TOTAL SPINAL DURING C-SECTION

MODULE: OBSTETRIC

TARGET: ANAESTHETIC CORE TRAINEES & ALL ANAESTHETISTS & OBSTETRIC TEAMS

BACKGROUND:
Total/High spinal block is an uncommon but significant complication of neuraxial anaesthesia. The obstetric population is at particular risk due to increased intraabdominal pressure, increasing BMI, early supine positioning following intrathecal injection, prior epidural volume loading, and inadvertent top-ups of intra- or sub-durally placed’ epidural’ catheters for LSCS.

All anaesthetists must be able to manage the respiratory, cardiovascular and neurological effects of an inadvertently high spinal block.
### RELEVANT AREAS OF THE ANAESTHETIC CURRICULUM

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  - Demonstrates satisfactory practice in preparing drugs for the induction of anaesthesia  
  - Demonstrates proper technique in injecting drugs at induction of anaesthesia  
  - Manages the cardiovascular and respiratory changes associated with induction of general anaesthesia |
| IG_BS_10 | In respect of airway management:  
  - Demonstrates optimal patient position for airway management  
  - Manages airway with mask and oral/nasopharyngeal airways  
  - Demonstrates correct head positioning, direct laryngoscopy and successful nasal/oral intubation techniques and confirms correct tracheal tube placement  
  - Demonstrates proper use of bougies  
  - Correctly conducts RSI sequence  
  - Correctly demonstrates the technique of cricoid pressure (Participant 2) |
| OB_BS_01 | Undertakes satisfactory preoperative assessment of the pregnant patient                                                                                                                                       |
| OB_BS_02 | Demonstrates the ability to clearly explain and prepare an obstetric patient for surgery                                                                                                                    |
| OB_BS_03 | Demonstrates the use of techniques to avoid aorto-caval compression                                                                                                                                         |
| OB_BS_07 | Demonstrates the ability to provide general anaesthesia for caesarean section [S]                                                                                                                       |
| RA_BK_09 | Recalls/discusses the complications of spinal and epidural analgesia and their management including, but not exclusively, accidental total spinal blockade and accidental dural tap and post-dural puncture headache |
| RA_BS_04 | Demonstrates how to undertake a comprehensive and structured pre-operative assessment of patients requiring a subarachnoid blockade, perform the block and manage side effects/complications correctly |
| CI_IS_01 | Demonstrates leadership in resuscitation room/simulation when practicing response protocols with other healthcare professionals                                                                            |
| CI_IS_02 | Demonstrates appropriate use of team resources when practicing response protocols with other healthcare professionals                                                                                      |
| OB_IS_05 | Demonstrates the ability to manage complications of regional block including failure to achieve an adequate block                                                                                         |
| OB_IS_09 | Demonstrates the ability to provide intra uterine resuscitation for the “at risk” baby                                                                                                                      |
| OB_HS_06 | Demonstrates skill in managing emergencies including pre-eclampsia, eclampsia, major haemorrhage                                                                                                           |
| OB_HS_10 | Demonstrates effective communication with patients and relatives/partners, including when things have not gone well                                                                                      |
**INFORMATION FOR FACULTY**

**LEARNING OBJECTIVES:**

- Recognition of the symptoms and signs of a high or total spinal block.
- Managing the consequences of a high spinal while safely facilitating delivery.
- Verbal reassurance and sufficient anaesthesia are required as there is a high likelihood of awareness.

**SCENE INFORMATION:**

- **Location:** Theatre (Maternity)
- **Expected Duration of Scenario:** 20 minutes
- **Expected Duration of Debriefing:** 30 minutes

**EQUIPMENT & CONSUMABLES**

- Pregnant simulation model and neonatal model
- Wedge
- Checked Anaesthetic Machine
- Airway Trolley and intubation equipment
- IV fluids and giving sets
- Self inflating bag-valve-mask
- CTG Monitor
- Theatre drapes

**PERSONS REQUIRED**

- Anaesthetic Junior Trainee
- Anaesthetic Assistant
- Anaesthetic Senior Trainee (Optional)
- Obstetrician (Optional)
- Midwife (Optional)

**PARTICIPANT BRIEFING: (TO BE READ ALOUD TO PARTICIPANT)**

This lady has been brought into theatre for an category II emergency section. She is usually fit and well and has had a normal pregnancy. She has had a poor CTG trace for about an hour, with some slow-to-recover bradycardias which have precipitated the decision to perform the section.

She has just had a spinal anaesthetic in the left lateral position. 2.5ml 0.5% heavy bupivacaine with 15 mcg fentanyl has been injected.
FACULTY BRIEFING:

The patient is undergoing an emergency (Category II) Caesarean section for foetal distress based on CTG finding. There has been time for regional anaesthesia.

Scenario commences immediately after the spinal anaesthetic block has been sited, and the patient has been placed onto her back (wedged) ALTERNATIVELY the anaesthetist who has performed the spinal block has been called away to an emergency and hands over the patient’s care to the participant.

If spinal block level is checked more than once, it reveals a rapidly rising block up to cervical level.

‘VOICE OF MANIKIN’ BRIEFING:

Your name is Sally Phillips. You are 32 years old and having your first baby.
No medical problems. No surgical history. No regular medications. No allergies.

Uneventful pregnancy. Some heartburn in the last few weeks.

As spinal block develops (over about 3-5 minutes):
Initially complaining of mild difficulty breathing – find hard to take deep breaths or cough.
Tingling in hands and arms, developing into numbness and weakness.
Start to feel a bit panicky.
Increasing difficulty breathing, inability to complete sentences in one breath.
Increasingly drowsy, eventual loss of consciousness.

VOICE OF THE TELEPHONE HELP BRIEFING:

Help will arrive as soon as possible but the starred consultant is helping out in emergency theatres.

If a recommendation is asked for from a senior, advise to treat haemodynamic effects with atropine and vasopressors, if conscious level falls then patient will require general anaesthesia.

OTHER IN-SCENARIO PERSONNEL BRIEFING:

MIDWIFE
Monitor CTG and reassure mother.
### Anaesthetic Record Sheet

**Patient Details**
- **Surname:** Sally Phillips
- **Address:** 33 years old
- **DOB:** Sex: M/F

**Anaesthetist's Preoperative Assessment by**

<table>
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<tr>
<th>Name</th>
<th>Grade: □ Cons □ AS □ SG □ Trainee</th>
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### Anaes / Surg History:
- No previous Gas

### Medical History:
- Normal pregnancy to date
- Non-reassuring CTG for last hour, 2 significant bradys that have been slow to recover.
- No medical problems.
- Frequent heart burn in the last few weeks

### O/E

**Airway Assessment**
- **Mouth Opening:** 1 2 3 4
- **Jaw:**
- **Neck:** MP2. Good neck and jaw ROM
- **Teeth:**

### NBM since
- Solids: Fasted overnight
- Clear Fluids:

### Pregnancy:
- Lactation: 

### Relevant Medication:
- No regular meds
- Gaviscon OTC

### Investigations
- **Hb:** 10.8
- **Plt:** 180
- **NAD Blood Sugar:**

### Relevant Tests
- **Coag:** INR 1.0
- **Gp. & Save:**
- **X - Match:**

### Consent
- **GA:** Sedation
- **Epidural:** Spinal
- **Regional:** 
- **Suppository:** 

### Allergies
- No Allergies

### Relevant Information
- **Neck and Jaw ROM:**
- **Apfel Score:**

---

**For attention of ward staff:** (further investigations, fasting, continue/omit current medication, etc.)

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**All orders/Information regarding medication & fluids must be entered on patient’s drug prescription & administration record.**

SPG2299
CONDUCT OF SCENARIO

INITIAL SETTINGS

Begins immediately after spinal injection
A: Own
B: Spontaneous, RR 16, SaO2 96%
C: BP 110/65, HR 105, 16G IV access
D: GCS 15, Pupils equal. Anxious.
E: Gravid uterus. CTG monitoring.

EXPECTED ACTIONS

• Minimise aortocaval compression
• Check level of block. 30° head up.
• Treat Haemodynamics with Phenylephrine (+/- Atropine)
• Call for help appropriately

OVER NEXT 3 MINS

A: Patent and self-maintained
B: Spontaneous, RR 24, SaO2 94% unless O2. Increased difficulty breathing.
C: BP 95/50, HR 70. If phenylephrine given, BP105/60, HR 60.
D: Panic > Nausea and vomiting > Drowsiness
E: Foetal bradycardia develops but recovers

EXPECTED ACTIONS

• Appropriate verbal reassurance of patient
• Rapid Sequence Intubation
• Appropriate management of haemodynamic changes
• Expedite Delivery

BLOCK RISES OVER NEXT 3 MINS

A: Partially obstructed as consciousness lost
B: RR falls to 0. SaO2 falls to 85% over 2 mins.
C: BP 70/40, HR 50
D: Eyes closed. GCS 3-4 (Moans).
E: Prolonged foetal brady.

EXPECTED ACTIONS

• Easy airway, easy to ventilate
• SaO2 falls slowly, no lower than 85%.
• Hypotension and Bradycardia respond to appropriate treatment.

LOW DIFFICULTY

• Moderately difficult airway
• SaO2 falls no lower than 75%.
• CVS poorly responsive to treatment, but not life-threatening to mother.

NORMAL DIFFICULTY

Options:
• Life-threatening hypotension and Bradycardia.
• Challenging Obstetrician
• Difficult airway
• PEA arrest

HIGH DIFFICULTY

Scenario ends at faculty discretion: Safe delivery of newborn or once appropriate anaesthetic management has been demonstrated.
DEBRIEFING

POINTS FOR FURTHER DISCUSSION:

Technical:
• Recognition of rising Spinal anaesthetic block (Signs and Symptoms)
• Management of unexpected loss of consciousness during C-Section

Non-technical:
• Based on established non-technical skills frameworks e.g. ANTS, NOTECHS etc
• Appropriate communication with patient during unexpected adverse events.

DEBRIEFING RESOURCES

1) Complete Spinal Block following Spinal Anaesthesia. Anaesthesia Tutorial of the Week 180. (24\textsuperscript{th} May 2010) Newman B
   http://www.frca.co.uk/Documents/180%20Complete%20spinal%20block%20after%20spinal%20anaesthesia.pdf

   http://ceaccp.oxfordjournals.org/content/2/6/174.full.pdf+html?sid=e1abed37-1d82-4e46-944b-5636870587

   http://www.nda.ox.ac.uk/wfsa/html/u14/u1414_01.htm

   http://bja.oxfordjournals.org/content/85/3/474.full
### INFORMATION FOR PARTICIPANTS

#### KEY POINTS:
- Recognition of the symptoms and signs of a high or total spinal block.
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Thomas C, Madej T.
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Dijkema L, Haisma H.
http://www.nda.ox.ac.uk/wfsa/html/u14/u1414_01.htm

Loss of consciousness following anaesthesia for Caesarean Section. BJA (2000) 85 (3): 474-476
Chan Y, Gopinathan R, Rajendram R
http://bja.oxfordjournals.org/content/85/3/474.full
PARTICIPANT REFLECTION:

What have you learnt from this experience? (Please try to list 3 things)

How will your practice now change?

What other actions will you now take to meet any identified learning needs?
PARTICIPANT FEEDBACK

Date of training session:.................................................................................................................................................

Profession and grade:..........................................................................................................................................................

What role(s) did you play in the scenario? (Please tick)

- Primary/Initial Participant
- Secondary Participant (e.g. ‘Call for Help’ responder)
- Other health care professional (e.g. nurse/ODP)
- Other role (please specify):
- Observer

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<th>Strongly Agree</th>
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<th>Neither agree nor disagree</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
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<td></td>
<td></td>
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<tr>
<td>I understand more about the scenario subject</td>
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<tr>
<td>I have more confidence to deal with this scenario</td>
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<td>The material covered was relevant to me</td>
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Please write down one thing you have learned today, and that you will use in your clinical practice.

How could this scenario be improved for future participants?
   (This is especially important if you have ticked anything in the disagree/strongly disagree box)
FACULTY DEBRIEF – TO BE COMPLETED BY FACULTY TEAM

What went particularly well during this scenario?

What did not go well, or as well as planned?

Why didn’t it go well?

How could the scenario be improved for future participants?