

IN THE CORONERS COURT
OF VICTORIA
AT MELBOURNE

Court Reference: COR 2010 2497

FINDING INTO DEATH WITHOUT INQUEST

Form 38 Rule 60(2)

Section 67 of the Coroners Act 2008

Amended pursuant to s.77 of the Coroners Act 2008 (Vic) on 2 April 2015

I, IAIN TRELOAR WEST, Deputy State Coroner having investigated the death of Linda Elizabeth PARKER

without holding an inquest:

find that the identity of the deceased was Linda Elizabeth PARKER

born on 19 May 1971

and the death occurred on 1 July 2010

at Monash Medical Centre, 246 Clayton Road, Clayton, 3168 Victoria

from:

1 (a) HYPOXIC BRAIN INJURY

1 (b) MULTIPLE HYPOVOLAEMIC CARDIAC ARRESTS

1 (c) CATASTROPHIC HAEMORRHAGE FROM DOCUMENTED PLACENTA
INCRETA

Pursuant to section 67(2) of the **Coroners Act 2008**, I make findings regarding the **following circumstances:**

1. Linda Parker was a 39-year-old woman who resided with her defacto partner of 24 years, Mr Jamie Hare and their three children, Melissa, Sarah and Rachel Hare. Ms Parker was healthy with no major health issues or concerns. She suffered from asthma but managed this effectively.
2. In September 2009, Ms Parker became pregnant with her fourth child. Her three other children had been born by caesarean deliveries with no reported serious complications, although after her first birth, Ms Parker was admitted to Frankston Hospital for 10 days, due to complications of paralytic ileus or infection. For her current birth, Ms Parker's doctor was Dr Zeiyad Al Mayaha and she saw him on several occasions during the course of her pregnancy. She was also referred to Gynaecologist Dr Andre Hugo of La Trobe Regional

Hospital, Traralgon. She saw him on 2 occasions during which time it was revealed that the baby was in a breech position and an elective caesarean was planned for 30 June 2010.

3. On the morning of 20 June 2010, Ms Parker was 38 weeks pregnant and found that she was bleeding after going to the toilet. An ambulance was called to her home address and she was transported without incident to La Trobe Regional Hospital at approximately 8.50am. She was seen by Dr Rahman, an Obstetric and Gynaecology Registrar who established that her vital signs were normal. A decision was made to perform an emergency caesarean delivery and Consultant Obstetrician and Gynaecologist Dr Sherif Girgis, was contacted.
4. Ms Parker arrived in the operating theatre at 9.38am and the caesarean commenced with Dr Girgis, Dr Rahman and Anaesthetist Dr Andrew Green present. A baby girl, Alicia Hare, was delivered in breech position soon after. There was significant bleeding and according to the medical statements of the surgical team, the placenta was stuck to the posterior uterine wall extending to the internal os. The ultrasound taken at 24 weeks however, determined that the placenta was anterior. After removal of the placenta, there was continued significant bleeding. Ms Parker received several units of blood after the surgery, a total of 35 units of packed red blood cells and eight units of cryoprecipitate (containing clotting factors). Six of the packed red cell units were 0 rhesus positive. As Ms Parker's blood type was rhesus negative, this reflected the urgency of the situation facing the team and the availability of rhesus negative blood after stocks were exhausted by the demands of her case. Over the next 30 minutes, the surgeons attempted to contract the uterus and control the bleeding, however, at 10.30am an emergency hysterectomy was considered necessary and performed.
5. According to Dr Green's statement, he realised that they were having trouble keeping up with the blood volume resuscitation. He made numerous calls to the blood bank for more blood and requested that Dr Girgis pack the abdomen and apply pressure. There was extreme hemodynamic instability with Ms Parker's haemoglobin concentration at less than 10% of the normal concentration. Ms Parker suffered a cardiac arrest. There was extensive resuscitation with multiple units of blood and fresh frozen plasma, however, it was not possible to get platelets. At 11am, additional assistance was requested from the off duty anaesthetic consultant Dr Grant Harrison and an Intensive Care Unit (ICU) registrar. Assistance was also requested from the ICU consultant Dr Milind Sanap along with the MET (Medical Emergency Team) personnel, ICU registrars Dr Jonathon Insermini and Dr Nilesh Shah. At 11.30am, an hour after the hysterectomy was commenced; Ms Parker's abdomen was closed.
6. Ms Parker suffered a second cardiac arrest at 12.34pm. After being stabilised, she was transported by air ambulance to Monash Medical Centre (MMC) in Clayton due to their specialist haematological facilities, at approximately 2.15pm. Dr Green accompanied her on this transfer and stated that she continued to have blood loss and cardiovascular instability. They arrived at MMC at 3pm.
7. Upon arrival at MMC, Ms Parker was admitted to the ICU where she required continued circulatory support after receiving fluid and blood replacement. Medical notes indicate that she was assessed with Disseminated Intravascular Coagulopathy (DIC) secondary to consumptive coagulopathy. Acidosis, hemodynamic instability and coagulopathy were also noted. On 21 June at 1.30am, an ICU nurse noted a mottled right leg. By 4am, the right leg was determined to be ischemic, presumably from the hemodynamic insult and it was anticipated that a partial amputation was highly likely in the future.
8. On 22 June, a laparotomy performed to remove abdominal packs found a hole in the bladder, which had been repaired. The nick in the bladder presumably occurred during the

hysterectomy. On 23 June, 670mls of blood was noted to be in the surgical drains along with an ischemic right leg and acute renal failure. On 24 June, a neurology review occurred whilst Ms Parker was paralysed and sedated. On 25 June, she was still sedated and found to have labile intracranial pressure readings, and non-reactive but equal pupils. An external ventricular drain was inserted to relieve the pressure on her brain.

9. On 29 June, Ms Parker was noted to have unequal pupils and a neurosurgical review by Dr Tony Goldschlager and Dr Ross Trioglo diagnosed her as suffering a hypoxic brain injury. Professor Dominic Thyagarajan, Director of Neurology at MMC ceased the sedation in order for a repeat neurology review later that same evening. In his medical record he noted; *'massive cerebral injury...severe global brain hypoxic injury, long term prognosis for recovery of cerebral function...to be gloomy.'* The neurologists did not support a decompressive craniotomy, as *'this would not alter the hypoxic brain injury.'* A planned and scheduled right leg amputation was cancelled. On 30 June, EEG showed no electrical activity. Ms Parker was in an induced coma for 11 days until her family was contacted about withdrawing life support due to her untenable neurological state. Life support was subsequently withdrawn at 2.23pm on 1 July 2010 and death certified at 3.05pm
10. Senior Forensic Pathologist, Dr Michael Burke conducted an external examination of Ms Parker's body and found changes consistent with the clinical history. Toxicology results were non-contributory.
11. The Coroner's Court Health and Medical Investigation Team¹ (HMIT) reviewed the file including medical records from La Trobe Regional Hospital, Frankston Hospital, Hollie Drive Medical Centre, MMC, as well as a medical consultation with Professor George Jelinek and expert opinions from consultant haematologist Dr Robert Bird² as well as obstetrician Dr Chris Wilkinson. The reason for the HMIT referral was to review the clinical screening, diagnosis of abnormal placental implantation and subsequent obstetric surgery performed on Ms Parker.

HMIT Findings:

1) Obstetric and Surgical Management:

12. According to Dr Wilkinson, the sequence of events that led to the placenta increta commenced at the time of the decision to perform the first caesarean section in May 1990 at Frankston Hospital. Due to this caesarean section, Ms Parker had a repeat caesarean section in 1994 and 1997 and these resulted in significant scarring to the muscles in the wall of her uterus and the internal lining of the uterus. With the fourth pregnancy, the scarring and lining of the uterus resulted in abnormal development of the placenta over that site. This resulted in a placenta increta. Due to these well-documented risks, women deemed suitable, are now more likely to be offered a vaginal birth after the first caesarean section.

¹ The role of the Health and Medical Investigation Team (HMIT) is to assist the Coroner's investigation into the nature and extent of deaths, which occurred during the provision of healthcare, and identify potential system factors in healthcare related deaths. HMIT personnel comprise of practising Physicians and Clinical Research Nurses who draw on their medical, nursing and research experiences, skills and knowledge to independently evaluate clinical evidence for the investigation of reportable healthcare deaths and to assist in identifying remediable factors that may assist in prevention and risk management in health services settings.

² The selection of Dr Bird as an expert was based on his clinical expertise in massive haemorrhages and his integral involvement in the development of a national protocol for managing massive blood transfusions.

2) Misdiagnosis of Placenta Increta

13. A placenta increta is usually diagnosed on ultrasound, as perforation of the uterine wall and invasion into adjacent structures (not in this case) is usually readily seen using the high-level ultrasound equipment used in the performance of an obstetric morphology ultrasound. Dr Wilkinson examined the ultrasound images and noted the 21-week images showed an anterior placenta. Given the history of previous caesarean sections, he believed there was inadequate ultrasound examination of the lower anterior uterine wall, where the anterior placenta was implanted. For accuracy in interpretation, Dr Wilkinson also commented on the importance of performing the ultrasound in 'real time'. However, without the information of previous caesarean sections on the request form, the radiologist would not be expected to perform a real time ultrasound with close examination of the lower anterior uterine wall.
14. Dr Wilkinson believed that if the previous history of repeat caesarean sections was on the ultrasound request slip, then the radiologist Dr Horsfall, should have examined Ms Parker specifically to exclude placenta accreta/increta, and if there were any suspicious findings, should have recommended an MRI. If the information regarding three previous caesarean sections was not included on the request form, then specific examination for placenta accreta/increta would not be expected by reasonable ultrasound practice standards, and nor would referral for MRI be expected.
15. HMIT subsequently requested from La Trobe Radiology Services a copy of the request from completed by the GP for the ultrasound, and the request forms for all of Ms Parker's pregnancy ultrasounds performed by La Trobe Radiology. This determined that none of the pregnancy ultrasound request forms contained the vital past clinical history information of repeated previous caesarean sections. This information would have indicated to the sonographer the presence of uterine scars, an alert with an anterior located placenta. Therefore, as this information was not on the request form, the ultrasound examination was accepted to be consistent with current practice.

3) Caesarean Section

16. Dr Wilkinson's expert opinion refers to Dr Girgis stating that there was 'a marked adhesion between the bladder and the omentum, which was 'reflected'. Dr Wilkinson notes, that it was possibly at this time that a hole in the bladder was made, which was first diagnosed at the exploratory operation at Monash Medical Centre two days later. Alternatively, he notes the hole in the bladder could also have been created during the hysterectomy that was to follow.
17. As expected, it was only after the baby was delivered that it was recognised that '*the placenta was morbidly adherent to the posterior uterine wall, extending to the os.*' The treatment that was administered over the next 30 minutes to control the bleeding, particularly the uterine artery ligation, was in the opinion of Dr Wilkinson, a difficult procedure for most generalist, and even oncology subspecialist practitioners, to do effectively. In his supplementary report to the Coroner, Dr Wilkinson is "*complementary of Dr Girgis's skills, as he obviously conducted a very difficult procedure in very trying circumstances.*"
18. Dr Wilkinson concluded that on the balance of probability, it would have been during the time between the delivery of the baby and hysterectomy at 10.30am, that the Disseminated Intravascular Coagulopathy (DIC) developed, which resulted in the uncontrollable surgical bleeding. In his statement, Dr Girgis stated the opinion that the DIC began when Ms Parker started to bleed at home. According to Dr Wilkinson, had an earlier decision for

hysterectomy been made, it appears very likely the DIC and extreme hemodynamic instability would probably have been avoided.

4) Blood Product Availability:

19. At least 35 units of red cell concentrate, 12 bags of fresh frozen plasma and 12 bags of cryoprecipitate were issued and transfused at La Trobe Regional Hospital over 3 hours and 45 minutes. Therefore, according to Dr Bird, in this case, it seems unlikely that the availability of more of these blood products would have improved the outcome. With regards to the availability of platelets, they are simply one component of management of a massive haemorrhage. According to Dr Bird, generally definitive surgical treatment or interventional radiology is required in instances of mass haemorrhage to arrest bleeding. Optimal delivery of blood products would bring about a resolution of massive bleeding in very few cases.

4(a) Timeliness of Cross-Matched Blood

20. In his statement, the anaesthetist Dr Green expressed frustration with the timely provision of blood products. However, Dr Bird was unable to comment directly on this matter, as the Coroners Court did not have access to the hospital records indicating the time of order in theatre and issue of blood products from the hospital Blood Bank. He has noted that a delay in cross match may have related to the previous administration of Anti D. The Blood Bank may not have been aware that Anti-D had been administered as standard practice during pregnancy. Therefore, the detection of an antibody on the group and antibody screen on the morning of surgery would have required antibody identification and delayed the issue of cross-matched blood.

HMIT Conclusions:

Misdiagnosis of Placenta Acreta/Increta

21. Appropriate ultrasound request form information is vital, to ensure sonologists can perform appropriately targeted ultrasound to exclude placenta acreta/increta. This may be a particular issue with midwives and General Practitioners ordering an ultrasound, where the clinical implications of previous caesarean sections may not be appreciated. It is also imperative that such information be available for smaller ultrasound clinics performing ultrasounds for public maternity services.

22. Dr Wilkinson commented on the apparent failure of consultant obstetrician Dr Hugo to make a basic association at the 34-week pregnancy consultation, between the clinical implications of a history of three previous caesarean sections and an anterior placenta. However, even with the vital clinical information of previous uterine scar(s) to indicate a chance of abnormal placentation, Dr Wilkinson notes placenta acreta/increta may not be diagnosed by ultrasound. Dr Wilkinson comments that an antenatal diagnosis of a placenta acreta/increta should result in a referral to a tertiary maternity hospital

Birth of a Baby by Caesarean Section

23. Reduction in the primary caesarean section rate, particularly for non-clinically indicated caesarean sections would reduce the incidence of placenta acreta/increta. As Dr Wilkinson notes, the encouragement of vaginal birth after the first caesarean section would reduce the formation of multiple scar tissue that is so strongly associated with placenta acreta/increta. Ms Parker's three caesareans caused significant scarring in the wall of the uterus and

internal lining which resulted in abnormal development of the placenta over the site and resulted in placenta increta for her fourth pregnancy.

24. The development of placenta accreta/increta is an important risk factor for women to know about when there is a request for a caesarean section with no clinical indication. Dr Wilkinson advised that promotion of awareness of the potential for placenta accreta/increta in women with previous caesarean sections should be not only amongst clinicians, but also known by women who are pregnant or likely to fall pregnant.

Surgical Planning

25. The performance of a planned caesarean for a woman with a known placenta accreta/increta in a tertiary maternity hospital facilitates dedicated surgical planning. Dr Wilkinson believed it was very likely that Dr Girgis' decision not to proceed to hysterectomy immediately, once the placenta was partially dislodged resulting in torrential bleeding and the diagnosis of placenta increta was made, led to a delay which contributed to the development of coagulopathy and massive haemorrhage. The preservation of the uterus for future childbearing often understandably delays this decision, but it should not have been a major influence on decision making in a woman of 39 years of age and parity, such as Ms Parker.
26. Dr Wilkinson acknowledged the decision to perform a hysterectomy is a difficult intra-operative obstetric decision and would have been predicated by the full clinical situation, and of course Dr Girgis' clinical skills and experience. Dr Wilkinson is not particularly critical of this delay given that he was not present, and the multiple variables affecting such a decision that can only be made in real time.
27. In a supplementary report to the Coroner, Dr Wilkinson stated: "*Dr Girgis's management of Linda on the morning of 20th of June was a nightmare scenario for any obstetrician, faced with a woman who he did not know or could not have anticipated and a critical clinical situation.*" In his opinion no criticism of the management is warranted, "*as Dr Girgis responded to an awful situation that he was in, and in an appropriate manner, consistent with his experience and circumstances.*"
28. While the accidental bladder perforation is likely to have contributed to difficulties in later management, Dr Wilkinson did not consider it a major factor. He was unable to comment on the leg amputation except to indicate the compounding effects of medical complications in a very sick patient.

Blood Product Availability

29. According to Dr Bird, in the case of Ms Parker, the activation of a Massive Transfusion Protocol would have meant ready availability to uncrossed blood products, along with the administration of fresh frozen plasma and cryoprecipitate to prevent the development of dilutional coagulopathy, although it does not appear that this would have been life saving in this case. In response to the death of Ms Parker, La Trobe Hospital developed a Massive Transfusion Protocol that is activated when a massive haemorrhage situation is identified.

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30. I find that the cause of death of Linda Parker was hypoxic brain injury, multiple hypovolaemic cardiac arrests and catastrophic haemorrhage from documented placenta increta.

RECOMMENDATIONS

This case highlights the importance of considering the potential for placenta accreta/increta development in the scar tissue following multiple caesarean sections. The key issue appears to be a failure to appreciate the possibility of placenta accreta/increta compounded by delay to hysterectomy, rather than availability or rapidity of blood transfusion.

Pursuant to section 72(2) of the **Coroners Act 2008**, I make the following recommendations connected with the death:

In order to prevent maternal deaths from placenta accreta/increta:

1. The Royal Australian and New Zealand College of Obstetricians and Gynaecologists:
 - A. Develop a clinical guideline that defines a clear pathway for clinical practice when placenta accreta is discovered prior to or at delivery. The clinical guideline will determine the situation when placenta accreta is suspected or known; birth should occur in a place with the necessary medical facilities and expertise.
 - B. Amend the 'Caesarean Delivery on Maternal Request' statement to include evidence of the potential risks associated with recurrent caesarean sections.
2. Regional Imaging Gippsland Service re-design the ultrasound request form to include the relevant clinical information of previous caesarean section.

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

Mr Jamie Hare

Ms Julie Clayton, Slater & Gordon

Dr Simon Fraser, La Trobe Regional Hospital

Ms Lucy Hunter, Medico Legal officer, La Trobe Regional Hospital

Ms Sheila Johns, Middletons Lawyers

Ms Michelle Dubrava, K & L Gates on behalf of La Trobe Regional Hospital

Ms Susan Van Dyk, Medico Legal Office, Monash Medical Centre

Dr Al Mayahe, Hollie Drive Medical Centre Morwell

Ms Jennifer Williams, CEO, Australian Red Cross Blood Service

Royal Australian and New Zealand College of Obstetricians and Gynaecologists

Regional Imaging Gippsland Service

The Chairperson, Victorian Consultative Council on Obstetric and Paediatric Mortality and Morbidity

Royal Australian College of Physicians & Haematologists

Royal Australian and New Zealand College of Radiologists

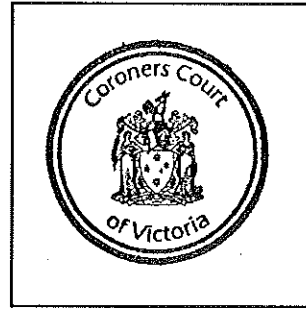
The Australian and New Zealand College of Anaesthetists

Australian Midwifery and Nursing Council

Royal Australian College of General Practitioners

Signature:

Iain West



IAIN WEST
DEPUTY STATE CORONER
Date: **2 April 2015**
