IN THE CORONERS COURT
OF VICTORIA
AT WODONGA

Court Reference: 2010 / 0520

FINDING INTO DEATH WITH INQUEST

Form 37 Rule 60(1)
*Section 67 of the **Coroners Act 2008***

Inquest into the Death of: ROBERT VIVIAN HAWKINS

Delivered On:	27th August 2014
Delivered At:	Coroners Court of Victoria 65 Kavanagh Street MELBOURNE 3006
Hearing Dates:	24th to 26th February 2014 and 22nd April 2014
Findings of:	JACINTA HEFFEY, CORONER
Representation:	Mr P Halley of Counsel – Acting for Dr J Lewin and Dr Dr E Moyle Ms D Foy of Counsel- Acting for Mr Neil Geddes
Police Coronial Support Unit	Leading Senior Constable G McFarlane

I, JACINTA HEFFEY, Coroner having investigated the death of ROBERT VIVIAN HAWKINS

AND having held an inquest in relation to this death on 24th to 26th February 2014 and 22nd April 2014

at WODONGA CORONERS COURT

find that the identity of the deceased was ROBERT VIVIAN HAWKINS

born on 11th March 1954

and the death occurred on the 5th February 2010

at St Vincent's Hospital Melbourne, 41 Victoria Parade, Fitzroy 3065

from:

1 (a) MULTI-SYSTEM FAILURE COMPLICATING INTRA-OPERATIVE HAEMORRHAGE DUE TO INADVERTENT SUPERIOR MESENTERIC ARTERY LIGATION DURING LAPAROSCOPIC NEPHRECTOMY FOR RENAL CELL CARCINOMA

in the following circumstances:

1. On the 6th January 2010, the deceased was diagnosed as having a moderately large localised tumour in his left kidney. He was referred by his General Practitioner to Urologist Dr Jonathan Lewin on the 13th January and the options for surgical removal were discussed, that is, the advantages and disadvantages of open surgery versus laparoscopic surgery, to remove the kidney. Mr Hawkins consented to the laparoscopic procedure. He was advised that this might be converted to an open procedure if warranted and that, given the size of his tumour[1] and the number of multiple collateral feeding vessels, there was a 30-40% risk of this becoming necessary.

2. The surgery took place on the 2nd February at the Wodonga campus of the Albury Wodonga Health at 2.36 PM. It seems that in the course of the surgery, the superior mesenteric artery (SMA) was inadvertently divided instead of the left renal artery. Unaware of this mis-identification, Dr Lewin had applied double clips to the bowel side of the artery instead of the aorta side, with only a single clip being applied to that side. This clip was insufficient to withstand the pressure from the aorta and came off causing a catastrophic bleed, with corresponding profound drop in blood pressure, cardiac arrest and significant reduction in blood supply to the bowel.

[1] The x-rays prior to the operation measured the tumour as being 6.5cm. Post-operatively it was measured at 8 cm.

3. Dr Lewin immediately opened the abdomen, realised his error and secured the SMA with clamps. He sought senior surgical help to manage the vascular and bowel issues whilst he removed the left kidney. Mr Neil Geddes, then a consultant general surgeon with past vascular surgical experience who happened to be at the hospital, attended and commenced to address the haemostatic issues, including transfusion of blood products, suturing, diathermy fulguration and ligation wherever bleeding vessels were located. He also removed the spleen. The SMA was ligated. At the conclusion, he observed that the small bowel was pink and it bled to pin prick. In evidence, he amended the next sentence in his statement to read: "*It was also moving with peristaltic waves*".[2] Haemostasis was considered "*adequate*". Mr Geddes, however, was unable to be certain that the celiac axis, the main supply to the intra-abdominal organs, was patent due to difficulties in visualisation. (It came to light only the next day that the celiac axis had been inadvertently divided during the resuscitation process).

4. He discussed the situation with Dr Lewin and it was decided that, due to there being no Intensive Care Unit at Wodonga Hospital, Mr Hawkins should be transferred to Albury Base Hospital ICU. The option of re-vascularising the SMA at that time by means of by-pass surgery was considered too risky given the patient's unstable condition[3] and, in any event, Mr Geddes had never performed by-pass surgery on the SMA. There was no vascular surgeon available. In the circumstances, Mr Hawkins was transferred to the Albury Hospital.

5. Mr Hawkins arrived at Albury Hospital ICU at approximately 9.30 PM. He was intubated and monitored overnight. During this time, notwithstanding blood transfusions, his blood pressure was low and lactate remained high, indicating hypo-perfusion. His condition had not improved in the morning. He was under the care of Dr Eric Moyle overnight and Dr Ziaduddin Ansari assumed his care at about nine o'clock in the morning. By this time, he was tachycardic, with poor urine output, worsening metabolic acidosis and worsening liver function. An urgent CT abdomen angiogram with IV contrast was ordered which revealed ischemic bowel and liver. Dr Lewin spoke to Professor Denton, Vascular Surgeon at St Vincent's hospital in Melbourne and arrangements were then made to transfer Mr Hawkins by air to that hospital. His condition continued to deteriorate whilst these arrangements were made.

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[2] Transcript dated 22/4/14 (unpaginated) – third page of evidence of Mr Geddes.

[3] It is worth noting here that the difficult task of stopping the bleeding had taken three hours.

6. Upon his arrival at St Vincent's Hospital at 4.30 PM, a CT scan demonstrated an occlusion of the celiac axis, SMA and ischemia of the liver. He was taken to theatre where he was operated on by two vascular surgeons and two colorectal surgeons. The SMA was re-vascularised with by-pass surgery using the long saphenous vein from the right thigh in the hope that once re-perfused, there would be back flow to the celiac axis and liver. That evening, due to bleeding, Mr Hawkins' abdomen was re-opened and ischemic segments removed. The by-pass was still patent. Further surgery occurred the next day, the 4th February, in which more ischemic areas of bowel were discovered and excised, but his coagulopathy problems persisted and he died on the 5th February.

7. Mr Hawkins' death was a "*reportable death*" under the Coroners Act 2008. Section 4 states that a death of a Victorian resident that occurs following a medical procedure where the death is or may be causally related to the medical procedure and death was unexpected by a medical practitioner immediately before the procedure was undertaken, is a death that is required to be reported the Coroners Court of Victoria.

8. No autopsy was conducted in view of the detailed and recent medical history available, which enabled a cause of death to be established without the need for post-mortem examination. An external examination was conducted by a forensic pathologist at the Victorian Institute of Forensic Medicine and determined the cause of death as stated above.

9. That Mr Hawkins' death related to the medical procedure was not in issue. Dr Lewin frankly admitted that he had failed to recognise the SMA, mistaking it for the renal artery.

10. The Coroners Court retained Professor Anthony Costello as an independent expert witness. Professor Costello made a statement in which he opined that unless Dr Lewin was sufficiently qualified, he should not have offered a laparoscopic procedure, but rather the open surgery alternative. With respect to the issue of failure to re-vascularise the small bowel, Professor Costello strongly disagreed with the decision to close the abdomen without attending to this. He described this as "compounding the significant surgical error".[4]

11. The Court also retained and heard evidence from Mr Charles Last, Vascular Surgeon and Consultant at Frankston Hospital for 15 years. He performs nephrectomies on large renal tumours but using only the open procedure. He was of the view that given the operation was

[4] Professor Costello has a fellowship of the Royal Australian College of Surgeons completed in 1980 in urological surgery and is presently Head of the Department of Urology at the Royal Melbourne Hospital, having previously been the Head of Urology at St Vincent's Hospital for 9 years. He does not perform laparoscopic nephrectomies.

originally estimated to take 120 minutes; that it was still on-going at the 210 minute mark (already 90 minutes over) when the mis-identification occurred, suggesting serious visualisation difficulties, that a decision should have been taken earlier to convert to an open procedure. He said that the failure of the left renal vein to collapse should have given a clue that the wrong vessel had been ligated.

12. Mr Last was less critical than Professor Costello of the decision not to re-anastomose the SMA at the time of the resuscitation in the circumstance that the bowel appeared to be adequately perfused at that time. (He said that surgical re-attachment of the SMA has complications of re-bleeding and neither of the doctors was a vascular surgeon). However he considered that the visual appearance will change over time and for that reason objective confirmation of adequate perfusion was needed to be arranged by either on-table angiography (if the equipment was available) or by CT scanning. (This would also have alerted them to the status of the celiac axis). He said that there was a limited window of about 4-6 hours (the "warm ischaemia time") after which the bowel will be too infarcted to be viable. This time could potentially have enabled a vascular surgeon to be flown from Melbourne if the patient was too unwell to be airlifted.

13. **I propose to deal with each of the issues raised in turn.**

    A Should conversion to open surgery have occurred earlier?

    B Should the SMA have been re-vascularised earlier?

    C. Was Mr Lewin adequately qualified to perform laparoscopic nephrectomies on an unsupervised basis and what constitutes adequate qualification?

    D. Should the procedure have been performed at Wodonga Hospital?

A. SHOULD CONVERSION TO OPEN SURGERY HAVE OCCURRED EARLIER?

14. Paragraph 12 above relates to this issue and arises from the evidence and opinion of Mr Last. In his statement, Mr Last said

> *"Dr Jonathan Lewin states that at the time of the injury the operation had already taken 210 minutes and the expected operating time of the entire procedure was only 120 minutes. The size of the tumour, the difficulty locating the renal artery and*

prolonged operating time, I feel should have alerted the surgeon that the operation was not progressing as expected due to difficulty in identifying the anatomy".[5]

15. In evidence, he said that the time, along with the fact that the renal vein did not collapse after the surgeon apparently believed he had ligated the renal artery – he referred to this as "*the accumulation of little clues along the way*"- should have led to "*a bell ringing*".

16. In terms of the passage of time, Mr Last conceded that Mr Lewin may not have been so aware of the time because he was concentrating on what he was doing.[6] He told the court "*There is no procedure that says "If you get past this point you must do this*".[7] He accepted that Mr Lewin had still believed he was making progress "but he was not" and that had there been a "*senior colleague*" present they might have conferred about this. He agreed under cross-examination that the only time it was absolutely necessary to convert was when the patient was bleeding and this decision was duly made.

17. With respect to the issue of the failure of the renal vein to collapse, Dr Shomik Sangupta, (a specialist urologist and currently Chairman of the Victorian sub-committee of the Board of Urology, Royal Australasian College of Surgeons) told the court

> *"The kidney sometime has more than one artery. So when you've clamped or controlled the first renal artery you will –I will usually make an assessment of the vein. If it's still filling up, then your judgment is that there is a second renal artery that you're looking for. The doesn't automatically make you think that it is a wrong renal artery.....I'm sure that at that point in time Dr Lewin thought that the artery that he had clipped was the first renal artery, but not having seen the vein empty he then went looking for additional renal arteries and I gather that another one or two were found and controlled....".*[8]

18. Essentially, he said, you keep looking for and dividing arteries until you're sure that the kidney has been devascularised and the vein has deflated. When this difficulty was put to Mr Lewin in evidence, he said that

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[5] See Statement of Mr Charlie Last- Exhibit J.

[6] Transcript P 196.

[7] I note that on the Johns Hopkins Medicine site (http:// urology.jhi.edi) in the information provided to patients undergoing laparoscopic nephrectomy states "The typical length of the operation is 3-4 hours).

[8] Transcript P 86-87.

"The difficulty is that you're dealing with a three dimensional picture and so sometimes I have two arteries, one sits in front of the other so I've got to ligate the first one to find the second that's behind".[9]

Conclusion

19. As is not uncommon in this jurisdiction, an objective assessment by a third party of a process, particularly a surgical process, is difficult to achieve when the catastrophic outcome is known. Mr Last was speaking as a surgeon who performs only open nephrectomies in which the surgical field is much clearer. A search of the published literature reveals that performing this procedure laparoscopically does not attract a greater risk in terms of misidentification of vessels. I am therefore satisfied that to attempt the procedure by way of laparoscopy, with capacity to convert, was reasonable. I am satisfied that the procedure may involve identifying and ligating a number of kidney arteries, the number of which is indeterminable in advance of the procedure, and for this reason, the failure of the kidney vein to collapse may not arouse immediate suspicion.

20. It would seem that Dr Lewin was in the course of performing this part of the procedure when the clip became detached and the bleed occurred. I do not consider, on balance, that there were sufficient pointers, either in the time it was taking nor in the failure of the renal vein to collapse, to arouse his suspicion that the wrong artery had been divided, leading to conversion.

B. SHOULD THE SMA HAVE BEEN RE-VASCULARISED EARLIER?

21. As stated above, Professor Costello was of the view that this should have happened at the time of the laparotomy. Mr Geddes told the court that he was aware that the SMA would need to be re-attached at some time, but as he considered there was adequate blood supply to the bowel, he felt this could be delayed until able to be performed by an appropriately qualified surgeon. There was no vascular surgeon available and Mr Geddes had never performed a bypass procedure on the SMA. In any event, he did not consider that Mr Hawkins' cardio-vascular and hemodynamic condition was sufficiently stable to allow such a procedure to take place at that time. There was no intensive care unit at Wodonga Hospital He considered, appropriately in my view, that the best course was to transfer the patient to Albury Hospital where there was an ICU.

[9] Transcript P 154.

22. Mr Last told the court that he considered that adequate perfusion of the small bowel should have been *confirmed* before a decision was made in this respect. I am satisfied by the evidence of Mr Geddes that for a very ill patient like Mr Hawkins, an intensivist would have been needed for a CT scan to be performed and there was none at Wodonga Hospital. Mr Geddes also considered that, even if this had not been the case, the use of intravenous contrast would have put Mr Hawkins at risk of hepato-renal failure.

23. Mr Last argued that even if not performed at Wodonga Hospital it could have been arranged upon arrival at the Albury Hospital. Dr Moyle, the Intensivist at the Albury Hospital, under whose care Mr Hawkins was admitted later that night, told the court that he had given consideration to arranging a CT scan but he told the court "*The disadvantages of a CT scan exposes the patient to intravenous contrast which increases their risk of renal failure developing.*"[10] He said that the main concern in the Intensive Care Unit that night was to stabilise the patient to optimize his medical condition and improve his coagulation profile. He said that every time you move a patient there is a risk of disconnections and problems occurring. "*You would want to have a good reason for any transfer of patients occurring*".[11] This was also the evidence of Dr Ansari who took over from Dr Moyle the next morning. He told the court that "*when a patient is on a ventilator and has lots of infusions running, sometimes, just moving the patient, because we have to move the patient from the bed to the table and that movement can cause sudden instability and sometimes a patient can have a cardiac arrest....*'.[12] I prefer the evidence of Mr Geddes and Drs Ansari and Moyle in this respect.

24. Mr Geddes did agree with Mr Last that, as a general rule, 4-6 hours without re-attachment of the SMA would normally be leaving it too late, however he pointed to the CT scan that was conducted at Albury Hospital the next morning and the report which stated that the small bowel showed blood supply in the wall. He said "This means it had a good chance of being viable." He noted that it was still viable when Professor Denton operated on Mr Hawkins at St Vincent's hospital the following afternoon to re-attach the SMA.

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[10] Transcript P. 171.

[11] Transcript P 172.

[12] Transcript P 108.

Conclusion

25. In conclusion, I make no criticism of Mr Geddes for not opting to attempt to re-vascularise the SMA at the time of the resuscitation.

C. WAS MR LEWIN ADEQUATELY QUALIFIED TO PERFORM LAPAROSCOPIC NEPHRECTOMIES ON AN UNSUPERVISED BASIS AND WHAT CONSTITUTES ADEQUATE QUALIFICATION?

26. The adequacy or otherwise of Mr Lewin's qualifications to perform this procedure was raised as a major area of concern by Professor Costello. He told the court that in his view, a urologist needed to have performed at least 40 laparascopic nephrectomies before being credentialed to perform the procedure on an unsupervised basis.

27. The court heard evidence from Dr Shomic Sangupta who challenged this. Dr Sengupta, is currently the Chair of the Victorian Chapter of the Royal College of Surgeons looking after the training of urologists. He told the court that there is no mandated number for any surgery. The assessment process is, rather, based on competency. It may take 40 cases in one case, but for a different trainee, 20 cases. The number is not specified.[13] He said that being able to perform laparoscopic nephrectomies is now a "*core skill*" required before a urologist can be admitted to Fellowship of the College of Surgeons. He distinguished this from laparoscopic *partial* nephrectomies which requires post-fellowship additional training. He said that the ability to perform a laparoscopic nephrectomy, whilst not a common operation, "*should be in the arsenal of all urologists*".[14]

28. Credentialing a Surgeon as being competent to perform certain procedures at a particular hospital is the responsibility of the hospital itself. As an example of this, Professor Costello told the court that at his hospital, the Royal Melbourne Hospital, the pre-requisites before a urologist could perform nephrectomies were very strict. A history of having performed a minimum of 40 procedures "*in a good institution*" was required and there were presently only three urologists considered adequately trained to perform the surgery. He did not agree with the view of Dr Sengupta that the fact of admission to the Fellowship necessarily suggests competence in performing laparoscopic nephrectomies.

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[13] Transcript P 71. Lines 1-29.

[14] Transcript P. 72.

29. In aid of his argument, Professor Costello cited three coroners cases (including the matter under discussion) as examples of the perils of the procedure in which he had been asked to provide an expert opinion in the past 12 months. One of the deaths had occurred in April 2010 at Epworth Eastern Hospital Box Hill. The deceased had undergone laparoscopic nephrectomy to remove left kidney. In the course of the surgery, it was converted to open surgery due to extensive fibroids around vessels, presumably because this complicated visualization of the vessels. The patient died the following day and an autopsy revealed that the splenic artery and the SMA had been divided. It was not clear to me whether this occurred partly during the laparoscopic procedure or whether it all occurred during the open procedure. The other case was a South Australian death following laparoscopy in 2013 after the patient suffered an irreversible bleed following misidentification of various vessels including the SMA and the right renal artery (the patient was having the left kidney removed). Notwithstanding attempts to repair the damage surgically, with re-anastomosis of the right renal artery, the SMA and the aorta, the patient developed an ischaemic bowel and died the following day. It was not clear from the summaries provided by Professor Costello precisely what the qualifications of the respective surgeons were. He described them as *"experienced urologists"* but *"clearly not experienced laparoscopic surgeons"*. The only other case mentioned by Professor Costello involved a case in which he was involved which was an open procedure in which the SMA was inadvertently divided. It was able to be repaired due to the availability of a vascular surgeon. A search of the Victorian coronial data base to discover past deaths following laparoscopic nephrectomies produced only the Epworth Hospital case.

30. Mr Halley submitted on behalf of Mr Lewin that the sample provided by Professor Costello *"cannot be elevated to say this is a high risk procedure.... The evidence is, which is the literature evidence, that this is a one in 100,000 occurrence that can occur in the best of hands but is a rare occurrence..."*[15]. No material was tendered to support this statistic and, indeed, upon this information being sought post-hearing, Mr Halley was unable to obtain such material from his client.

31. Mr Sengupta told the court that when he first started out as a renal surgeon, he got more training in open renal surgery. *"Those who are going through training right now probably have greater competence and greater exposure to laparoscopic renal surgery.... So the next generation might have to get credentialed to do open surgery. It may reverse itself in the*

[15] Transcript P. 250. I am not clear where this statistic came from

space of a generation.... So I think these are dynamic things...that administrators need to look at."[16]

32. Professor Costello's suggestion of 40-43 observed procedures before becoming adequately qualified would, according to Mr Sengupta lead, of necessity, to centralized hospitals being the only centres at which the operation could be offered due to the numbers required. Mr Sengupta agreed that some procedures are rare enough to be restricted in this way but he considered that a laparoscopic nephrectomy is "*common enough*" and, even though it will not be done by everyone, there is no reason a practitioner such as Dr Lewin might not start a practice in a regional centre like Wodonga offering it if the numbers seeking it are sufficient. He re-iterated that this was a core part of the training in urology at the present time. There may be difficulties if a minimum number is set to be able to continue to offer the operation, given unforseen circumstances that might arise over a year, such as an overseas trip. Hospital administrators and peer review he considered would adequately cover the situation.

33. As at February 2010, Mr Lewin had performed up to 17 laparoscopic nephrectomies as primary surgeon: 10 in the UK (as part of his UK Fellowship training); approximately 7-10 at Monash Medical Centre (during a 12 month Fellowship in uro-oncology with specific focus on laparoscopic renal surgery- the precise number unknown as the log book on computer was lost due to computer malfunction). He was formally credentialed as a Specialist Urologist by the Wodonga Regional Health Services Credentialing Committee on the 20th May 2009. This appointment had been endorsed by the Royal Australasian College of Surgeons (RACS) in December 2008 with the recommendation that for the next 24 months he was to be under supervision, but with no direct supervision of procedures. Among the references provided was one from Dr Daniel Moon from Monash Medical Centre, an experienced surgeon who performs the procedure, and which endorsed Mr Lewin's competency.

34. He was to have two clinical assessors who were to file three monthly progress reports. He had already, by May 2009, spent 8 months at Wodonga Hospital as a Senior Registrar during which time he had been supervised directly whilst operating by the same two clinical assessors who were subsequently appointed in line with the recommendation of the RACS. (These operations did not include laparoscopic nephrectomies as these were not offered at the hospital). The Hospital also required that a regional Specialist Urologist with expertise in laparoscopic nephrectomy, Mr Sowter, provide initial direct supervision until such time as he

[16] Transcript P 79.

was satisfied that Mr Lewin was sufficiently skilled to operate independently. This requirement was met.

35. Whilst in an ideal world, the minimum requirements proposed by Professor Costello would be optimal, realistically I am not persuaded that the data bears out his major premise. Certainly, the procedure is risky but in competent hands, that risk is minimized. It is difficult to extrapolate from the two other case histories referred to by Professor Costello as it was not clear in one case whether the error occurred during the laparoscopic or the open phase. A search of the coronial data base did not elicit more cases. Furthermore, in neither of the cases (from the material provided), was the experience or qualifications of the surgeons referred to. Rather, it was assumed, because of the outcome, that the surgeons involved lacked experience. This overlooks the recognised fact that errors may occur even in the most experienced hands.

Conclusion

36. I consider that the concerns raised by Professor Costello, whilst sincerely held, do not warrant a recommendation in terms of the sorts of minimum qualifications he is advocating. They were referred to variously by witnesses as representing "*the gold standard*". I accept the evidence of Mr Sengupta that the appropriate qualification should be based on competency rather than numbers. I accept his evidence that urologists currently perform full laparoscopic nephrectomies as part of their initial Fellowship training which, by definition, is in a supervised way. Support for the laparoscopic method in preference to open surgery, in appropriate cases, is well documented in the literature and the rationale well established.

37. Finally, Mr Lewin gave sworn evidence that since Mr Hawkins' death he has performed some 19 laparoscopic nephrectomies without incident. He has also instituted an audit of his practice through the Urology Society of Australia and New Zealand which supports his competency to perform the procedure. I accept his assessment that the mistake made in the course of the procedure under consideration arose from the unusual anatomical features involved rather than from lack of competence to perform the procedure generally. In his statement, Mr Lewin stated that the size of the tumour meant that "*the kidney sagged towards the midline*" and its size also meant that "*the renal artery was pushed behind the kidney and the kidney was sitting in front of the aorta*".[17] I accept that he acted immediately to attempt to reverse the situation by converting to an open procedure and calling for surgical help. Finally, he sought advice appropriately from a vascular surgeon at St Vincent's Hospital and arrangements were made

[17] See Statement of Mr Lewin Exhibit G1.

to transport Mr Hawkins to Melbourne. I am satisfied that, although it seemed to be a long time before transport took effect, the logistics involved are significant and the resulting time involved was the quickest that could be arranged.

D. SHOULD THE PROCEDURE HAVE BEEN PERFORMED AT WODONGA HOSPITAL?

38. There was no ICU at Wodonga Hospital at the time of the procedure. There was no indication ahead of the procedure that there would be any need for access to an ICU. Nevertheless, it is noted with approval that since Mr Hawkins' death, all laparoscopic surgery has been transferred to Albury Hospital because of better provision of ICU services. Mr Hawkins was an otherwise well man, according to the evidence. There was no reason to be concerned that the complications that arose, requiring ICU care, were likely to do so, mandating a referral to Albury Hospital or other hospital with an ICU.

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

The Family of Robert Hawkins

Professor Costello

Mr Charlie Last

Interested Parties

Signature:

JACINTA HEFFEY
CORONER
Date: 27 August 2014

Coroners Court of Victoria