



IN THE CORONERS COURT
OF VICTORIA
AT MELBOURNE

Court Reference: COR 2015 3982

FINDING INTO DEATH WITHOUT INQUEST

Form 38 Rule 60(2)

Section 67 of the Coroners Act 2008

Findings of:	Caitlin English, Acting State Coroner
Deceased:	Lucia Grace Sefton (Bowlen)
Date of birth:	6 August 2015
Date of death:	6 August 2015
Cause of death:	I(a) Head injury in the setting of an obstructed labour
Place of death:	Bendigo Base Hospital, 100 Barnard Street, Bendigo, Victoria

INTRODUCTION

1. Lucia Grace Sefton (Bowlen) was born to Ms Stephanie Bowlen and Mr Jesse Sefton at the Bendigo Base Hospital (BBH) on 5 August 2015. Baby Lucia was delivered by caesarean section at 1.12am on 6 August 2015.
2. At birth, baby Lucia was noted to be apnoeic, floppy and pale with no detectable heart rate at 1 minute of life. Resuscitation efforts were immediately enacted by the treating paediatric team; however, baby Lucia's condition did not improve, and her death was confirmed at 2.35am on 6 August 2015.

THE PURPOSE OF A CORONIAL INVESTIGATION

3. Baby Lucia's death was reported to the Coroner as it was unexpected and following a medical procedure where the death is or may have been causally related to the medical procedure and so fell within the definition of a reportable death in the *Coroners Act 2008*.
4. The role of a coroner is to independently investigate reportable deaths to establish, if possible, identity, medical cause of death and surrounding circumstances. Surrounding circumstances are limited to events which are sufficiently proximate and causally related to the death. The purpose of a coronial investigation is to establish the facts, not to cast blame or determine criminal or civil liability.
5. As part of the investigation into baby Lucia's death, I referred the matter to the Coroners Prevention Unit (CPU)¹, to review the perinatal care provided to baby Lucia at BBH.
6. I received statements from Dr John Cullen, former Clinical Director of Obstetrics and Gynaecology at Bendigo Health, Dr Anju Agarwal Consultant Obstetrician at Bendigo Health and Dr Nicola Yuen, Clinical Director of Obstetrics and Gynaecology and Deputy Chief Medical Officer at Bendigo Health.
7. The Court engaged Dr David Simon, Specialist Obstetrician and Gynaecologist at West Gippsland Hospital, Warragul, to provide an independent expert opinion. The expert report was provided to the Court by Dr Simon on 2 October 2017.

¹ The Coroners Prevention Unit (CPU) was established in 2008 to strengthen the prevention role of the coroner. The unit assists the Coroner with research in matters related to public health and safety and in relation to the formulation of prevention recommendations. The CPU also reviews medical care and treatment in cases referred by the coroner. The CPU is comprised of health professionals with training in a range of areas including medicine, nursing, public health and mental health.

8. I also received submissions on 21 September 2018 from Professor Yee Leung the Women's Health Committee at The Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG) after I proposed several recommendations to the Committee based on the advice contained in Dr Simon's report.
9. I have based this finding on the review conducted by CPU, the statement from the forensic pathologist who examined baby Lucia, the statements from treating clinicians at Bendigo Health, the expert report by Dr Simon, the submissions from RANZCOG and information contained in the medical records provided by Bendigo Health. In the coronial jurisdiction facts must be established on the balance of probabilities.²

IDENTITY

10. On 6 August 2015, paediatrician Dr Peter Wearne visually identified his patient Lucia Grace Sefton (Bowlen), born 6 August 2015.
11. Identity is not in dispute and requires no further investigation.

BACKGROUND

12. Ms Bowlen was 27 years old and had an uncomplicated pregnancy prior to having queried rupture of membranes and going into preterm labour with baby Lucia.
13. During the pregnancy Ms Bowlen had a first trimester combined screening test that was low risk. No concerns were identified on the antenatal ultrasound at 19 weeks gestation. A low-lying anterior placenta was noted at ultrasound at 20 weeks gestation, however a repeat ultrasound at 32 weeks gestation demonstrated the placenta was anterior and clear of the cervix. A test for gestational diabetes in pregnancy was negative at 28 weeks gestation.³
14. At 21 weeks Ms Bowlen was deemed low risk and she was considered suitable for Midwife Shared Care and midwife delivery. An estimated delivery date was recorded as 19 September 2015. A normal schedule of visits was recorded according to the guideline for Ms Bowlen's model of care.

² This is subject to the principles enunciated in *Briginshaw v Briginshaw* (1938) 60 CLR 336. The effect of this and similar authorities is that coroners should not make adverse findings against, or comments about, individuals unless the evidence provides a comfortable level of satisfaction as to those matters taking into account the consequences of such findings or comments.

³ Gestational diabetes is diabetes that occurs for the first time during pregnancy and goes away after a baby is born. Gestational diabetes occurs when the mother's body is unable to cope sufficiently with the increased level of hormones from the placenta, which block the action of the mother's insulin.

CIRCUMSTANCES IN WHICH THE DEATH OCCURRED

15. On 5 August 2015 Ms Bowlen made a telephone call to the Bendigo Base Hospital expressing concern regarding mucous loss per vagina with a little bit of old blood. Ms Bowlen was told to again contact the hospital if she experienced any pain, bright blood loss or if she had any concerns. A second telephone call was made by Ms Bowlen to the hospital later that day and she was requested to attend the hospital for assessment.⁴
16. Ms Bowlen presented to the Bendigo Base Hospital that day, with a noted history of 'period like' pains.⁵ A Rupture of Membranes test⁶ returned positive.
17. A speculum examination was undertaken at 2.05pm which showed that the cervix was closed. A blood-stained mucous plug was also noted in the cervix.
18. Ms Bowlen was administered a dose of 11.4 milligrams of intramuscular Celestone at 2.55pm. No further Celestone was administered to Ms Bowlen.⁷ Panadeine forte was administered for pain at 3.35pm. Three doses of tocolytic nifedipine,⁸ one dose of intravenous metoclopramide, and one dose of intravenous benzylpenicillin were administered between 4.00 to 5.00pm.
19. By 5.00pm spontaneous labour had commenced, and a vaginal examination conducted by the registrar confirmed that the cervix was dilated to 4 centimetres. The paediatric team were notified of the impending delivery of a premature baby.
20. An abdominal examination indicated the baby was in a cephalic longitudinal position. Intrapartum electronic fetal monitoring with cardiotocography (CTG)⁹ commenced. Further analgesia was provided by the insertion of an epidural by an anaesthetist at 5.30pm.¹⁰
21. Maternal tachycardia¹¹ was present throughout labour. The maternal observation chart and CTG documented a maternal heart rate between 120 to 140 beats per minute (bpm) from

⁴ Statement of Dr Anju Agarwal dated 14 November 2016.

⁵ Bendigo Health, Medical records

⁶ A test for diagnosing the rupture of membranes when the rupture of membranes is not overt or unconfirmed by speculum examination.

⁷ Babies born prematurely are at risk of developing Hyaline Membrane Disease (HMD), or Respiratory Distress Syndrome (RDS) as the premature baby's lungs produce an inadequate amount of surfactant. Surfactant stops the lung alveoli air sacs, from collapsing when the baby exhales. When the alveoli collapse, it is difficult for them to reopen. In order to reduce the severity of HMD by maturing the fetal lungs, the mother is administered two doses of intramuscular corticosteroids, Celestone or Dexamethasone 24 hours apart prior to the baby's birth.

⁸ Nifedipine is a tocolytic administered to reduce the interval and strength of contractions and suppress labour.

⁹ CTG, is electronic fetal monitoring of the heartbeat. CTGs are a widely used technique for assessing fetal wellbeing. During both pregnancy and labour, the fetal heart rate (FHR) may be monitored by either auscultation or electronic monitoring (EFM). CTGs have a high degree of sensitivity but low level of specificity.

¹⁰ Epidural analgesia is the provision of pain relief by continuous administration of pharmacological agents into the epidural space via an indwelling epidural catheter. During labour, local anaesthetics and opioids are administered via a catheter in to the epidural space.

¹¹ An elevated heart rate.

5.00pm to 1.00am. A low-grade fever was also measured with temperature increasing to 37.9 then 38 degrees Celsius. Intravenous antibiotics and intravenous fluid were administered.

22. Ms Bowlen was reviewed by the Obstetrics Registrar Dr Kim at 7.30pm and 8.10pm. At the latter review Dr Kim consulted with Dr Agarwal who advised a vaginal examination and artificial rupture (ARM) of the fore water membranes be performed. At 8.25pm a midwife performed a vaginal examination and ARM, describing the presence of caput succedaneum.¹²
23. During this time the midwife updated the paediatric team regarding the labour progress. Dr Wearne had a discussion with Ms Bowlen and Mr Sefton at 9.15pm and the Special Care Baby Unit (SCBU) staff attended to introduce themselves. Baby Lucia was planned for admission to SCBU after birth due to prematurity.
24. The labour progressed quickly and at 9.35pm a midwife performed a vaginal examination and found the cervix to be fully dilated. At this time the CTG was normal. Maternal observations indicated temperature 37.2 degrees Celsius and persistent tachycardia. A moderate amount of caput was felt, and the fetal head was assessed to be at station level with the ischial spines.¹³
25. Ms Bowlen commenced pushing at 10.45pm with midwives noting head descent when pushing and caput felt at that time. The midwives noted at 11.15pm and 11.33pm that pushing was ineffective and there was no fetal head descent with pushing.
26. At 11.41pm Dr Kim assessed Ms Bowlen. Dr Kim found her to be febrile at 37.9 degrees Celsius and tachycardic to 120 bpm. Dr Kim noted that the CTG showed a rising baseline heart rate from 140 to 150 bpm and that variability was normal. A variable deceleration was noted but acceleration was also present. On vaginal examination Dr Kim found that the cervix was fully dilated. The fetal head was assessed to be 2cm beyond the ischial spines. No caput was described in Dr Kim's notes. Dr Kim discussed this with Dr Agarwal, who decided to attend and assess the patient for a possible instrumental delivery.
27. Dr Agarwal arrived at 12.03am on 6 August 2015 and performed a vaginal examination. Dr Agarwal experienced difficulty in determining the position of the presenting part, noting

¹² Caput succedaneum or caput, is an oedematous swelling of the scalp above the periosteum and is generally a benign condition, usually resolving within a few days and requires no treatment.

¹³ Indicating descent of the fetal head to be level in relation to the ischial spines.

significant caput. A bedside ultrasound was performed to determine the position of the baby and showed the baby to be occipito-posterior (OP). A decision was made to perform a caesarean section. An instrumental delivery with forceps was assessed as not being safe given the OP position, preterm gestation and presence of caput. This was explained to Ms Bowlen and an informed consent form was signed.

28. At 12.45am the CTG tracing was removed and Ms Bowlen was transferred to theatre. The operation notes indicate that during the caesarean the head was noted to be OP and deflexed. There was difficulty extracting the fetal head with a midwife asked to push on the head vaginally to assist the delivery. The midwife documented that she applied gentle pressure to baby's Lucia head after which she was delivered following 45 seconds of manoeuvring.
29. Baby Lucia was born at 1.21am on 6 August 2015 with a birth weight of 2322grams. As per the obstetrician's notes, she cried at delivery, prior to being taken by the paediatric team for resuscitation. A cord arterial blood gas did not demonstrate significant abnormality and demonstrated a pH of 7.2 and lactate of 3 mmol/L.¹⁴
30. Dr Wearne was present at the labour from 12.12am and was also present at the time of birth at 1.21am along with the Paediatric Resident. Baby Lucia was noted to be apnoeic, floppy and pale at birth with no detectable heart rate at 1 minute of age. APGARs¹⁵ were 1 at one minute, 0 at five minutes. Cardiopulmonary resuscitation (CPR)¹⁶ was commenced at 1 minute of life and intermittent positive pressure ventilation (IPPV) was provided via a neopuff¹⁷ in 100 percent oxygen.
31. A neonatal code blue was called, and the anaesthetic consultant attended. Resuscitation continued, and baby Lucia was intubated at 14 minutes of life. Bilateral air entry heard, and oxygen saturations were initially 79 percent, but saturations then dropped to between 53 and 70 percent. Two doses of adrenaline were administered through umbilical access at 1.41am and 1.43am. The endotracheal tube (ETT) was removed at 1.44am and reintubation occurred at 1.45am after which baby Lucia was transferred to the SCBU. At 1.50am a heart rate of 56 beats per minute was detected at 25 minutes of life. Normal saline bolus was

¹⁴ A blood gas measures pH, partial pressure of carbon dioxide and lactate. Lactate is a by-product of oxygen depleted metabolism. Normal lactate levels are less than 2 mmol/L.

¹⁵ The (Appearance, Pulse, Grimace, Activity and Respiration) APGAR score was designed to standardise the way caregivers evaluated a baby's physical wellbeing at birth, helping to provide a general understanding of how well each baby makes the physical transition to independent life from their mother. The APGAR score utilises five physical signs of a baby at birth, giving each a possible score of 0, 1 or 2, reaching a total assessment of up to 10 points.

¹⁶ Performed in the event of cardiac and respiratory arrest and may involve interventions such as airway support, ventilation, chest compressions, the administration of cardiac resuscitation medications such as adrenaline, and cardiac defibrillation.

¹⁷ A resuscitator which delivers breaths manually with accurate peak inspiratory and peak end expiratory pressure.

administered and an umbilical venous catheter and nasogastric tube¹⁸ were inserted. CPR continued throughout this time as the detectable heart rate remained below 100bpm.

32. A blood gas at 2.13am was abnormal, with a metabolic acidosis, a pH of less than 6.8 and lactate of 14.2mmol/L.¹⁹ Dr Wearne consulted with the Paediatric Infant Perinatal Retrieval (PIPER)²⁰ Consultant on call. Given baby Lucia's dire condition and that she had not responded to resuscitation efforts, the decision was made to cease resuscitation. Baby Lucia was extubated, and cardiac compressions ceased at 2.35am on 6 August 2015.

CAUSE OF DEATH

33. On 7 August 2015, Dr Sarah Parsons, a Forensic Pathologist practising at the Victorian Institute of Forensic Medicine, conducted an examination and provided a written report, dated 11 November 2015. In that report, Dr Parsons concluded that a reasonable cause of death was *'I(a) Head injury in the setting of an obstructed labour'*.
34. Dr Parsons' commented that upon examination baby Lucia *'was found to have significant head injuries which are likely to have caused her death. These were all to the right side of the head and are likely due to an obstructed labour. Whether the injuries are due to the head being stuck in the pelvis and being pushed against the pelvis or whether it is due to the disimpaction of the head from the pelvis is unclear'*.
35. Dr Parsons further noted that from a pathologist point of view she was unable to *'comment on whether the child was born alive. The findings at autopsy suggest the child died sometime around birth, most likely during delivery or immediately after birth.'* Baby Lucia had *'a significant head injury which could have caused death at either stage during the birth process. The findings at autopsy need to be correlated with statements of those people who were present when the child was delivered'*.
36. I accept Dr Parsons' opinion as to cause of death.

REVIEW OF CARE

37. Given the circumstances of baby Lucia's death, I referred the matter to the CPU, to review the perinatal care provided to baby Lucia at BBH.

¹⁸ This tube is inserted through the nose and into the stomach and can be used to provide nutrition and fluids.

¹⁹ An abnormal increase in the acidity of the body's fluids, caused either by accumulation of acids or by depletion of bicarbonates. PH is a logarithmic measure of hydrogen ion concentration, that is, the acidity or alkalinity of a solution. The normal pH range in human blood is 7.35-7.45.

²⁰ PIPER is a state-wide service which provides accessible and timely expert advice to health care providers for paediatrics and high risk obstetric care.

Bendigo Health Review

38. Dr Nicola Yuen, Clinical Director of Obstetrics and Gynaecology and Deputy Chief Medical Officer at Bendigo Health provided a detailed statement to the Court. She advised that Bendigo Health conducted a review into baby Lucia's death led by the Clinical Director of Paediatrics at Bendigo Health.
39. The review made the following recommendations for implementation by Dr Yuen in her capacity as the Clinical Director of Obstetrics and Gynaecology:
- (a) Clinical Director of Obstetrics and Gynaecology and Senior Manager of Women's and Children's Services to ensure the provision of training for appropriate clinical staff in measures to assist with the delivery of deeply impacted foetal head;
 - (b) Implementation of Bendigo Health policy for requirements of Consultant Paediatricians to achieve competency in neonatal and paediatric resuscitation;
 - (c) Inclusion of a scenario of a difficult delivery of the foetal head at Caesarean Section and subsequent subgaleal haemorrhage in local PROMPT (practical obstetric multi-practitioner training) courses;
 - (d) Scheduled repetitive audit of all Resuscitaires to ensure Guidelines and Flowcharts (and resuscitation equipment) are present as required on all cots; and
 - (e) Review of handover process in Obstetric Department.²¹
40. Dr Yuen commented that '*the potential for serious fetal intracranial injury to occur at caesarean section is very rare but is undoubtedly more likely with a deeply impacted fetal head. There is currently no clear consensus on the safest way to deliver such fetuses. The literature describes both the "push method" of delivering from below (as used in this case) and also the "pull" method of delivering the fetus as a breech extraction as techniques for achieving delivery of the deeply impacted fetal head. Neither is confirmed as superior for what is often a difficult obstetric scenario*'.²²

²¹ Statement from Dr Nicola Yuen dated 14 December 2016.

²² Statement from Dr Nicola Yuen dated 14 December 2016.

Expert Report of Dr David Simon

41. At the suggestion of CPU, I engaged Dr Simon to review and provide an expert opinion on the management of the labour. I requested that Dr Simon focus his expert report on those factors which may have identified the need for an earlier delivery and their degree of contribution to the birth injuries. Dr Simon concluded:

- (a) The management of Ms Bowlen's pregnancy and pre term labour was appropriate;²³
- (b) The presence of caput impeded the precise determination of the fetal head position and station;²⁴
- (c) The arrest in labour progress was correctly identified at 11.41pm and a consultant obstetrician was notified. The consultant Dr Agarwal arrived in a timely manner and following an assessment in the birth suite at 12.20am. Dr Agarwal appropriately decided a caesarean section birth was a safer option than an assisted vaginal birth.²⁵ This was based on baby Lucia's prematurity, posterior position and head descent to the level of the ischial spines;
- (d) An earlier birth was unwarranted given labour was progressing well with a normal CTG, and no indications of fetal hypoxia or sepsis;²⁶
- (e) The level of urgency assigned to the caesarean section was correct given a normal umbilical arterial pH suggested fetal hypoxia did not develop during the time taken from the decision to perform a caesarean section to when the birth occurred; and
- (f) The time taken to prepare Ms Bowlen for theatre, assign staff, transport to theatre, top up the epidural to ensure adequate anaesthesia for the surgery, and then perform the surgery was within an accepted timeframe.

42. Dr Simon noted there were interruptions to the fetal monitoring during transfer to theatre and prior to the delivery of baby Lucia. He stated '*interruptions to fetal monitoring should be minimised during transfer to the operating theatre and prior to delivery of the fetus.*'²⁷

²³ As indicated by Ms Bowlen's admission to hospital, administration of a steroid injection to decrease the risk of neonatal respiratory distress in the event of preterm birth, and an attempt to delay delivery to allow time for the steroids to take effect by the use of the tocolytic drug Nifedipine. Ms Bowlen was commenced on the correct antibiotic regimen of Erythromycin, on definitive diagnosis of labour, changed to Penicillin.

²⁴ The level of fetal head descent within the birth canal in relation to the ischial spines.

²⁵ By the use of forceps or Ventouse vacuum.

²⁶ As indicated by a normal fetal heart recording on CTG and normal cord blood arterial PH.

43. Dr Simon noted that *'Dr. Agarwal made a decision in the birth suite at 0020 to perform a caesar. It may have been prudent to re-examine Ms Bowlen in theatre prior to commencing the caesarean section about an hour later. It is possible that the head may have descended lower into the pelvis in that intervening hour with the further descent being the cause of the unexpected difficult extraction of the head from the pelvis. If the head had been noted on examination in theatre to be lower in the pelvis, some obstetricians appropriately skilled in the use of forceps would feel it appropriate to apply the forceps and deliver the baby even if the head was in the persistent OP position. Other obstetricians would only feel that it was safe in a premature baby to use forceps when the forceps assisted birth was expected to be straight forward, that is not after a prolonged period of pushing, and caput and posterior position'*.²⁸

Caesarean section at full dilation in a premature birth

44. The CPU noted that according to the Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG) 'Delivery of the fetus at caesarean section' guideline,²⁹ the potential for fetal injury at caesarean section includes:
- (a) Skull fracture and /or intracranial haemorrhage following disimpaction when the head is deep in the pelvis;
 - (b) Brachial plexus palsy following a difficult delivery of the shoulders; and
 - (c) Cervical spine, spinal cord and/or vertebral artery injury following delivery of the after coming head in a breech birth.³⁰
45. In this case there were no risk factors for theatre, such as a high BMI or previous abdominal surgery, to alert the surgical team of a likelihood of difficult surgical access to deliver the baby. When there was difficulty delivering the head, Dr Agarwal requested the midwife, who was scrubbed to receive the baby, to push from below. The midwife described 'gentle pressure to baby's head which was delivered after approximately 45 seconds of manoeuvring.'³¹

27 Expert Report of Dr David Simon undated; The Royal Australian and New Zealand College of Obstetricians and Gynaecologists Women's Health Committee. 'Delivery of the fetus at caesarean section.' Revised in July 2017.

28 Expert Report of Dr David Simon undated.

29 The Royal Australian and New Zealand College of Obstetricians and Gynaecologists Women's Health Committee. 'Delivery of the fetus at caesarean section.' Revised in July 2017.

30 The Royal Australian and New Zealand College of Obstetricians and Gynaecologists Women's Health Committee. 'Delivery of the fetus at caesarean section.' Revised in July 2017.

31 Medical records, Bendigo Health.

46. However, there were no details which documented the precise disimpaction manoeuvres employed by the midwife, particularly in relation to the pressure which was applied and whether two fingers or a cupped hand were used to push.
47. According to Dr Simon, most obstetricians are likely to have limited or no experience in managing an impacted head at full dilation, especially in a premature baby.³² In addition, midwives have limited or no training and experience in providing such assistance in the situation of a premature baby with the head impacted in the mother's pelvis.
48. Dr Simon speculated the skull fracture and intracranial haemorrhage were more likely due to the disimpaction process and not labour itself. As the technique employed by the midwife was unknown, Dr Simon concluded the direct mechanism of injury was unable to be determined.
49. Following the final vaginal examination by Dr Agarwal in the birth room, it was possible the fetal head descended lower into the pelvis prior to caesarean section. Therefore, in this scenario, further head descent resulted in the unexpected difficult extraction of the head from the pelvis. Given Dr Simon noted that there was no re-examination of Ms Bowlen in theatre prior to commencing the caesarean section, Dr Agarwal was asked to respond to his expert report.
50. Dr Agarwal was sent the expert opinion. She did not comment directly on the need for a re-examination in theatre to determine descent of the fetal head which would alert her of a possible impacted fetal head. Dr Agarwal stated her *'usual practice is to reassess women in theatre, when appropriate, prior to proceeding to a Caesarean section. However, in this situation given the prematurity, severity of the caput and the occipito-posterior position, I believed Caesarean was the safest option for delivery.'*³³
51. Dr Agarwal noted in her 17 years of practice as an obstetrician and gynaecologist she has never *'had to disimpact the fetal head of a premature baby. In saying that, experience with delivery of an impacted fetal head at full dilation is limited. Most manoeuvres that are practiced are for term babies which is more common.'*³⁴

³² An obstructed labour is less likely due to the small size of a premature baby.

³³ Statement of Dr Anju Agarwal dated 17 January 2018.

³⁴ Statement of Dr Anju Agarwal dated 17 January 2018.

Perinatal deaths following obstructed labour

Disimpaction technique

52. In 2016, Queensland Deputy State Coroner Lock conducted an Inquest on the perinatal death of Nixon Martin Tonkin's from birth injuries following an obstructed labour.³⁵ During the Inquest into Nixon's death, two other perinatal deaths were referenced.³⁶ Deputy State Coroner Lock was assisted by expert opinions provided by independent specialist obstetricians, Dr Andrew Bisits and Dr Robert Lyneham. Whilst the Inquest focussed more broadly on The Royal Brisbane Women's Hospital's clinical governance framework and level of obstetric consultant involvement, it also focussed on the technique employed to disimpact the fetal head.
53. Dr Bisits opined, and Deputy State Coroner Lock accepted that *'Nixon's death was most likely caused by skull fractures arising from excessively focussed pressure in attempting to disimpact the head using two fingers in the vagina to press upwards on the baby's skull.'*³⁷
54. Deputy State Coroner Lock recommended *'RANZCOG reconsider the policy statement C-Obs 37 Delivery of the fetus at Caesarean Section as to whether C-Obs 37 should include more information about the techniques to be adopted in the event of a presentation of a deeply impacted fetal head, consistent with the evidence of Dr Bisits and Dr Lyneham.'*³⁸
55. In addition, Dr Bisits and Dr Lyneham agreed that *'having more senior staff available earlier could have provided assistance and avoided any wrong technique.'*³⁹ A revised RANZCOG's guideline was published in July 2017.⁴⁰
56. The revised RANZCOG's guideline instructs:
- 'A vaginal examination should be performed immediately prior to commencing the procedure. This is to:*
- *Exclude the possibility of further head descent such that vaginal delivery would be more easily accomplished.*

35 Deputy State Coroner John Lock Finding of Inquest into the death of Nixon Martin Tonkin [2014/1999]

36 Deputy State Coroner John Lock Finding of Inquest into the death of Benjamin Glasgow [2006/2914]; Deputy State Coroner John Lock Finding of Inquest into the death of Archer Langley [2014/2710].

37 Deputy State Coroner John Lock Finding of Inquest into the death of Nixon Martin Tonkin [2014/1999]

38 Deputy State Coroner John Lock Finding of Inquest into the death of Nixon Martin Tonkin [2014/1999]

39 Deputy State Coroner John Lock Finding of Inquest into the death of Nixon Martin Tonkin [2014/1999]

40 The Royal Australian and New Zealand College of Obstetricians and Gynaecologists Women's Health Committee. 'Delivery of the fetus at caesarean section.' Revised in July 2017.

- *Apply steady firm upward pressure to assist with disimpaction of the fetal head and assist with the abdominal delivery. There is some evidence that inflatable devices might reduce the risk of uterine injury in these circumstances. Administration of a tocolytic agent may be of benefit.*

An experienced obstetrician and paediatrician should be in attendance or readily available where a technically difficult delivery is anticipated.

The anaesthetist should be appropriately prepared in anticipation of the need for acute tocolysis and management of postpartum haemorrhage.⁴¹

57. As referenced in paragraph 57 RANZCOG's guideline cites 'there is some evidence that inflatable devices might reduce the risk of uterine injury in these circumstances', however in relation to baby Lucia's injuries, it would be of assistance for RANZCOG to review any evidence on reducing head injuries. Recently some Victorian hospitals have commenced a trial of the fetal pillow inflatable device.⁴²

58. In accordance with RANZCOG's guideline and by taking into account Queensland Deputy State Coroner Lock's Inquest Finding into the death of Nixon Tonkin, Dr Simon additionally noted that the expert in that case 'Dr Bisits, opined that the following approach be used in the situation of a deeply impacted head:

(a) Awareness of when the situation may arise.

(b) Careful assessment of the women immediately prior to the caesarean section to see whether a safe assisted birth can be performed.

(c) All maternity care staff need to be aware of the appropriate measures to correct this situation, including midwifery staff who will be attending the caesarean section as well as anaesthetists.

(d) The first step of disimpaction should be flexion of the baby's head through the uterine incision by the primary operator.

⁴¹ The Royal Australian and New Zealand College of Obstetricians and Gynaecologists, Delivery of the fetus at caesarean section C-Obs 37.

⁴² The Royal Australian and New Zealand College of Obstetricians and Gynaecologists, Delivery of the fetus at caesarean section C-Obs 37; A balloon device designed to elevate a deeply impacted head out of the pelvis marketed as a Fetal Pillow®. According to the manufacturer 'Safer Obstetric Systems', the Fetal Pillow® has widespread use in South Australian regional maternity hospitals. In Victoria, the Royal Women's Hospital, Frankston Hospital, Djerriwarrh Bacchus Marsh and Northern Health are currently undertaking a trial of the Fetal Pillow®.

- (e) *The second step should be upward pressure on the head from the vagina using a cupped hand, not two fingers, the flex the head upwards.*
 - (f) *The third step should be reverse breech extraction using the same principles for the birth of a breech at caesarean or in a vaginal delivery...*
 - (g) *The fourth step should be a T incision of similar such extension of the uterine incision.*
 - (h) *Other possibilities include the fetal pillow, and the 'shoulders first' Patwardhan method.*
 - (i) *Steps to achieve disimpaction need to be part of any obstetric training programs⁴³ for both obstetricians and midwives and should include anaesthetists as well.*
59. Dr Simon further noted *'in relation to (b) and (c), a confirmation that careful assessment has been completed and a discussion of the manoeuvres that may be required could be part of the recommended surgical safety 'timeout' check list⁴⁴ at all caesarean sections at full dilation.*
60. *The anaesthetist should also be ready to provide emergency tocolysis (usually GTN spray) in the event that there is any difficulty delivering the head.'*⁴⁵

Consultation with The Royal Australian and New Zealand College of Obstetricians and Gynaecologists

61. On 24 August 2018, the Court sent correspondence to RANZCOG's Women's Health Committee proposing several recommendations following the expert report provided by Dr Simon. The recommendations are as follows:
1. That RANZCOG amend its guideline, 'Delivery of the fetus at caesarean section' by inserting the following additional information:
 - (a) Before a caesarean section as full dilation commences, confirm that a careful assessment has been completed, following a discussion on the manoeuvres that may be required;

⁴³ Practical Obstetric Multi-Professional Training (PROMPT) is an evidence based multi-professional training program for obstetric emergencies.

⁴⁴ A World Health Organisation (WHO) Surgical Safety Checklist to increase the safety of patients undergoing surgery by systematic checking to ensure conditions are optimal for patient safety. The surgical 'timeout' is performed by the surgeons, anaesthetist and theatre nurses in the operating theatre immediately before a planned procedure. At the time a person is brought into theatre, the surgical team pauses to confirm patient identity, surgical site and planned procedure.

⁴⁵ Expert Report of Dr David Simon undated.

- (b) Once the situation is suspected or diagnosed, the multi-disciplinary team in theatre need to be aware of their roles, responsibilities and techniques to be employed. A discussion on the manoeuvres that may be required is included in the surgical safety 'time out' list;
- (c) Targeted education in relation to vaginal disimpaction should also be provided to midwives who are present in caesarean sections and who may be required to assist in vaginal disimpaction; and
- (d) The need for multi-disciplinary scenario based training, such as Practical Obstetric Multi Professional Training (PROMPT) that includes techniques to be adopted for safe delivery of the baby where the head is deeply impacted in the pelvis.

2. That RANZCOG consider the evidence on inflatable devices in the minimisation of foetal head injuries

62. On 21 September 2018, I received a response from Professor Yee Leung the Chair of the Women's Health Committee at RANZCOG, in which he advised:

'...Having taken into account the documentation provided by the court, the Women's Health Committee have provided the following response in relation to the proposed additions be made to the College statement:

1. Before a caesarean section at full dilation commences, confirm that a careful assessment has been completed, followed by a discussion on the manoeuvres that may be required.

The Committee feels that a careful comprehensive assessment is part of basic standards of care that applies to all clinical practice. An outline of pre-operative considerations and assessment are currently recommended in the College statement as Good Practice Points.

2. Once the situation is suspected or diagnosed, the multidisciplinary team in theatre need to be aware of their roles, responsibilities and techniques to be employed. A discussion on manoeuvres that may be required is included in the surgical safety "timeout" list.

The Committee do not support the additions to the time out list due to the infrequency of occurrence and the utilisation of standard lists which are not specific to each procedure.

Additionally, the Committee felt that this discussion should not take place in the presence of the woman or her partner, which is the practice for timeout at caesarean section, as this will increase their levels of anxiety.

3. Targeted education in relation to vaginal disimpaction should also be provided to midwives present at caesarean sections and who may be required to assist in vaginal disimpaction.

Multi professional training is supported by RANZCOG, however the specific education of midwives is outside the remit of the College. The Committee felt that experienced staff should be in attendance or readily available where a technically difficult delivery is anticipated.

4. The need for multi-disciplinary scenario based training, such as Practical Obstetric Multi Professional Training (PROMPT) that includes techniques to be adopted for safe delivery of the baby where the head is deeply impacted in the pelvis.

The Practical Obstetric Multi-professional Training or 'PROMPT' program is an emergency obstetric training program that uses simulated obstetric emergencies with a focus on elements such as participant teamwork, communication and situational awareness. Practising scenarios focusing on these key elements enables participants to better handle real obstetric emergencies if they arise.

RANZCOG delivers the PROMPT Train the Trainer (T3) program across Australia to core multi-professional hospital teams. These teams are taught the process for delivering PROMPT workshops at their facility. The training manuals that complement the training cover the most common obstetric emergencies. Hospitals however can choose to include simulated training for any obstetric emergency they identify as relevant to their service.

5. Whether Safer Care Victoria would be a more appropriate body for such a recommendation than RANZCOG.

The Committee feels that as RANZCOG core remit is training and accreditation throughout Australia and New Zealand, it is appropriate that this recommendation remains with the College and that government bodies such as Safer Care Victoria should ultimately provide support to the College's guidance in their local jurisdiction.

6. RANZCOG to consider the evidence on inflatable devices in the minimisation of fetal head injuries.

The College statement outlines that there is some evidence that inflatable devices might reduce the risk of uterine injury in these circumstances. There is no high-quality evidence of a reduction in fetal head trauma and limited evidence of any clinically significant neonatal benefit. The studies of the use of inflatable devices do not include enough women at preterm gestations to determine their role in such situations. Although use of such devices may be of benefit, its use in preterm deliveries is currently unproven and should remain at the discretion of the treating clinician. RANZCOG considers that attendance of an appropriately experienced obstetrician at a potentially difficult caesarean section is of more value than the use of a particular device.⁴⁶

Review of RANZCOG's response by Dr Simon

63. I requested that Dr Simon review the response provided by RANZCOG. Dr Simon advised the Court that he considered RANZCOG's response to the proposed recommendations to be reasonable overall, given that RANZCOG can only recommend changes based on evidence. In particular Dr Simon noted that recommendations 1 to 3 are considered to be good practice.⁴⁷
64. Dr Simon noted that although recommendations 3 and 4 were beyond the scope of RANZCOG, individual hospitals may consider implementing scenario-based training involving the maternity and theatre teams as a method to increase awareness.⁴⁸
65. Finally, Dr Simon considered RANZCOG's response to recommendation 6 was also reasonable based on the current lack of evidence in the efficacy of inflatable device use.⁴⁹

COMMENTS PURSUANT TO SECTION 67(3) OF THE ACT

66. The tragic death of Baby Lucia highlights the importance that obstetricians follow RANZCOG's guideline 'Delivery of the fetus at caesarean section' as best practice to manage an impacted fetal head at full dilation and minimise birth injuries.

⁴⁶ Letter from Professor Yee Leung, Chair, Women's Health Committee RANZCOG dated 21 September 2018

⁴⁷ Internal email of the Coroners Court of Victoria dated 1 February 2019.

⁴⁸ Internal email of the Coroners Court of Victoria dated 1 February 2019.

⁴⁹ Internal email of the Coroners Court of Victoria dated 1 February 2019.

RECOMMENDATION

67. Pursuant to section 72(2) of the *Coroners Act 2008*, I make the following recommendation to Safer Care Victoria and The Royal Australian and New Zealand College of Obstetricians and Gynaecologists:

That Safer Care Victoria supports The Royal Australian and New Zealand College of Obstetricians and Gynaecologists to ensure that ongoing Practical Obstetric Multi-Professional Training provided to core multi-professional hospital teams includes techniques to be adopted for the safe delivery of the baby where the head is deeply impacted in the pelvis.

FINDINGS AND CONCLUSION

68. Having investigated the death, without holding an inquest, I find pursuant to section 67(1) of the *Coroners Act 2008* that Lucia Grace Sefton Bowlen, born 6 August 2015, died on 6 August 2015 at Bendigo, Victoria, from head injury in the setting of an obstructed labour in the circumstances described above.

69. I convey my sincere condolences to Ms Bowlen and Mr Sefton and their family for the tragic loss of their daughter, Lucia.

70. I direct that a copy of this finding be provided to the following:

Ms Stephanie Bowlen and Mr Jesse Sefton, senior next of kin.

Dr Nicola Yuen, Bendigo Health.

Women's Health Committee, The Royal Australian and New Zealand College of Obstetricians and Gynaecologists.

Chairman Consultative Council on Obstetric and Paediatric Mortality and Morbidity.

Safer Care Victoria, Victorian Department of Health and Human Services.

Nursing and Midwifery Board of Australia.

Professor Timothy Draycott, Department of Translational Health Sciences, University of Bristol.

Dr Kaite Cornthwaite, Department of Translational Health Sciences, University of Bristol.

Senior Constable N. F. O'Neill, Victoria Police, Coroner's Investigator.

Signature:



CAITLIN ENGLISH

ACTING STATE CORONER

Date: 18 September 2019

