CORONER'S COURT

OF NEW SOUTH WALES

Inquest:	Inquest into the death of Lucas Peyret
Hearing dates:	26, 27, 28 and 29 September 2022
Date of findings:	26 October 2022
Place of findings:	Coroner's Court of New South Wales
Findings of:	Deputy State Coroner Erin Kennedy
Catchwords:	CORONIAL LAW – unexpected hospital death; Sugammadex; anaphylaxis; appendicectomy; acute appendicitis; Open Disclosure policy
File number:	2019/00176528
Representation:	Mr S Beckett SC, senior counsel assisting the Coroner instructed by Ms S Bangash, Department of Communities and Justice Ms L Boyd, representing South East Sydney Local Health District, instructed by Ms A Talbot, Crown Solicitors Office Mr M Lynch, representing Dr Sukhi Hegde, instructed by Ms Lyn Kearney, Avant Mutual Mr T Saunders, representing Dr Negin Sedaghat, instructed by Ms Nevena Brown, Meridian Lawyers Ms L McFee, representing Dr Jakob Koestenbauer, instructed by Ms S Schooley, MDA National

Findings:

I make the following findings pursuant to Section 81 of the Coroners Act 2009 NSW:

That Lucas Peyret died on 5 June 2019 of hypoxic brain injury arising from severe anaphylactic shock due to the administration of Sugammadex following surgery at Prince of Wales Hospital Randwick, NSW.

Recommendations

That the findings of this inquest be referred to both the Australian and New Zealand College of Anaesthetists and the Therapeutic Goods Administration to consider further the incidence of anaphylaxis from the use of Sugammadex and risk management of the same in light of the facts of the death of Lucas Peyret.

Non-publication orders: See annexure A

FINDINGS

Introduction

1. This is an inquest into the very sudden death of Lucas Peyret, (**Lucas**) a 21-year-old man who died in June 2019 as a result of unexpected complications arising from an operation at Prince of Wales Hospital to remove his appendix.

2. Lucas was very close to his mother and father, and this was a sudden and devastating loss for them. From the date of the operation until now the family have sought explanations for what led to the death of their son, and it is hoped that these findings will assist the family in that respect.

The role of the Coroner

3. Jurisdiction arises under s 21(1) of the *Coroners Act 2009* (NSW) to conduct this inquest because the death was a "reportable death" in that "the person died in circumstances where the person's death was not the reasonably expected outcome of a health-related procedure carried out in relation to the person".

4. Section 81(1) of the *Coroners Act 2009* (NSW) requires that formal findings are made as to:

a. the occurrence of the death;

b. the identity of the deceased;

c. the date and place of the death; and

d. the manner and cause of the death.

5. In this case, determining manner and cause involves looking at the medical intervention and interaction experienced by Lucas from the point of his attendance at Prince of Wales Hospital until the time of his death. The family have raised concerns in relation to his treatment and in relation to communication between themselves and the hospital.

6. These are important issues to explore for Lucas and for the community generally.

Reflection on the life of Lucas

7. Lucas was the son of Katya Denomme and Laurent Peyret, both of whom are French citizens. He was their only son and was born in France. He was extremely close with both.

8. Ms Denomme decided a change would be good for herself and Lucas, and so they moved to Australia in 2001 when Lucas was about 4 years old. Initially he grew up in Darwin and then moved to Sydney in 2003 when he was 6 years old and where he attended the International French School in Maroubra graduating in 2015. He went to Macquarie University and then transferred to Sydney University where he completed qualifications in Information Technology in 2018.

9. Three months before his death he had obtained a job as a legal clerk at Law-in-Order and was apparently enjoying it and the opportunities it provided. He was living in Camperdown with two friends.

10. His mother described him as being healthy with no history of medical issues other than mild asthma. He had never been admitted to hospital before and had not had any surgery before 26 May 2019. She enjoyed good and open

communication with him around the issue of drugs and alcohol and reports that he was not interested in drugs and drank alcohol only socially.

11. Ms Denomme lives between Bali and France and Mr Peyret lives in France. That fact of course made it much harder for the family of Lucas when events unfolded. Although Ms Denomme had once called Sydney home, she had since left the country. There were limited supports for them in Australia making this process much more difficult to navigate.

Evidence gathered for Inquest

12. The primary investigation was undertaken by the Officer in Charge Constable Alyssha O'Regan.

13. The evidence obtained in this matter has been comprehensive and extensive. Statements have been received from the primary medical practitioners involved in Lucas' treatment at Prince of Wales Hospital as well as from Ms Denomme. The following were called to give evidence at the Inquest:

    a. Dr Jakob Koestenbauer, unaccredited registrar in surgery, who saw Lucas on the afternoon of 26 May 2019 and who diagnosed acute appendicitis, assisted in the surgery and also assisted with the resuscitation.

    b. Dr Negin Sedaghat, general surgeon, who conducted the laparoscopic appendicectomy on Lucas on 26 May 2019;

    c. Dr Sukhi Hegde, then a trainee anaesthetist (now an anaesthetic registrar), who provided anaesthetic treatment before, during and after the operation and commenced resuscitation;

    d. Dr Ronald Fung, then a trainee anaesthetist (now an anaesthetic registrar), who assisted with the resuscitation; and

    e. Dr Adam Perczuk, consultant anaesthetist, who was Dr Hegde's superior and assisted with the resuscitation.

14. Due to the complex medical matters involved, two independent experts were consulted:

    a. Associate Professor Paul Forrest, Head of Cardiothoracic Anaesthesia and Perfusion at Royal Prince Alfred Hospital; and

    b. Associate Professor Charbel Sandroussi, Director of Upper Gastrointestinal Surgery, Hepatobiliary and Transplant Surgeon at Royal Prince Alfred, Strathfield and the Mater hospitals.

15. In addition, two reports have been prepared in related civil proceedings and received into evidence.

    a. Associate Professor John Raftos, Staff Specialist in Emergency Medicine at St Vincent's Hospital (for the family); and

    b. Professor Arthur Richardson, Upper Gastrointestinal and General Surgeon, Westmead Hospital (for the defendant Local Health District).

16. The experts attended a conclave prior to giving evidence, and appeared together in a conclave giving evidence in the proceedings which I will address below.

The events leading up to the Operation

17. Lucas expressed a desire to move out of his student share accommodation to his mother who was living in Bali in May 2019. Ms Denomme decided to visit Sydney to see her son and help him to find new accommodation. She arrived from Bali on Friday, 24 May 2019.

18. On 25th May 2019 Lucas did not wish to look for new accommodation on that day, so they relaxed and went to Newtown for lunch to catch up. That evening she noticed Lucas go into the bathroom and vomit. She suggested they go to a medical centre the next day if he still felt unwell. He went to bed and slept for about 12 hours.

19. The next day, 26 May 2019, Lucas was still unwell, and so at 9.00am Ms Denomme took Lucas to the Kingsford Medical Centre where there was a long wait.

20. At 11.07am Lucas was seen by Dr Wan Kum Chan who recorded the following:

> Headaches & fever & myalgia & cough 2/7
>
> Nausea & diarrhoea 1/7
>
> Hs acute R upper abdo pain &
>
> R shoulder pain today
>
> Abdo-guarding T37.4
>
> Ref Hospital ? rupture
>
> Patient decline Ambulance transport
>
> Mother will drive him there

21. Lucas declined the offer of calling an ambulance and so Dr Chan wrote a referral to the Emergency Department at Prince of Wales Hospital as follows:

> Thank you for seeing Lucas Peyret who has acute R upper abdo pain & R shoulder tip pain & fever for review. He has recent vomiting & diarrhoea yesterday. He decline[d] to go to Hospital by Ambulance.

22. Dr Chan noted that Lucas has no known adverse drug reactions, no allergies and no significant medical history. He was given a script for Tamiflu 75mg, 1 twice per day. Dr Chan recommended an ambulance, however it was decided that Ms Denomme and Lucas would take themselves.

Attending Prince of Wales Hospital

23. Lucas arrived at Prince of Wales Emergency Department at 11:48am on 26 May 2019, accompanied by Ms Denomme and the referral letter from Dr Chan.

24. At 12.05pm, Lucas was triaged by Registered Nurse Yvonne Gonzales as category 3. She recorded that he was unwell with abdominal pain and diarrhoea and vomiting. She noted that he had been referred by a GP, had been unwell

since yesterday, with fever, neck pain and lethargy. She recorded that he had today developed right sided abdominal pain associated with nausea/vomiting and diarrhoea. He was noted to have a temperature of 37.9 degrees. He was given Panadol.

25. Mr Peyret was then seen by Registrar Dr Dean Hearn in the Emergency Department at about 2.43pm.

26. Dr Hearn conducted an examination of Lucas, which included the testing for the key diagnostic features of appendicitis. His conclusion was that Lucas was suffering from acute appendicitis and considered that there was a possibility that the appendix had also perforated. He discussed the possibility of surgery with the Surgical Team at Prince of Wales Hospital and commenced Lucas on antibiotics. He also asked for bloods and cultures to be taken and Panadol and IV fluids to be given.

27. Antibiotics were also given twice that day, and Lucas was given pain management medication.

28. At 6.29pm Lucas was seen by Dr Jakob Koestenbauer, the surgical registrar. Dr Koestenbauer noted that Mr Peyret was tender over 'McBurney's point' with rebound and percussion tenderness. Dr Koestenbauer reviewed Lucas' blood cultures, arterial blood gases and noted that Lucas' white blood cells were elevated as was his C-Reactive Protein (CRP) level, both indicators of infection.

29. He reached a diagnosis of acute appendicitis and was admitted under the care of Dr Parasyn, the surgical consultant with instructions to "book and consent" for a laparoscopic appendicectomy (the Australian term for the US word appendectomy). He was continued on IV antibiotics and fluid, given DVT prophylaxis and was "nil by mouth" in anticipation of the surgery. In evidence he indicated that of concern for him was the high temperature reported, suggesting potential infection. He was also not concerned about requirement of imaging; he said the accuracy of the clinical diagnosis is between 80-90% accurate. He said that he saw no diagnostic features that would lead him to undertake further investigations that required exploring.

30. Dr Koestenbauer consulted with surgical fellow Dr Negin Sedaghat via telephone and Dr Sedaghat agreed with Dr Koestenbauer's diagnosis. An appendicectomy was arranged for that evening.

31. At 8.04pm, as per protocol Dr Sedaghat contacted Dr Andrew Parasyn, the senior supervising surgeon on call, who agreed to the laparoscopic appendicectomy that evening. Dr Sedaghat was the surgeon assigned to undertake the operation with Dr Parasyn providing supervision remotely.

32. Dr Koestenbauer then discussed the surgery with Lucas, including the risks associated with it. He recalled in evidence that Lucas was keen to proceed with the surgery, he did not want to wait and take any alternative non-surgical course at that time. That was in keeping with what was medically being advised.

Pre-operative anaesthetic consultation

33. Dr Hegde performed a pre-anaesthetic assessment of Lucas. She assessed his general medical history, his current clinical state, and his airway.

34. Lucas told Dr Hegde that he was an occasional smoker and that he had a possible history of childhood asthma but was otherwise well prior to his admission. He had no previous known issues with any medications and no hospitalisations that he could recall for this condition. He had no recent upper respiratory tract infections which would have added to his risk. He informed Dr Hegde that he had never undergone a general anaesthetic before and that he had no family history and no major reactions to anaesthesia. He did not have any known drug allergies.

35. Dr Hegde considered Lucas' blood pressure, heart rate, oxygen saturations to be within standard limits. His chest was clear. She did not anticipate any major difficulties with securing his airway with an endotracheal tube for the purpose of the operation but was concerned about his increased risk of aspiration given his acute abdominal pathology. She says she discussed with him the performance of a modified rapid sequence induction to minimise the risk of aspiration.

36. Dr Hegde says she discussed with Lucas the risks involved with a general anaesthesia and specific anaesthetic risks relevant to his clinical situation. Although not noted in the medical records in detail, Dr Hegde says she outlined the risks of a sore throat, post-operative nausea and vomiting, aspiration risk in the context of an acute abdomen, dental damage, allergic reactions, including potentially life-threatening reactions and perioperative morbidity and mortality. Lucas provided his consent to proceed with the operation.

The Operation

37. The operation commenced at about 8.58pm. Dr Sedaghat performed a standard laparoscopic appendicectomy with Dr Koestenbauer assisting.

38. Dr Sedaghat concluded that the intra-operative findings were consistent with acute appendicitis and the surgery was "routine". She signed the operation report at 9.34pm and left the theatre room at 9.35pm. The surgery concluded at 9.39pm. She explained in evidence that there was an urgent need for her to attend another patient requiring treatment, and that she in fact performed another surgery on that patient later that night.

Anaesthesia during the operation

39. Dr Hegde administered a local and general anaesthesia to Lucas, with a dose of Midazolam 2.5mg at 8.38pm. A modified rapid sequence induction was performed and Lucas' airway was secured with an endotracheal tube without issue. Ventilation was provided by machine and there were no anaesthetic issues during the operation.

40. Dr Hegde administered Rocuronium 70mg, a muscle relaxant, at the start of the procedure and an additional dose of 20mg towards the end of the surgery. Dr Hegde also administered Fentanyl 100mcg at the start for pain management and a further dose of 100mcg towards the end of the case, Propofol 200mg an anaesthetic agent, Dexamethasone 8mg as prophylaxis for vomiting; Cephazolin 2g for surgical infection prophylaxis, Heparin 5000IU for DVT prophylaxis, Parecoxib 40mg for pain management and Ondansetron 4mg for nausea towards the end of the case.

41. Dr Hegde says that no issues or concerns were identified or observed by her throughout the procedure.

Lucas' cardiac arrest following the operation

42. Dr Hegde prepared Mr Peyret for emergence from the anaesthesia and Dr Koestenbauer had remained with her. Lucas was transferred from the operating table to a hospital bed and was positioned upright prior to emergence.

43. At 9.42pm, Sugammadex 400mg was administered as a reversal agent for the muscle relaxant, Rocuronium that had been administered during the procedure.

44. Lucas responded to Dr Hegde's voice and was able to lift his head off the pillow. He showed appropriate muscle tone and breathed spontaneously. Lucas was able to open his eyes on command.

45. Dr Hegde extubated Lucas and transferred him to a Hudson Mask which was connected to an oxygen cylinder. However, at about 9.50pm or just before, Mr Peyret began to wheeze audibly and rapidly desaturate with a declining loss of consciousness. This was a sudden and unexpected result. It is important to repeat the detail of what took place next.

46. The Hudson Mask was removed and Dr Hegde began to bag mask ventilate Mr Peyret with a high positive end expiratory pressure via the machine but was unable to do so. Dr Hegde administered Propofol 50mg IV as she had concerns that Mr Peyret had potential laryngospasm. Her initial differential diagnoses were laryngospasm, bronchospasm or anaphylaxis to one of the medications administered on emergence from the anaesthetic.

47. Dr Hegde called a hospital 'Code Blue' whilst providing ongoing resuscitation. As well as the Code Blue being called the emergency button was also activated to alert all in the surgical area of the Code Blue. The Resuscitation Record records this time as 9.50. Dr Ronald Fung, another anaesthetic trainee, was in the area and considered that he might also be someone to assist with the Code Blue. Dr Fung arrived at about 9.53pm and two further medical officers from the Code Blue Team. Dr Fung took over leading the resuscitation for all those

present. The anaesthetic consultant Dr Adam Perczuk was also called to attend.

48. Dr Hegde secured Lucas' airway with a laryngoscope and a size 8.0 endotracheal tube. That is, a new endotracheal tube was inserted, similar to that just removed post-operatively. Dr Hegde says Lucas was given Adrenaline 0.5mg IM and 6 puffs of Salbutamol administered via the endotracheal tube given ongoing difficulties with ventilation despite intubation. Dr Fung administered a further dose of Adrenaline 100mcg IV.

49. The Resuscitation Record notes that Lucas was 'asystole' at 9.55pm, reflecting that his heart had stopped. The need was to get his heart started as quickly as possible.

50. At about 9.57pm, CPR was commenced followed by a further 1mg Adrenaline IV.

51. Those present discussed potential causes of cardiac arrest that included hypoxia, hypovolaemia, hypo/hyperkalaemia, hypothermia, toxins, tamponade, tension pneumothorax and thrombosis.

52. Despite intubation, Dr Hegde found it difficult to ventilate Mr Peyret due to high airway pressure. She believed this was bronchospasm secondary to life-threatening anaphylaxis. Dr Hegde checked that the endotracheal tube was correctly placed by the use of a video laryngoscope.

53. Consultant Dr Perczuk arrived at 10.01pm and as ranking consultant allowed Dr Fung to continue to direct the Advanced Life Support (ALS) process. He immediately activated the hospital's extracorporeal membrane oxygenation (ECMO) team – although they were not required given Lucas' subsequent return to spontaneous circulation and breathing. He took over bag mask ventilation which allowed him to have a tactile feel of what was going on. He instructed the administration of the muscle relaxant Cisatracurium

54. Dr Perczuk instructed Dr Hegde to check the position of the endotracheal tube with a video laryngoscope and noticed that it had become dislodged during

CPR due to the movement from chest compressions. Dr Hegde repositioned the endotracheal tube. Immediately prior to dislodgement, Dr Hegde recalled the ETCO2 was 12-13mmHg.

55. During the next round of CPR, Dr Perczuk decided to replace the endotracheal tube to be sure that everything was as optimal as possible. A new size 8.0 endotracheal tube was inserted at about 10:09pm.

56. Lucas' pulse was palpable at 10.18 pm and chest compressions ceased immediately. That is, there was a return of spontaneous circulation or 'ROSC'.

57. It appears from the Resuscitation Record that over 6 mg of Adrenaline was administered and there were five rounds of CPR. The time between Lucas being found asystole and ROSC was 23 minutes.

58. Drs Hegde, Koestenbauer and Perczuk observed large volumes of pink frothy secretions present in the tube throughout the resuscitation, indicating the presence of pulmonary oedema. Dr Hegde considered that negative pressure pulmonary oedema was ruled out as a cause of hypoxia but acknowledged that it could have been present concurrently without being the precipitating cause.

59. Lucas was transferred to ICU at Prince of Wales Hospital. At that time the feeling was that all needed to wait and see if Lucas responded and regained consciousness.

Admission to ICU

60. On 27 May 2019, the finding on EEG was "consistent with severe encephalopathy with myoclonus." The neurology team diagnosed Mr Peyret with post hypoxic myoclonus.

61. An MRI performed on 29 May 2019 showed "global cortical ischemia" and on 30 May 2019, an EEG reported "severe global CNS dysfunction". On 31 May 2019, an EEG showed "no definite cerebral activity present" and reported "severe global encephalopathy".

62. On 2 June 2019, Lucas' pupils were recorded as non-reactive and a CT brain scan showed "loss of grey-white differentiation" and "significant cerebral oedema with marked effacement."

63. On 3 June 2019 Mr Peyret underwent a nuclear medicine cerebral perfusion study which recorded "no cerebral perfusion identified" and "the scan appearances are in keeping with brain death". And at 1:37pm that day, ICU consultant Dr Salt pronounced life to be extinct. The ICU team obtained a second opinion by an intensive care senior staff specialist, Dr Gordon Flynn, which confirmed Dr Salt's opinion.

64. These tests demonstrated that the loss of oxygen to Lucas' brain over an extended period of time had damaged his brain to the extent that he could no longer survive.

65. Lucas' family were devastated and sought a second opinion prior to the cessation of life support from a family contact vascular immunologist, Professor George Grau. On 5 June 2019, Lucas' family agreed to cease organ supports and cardiac activity ceased at about 12.52pm.

Communication by hospital staff with the family

66. The Hospital engaged with Lucas' family. The first meeting was on 26 May 2019 with Dr Perczuk, Dr Sedaghat, Dr Hegde, an ICU fellow and Ms Denomme. An apology, being a key component of Open Disclosure, was given together with an explanation that, at that point, there was a differential diagnosis. Further investigations were needed, and Ms Denomme was informed of this.

67. A social worker was allocated to assist the family, and she remained constantly engaged from 27 May 2019 to 5 June 2019. There were meetings between the family and a number of the hospital's most senior practitioners on 30, 31 May, and 3, 4 and 5 June to discuss Lucas. The hospital provided the family, on request, medical records and also informed them of the root cause analysis (RCA) process which had been commenced.

68. On 1 July 2019 Director of Clinical Services, Dr Martin Mackertich and Dr Rob Turner, the head of Anaesthetics met with Ms Denomme to discuss the RCA. Later that month she was provided with a copy of that report, and when she returned to Australia she was able to attend the hospital on 28 July 2019 to discuss the findings and to ask questions.

69. The process of communication between staff and patients and their families is governed by a process known as Open Disclosure. The process is guided by NSW Health policy and locally by Guidelines devised by the Local Health District. This process should allow the doctors to discuss what happened in an open fashion, to be transparent and to offer an apology to family immediately.

Findings

70. Following some abdominal pain on 25 and 26 May 2019, Lucas saw a GP and was referred to the Emergency Department at Prince of Wales Hospital. On admission on 26 May 2019 Lucas was diagnosed with appendicitis with a possibility of perforation of his appendix. The surgical team were advised and surgery was agreed on. Later that evening a laparoscopic appendicectomy was performed, without complication. However, when Lucas was being brought out of anaesthetic he started wheezing and his oxygen saturation levels collapsed. The wheezing noise was very significant, alerting doctors as to what the likely cause was, and what action must immediately be taken.

71. He lost consciousness and shortly thereafter went into cardiac arrest. Resuscitation was commenced immediately. The anaesthetist attending on Lucas, Dr Hegde, immediately called a ‘Code Blue’ and asked the consultant anaesthetist Dr Adam Perczuk to attend. Both the Code Blue Team and Dr Perczuk arrived within minutes. The working diagnoses of the resuscitation team were (1) severe anaphylactic reaction following administration of the anaesthetic reversal agent Sugammadex, (2) bronchospasm or (3) laryngospasm. After at least 23 minutes of CPR spontaneous circulation returned. However, during that time Lucas’ brain had been starved of oxygen.

72. Lucas was transferred to the ICU. His mother Ms Katya Denomme was contacted that night at about 11.30pm and asked to come to the hospital. There she met with Dr Perczuk, Dr Hegde, the ICU fellow and the Surgery fellow.

73. Over the following days CG, MRI, CT and nuclear brain study all indicated that Lucas had been deprived from oxygen to his brain for a period of time that had damaged his brain function in a way that could not be repaired. He could no longer survive.

74. Lucas was maintained on life support while the family sought a second opinion as to his neurological function. On 5 June 2019 a meeting was held between Ms Denomme, Lucas' father Mr Laurent Peyret and the Head of Anaesthetics and the ICU consultant, initially with the family's lawyers. At the meeting the family determined to end life support and Lucas' cardiac activity ceased at 12.52pm that day.

75. In her statement in this matter Ms Denomme says she is concerned that she was not "getting the whole truth" from the hospital staff about her son's treatment, that she was concerned as to whether the hospital had the right staff on the night to operate on her son and that she is "disappointed with the system and how I was treated by the hospital".

76. Dr Makertich gave evidence on the process of Open Disclosure in this case. There was considerable interaction with family immediately following the operation and, in the months following. Dr Frances Dark, Clinical Lead Queensland Open Disclosure, has reviewed the operation of Open Disclosure and opined that the process was followed in this case.

77. The process is just that, a process. Every case will depend on the circumstances of each case. In this case Lucas' parents found themselves away from their homes, in a country that they do not live. Language was a significant barrier for Lucas' father. All loss of life is tragic, but this was a particularly devastating, unexpected and sudden death of a very young man. The shock to the parents is hard to imagine. The fact was that at the time no one knew the cause of his death definitively, and it is unsurprising that they felt that a mistake had been made.

78. There was also the issue of the use of the word “trainee” in relation to Dr Hegde. This may have left the impression that Dr Hegde was perhaps not a qualified doctor nor anaesthetist. To the contrary she had been a practising doctor for four years, followed by 18 months into training as a specialist anaesthetist. She had adequate supervision and was qualified to undertake the operation with Lucas. The expert independent opinion is that she conducted herself in every way appropriately during the course of the operation.

79. Dr Hedge gave evidence. She was very affected by the loss of Lucas and expressed that during the Inquest. She was able to explain the operation and that everything was going well until the administration of Sugammadex. There is no criticism of the use of that drug, in fact it was the indicated drug to be used in the circumstances of this case. The expert view was that even with the risk of Sugammadex and the option of alternative drugs, those other drugs are not indicated for an operation of this nature and short duration.

80. After listening to the experts in the conclave, it is my finding that the evidence of the surgeons must be preferred to that of Associate Professor John Raftos. The role of the Emergency Physician is to diagnose and act. In this case, the appropriate action was to refer Lucas to a surgeon. What happens from that point is in the expertise of a qualified specialist surgeon. I accept the submission that in this matter Associate Professor Raftos’ evidence may be given very little weight. He is an Emergency Physician. He gave evidence that an appendicectomy was an operation that he performed or participated in 30 years ago and is not part of his current practice. Associate Professor Sandroussi estimated that he had conducted about 2,000 appendicectomies in his career with Professor Richardson similarly indicating that the operation was a surgeon’s ‘bread and butter’. Associate Professor Raftos’ expertise was limited to clinical examination, diagnostic steps, calling for and organising diagnostic tests. Some of his evidence was based on what he believed a gastric surgeon would do at St Vincent’s hospital, where he currently works.

81. His evidence that further tests by way of CT scan or ultrasound was required, is totally out of step with the expert surgeons. The standard test to diagnose appendicitis was not a test used by him.

82. The expert evidence of the surgeons was that with a high rating on the appropriate Alvarado scale of 8 or 9, t Lucas needed an operation. Delay was not recommended. Further, evidence was given by Associate Professor Richardson that to the contrary, reliance on finding nothing on a scan and failing to act can be dangerous. Associate Professor Sandroussi and Professor Richardson indicated the dangers in delay, including perforation, peritonitis, infection in the abdominal cavity and post-operative complications. Associate Professor Sandroussi gave evidence that there is established literature that every 6 hours of delay increased the risk of complications following surgery.

83. After the operation Lucas' appendix was sent for microscopic examination, a process known as 'histopathology'. The result was received the next day:

> … MICROSCOPIC (Reported by Dr M Yan):
>
> The entire appendix has been embedded.
>
> Sections of the appendix show patchy non-specific mild acute inflammation in the mucosa, with rare crypt abscesses. No acute inflammation, diagnostic for acute appendicitis, is present in the muscularis propria. The serosa appears unremarkable. There is no evidence of dysplasia or malignancy.
>
> COMMENT
>
> Mild acute mucosal inflammation of uncertain significance is present. No diagnostic features of acute appendicitis are seen.

84. Dr Sedaghat gave clear evidence that while undertaking the operation she confirmed the findings of green turbid fluid in the abdominal cavity and redness of the ileocecal region indicating that there was infection. Moreover, she said looking at the appendix it should be "lily white" in colour, and Lucas' was not.

She had taken photographs to show what she saw. Her account was that the histopathology confirmed her diagnosis. The specimen observed after death did not show the signs of acute appendicitis, however Dr Sedaghat said comments by the pathologist that "mild acute mucosal inflammation of uncertain significance", in her view confirmed diagnosis (the expert surgeons agreed) and which I accept.

85. Dr Sedaghat was such an impressive witness. I was left in no doubt as to her diagnosis, and her desire to operate quickly to ensure the best result for Lucas. Instead of waiting to the next day, she made arrangements to fit in the surgery that night. She impressed as careful, experienced and precise.

86. One of the suggestions by Associate Professor Raftos was that he would prefer the operation to not be conducted as late as Lucas was operated on. I find no merit in that position. Appropriate surgical staff were available, the expert opinion is that it is important to act quickly in cases such as Lucas and that is what happened. The logic of this argument is also hard to follow. Lucas had an acute, unexpected reaction to Sugammadex, which would have been the same if it were administered the following day, which it would have been.

87. Overwhelmingly I am satisfied that on the diagnosis of three doctors, Lucas had acute appendicitis. The operation should have been conducted when it was. Two expert and independent surgeons agree with that finding.

88. Dr Hegde was an appropriate anaesthetic registrar to undertake the procedure. As at May 2019 she was in her second year as an anaesthetic trainee, in that she was training to become a fellow of the Australian and New Zealand College of Anaesthetists. She had been qualified as a medical practitioner since 2014. She practised in anaesthetics for 6 months prior to commencing in her specialist training in early 2018. She was being supervised by Dr Perczuk remotely and he was able to be at the hospital within 10 minutes of the call. She was qualified to conduct this operation, and indeed the review of her work demonstrated that her work was performed appropriately.

89. The Director of Clinical Services Dr Mackertich gave evidence that it was appropriate practice for anaesthetic registrars to perform operations such as

appendicectomies at Prince of Wales Hospital without any direct supervision. Dr Hegde's direct supervisor Dr Perczuk was satisfied that she had the skills required.

90. An independent review of the resuscitation was undertaken by Associate Professor Paul Forrest found that the care and treatment of Lucas was appropriate and adequate.

91. He found that:

    a. There was a prompt recognition of the importance of the wheeze causing Dr Hegde to bag mask ventilate Lucas

    b. There was a timely call for assistance

    c. There was consideration of the possible differential diagnoses

    d. Lucas received adrenaline for anaphylaxis before the cardiac arrest was called and then appropriate levels of adrenaline after his heart stopped

    e. The administration of adrenaline, cardiac compressions and IV fluids were in accordance with the Australian Resuscitation Council's Advanced Life Support protocol

    f. Severe bronchospasm was treated appropriately

    g. The dislodging of the endotracheal tube during resuscitation was promptly recognized and rectified.

92. Dr Frances Dark, a specialist in Open Disclosure from outside NSW reviewed the evidence and found that the hospital had acted appropriately.

93. Dr Mackertich accepted that the family were not happy with what had occurred and still had criticisms of the hospital. Regardless of this understanding the hospital did not give up, it continued to follow it's guidelines, continued to engage with the process and with Lucas' family. He also showed a respect and understanding for the difficult situation they were in, and the tragic

circumstances of Lucas' death and the intolerable toll that has taken on the family.

Use of Sugammadex

94. Associate Professor Forrest provides an expert opinion with respect to the incidence of anaphylaxis as a result of the administration of Sugammadex and raises whether there is a greater role for a drug such as Neostigmine which has a lesser incidence of anaphylaxis and performs a similar role in anaesthesia.

95. He identified two important studies to estimate the incidence of anaphylaxis from the use of Sugammadex. Those were

    a. In the UK: 2 per 100,000 (Royal College of Anaesthetists)

    b. In Japan: 2 in 10,000 based on a study of 50,000 patient (Ohihara Sutdy)

96. He said in evidence that in certain surgery it is worth considering the use of Neostigmine, which although less effective and slower to reverse the effect of the anaesthetic, has lower risks of anaphylaxis.

97. Three possible causes have been identified as the cause of Lucas' severe reaction after the surgery: severe and life-threatening anaphylaxis to the administration of Sugammadex, laryngospasm and bronchospasm.

98. Only one expert, Associate Professor Forrest, has given evidence about this issue specifically and he is of the opinion that although everything possible was done to resuscitate Lucas, from an anaesthetic point of view, Lucas was in the very small percentage of people who have an anaphylactic reaction to Sugammadex. It should be noted that Associate Professor Forrest indicates that responses to anaphylaxis is one of the core introductory units in anaesthetic training.

99. Associate Professor Joanna Sutherland, Chair of the Safety and Quality Committee of the Australian and New Zealand College of Anaesthetists (**the College**) gave evidence about the College's assessment of Sugammadex and

her opinion about the incidence of anaphylaxis in the use of Sugammadex. She indicated that the study undertaken in Japan needed further analysis, such as knowledge of the parameters around anaphylaxis, the demographic that differs from Australia and the fact that Neostigmine requires a second drug to be administered as it acts indiscriminately at other receptors in the body and carries other risks.

100. The important conclusion from both experts was that there is a need to look at this issue. There is a need to ensure reporting of reaction to Sugammadex is being made so that the dangers are properly understood and considered.

101. On the facts before me I can find that Lucas' heart stopped at 9.55 pm and recommenced at 10.18 pm, being a total of 23 minutes. Appropriate steps were taken to resuscitate Lucas after he suffered a severe and unexpected post-operative reaction to Sugammadex. Lucas was deprived of oxygen for too long, and sadly could not be saved.

Findings

Pursuant to section 81(1) of the Coroners Act (2009)

a. Identity: Mr Lucas Peyret

b. Date: 5 June 2019

c. Place: Prince of Wales Hospital Randwick NSW

d. Cause: Anaphylaxis

e. Manner: Complications of anaesthetic following surgery (sugammadex)

To the family and friends of Lucas, I offer my sincere and respectful condolences for their significant loss.

Magistrate E Kennedy
Deputy State Coroner
26 October 2022

Annexure A - Non Publication Order

(1) Under to s74(1)(b) of the *Coroners Act 2009* the mobile phone numbers, home phone numbers, personal emails and residential addresses of persons mentioned in the brief of evidence not to be published including those of the family of the deceased and all witnesses including expert witnesses.