Queensland Trauma Education

TRAUMA IN PREGNANCY

Placental abruption

Immersive scenario

Facilitator resource kit

Clinical Excellence Queensland
JAMIESON TRAUMA INSTITUTE
CSDS Clinical Skills Development Service
Queensland Government

Queensland Trauma Education

The resources developed for Queensland Trauma Education are designed for use in any Queensland Health facility that cares for patients who have been injured as a result of trauma. Each resource can be modified by the facilitator and scaled to the learners needs as well as the environment in which the education is being delivered, from tertiary to rural and remote facilities.

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Queensland Trauma Education
Trauma in Pregnancy – Placental abruption: Immersive scenario – Facilitator resource kit
Version 2.0

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About this training resource kit

This resource kit provides healthcare workers with the basic knowledge and skills on how to assess and manage placental abruption following a traumatic incident.

National Safety and Quality Health Service (NSQHS) Standards

Target audience

- Emergency department medical and nursing clinicians.
- Obstetric medical staff and midwives

Duration

45-60 minutes.

Group size

4-6 participants (or team composition applicable to local area).

Learning objectives

By the end of this session the participant will be able to:

- Understand the importance of the initial assessment (primary and secondary) on admission to Emergency for a pregnant patient following a road traffic collision (RTC).
- Identify the need for additional investigations in the pregnant trauma patient.
- Recognise, manage and respond to clinical deterioration from placental abruption.

Facilitation guide

1. Discuss the pre-simulation briefing and deliver the immersive scenario on placental abruption.
2. Utilise the supporting documents to maximise learning throughout immersive scenario.
3. Utilise the debriefing guide to evaluate participant performance and provide feedback.

Supporting resources (in Printable Resources)

1. Structured assessment – infographic poster
2. Specific management – manual displacement
3. Pre-simulation briefing poster
4. USS anterior placenta.
5. X-ray pelvic.
6. Doppler wave forms.
7. USS abdominal scan 1.
8. USS abdominal scan 2.
9. Kleihauer results.

10. Recommended Anti D.
11. Group and antibody screen.
12. Full blood count results.
13. Biochemistry.
14. CTG 1 - on admission.
15. CTG 2 - 30 minutes post admission.

Simulation event

This section contains the following:

1. Immersive scenario
2. Resource requirements
3. Handover card
4. Scenario progression
    a. State 1
    b. State 2
    c. State 3
5. Debriefing guide

Immersive scenario

Type	Immersive scenario
Target audience	Emergency department medical and nursing staff. Obstetric medical staff and midwives.
Overview	Emergency department presentation. 27 year old G2P1. 36+4/40 gestation low risk (uncomplicated medical and obstetric history) patient is involved in an MVC at 70km/hr. She is the single occupant driver of the car, no air bag deployment but seat belts were felt tightly around her chest and lower abdomen. She self presents to emergency complaining of minor pain to her neck and right shoulder, and a seat belt mark across her R chest wall. On presentation she denies any PV loss but comments that she has not felt many fetal movements since the crash. Vital signs on admission to ED are normal, she is visibly shaken and distressed. She was on her way to pick up her other child from nursery. She believes she was travelling about 70km/hr when she was hit on driver's side by someone who ran a red light. The scenario has two parts: initial assessment and investigations and then fast forward two hours later with a secondary management requirement.
Learning objectives	• Understand the importance of the initial assessment (primary and secondary) on admission to Emergency for a pregnant patient following a road traffic collision (RTC). • Identify the need for additional investigations in the pregnant trauma patient. • Recognise, manage and respond to clinical deterioration from placental abruption.
Duration	45 minutes, including debrief.

Resource requirements

Physical resources

Room setup	Resus bay in emergency.
Simulator/s	1 simulated patient with a 36/40 abdomen with a simulated patient monitor. **OR** 1 manikin including software with a 36/40 abdomen.
Simulator set up	• Street clothes, lying supine with a wedge under right hip. • Moulage: R shoulder redness; driver seatbelt redness to R upper chest.
Clinical equipment	• Standard resuscitation equipment for emergency department. • Fetal doppler. • CTG and/or CTG trace.
Access	2 IVC setups with no IV stickers attached.
Other	ED chart and relevant paperwork.

Human resources

Faculty	2 facilitators (Dr/Nurse with maternity and debriefing experience) to take on roles of scenario commander and primary debrief.
Simulation coordinators	0 if using a standardised patient – facilitators to control simulated monitor. 1 if using a simulator – for manikin set up and control.
Confederates	1 midwife from birth suite (if applicable).
Other	Initially, 1 nurse and 1 doctor in room. The other nurses and doctors outside to be called when needed. Obstetric and midwifery staff involvement if available, depending on facility.

Handover card

Handover from ambulance officer

Joanne self-presented following a low speed RTC.

She is a 27-year-old and currently is 36+4/40. She was travelling around 70km/hr when she was hit on driver's side by someone who 'ran' a red light. She was the driver, no other occupants, no air bag deployed, and she was wearing a seat belt.

Nil medical history. Obstetric history - G2P1, nil concerns with both pregnancies. Vital signs are normal. She is complaining of minor pain to her neck and right shoulder, no PV loss.

Thanks for looking after her.

Scenario progression

<table>
<tr><th colspan="4">STATE 1: INITIAL ASSESSMENT</th></tr>
<tr><th colspan="2">Vital signs</th><th>Script</th><th>Details</th><th>Expected actions</th></tr>
<tr><td>ECG</td><td>ST</td><td rowspan="10">Sally I was pulling away from the traffic lights and he came out of nowhere. He hit me on the front side of my car, there was a terrible bang. The seat belt was very tight across my chest and the lower part of my tummy.</td><td rowspan="10">Primary survey results
A maintaining own.
B nil respiratory distress; bilateral clear, no chest wall tenderness or crepitus/ subcutaneous emphysema.
C nil obvious bleeding; nil PV loss, warm peripherally.
D alert and oriented, moving all limbs.
E no cuts or abrasions, visible red make on shoulder and upper chest from seat belt, no marks on abdomen.
Fetal assessment
Abdominal palpation = 36 weeks.
Longitudinal lie back Rt & lateral ROT.
Cephalic presentation.
Nil contractions.
FH 126 with Doppler.
Abdomen tender toward fundus near seat belt mark but currently soft.
No fetal movements since accident.</td><td rowspan="10">Commence primary survey
❑ Assess airway.
❑ Assess breathing.
❑ Assess circulation.
• Position left lateral 15-30^{o} tilt.
• Insert large bore IVC.
• Determine PV loss.
❑ Assess disability – full GCS.
❑ Expose patient.

Perform fetal assessment
❑ Obtain obstetric history.
❑ Perform abdominal palpation.
❑ Obtain gestational age.
❑ Determine fetal response.
❑ Auscultate for fetal heart (doppler USS).
❑ Discuss fetal movement.
❑ Discuss PV loss.</td></tr>
<tr><td>HR</td><td>105</td></tr>
<tr><td>SpO_2</td><td>96%</td></tr>
<tr><td>BP/ART</td><td>110/60</td></tr>
<tr><td>RR</td><td>22</td></tr>
<tr><td>Temp</td><td>36.9</td></tr>
<tr><td>BGL</td><td>4.0</td></tr>
<tr><td>GCS</td><td>15</td></tr>
<tr><td>FHR</td><td>126</td></tr>
<tr><td></td><td></td></tr>
</table>

<table>
<tr><th colspan="4">STATE 2: ONGOING MANAGEMENT / SECONDARY ASSESSMENT</th></tr>
<tr><th colspan="2">Vital signs</th><th>Script</th><th>Details</th><th>Expected actions</th></tr>
<tr><td>ECG</td><td>ST</td><td rowspan="10">Sally
I am really worried about the fact I haven't felt the baby move since the accident.
Am I able to have some pain relief for my sore shoulder and tummy?</td><td rowspan="10">Secondary survey results
Head – nil abnormalities.
Chest – visible seat belt mark R upper chest.
Abdomen – no marks.
Limbs – redness R shoulder, painful requiring analgesia.
Results - see supporting documents
Blood.
CTG – normal (CTG 1).
Abdominal USS.</td><td rowspan="10">Secondary survey
❑ Perform head to toe assessment.
❑ Inspect abdomen ecchymosis (bruising) or asymmetry.
❑ Administer analgesia - oral / IV.

Investigations
❑ Bloods – FBC, G&H, Kleihauer.
❑ CTG to be commenced ASAP.
❑ Abdominal USS.
❑ Xray – discussion pros/cons.

Management
❑ High index of suspicion for occult shock and abdominal injury.
❑ Referral to O&G/Maternity Department for review in ED.
❑ Observe in emergency CTG for minimum of 4 hours.</td></tr>
<tr><td>HR</td><td>110</td></tr>
<tr><td>SpO_2</td><td>97%</td></tr>
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<tr><td>FHR</td><td>126</td></tr>
<tr><td></td><td></td></tr>
</table>

<table>
<tr><th colspan="4">STATE 3: 30 MINUTES POST PRESENTATION</th></tr>
<tr><th colspan="2">Vital signs</th><th>Script</th><th>Details</th><th>Expected actions</th></tr>
<tr><td>ECG</td><td>ST</td><td rowspan="10">Sally My tummy is more painful now.</td><td rowspan="10">Increasingly more uncomfortable and restless due to pain.

Assessment results
A Maintaining own
B Increased respiratory rate due to increased pain.
C Not certain if there are contractions due to a constant pain.

Abdomen tender around the fundus, uterus feels hard, “woody”. Couvelaire uterus (concealed abruption).

Results - see supporting documents

Kleilhauer – positive result for fetal maternal haemorrhage.
CTG – abnormal (CTG 2).</td><td rowspan="10">Assessment
❑ Repeat primary and secondary survey.
❑ Full obstetric assessment of abdomen.

Investigations
❑ CTG.
❑ PV Loss +/- speculum examination.
❑ Bloods – FBC, ROTEM.

Management
❑ Check Kleihauer result.
❑ Identify emergency situation.
❑ Perform cross match.
❑ Consider MTP / blood products.
❑ Organise disposition.
• CAT 1 LSCS.
• Involve neonatal team, if available.
• Organise admission / retrieval.</td></tr>
<tr><td>HR</td><td>110</td></tr>
<tr><td>SpO_2</td><td>97%</td></tr>
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</table>

Debriefing guide

Scenario objectives

- Understand the importance of the initial assessment (primary and secondary) on admission to Emergency for a pregnant patient following a RTC.
- Identify the need for additional investigations in the pregnant trauma patient.
- Recognise, manage and respond to clinical deterioration from placental abruption.

Example questions

Exploring diagnosis

- Explain your thought process on how the team came to conclude that this patient has placental abruption (suspected/actual)?
- Do you have structured process for fetal assessment - FHR/fetal movement?

Discussing management

- What is the most effective position for this patient (upright/tilting/manual displacement)?
- Why? How do you perform these manoeuvres?
- What's the importance of obtaining a Kleihauer level?
- How long should you perform CTG monitoring?
- What factors affected your decision making around the plan for this patient (observation/Cat 1 LSCS)?

Discussing teamwork / crisis resource management

What available resources do you have in your area to assist with managing placental abruption caused by trauma?

- Who do you call for CTG monitoring? When are they available? How do you access them?
- Do you have cognitive aids available in your department?
- Ability to obtain Kleihauer level. How long would it take?
- Ability to perform a ROTEM.

Key moments

- Recognition of placental abruption (potential/actual).
- Performing structured assessment in the pregnant trauma patient.
- Correct positioning.
- Performing fetal assessment.
- Obtaining Kleihauer levels.

Acronyms and abbreviations

Term	Definition
Cat 1.	Category 1
CTG	Cardiotocography
FHR	Fetal heart rate
LSCS	Lower (uterine) segment caesarean section
MTP	Massive transfusion protocol
USS	Ultrasound scan
PV	Per vaginal
RTC	Road traffic collision
FBC	Full blood count
G&H	Group and hold

References

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