inform the parturient with clear information with regards to the timing. The following can be written onto the GA form:

1. Fast from solids 6 hours prior to surgery (with timing stated)
2. Allow clear oral fluid less than 150ml up to 2 hours before surgery (with timing stated)

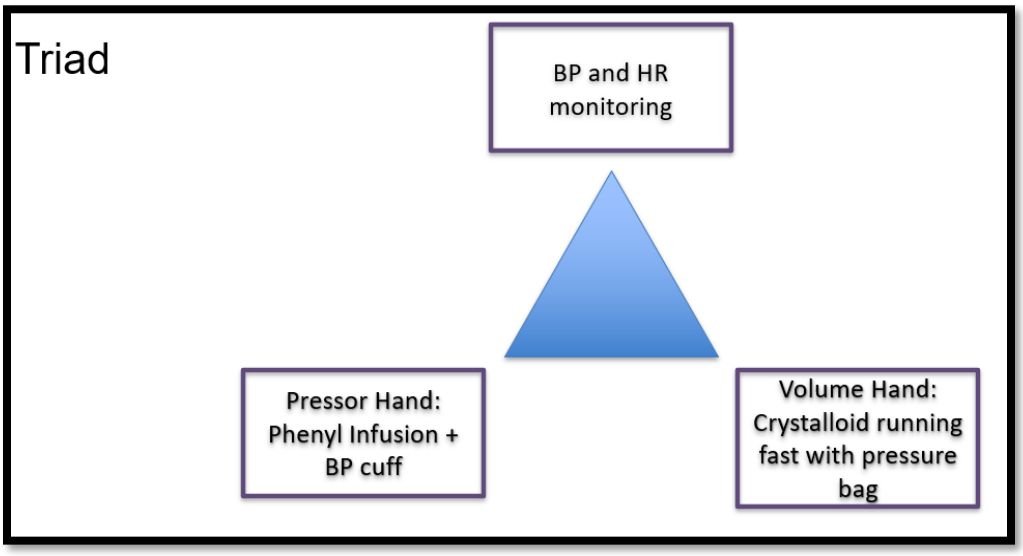
On arrival to OT

Parturient will be wheeled down with stretcher to MOT. In elective cases and if parturient is not in labour, get the parturient to walk into theatre with accompanying staff nurse. Once in theatre, sit immediately for positioning (only in MOT set up, not General OT(GOT) as its unsuitable).

Position for LSCS: both feet firmly on stool surface, sitting on side of OT table facing the wall, back exposed, hugging a pillow, put blanket with warmer connected to always keep the patient warm.

Place monitoring while patient sitting up: BP (set up for every 1-minute interval), PR, SpO2 is taken.

Flush branulla to ensure its patency. Once flushed, decide on which arm is pressor hand versus volume hand. Ensure the set-up of the monitoring triad as follows:



Phenylephrine Infusion & Co loading

At the beginning of your list, prepare 100ml saline bottles of Phenylephrine 100mcg/ml. Please check with other theaters if there is already a bottle prepared that you could share usage to prevent drug wastage.

For this case purpose, a 20 ml syringe of Phenylephrine concentration 100mcg/ml is drawn out. Affix with infusion tubing and 3-way tap distal to tubing.

Start infusion briefly at 30ml/hour after flushing branula just to ensure that there are no technical glitches to your pump set such as occlusion. Turn the 3-way tap closed and stop infusion once satisfied that syringe pump is working.

Simultaneously, ensure co loaded with 500ml to 1 litre volume of crystalloids. Be cautious in patients with pre-eclampsia or cardiac disease.

Personal Protective Equipment (PPE) & Skin Preparation

All trainees must do hand hygiene prior to donning. PPE that is required for aseptic procedure would be:

1. Facemasks
2. Sterile gown
3. Sterile gloves
4. Surgical hat/cap

Even if another trainee comes to help with a difficult spinal anaesthesia, please don appropriately.

Mandatory skin preparation: Chlorhexidine 0.5% in Alcohol 70%.

Antiseptic solutions are neurotoxic, hence ensure no accidental spillage onto neuraxial injectate or accidental injection of it.

Open the sterile set carefully and remove the gully pot, 3 surgical gauzes and sponge forceps and close the set again.

Once the gully pot is filled up, soak 3 surgical gauzes in it and proceed to clean the back. Discard it to your assistant and do not place it back onto your surgical field.

Drape your patient appropriately.

Preparation of Spinal Anaesthetic Tray

- Preparation of Local Anaesthetic (LA):

GA nurse (wears non-sterile gloves) shows the ampoule of Lignocaine 2%. Reads label and expiry date loudly. It is poured into one gully pot on your sterile field.

- Preparation of intrathecal Morphine (ITM) 0.1mg:

GA nurse (wears non-sterile gloves) shows the ampoule of morphine to anaesthetist. Reads label and expiry date loudly.

Use a 1ml insulin syringe with needle and draw up 0.1ml. Now, add 0.9ml of Heavy Bupivacaine 0.5% to the 1ml syringe. Discard 0.9ml of the solution, leaving behind 0.1 ml (0.1 mg Morphine)

- Preparation of intrathecal Fentanyl 15mcg:

GA nurse shows the ampoule of fentanyl to anaesthetist. Reads label and expiry date loudly.

Using the same syringe with the preexisting 0.1mg Morphine to draw up 15mcg of Fentanyl (0.3ml).

The final total volume of opioid (Morphine with Fentanyl) must be 0.4ml.

Contraindication for IT Morphine

1. Allergic to morphine
2. Uncontrolled Bronchial Asthma
3. Morbid Obesity. In cases BMI > 40 kg/m^2, it is a specialist-based decision if to proceed with ITM. If to proceed with ITM in such cases, the following safety measures must be adhered to:
   - ✓ Postoperative monitoring in Labour Room HDU for 24 hours.
   - ✓ Nasal prong Oxygen 3L/min for 24 hours.
   - ✓ 3rd call (Peri) to review overnight once.
   - ✓ Registrar-on-call to take note of the case.

In cases whereby the above cannot be fulfilled, omit ITM and offer:

1. PCA Fentanyl or
2. Change the technique to Combined Spinal Epidural (CSE) with the option of continuous epidural infusion postoperatively using standard Bupivacaine 0.1%/ Fentanyl 2mcg/ml.

Standard LA dose for Spinal Anaesthesia

All parturient will receive 0.5% Heavy Bupivacaine as per their height as follows:

Height	Dose of Heavy Bupivacaine 0.5% (ml)
150cm and above	2ml
145 cm – 149cm	1.7ml
144cm and below	Discuss dosage with specialist

Hence, the total volume of spinal injectate with local anaesthetic and intrathecal opioids is standardised in HUSM as follows:

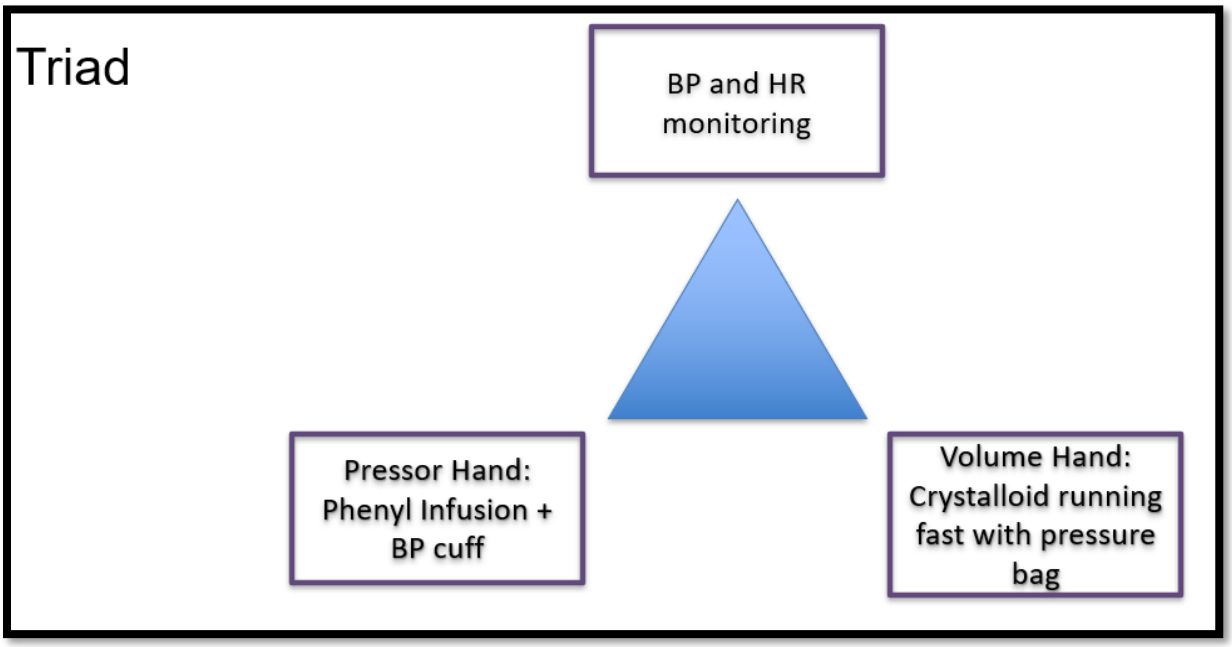
Height	Dose of Heavy Bupivacaine 0.5% (ml)	Dose of Intrathecal Fentanyl and Morphine	Total Volume
150cm and above	2ml	0.4 ml	2.4 ml
145 cm – 149cm	1.7ml	0.4 ml	2.1ml
144 cm and below	Discuss with specialist	Omit ITM, Fentanyl 15mcg (0.3ml)	

Spinal Anaesthesia

- Once the parturient is positioned optimally and skin prep with draping done, give the skin LA and allow time for it to work. Always talk through the procedure with the parturient.
- Proceed with spinal anaesthesia. The first choice is always standard Pencan 27G regardless of BMI of patient. You can change your first choice of Pencan to a different gauge or length if justified by a preprocedural ultrasound of spine.
- Once CSF flow is attained, ask your assistant to start Phenylephrine infusion at 30ml/hour with opening of the 3 way tap near branulla as well.
- 2-point CSF check. At the beginning and middle of the procedure. No barbotage practiced.
- As you complete your spinal injectate intrathecally, inform parturient that she will begin to feel warm and tingling sensation over her buttock.

Post Spinal Anaesthesia

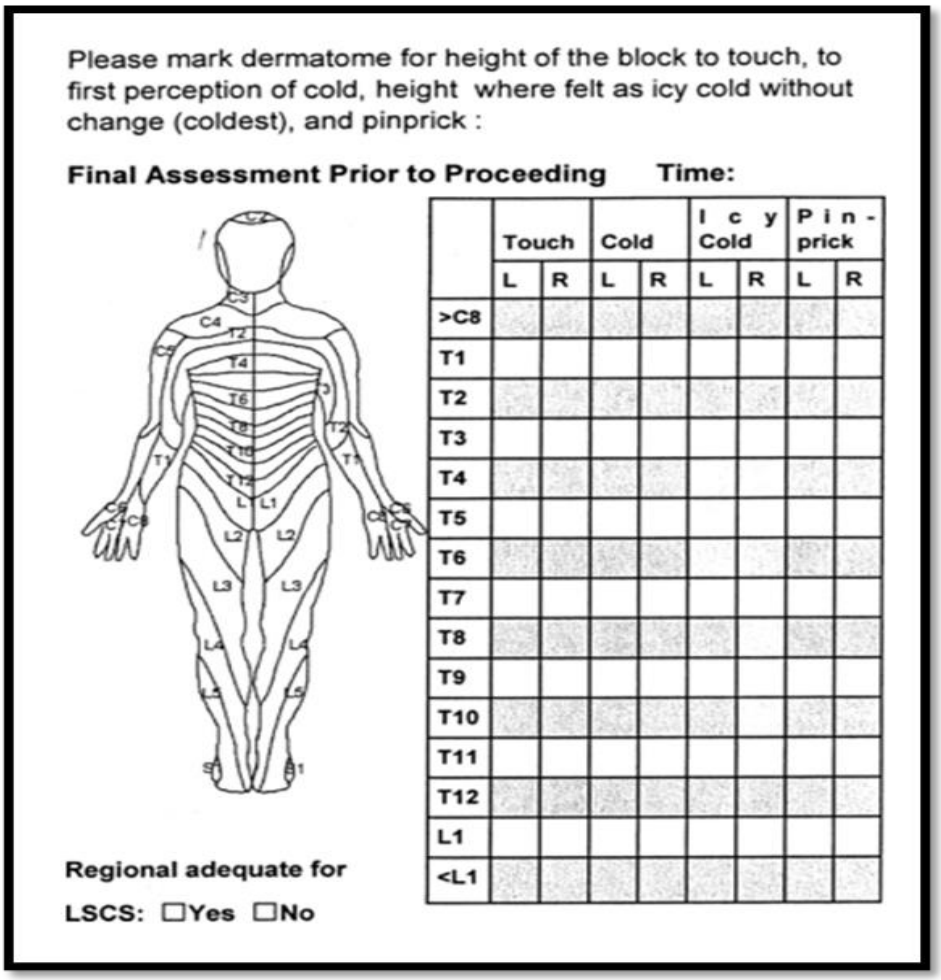
- Check fetal heart rate (FHR) post spinal and document in GA form.
- Do not unnecessarily ask parturient if her legs are heavy or numb until the point of proper block height check. It allows the spinal block to establish and lessen parturient anxiety.
- Continuously assess for haemodynamics stability, in terms of response of blood pressure, heart rate and patient clinical response.
- Titrate the Phenylephrine infusion with the aim to prevent hypotension as follows:
  - ✓ Increase by increments of 10ml/hour or more with every minute of BP reading.
  - ✓ Decrease down the Phenyephrine infusion by 5ml/hour. Always aim for maintenance of baseline BP.



- Assist your staff nurse to place the nasal prong oxygen and blankets with warmer connected. Always keep parturient warm.
- Serve standardized antibiotics IV Ampicillin 2g stat that is prepared by O&G team before surgery starts.
- Serve IV Dexamethasone 8mg as antiemetic. Omit if patient has received it 12 hours before in the ward or is a poorly controlled diabetic. Dexamethasone ampoule looks very similar to Suxamethonium. Be cautious to prevent drug error.

Block Height Assessment

- Check the motor block first. If the patient is still able to lift leg off the OT table, do not proceed to sensory check. Give time for spinal block to establish.
- Check loss of cold sensation. Use ice block provided in OT. Start with establishing baseline by placing it on parturient forehead and stating that it is icy cold.
- Then, choose with either side (right or left) thigh for start of block check assessment. Using the ice block, move it slowly upwards past mid-clavicle and to the neck. Identify the level where it starts to feel cold and where it is as cold as her forehead.
- Repeat on opposite side.
- Establish the upper height of block. Aim for T4 level(6).



Please mark dermatome for height of the block to touch, to first perception of cold, height where felt as icy cold without change (coldest), and pinprick :

Final Assessment Prior to Proceeding **Time:**

	Touch		Cold		Icy Cold		Pin-prick	
	L	R	L	R	L	R	L	R
>C8								
T1								
T2								
T3								
T4								
T5								
T6								
T7								
T8								
T9								
T10								
T11								
T12								
L1								
<L1								

Regional adequate for LSCS: ☐Yes ☐No

Chart for block height assessment

- The surgeon drapes parturient with surgical drapes. This is followed by mandatory 2nd block check with surgical forceps. Ask the parturient if she is comfortable? Ensure she answers you with Yes or No.
- Silence or a nod is not enough as an answer as she may be uncomfortable and too scared to answer. Parturient may also be very terrified and anxious and this needs to be addressed. Consider the option of playing music in the theatre.

Delivery of Baby

- Serve slow bolus of IV Pitocin 5U on delivery of baby. If requested by O&G team to serve another IV Pitocin 5U on a case-to-case basis.
- Dilute Pitocin 40U in 1 pint of crystalloid with IVD tubing. Attach the infusion to the patient and run 1 pint over 6 hours (30 drops per minute).
- Consider infusion of oxytocin in patients with severe preeclampsia or cardiac disease in pregnancy. Infusion of 40units oxytocin diluted in 40ml Normal saline run at 5-10ml/hr.
- Serve IV Paracetamol 1g and IV Ondansetron 4mg. IV Ondansetron may help to reduce shivering and postoperative nausea and vomiting (PONV) intraoperatively.
- If both parturient and baby stable, request the baby nurse in charge to bring the baby for skin-to-skin contact with parturient to enhance bonding and initiate breastfeeding.
- At the end of surgery, ensure Suppository Diclofenac 100mg per rectally is placed by surgeon.
- Parturient can be wheeled out of MOT slightly propped up to 15 degrees, lying on her pillow.

Estimation of blood loss

- Visual estimation of blood loss intraoperatively needs to be documented as estimated blood loss (EBL). Please do consider the haemodynamics of the parturient while estimating.
- In MOT, quantitative estimates of blood loss (QBL) are done by weighing surgical field and suction liquid and this is minused with dry weights. QBL needs to be documented as well.
- Any case with EBL or QBL > 1L, please request for a full blood count (FBC) 6 hours post operatively.
- Consider IV tranexamic 1g in addition to oxytocin if not already done so if Postpartum Haemorrhage (PPH) occurs.

QBL Calculation in USM

AVERAGE ABSORBANT ITEM WEIGHTS	WEIGHT (X1)	Standard Caesar Set
Abdominal pack – Big 29cm x 29 cm	30g	2 pieces – 60g 4 pieces – 120g
Abdominal pack – Small 19cm x 19 cm	15g	2 pieces – 30g 4 pieces – 60g
Raytex Gauze	2g	10 pieces – 20g 20 pieces- 40g
Plain gauze	2g	10 pieces -20g
Slide Sheet	100g	1 piece – 100g
Blue Sheet	20g	

Dry weight Standard Caesar Set= 2 Abdominal pack sized big + 2 Abdominal pack sizzed small + 20 pieces Raytex + 10 Plain gauze + Slide sheet = 250g

QBL =

Total wet weight + Suction chamber - Liquor - Dry weight Standard Caesar Set

Postoperative Analgesia for Parturient receiving ITM for LSCS

- All patients who have receive ITM in their spinal dose, will receive the following in the ward:

1. T. Paracetamol 1g qid for 3 days, first dose to commence 6 hours post op on the routine nursing timing (6am,12pm,6pm,12 midnight)
2. T. Diclofenac 50mg tds for 3 days, first dose to commence 18 hours post op on the routine nursing timing (12 midnight, 8am, 4 pm)
3. T. Maxolon 10mg prn/tds for 1 day for prevention PONV.

- Contraindications to Nonsteroidal anti-inflammatory drugs (NSAIDs):

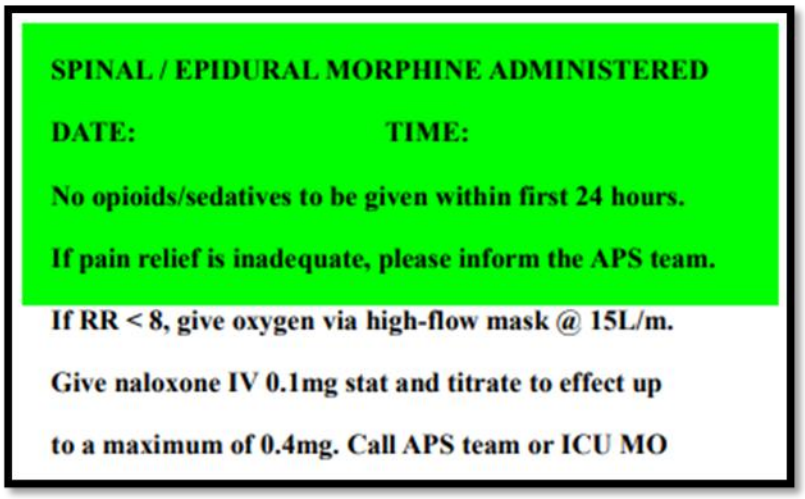
1. Allergic to NSAIDs
2. PPH
3. Pregnancy induced Hypertension/ Preeclampsia/HELLP Syndrome
4. Poorly controlled Bronchial Asthma
5. History of upper GIT bleed (in cases of severe hyperemesis gravidarum)

- For those contraindicated to NSAID, start:

1. T. Oxynorm 5mg prn/qid for 3 days

Postoperative Analgesia Documentation

- Fill in the blue APS form that has the following instruction chop on it.



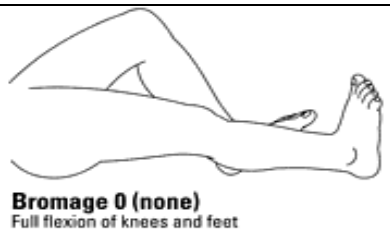
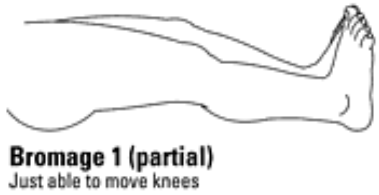
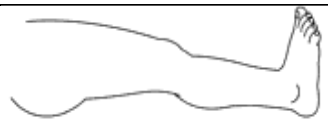
- No additional oral, rectal, IV or IM opioids should be given in the first 24 hours following administration of neuraxial morphine without prior consultation with the APS team.
- Fill in the whiteboard in the APS room with the patient details, for the APS team to follow-up parturient the next day.

Postoperative Monitoring in Recovery Bay

Routine post-caesarean section observations are done as follows:

1. Heart rate,
2. Respiratory rate
3. Blood pressure
4. Pain score
5. Presence of PONV
6. Bromage score
7. Pad chart

Bromage score(7)

 **Bromage 0 (none)** Full flexion of knees and feet	No Residual Motor Block; Full flexion of knee and feet	0
 **Bromage 1 (partial)** Just able to move knees	Partial Block Remains; just able to flex knees with free movement of feet	1
 **Bromage 2 (almost complete)** Able to move feet only	Almost complete block; only able to move feet; Unable to flex knee	2
 **Bromage 3 (complete)** Unable to move feet or knees	Complete Motor Block; Unable to move feet or knees	3

Postoperative Monitoring in Ward

- All parturient who received ITM must be reviewed by APS team 24 hours post LSCS. Ensure that patient has at least one branula for up to 24 hours postoperatively.

- During APS assessment, kindly document:

1. Bromage Scoring
2. Assessment for side effects (pruritus, PONV)
3. Assess for complications (PDPH, residual block/neurological deficit/urinary retention)

- Please inform the registrar and specialist in charge once any complications are noted. Educate the woman of the importance of using regular, simple analgesia despite breastfeeding.

- Parturient can be referred earlier back to APS team in the event of uncontrolled pain or PONV for rescue drugs.

Conversion of Labour Epidural to Anaesthesia for Emergency LSCS

As our labour epidural services become more established, trainees should anticipate more cases of parturient with preexisting epidural catheters from labour suite referred for an emergency LSCS in MOT/GOT.

Assessment for suitability of proceeding with epidural top up

We should be mindful of the indication for emergency LSCS in each referral. Decision to delivery interval plays a big role in determining mode of anaesthesia. When comparing the time it takes to deliver the baby in both cases of general anaesthesia versus labour epidural top up, a retrospective audit demonstrated a mean decision-to-delivery interval of 17 and 19 minutes(8).

However, conversion of preexisting labour epidural catheter still comes with a risk of failure rate up to 21% as is cited in literature(9). Epidural conversion failure leads to general anaesthesia in the parturient. General anaesthesia in obstetric population comes with the gravely higher incidences of peripartum mortality and morbidity that unfortunately ends in litigation.

Hence, it is imperative for our trainees to decide during the preoperative assessment if to use the current labour epidural catheter or remove it and proceed with spinal anaesthesia as per protocol.

During preoperative history and examination, the following red flags should be sought after:

- ✓ Breakthrough pain in labour despite on labour epidural
- ✓ Parturient complaining of patchy sensory block.
- ✓ If parturient is on continuous epidural infusion, presence of any bilateral leg weakness?
- ✓ Examination with ice block on sensory loss to cold. Is there a missed segment or patchy block?
- ✓ Examination of the back is mandatory, to check if epidural catheter has migrated.

Location of epidural top up

- For safety of parturient, it should always be in the operating theatre after standard monitoring had been set up. This can facilitate early increased identification of complications such as high or total blockade, hypotension and local anaesthetic systemic toxicity.
- Test dose: Epidural Lignocaine 2% 3ml
- The reasoning of the test drug and dose is that it gives a definitive objective motor block within 1.5 min in the event of accidental intrathecal injection compared within 9 minutes if it was within correct space epidurally(10).

Epidural Cocktail for top up Anaesthesia for LSCS

In USM, our intuitionally agreed choice of drugs are as follows. Please ensure that the syringes are labelled correctly:

Syringe size used	Drug dose	Drug volume drawn up	Labelled
3 ml	Fentanyl 100 mcg	2 ml	Fentanyl 50mcg/ml
20 ml	Lignocaine 2% (non-preservative) Adrenaline 0.1mg of 1:1000	20 ml 0.1 ml	Lignocaine 2% with 1:200 000 Adrenaline

- Commonly, approximately 12 to 14ml of LA is given to establish block.
- The reason the opioid fentanyl is separated from the local anaesthetic is that we can achieve the higher doses of epidural fentanyl without having to give too high doses of LA.
- Addition of epidural fentanyl is also able to hasten the time for surgical anaesthesia by up to 2 minutes(11).
- When topping up for LSCS, always practice aspirating via the epidural catheter to ensure there has been no migration into CSF or blood.
- Drugs are then given epidurally in aliquots of 3 ml of LA, followed by epidural fentanyl 25mcg each time until motor block of the lower limbs and loss of cold sensation up to T4 is present.

- In epidural top up, the hypotension is not as acute or severe as for spinal anaesthesia. Hence, while we do not practise starting a phenylephrine infusion.
- If the BP monitoring is stable every minutely, it is up to the trainee to reduce the frequency to 2.5 minutely once haemodynamics are stable.
- After successful epidural top up, the rest of the intraoperative anaesthesia protocol follows closely as anaesthesia for spinal anaesthesia for LSCS.
- At the end of surgery, administer single dose epidural top up is 1.5 mg of morphine followed by a flush of 5ml NS is administered epidurally before pulling out the catheter.

In the event of PPH, one of the following choices can be considered:

1. Decide to omit the epidural morphine and use the catheter for postoperative analgesia with continuous epidural infusion using standard Bupivacaine 0.1%/ Fentanyl 2mcg/ml or,
2. Serve single dose epidural Morphine 1.5mg at the end of surgery, repeat a FBC 6 hours postoperatively and review result. This is to ensure parturient has no evidence of thrombocytopaenia prior to removing epidural catheter in ward. Handover to APS/ 3rd call.

Contraindication for single dose Epidural Morphine (1.5mg):

1. Allergic to Morphine

2. Uncontrolled Bronchial Asthma

3. Morbid Obesity. In cases BMI > 40 kg/m2, it is a specialist-based decision if to proceed with Epidural Morphine. If to proceed with Epidural Morphine in such cases, the following safety measures must be adhered to:

- ✓ Postoperative monitoring in Labour Room HDU for 24 hours.
- ✓ Nasal prong Oxygen 3L/min for 24 hours
- ✓ 3rd call (Peri) to review overnight once.
- ✓ Registrar-on-call to take note of the case.

In cases whereby the above cannot be fulfilled, omit Epidural Morphine and offer continuous epidural infusion using standard Bupivacaine 0.1%/ Fentanyl 2mcg/ml instead.

Postoperative Analgesia for Parturient receiving Epidural Morphine for LSCS

- All patients who have receive Epidural Morphine at end of surgery, will receive the following in the ward:
    1. T. Paracetamol 1g qid for 3 days, first dose to commence 6 hours post op on the routine nursing timing (6am,12pm,6pm,12 midnight).
    2. T. Diclofenac 50mg tds for 3 days, first dose to commence 18 hours post op on the routine nursing timing (12 midnight, 8am, 4 pm).
    3. T. Maxolon 10mg prn/tds for 1 day for prevention PONV.

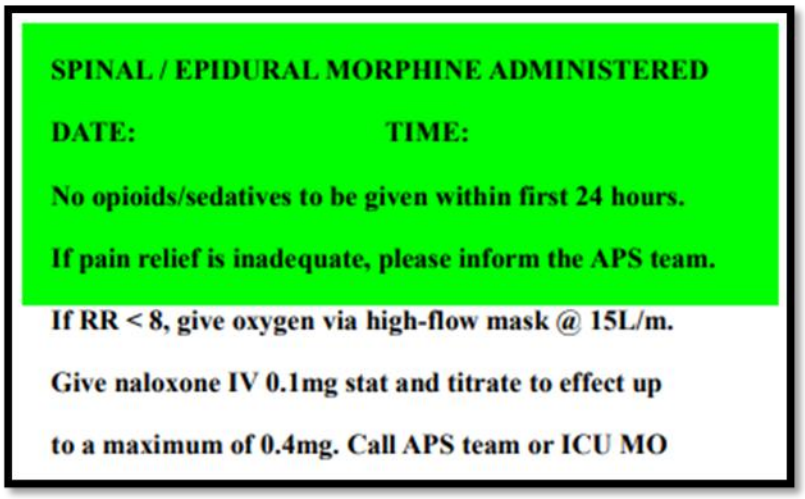
- Contraindications to Nonsteroidal anti-inflammatory drugs (NSAIDs):
    1. Allergic to NSAIDs
    2. PPH
    3. Pregnancy induced Hypertension/ Preeclampsia/HELLP Syndrome
    4. Poorly controlled Bronchial Asthma
    5. History of upper GIT bleed (in cases of severe hyperemesis gravidarum)

- For those contraindicated to NSAID, start:

1. T. Oxynorm 5mg prn/qid for 3 days

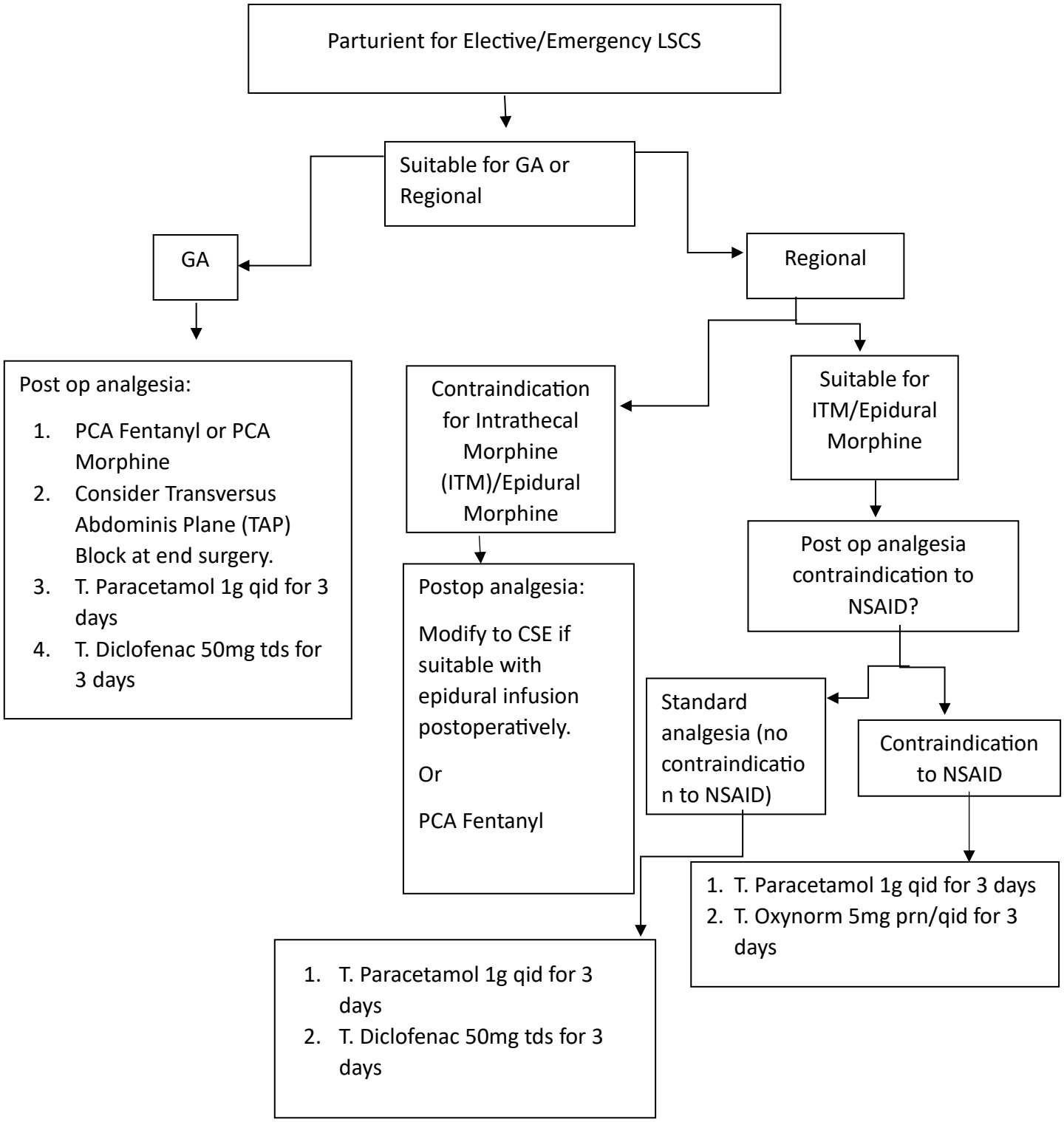
Postoperative Analgesia documentation

- Fill in the blue APS form that has the following instruction chop on it.



- No additional oral, rectal, IV or IM opioids should be given in the first 24 hours following administration of neuraxial morphine without prior consultation with the APS team.
- Fill in the whiteboard in the APS room with the patient details, for the APS team to follow-up parturient the next day.
- Postoperative monitoring in Recovery and Ward remains the same as protocol stated for Spinal Anesthesia for LSCS.

USM GUIDELINES: FLOW CHART FOR POST OPERATIVE ANALGESIA FOR LOWER SEGMENT CAESAREAN SECTION



Management of side effects of Neuraxial Morphine

Respiratory depression & Oversedation

Highest risk period being between 3 to 12 hours after neuraxial morphine administration.

The administration of medicines known to cause sedation such as antihistamines, benzodiazepines and anticonvulsants should be avoided in the first 24 hours following neuraxial morphine administration to avoid over-sedation.

Where a patient is regularly treated with these medicines for pre-existing medical conditions, there is a need to consider benefits and risks of continuing these medicines during the first 24 hours following administration of neuraxial morphine e.g. regular anticonvulsants for the management of epilepsy should be continued during the first 24 hours after neuraxial morphine administration.

In the event of respiratory depression or oversedation:

1. Call for help by informing APS MO/ 3rd call/ ICU MO urgently.
2. If patient is excessively sedated or unable to arouse or RR $\leq$ 8, give supplemental O2 via high flow mask at 15L/min.
3. IV Naloxone 100mcg every 3min until maximum of 400mcg and parturient stable and awake.
4. Transfer of patient to HDU for closer observation.

Pruritus

Incidence of pruritus is common at about 1 in 3 parturient(5). Typically, it presents with itchiness over face, nose and upper extremities. It is an opioid dependant side effect with the possible mechanism being μ receptor mediated stimulating the trigeminal nerve.

This needs to be mentioned preoperatively at consent taking and reassurance that it is a self-limiting condition up to 24 hours postoperatively. It usually requires no treatment. Always avoid antihistamines as treatment as this will cause sedation.

If severe cases of pruritus, consider:

1. IV 40mcg naloxone every 5 minutes titrated to effect (maximum 200mcg total) or
2. IV Nalbuphine 3-5mg single stat doses.

Postdural Puncture Headache (PDPH)

PDPH remains one of the more common complications of neuraxial blockade and a significant cause of postnatal morbidity. Incidences of PDPH are 1.5% and 11.2% of women experience after spinal anaesthesia depending on needle size and design(12).

PDPH is defined as headache occurring within 5 days of a lumbar puncture, caused by CSF leakage through the dural puncture, usually accompanied by neck stiffness and/or subjective hearing symptoms, remits spontaneously within 2 weeks, or after sealing of the leak with autologous epidural lumbar patch(13).

Detailed history taking will present with typical symptoms as follows:

1. Postural headache

2. Neck stiffness
3. Pain in the cervical, thoracic or lumbar vertebral area
4. Subjective hearing symptoms
5. Visual disturbances
6. Vertigo

Be mindful that about one-third of parturient develop headaches in the first postpartum week but PDPH accounts for only 4.7% of all the postpartum headaches(12). Differential diagnosis of PDPH are as follows:

1. Primary headaches (e.g. migraine, tension headache)
2. Pre-eclampsia and hypertensive diseases of pregnancy
3. Vascular causes both haemorrhagic and ischaemic
4. Infection (meningitis, sinusitis)
5. Intracranial pathology

Management of PDPH

Non-pharmacological

1. While we encourage parturient to rest, there are no published randomized controlled trials (RCTs) examining the effect of bed rest in the treatment of PDPH and bed rest has not been shown to speed the resolution of PDPH.
2. Normal hydration should be maintained but there is no evidence of benefit from excessive fluid administration in the treatment of obstetric PDPH. IV fluids need only be used to prevent dehydration when adequate fluid cannot be taken orally.
3. Reassurance to parturient with regular follow up.

Pharmacological:

1. Regular multimodal analgesia including paracetamol and NSAIDs should be offered to all parturient if not contraindicated.
2. Opioid analgesia (T. Oxynorm 5mg qid/prn) offered if non opioid analgesia is unable to provide adequate relief from PDPH.
3. Syrup caffeine 300mg 12 hourly/PRN. This may be offered but caffeine treatment should not exceed 24 hours. Each dose should not exceed 300 mg, with a maximum of 900 mg in 24 hours. A lower maximum dose of 200 mg in 24 hours should be considered for women who are breastfeeding as higher doses precipitate irritability in breastfed babies. Women receiving caffeine therapy should have their intake of caffeinated drinks monitored and the recommended daily dose should not be exceeded.
4. Consider laxatives such as Syrup Lactulose 15ml tds.
5. Epidural blood patch (EBP) is gold standard of therapy for PDPH(12). Possibility of an epidural blood patch should be primed from the first visit itself. Mechanism of epidural blood patch relies on volume of blood injected and the pressure this generates within the spinal canal. It helps seal of the dural puncture with blood clot and helps increase the cerebrospinal fluid (CSF) pressure. Timing of EBP should be within 48 hours of dural puncture. Several retrospective studies have found greater efficacy but there are no randomised studies comparing the efficacy of early or late EBP.

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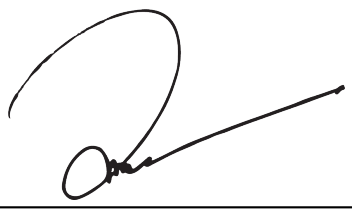
Endorsed By :



Dato' Professor Dr. Nik Hisamuddin Bin Nik Ab. Rahman

Director

Hospital Universiti Sains Malaysia

Date : 24th January 2024