QUEENSLAND COURTS

CORONERS COURT OF QUEENSLAND

FINDINGS OF INVESTIGATION

CITATION:	**Non-inquest findings into the death of Ms SWK**
TITLE OF COURT:	Coroners Court
JURISDICTION:	SOUTHPORT
DATE:	17 October 2017
FILE NO(s):	2011/1085
FINDINGS OF:	James McDougall, Coroner
CATCHWORDS:	CORONERS: spinal surgery, Jehovah's Witness, refractory back syndrome, haemorrhage
Counsel Assisting	Rhiannon Helsen

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Background

Ms. SWK was 78 years of age at the time of her death. She was a devout Jehovah's Witness.

Ms. SWK had a history of hypertension, osteoporosis, depression, irritable bowel syndrome, anxiety disorder, hiatus hernia and chronic pain. In July 1998, she underwent a complete right hip replacement performed by Orthopaedic Surgeon, Dr M at the Gold Coast Hospital. At that time, Dr M noted that she had a degree of spinal stenosis radiographically, which he did not consider needed to be treated. This surgery took place without complication, and Ms. SWK made a full recovery.

In 2010, Ms. SWK underwent a decompressive laminectomy and fusion spinal surgery performed by Neurosurgeon, Dr RG.

In December 2010, Ms.SWK sought a referral back to Dr M for the purpose of further review as a result of ongoing spinal pain following her spinal surgery earlier that year. She was reportedly depressed and felt her health and physical ability was significantly affected by her condition. Following a number of medical tests performed, including X-rays, CT scans and MRI, it was found that she had spinal stenosis, degenerative lumbar scoliosis, and degenerative discs at L3/4 and L5/S1. Dr M formed the view that Ms. SWK was suffering from 'mechanical' back pain and leg pain due to L5 nerve root involvement, diagnosing her with 'refractory back syndrome'.

Ms. SWK consulted with Dr M again on 17 March 2011, after further investigations indicated that she had bilateral chronic inactive L5 radiculopathies. He recommended spinal reconstruction surgery using both an anterior and posterior approach. Records suggest that he discussed the nature of the surgery with Ms. SWK, which included the outcome, complications, alternatives and the fact that it was 'not a small procedure'. However, they both agreed that her declining ability to function warranted surgical intervention.

Ms. SWK was admitted to a Private Hospital on 28 March 2011, for surgery to be performed by Dr M of the lumbar spine, namely:

- L4/5 removal of screws;
- L5/S1 anterior lumbar interbody fusion;
- L3/4, L4/5, L5/S1, S1/S1J posterior spinal fusion;
- Revision decompression laminectomy; and
- L4/5 posterior lumbar interbody fusion.

The operation commenced at 1:30 pm and was completed by 6:00 pm that day. From the operation records it appears that the anterior component of the procedure proceeded without complication. However, at 4:30 pm Ms. SWK became hypotensive and tachycardic. These changes do not seem to have responded to inotropic treatment. Intra-operative blood loss was estimated to be around 1000 ml with 345 ml salvaged and returned to circulation by way of a cell saver.

Post-operatively, Ms. SWK was immediately transferred to the Intensive Care Unit ('ICU') where she remained hypotensive and tachycardic. Her hypotension was resistant to repeated infusions of Aramine, noradrenaline and adrenaline. Due to Ms. SWK's religious beliefs, a blood transfusion was not able to be performed. On examination in the ICU, she was noted to have a heart rate of 110 per minute and a blood pressure of 90/53. Her post-operative haemoglobin was 77 g/L, a drop from 137 g/L pre-operatively. She was mechanically ventilated and sedated, although able to obey simple commands.

Later on in the evening on 28 March 2011, ICU physicians recorded their concerns that a haemorrhagic cause of her haemodynamic status should be excluded urgently. The progress notes also state that there was no evidence for gastro-intestinal bleeding or other causes of blood loss.

An abdominal CT scan performed that evening, found that there was a modest amount of blood in the left iliac fossa (300 ml) and some extra-luminal gas as would be expected, but no major haematoma. Ms. SWK's ICU notes state that the CT scan *'…showed no significant evidence of bleeding identified associated with the procedure.'* Furthermore, Dr M reportedly reviewed Ms. SWK and the CT scan and was *'happy that surgical haemorrhage is not a major issue at present'*.

The possibility that Ms. SWK's hypotension and tachycardia were related to a cardiac problem was excluded by way of an echocardiogram, which was normal. Whilst these conditions intermittently responded to fluid replacement, this was not sustained and by 9:45 pm, her haemoglobin had fallen to 48 g/L. ICU Physicians recorded their belief that Ms. SWK was still bleeding, and that the site of the surgery was the most obvious source. Advice was sought from Haematologist, Dr GS for the use of non-blood products to manage Ms. SWK's anaemia.

A CT angiogram performed late on 28 March 2011, showed that, *'there is slightly more blood than previously, spread around the left groin and pelvic side wall, total approx. 1000 ml. There is a possible bleeding site medial to the distal left external iliac artery which would be an appropriate place to be the source of the haematoma in this distribution. No other candidate is seen, and the vicinity of the spinal fixation is satisfactory. Catheter angio and embolization would have a chance (30%) of finding and treating a bleeding source'*. It was felt that her prognosis was poor, and discussion with her next of kin confirmed that she would not accept blood products irrespective of whether she would die as a result.

In the early hours on 29 March 2011, Ms. SWK's condition was recorded as being more stable. She was then transferred for the purpose of a pelvic angiogram via the right femoral artery, which showed that there was no bleeding point. It was noted that Ms. SWK's urine output had markedly declined. She was treated with cryoprecipitate but no other blood products.

By later in the morning on the 29 March 2011, ICU Physicians recorded that Ms. SWK's haemoglobin appeared to have stabilised at 46 g/L, and that she was not *'obviously bleeding'*. Her renal function, however, was deteriorating.

By morning on 30 March 2011, Ms. SWK's haemoglobin had dropped to 38 g/L and she had developed right lung changes suggesting pneumonia and interstitial fluid collection. She had also developed coagulopathy, worsening renal failure, acidosis and a greater requirement for inotropes. Unfortunately, she continued to deteriorate and died at 5:00 pm on 30 March 2011.

Post-mortem findings

On 1 April 2011, an external and full internal post-mortem examination was performed by a Forensic Pathologist. A number of histology and toxicology tests were also conducted.

Autopsy revealed the presence of significant haemorrhage into the abdominal cavity and into the tissues at the back of the abdomen, in the abdominal wall on the left and into the pelvic soft tissues. The haemorrhage had developed following surgery to the lower spine although the surgical sites appeared to be intact. A number of clipped small blood vessels were noted around the surgical site and it could not be determined if one of the clips had detached from a small vessel since these are impossible to accurately dissect at autopsy. The largest concentration of haemorrhage appeared to be on the left in the retroperitoneal area adjacent

to the site of surgery. The major blood vessels of the pelvic area were intact. The exact site of the haemorrhage was unable to be determined at autopsy.

As a result of the haemorrhage, Ms. SWK's haemoglobin fell from a pre-operative level of 137 g/L, to a level of 38 g/L. Consequent to the significant haemorrhage, she also developed failure of multiple organs with development of kidney failure, coagulopathy and pneumonia involving both lungs. There were also early 'shock' changes in the liver, due to low blood pressure.

The Forensic Pathologist is of the view that the direct cause of Ms. SWK's death was multi-organ failure secondary to the haemorrhage into the abdomen, pelvis and retroperitoneum, which had occurred following her lumbosacral spinal surgery. The Forensic Pathologist did note that Ms. SWK's refusal of blood products on religious grounds was also a significant factor in her death. Although she was treated with intravenous fluids, vasopressors and iron, the effects of the haemorrhage could not be reversed.

Ms. SWK's cause of death was found to be multi-organ failure, due to, or as a consequence of haemorrhage into the abdomen, pelvis and retroperitoneum, due to or as a consequence of lumbosacral spinal surgery. The other significant condition noted was Ms. SWK's refusal of blood transfusion.

Clinical Forensic Medicine Unit Review

A Forensic Medical Officer (FMO) conducted a review of a portion of Ms. SWK's medical records from the Private Hospital and Dr M, as well as the autopsy findings and Form 1.

The FMO was asked to provide comment in relation to the treating doctor's response to Ms. SWK's post-operative deterioration and whether surgical intervention should have been considered given her religious viewed and declined blood transfusion.

The FMO expressed the view that Ms. SWK's age and religious beliefs necessitated careful consideration of surgery as a treatment option for her chronic back pain, especially given the length and complexity of the recommended procedure. She suggested that expert advice be sought from an orthopaedic and/or neurosurgical specialist be sought to comment on the appropriateness of the decision to operate on Ms. SWK.

The FMO further noted that whilst a specific site of bleeding could not be identified at autopsy, it is evident that Ms. SWK's death was as a result of significant haemorrhage resulting from her lumbosacral spinal surgery. Her religious beliefs, intermittent response to fluid replacement, and the failure of the CT scans and angiography to identify a bleeding source, combined to seriously compromise her post-operative management. The FMO was unable to say whether vascular surgery should have been considered, given the failure of an interventionist radiologist to identify a source of bleeding.

Statement from Orthopaedic Surgeon, Dr M

During the course of the coronial investigation, Dr M provided a number of statements in relation to his care and treatment of Ms. SWK.

Ms. SWK had been a patient of Dr M since 1998, having previously performed a full right hip replacement without any complications. In relation to this previous surgery, Dr M noted the following:

- Ms. SWK was first reviewed on 17 June 1998 in relation to osteoarthritis of the hip, having been referred for the purpose of spinal stenosis. She was referred for a pelvic x-rays and a CT scan of her lumbar spine. These showed that her right hip was

osteoarthritic. The spine had degenerative changes in the facets, in the discs, and L4-5 also had moderate secondary central spinal canal stenosis.

- During a consultation on 30 June 1998, the aforementioned results were discussed and it was decided that Ms. SWK was to undergo a right total hip replacement. Dr M was aware that Ms. SWK was a devout Jehovah's Witness and would not receive a blood transfusion. This surgery took place without complications at a local Public Hospital on 31 July 1998.

- A post-operative consultation took place on 15 August 1998, during which Ms. SWK was reportedly recovering very well and could walk independently. Further consultations occurred at 3 month, 6 month and 12 month post-surgery, during which it was evident Ms. SWK had recovered well from the surgery and was seen to be 'moving and looking well'. Dr M noted that during the 12 months following her total hip replacement, Ms. SWK's symptoms in relation to her spinal canal stenosis settled. Annual check-ups subsequently continued until 2002, during which Ms. SWK had continued to be well.

In September 2010, Ms. SWK was referred back to Dr M by her general practitioner, Dr H for the purpose of further review following a decompressive laminectomy and fusion under the care of Neurosurgeon, Dr RG. Dr M requested a number of X-rays and CT scans to be performed prior to the initial appointment scheduled for 21 December 2010.

During the consultation on 21 December 2010, Ms. SWK indicated that she was suffering from pain over the area of the lumbar spine radiating into the iliac crest and buttocks, and running into the posterior legs. Ms. SWK completed a number of questionnaires, which indicated that she felt her health was poor and her physical ability was significantly affected by her condition. She required sleeping pills to rest, and cortisone injections to manage the pain. Ms. SWK appeared to be depressed and was unhappy with her predicament and the prospect of having to put up with the pain. Dr M formed the view that Ms. SWK had refractory back syndrome. He directed that further tests be carried out by way of an MRI, X-Ray, discogram and EMG.

Ms. SWK returned for a further consultation with Dr M on 17 March 2011. The further tests conducted prior to this appointment indicated that she was suffering from 'bilateral chronic inactive L5 radiculopathies the left worse than the right'. Dr M noted in a letter to Ms. SWK's general practitioner that

> 'Discography has been done that shows reproduction of symptoms at L3-4, L4-5 and L5-S1. Despite, L4-5's apparent fusion…you can still have discogenic back pain in the presence of a pedicles screw fusion that is solid. A decompression and fusion has been done at L4-5, but there has been no attempt at reconstruction in terms of the balance. In order to restore the sagittal and coronal balance some sort of interbody work would have been required. She also has a degenerative 'flat-tyre' disc with significant neuroforaminal stenosis at L5-S1. This is the cause of her L5 radiculopathy. At L3-4 there is a degenerative disc that has a lateral listhesis as a result of the scoliosis that's occurred. She has one of the screws in the facets at L3-4 and it clearly interferes with the function.'

In order to treat her condition, Dr M was of the view that Ms. SWK required a reconstruction by way of an anterior lumbar interbody fusion ('ALIF') at L5-S1, an L3-4 L4-5 L5-S1 and S1-S1J Posterior Spinal Fusion, an L3-4 L4-5 Laminectomy, and an L3-4 L4-5 Posterior Lumbar Interbody Fusion. According to Dr M he explained to Ms. SWK the nature of the reconstruction, the reasons for it, the alternatives, the outcomes and complications, reiterating that this was not a small procedure. Ms. SWK allegedly indicated that given her declining ability to function, exacerbation of her symptoms and chronic pain level, she was adamant that she could not continue in her present state and wished to have the recommended procedure. Dr M talked her through the surgery consent form, specifically the complications, which included a

discussion about bleeding and her Jehovah's Witness status. The use of cell saver technology was discussed, which Ms. SWK was amendable to. The consent form specifically states,

> *'You will lose blood during the procedure. We use cell saver technology that recycles your own blood and returns it to your body during the surgery.*
>
> *In exceptional circumstances, an injury may occur to an artery or vein and you may need a blood transfusion. A blood transfusion is rarely required. A vascular surgeon may need to be called in to assist in repair of your vessels.*
>
> *Also, bleeding after surgery may result in a haematoma. This is a rare complication. If a haematoma occurs, further surgery may be required and there is an increased risk of infection.'*

Dr M acknowledges that he was well aware of Ms. SWK's Jehovah's Witness status, which was discussed for the purpose of the previous surgery he conducted in 1998. Ms. SWK made it clear that she would not accept blood products. This remained the case for the spinal surgery in 2011.

Ms. SWK signed the medical consent form on 17 March 2011. Dr M completed a Lumbar Fusion Pre-Op Assessment Form and an Operation Booking Form. Ms. SWK subsequently completed the Private Hospital Pre-Admission Form, whereby she noted that she was a Jehovah's Witness. She underwent a Pre-Operative Clinic Order on 21 March 2011.

In relation to the surgery performed on 28 March 2011, Dr M states that:

- The ALIF procedure was performed first following which there was no active bleeding on closure. Ms. SWK was then placed into a posterior position, and a spinal fusion followed by a decompressive laminectomy was carried out. A layered closure was then performed. During the procedure, at about 500 ml blood loss during the posterior component, the anaesthetist raised some concerns about Ms. SWK's blood pressure, which had become unstable. Her blood pressure was resistant to repeated Aramine infusion, fluid support and noradrenaline boluses. The final estimated blood loss was around 950 mls, of which 345 mls were returned through reperfusion. Dr M notes that the cause of the hypotension was not obvious at the time, and ICU was notified. Further testing (chest x-ray, echocardiogram and abdominal CT scan) was arranged with ICU Consultant, Dr JR in order to exclude a haemorrhagic cause for the resistant hypertension.

- Following Ms. SWK's admission to the Private Hospital ICU, Dr M continued to liaise with ICU staff as to her ongoing care. He was made aware of the results of the further testing undertaken, and discussed each with Dr JR. He was of the view that there was no major bleeds as a result of the procedure. Haematologist, Dr GS was called in to provide advice. CT angiography was undertaken and discussions were had with Ms. SWK's family, who were advised that without the use of blood products, her prognosis was guarded. No source could be found for embolization. Dr M states that following the angiography, he discussed the possibility of returning Ms. SWK to theatre with Dr JR, however, it was thought that she was too unstable at that time. She continued to deteriorate and unfortunately passed away on 30 March 2011.

In relation to how he formulated his diagnosis of Ms. SWK's condition, Dr M states that he took into account her reported symptoms, clinical history, findings of his physical examination of the patient, as well as the clinical investigations undertaken. He notes that in modern spinal surgery, no single component should be used in isolation to form a diagnosis. In Ms. SWK's

case, her diagnosis included the following elements (which are outlined in further detail in his statement):

- Her previous lumbar decompression and posterior spinal fusion at L4-5 that had not addressed the coronal or sagittal imbalances of the lumbar spine, failed to resolve the neuroforaminal compressive issues at L5-S1 and had resulted in paravertebral muscle weakening.

- There was a L4-5 pseudarthrosis. It was stable pseudarthrosis that involved no bony fusion from transverse process of L4 to transverse process of L5. However, scarring from the original surgery had resulted in a stable pseudarthrosis.

- Ms. SWK had degenerative lumbar scoliosis as evidenced in the radiology.

- Ms. SWK had multilevel degenerative disc disease.

- The presence of bilateral chronic inactive L5 radiculopathy.

- Osteoporosis.

- Latrogenic segmental instability as a result of a decompression and fusion of the L4-5 level.

- Refractory Back Syndrome.

With respect to his decision to offer Ms. SWK revision spine surgery, Dr M notes that he considered the contraindications for surgery as weighed against the possible gains from undergoing revision surgery. He notes that revision surgery is much more complex than primary spinal surgery, and a patient's physical and psychological ability to tolerate a complex procedure needs to be taken into account. In Dr M's opinion, whilst Ms SWK had a number of co-morbidities, she importantly did not have any *'primary contraindications'* in the form of ischaemic heart disease, respiratory disease, renal failure, insulin dependent diabetes or severe osteoporosis. In Ms. SWK's case, her two significant contraindications for surgery were her Jehovah's Witness status and osteoporosis. He notes that in relation to her osteoarthritis, he managed this intraoperatively be securing screws into the ilium first. The risks associated with her religious beliefs were ones that he and Ms.SWK understood, and he tried to minimise and manage the risks associated with this pre-operatively and intraoperatively as best as possible. Dr M concluded that revision surgery was not contraindicated in Ms. SWK's case.

Having carefully considered the indications and contraindications for Ms. SWK to undergo revision surgery, Dr M discussed each with her, as well as the alternatives to surgery, and the risks associated with undergoing surgery. He is of the view that she was sufficiently informed so as to be able to make an informed decision as to whether to proceed. He notes that she was deteriorating at the time she first consulted with him in 2010, some 14 months after having had a previous back surgery. He states that the decision for Ms. SWK to have the revision back surgery was done so having fully balanced the indications for surgery against the contraindications, and in the context of a long-standing surgeon/patient relationship.

In relation to the decision not to re-explore the anterior wound during surgery when Ms. SWK became hypotensive, Dr M states that he was in constant communication with the anaesthetist as to whether this episode was severe enough to stop operating. Ms. SWK was given inotropes to which she responded. At the time, it was considered more likely that Ms. SWK had a cardiovascular issue or a reaction, as opposed to bleeding given what had transpired during the surgery to the anterior column and what was happening posteriorly. He noted that

Ms. SWK's episodes was not thought to be severe enough to merit discontinuing the posterior approach and her blood pressure responded to the treatment provided by the anaesthetist. Following completion of the posterior surgery, Ms. SWK was placed on her back and her abdomen was examined. Dr M noted that it was not distended, with a CT scan confirming that only 300 mls of blood, which would not have been palpable through the abdomen. Accordingly, he was of the view that there was no intraoperative clinical signs that would have merited a reopening of the anterior approach at the time, which had this been done, may have placed Ms. SWK at more risk.

Dr M says that he has performed over 3000 anterior lumbar approaches to the spine over the past 17 years and pioneered these surgeries in Australia, developing instruments and retractors, as well as techniques. He notes that his patients have rarely required a blood transfusion, which is especially the case for L5-S1. Furthermore, he uses a retroperitoneal approach, blunt instruments, and a haemostatic agents, which generally means that the average blood loss is about half a millimetre per minute.

Dr M says in his statements that following Ms. SWK's death, which has weighed on him heavily, he no longer offers elective spine surgery to patients who decline to receive blood transfusions. He is of the view that had Ms. SWK received a blood transfusion she would have survived.

Furthermore, the Private Hospital have since changed their admission consent form, which is included when a patient is admitted to the Hospital, so that it expressly asks whether they will consent to a blood transfusion.

Expert report from Neurosurgeon, Dr LA

Neurosurgeon, Dr LA was asked to consider the care and treatment provided to Ms. SWK, especially whether surgery was appropriate given her circumstances. His expert report was received on 30 April 2015.

Having considered the relevant medical records, statements and coronial material, Dr LA formed the view that, in light of Ms. SWK's medical history and religious beliefs, it was clinically unwise to carry out anterior trans-abdominal lumbar spine surgery. Having considered Dr M's statement in relation to the procedure carried out, Dr LA noted that Ms. SWK's multiple co-morbidities were not identified. Furthermore, given the significant chance of intra-abdominal bleeding as a cause of the blood loss, Dr M did not explain why he did not re-explore the anterior retroperitoneal fusion site, particularly given there was no cardiac explanation for the change in her blood pressure, her pulse rate or her haemoglobin on the afternoon of 28 March 2011.

Dr LA noted that in the absence of a cardiac event, intra-abdominal blood loss would readily explain Ms. SWK's sudden deterioration during the operation. He highlights that this is a well-known complication and is explained on the consent form signed by the patient. Haemorrhage from damage to major blood vessels within the abdomen and pelvic has been well recorded, and, as a result, some orthopaedic specialists operate with vascular surgeons to minimise the complication.

Dr LA is of the view that it was unwise to recommend this surgical course of treatment to Ms. SWK given her age, multiple medical co-morbidities, and history of previous lumbar surgery. Dr LA is of the view that given the significant risks of intra-abdominal bleeding with the anterior approach; her firmly-held religious beliefs, and the hypotension and tachycardia during the surgical procedure, the re-exploration of the intra-abdominal retroperitoneal area should have been carried out at the time of the procedure.

Dr LA acknowledged that Ms. SWK had a significant history of chronic pain in the presence of an anxiety depressive disorder and diffuse osteoarthritis, as well as her other multiple, serious co-morbidities. However, she had failed to respond to a previous lumbar operation in 2010, and her religious beliefs and refusal to have a blood transfusion compromised the significant risk of surgical haemorrhage from an anterior retroperitoneal lumbar procedure. Dr LA concludes that there is no meta-analysis which identifies that one lumbar spinal fusion approach is better than another. However, he considers that in the presence of Ms. SWK's religious beliefs, and multiple medical co-morbidities, the decision to carry out an anterior and posterior procedure in her case was unwise.

Dr LA notes that given Ms. SWK's physical condition, and the previous failure of lumbar surgery to rectify her chronic pain issues, the chance of a successful remission in her chronic pain due to her lumbar spine condition was unlikely. There are multiple documented practiced procedures for managing spinal lumbar pain, including laminectomy, decompression and posterior lumbar instrumented fusion, all of which Dr LA notes could have avoided the significant risk of intra-abdominal haemorrhage in this type of case, with a patient whose religious beliefs exclude the use of a blood transfusion.

Dr LA also highlights that Ms. SWK's operation was complicated by tachycardia and a significant fall in blood pressure. Given the nature of the operation carried out, and the absence of any other explanation for this hypotensive episode, Dr LA is of the view an immediate intra-abdominal exploration should have been considered by the surgeon. Had this been done, it would have been more likely that the bleeding points could have been identified, as opposed to through imaging or angiography conducted after the procedure.

With respect to the post-operative management and care of Ms.SWK whilst in the ICU, Dr LA is of the view that the care provided was appropriate, and reached the international standards of management.

Dr M's response to Dr LA's report

Dr LA's expert report was subsequently provided to Dr M's legal representatives, Avant Mutual Group for further comment.

By way of a response, a report was provided by Consultant Orthopaedic Spinal Surgeon, A/Professor RL, dated 7 December 2015. Advice from Avant Mutual Group suggests that Dr M places reliance upon the content of A/Professor RL's report without providing any further direct comment.

It was further submitted that Dr LA was not an appropriate specialist to comment upon Dr M's care of Ms. SWK as he does not have training and expertise equivalent or similar to Dr M. Furthermore, Dr LA is allegedly not experienced in instrumental spinal surgery, and has not operated for a number of years. When in practice, Dr LA's practice was primarily in intracranial surgery not spinal surgery. He now specialises in pain medicine. Accordingly, it was submitted that A/Professor LR's report should be preferred over that of Dr LA. I reject these submissions.

Expert report of A/Professor RL

A/Professor RL was asked to consider and respond to Dr LA's report, as well as other relevant coronial documentation provided to him. A brief summary of the pertinent components of A/Professor RL's report is outlined below.

In relation to whether it was reasonable for Dr M to recommend Ms. SWK undergo revision surgery, A/Professor RL is of the view that:

- Whilst he acknowledged Dr LA's view that Ms. SWK would have done better to not have any spinal surgery, or for such surgery not to have been carried out by way of a retroperitoneal approach, A/Professor RL notes that Dr M's records suggest that he communicated clearly with Ms. SWK in the pre-operative work up, and also implemented a high degree of cautious consideration before the surgical intervention proposed commenced. Importantly, he highlighted that Dr LA's view was provided in the context of a now clear retrospective review of Ms. SWK's management with knowledge of the tragic outcome.

- Ms. SWK's co-morbidities are not uncommon for patients in her age group, particularly with patients who are debilitated with pain and who have had previous surgery, with failure of improvement of symptoms. He notes that there is some contention that patients in such an age bracket, as well as with such co-morbidities, should remain candidates for surgery. He notes that there is some good evidence, which suggests that degenerative scoliosis and severe spinal stenosis conditions in the elderly are better treated surgically.

- From a review of Ms. SWK's medical records, Dr M engaged in an extensive pre-admission assessment process, and also made arrangements for Ms. SWK to be admitted directly to ICU following the surgery. Furthermore, Dr M clearly understood the magnitude of Ms. SWK's religious beliefs, as well as the magnitude of the surgery he recommended and the possible implications for his patient. He notes that Dr M's consent process remains rigorous and approximates 'an exemplary level of consent taking'.

- Having considered Dr M's surgical experience and the fact that he practices exclusively in spinal surgery, as well as Ms. SWK's circumstances, he is of the view that it was reasonable for spinal surgery to be recommended. He acknowledges that there will always be significant variations amongst surgeons as to whether Ms. SWK was a suitable candidate for surgery, which is reflective of their level of experience, expertise and willingness to accept a degree of risk, which he recognises was perhaps more than usual given Ms. SWK's religious status.

- The decision by Dr M to consider the anterior and posterior approach lumbar surgery given Ms. SW-Y was suffering from failed posterior lumbar surgery was reasonable. In support of this view, he also highlights that the surgery proceeded without obvious complication, with minimal blood loss. Clearly, there had been some bleed after the anterior approach surgery was completed and it remains uncertain following autopsy as to what site and what vessel was responsible for this bleed. Dr M has vast experience in the anterior approach lumbar surgery having performed a great number over his career. Whilst his anterior approach is somewhat unique, as other surgeons may only treat this condition through a posterior approach, his approach is well described and practiced by many other surgeons around the world.

- Dr M's involvement in the postoperative care of Ms. SWK was reasonable. He is of the view that the suggestion by Dr LA that he should have re-explored the anterior retroperitoneal fusion site during surgery is 'highly contentious'. Whilst A/Professor RL understands the sentiment, he notes that practically this intervention would have resulted in significant further blood loss and may have caused further collapse of Ms. SWK's blood pressure. Furthermore, the successful finding of a bleeding point may or may not have been possible, and in turn, *'the death of Ms SWK on the operating table in this instance would have been close to 100% especially in the context of her choice not to accept banked blood donations'*. As such, he notes that it was understandable that Dr M did not return Ms. SWK to the operating theatre, which A/Professor RL believes would have caused her to die on the operating table.

A/Professor RL notes had Ms. SWK accepted blood donations, the possibility of returning her to the operating theatre for an exploration of the retroperitoneum and peritoneum may have been more feasible.

- That the medical management and surgical care of Ms. SWK by Dr M was technically appropriate. He notes that 'with the benefit of full retrospective analysis of this patient's surgical management and pre and post-operative care, one could easily suggest that the best outcome for Ms SWK would have been not to have any spinal surgery at all, considering her co-morbidities and confounding religious beliefs which precluded her from having banked blood donations. This decision however, is easily made in retrospect and the decision made by the treating surgeon and patient was seemingly well discussed, understood and consented upon in a legal sense. This fact does not reduce, in any way, the tragedy and sadness that must be associated with this patient's loss. This tragic case also highlights the significant complexities surrounding the care of such patients with co-morbidities who suffer significant spinal degenerative conditions. The religious belief of this patient added a further dimension to all decisions made, and it will stand as a case to highlight, and perhaps educate, all surgeons who treat such conditions in such patients.'

Conclusion

Ms SWK was 78 years of age when she died on 30 March 2011 as a result of multi-organ failure secondary to haemorrhage into the abdomen, pelvis and retroperitoneum following spinal surgery.

Ms SWK clearly presented with a somewhat complex medical picture, particularly given her history, ongoing chronic pain and devout religious beliefs. Her medical records confirm that she had continued to experience pain following a recent back surgery carried out by another surgeon, and was seeking the advice and expertise of Dr M, as he had previously treated her successfully by way of hip surgery in 1998. Ms. SWK was openly depressed and in chronic pain as a result of her condition, which greatly impacted on her quality of life.

There are two central issues in relation to Ms SWK's death namely, whether the anterior and posterior lumbar surgery was contraindicated in the circumstances, and why further exploration of the surgery site for bleeding was not carried out when she became hypotensive during the operation, and post-operatively.

I accept that the significance of the recommended revision lumbar surgery was discussed with Ms SWK at length. This included the possible complications, which were further exacerbated by her devout religious beliefs, as well as the alternatives. A number of medical tests were performed prior to any diagnosis being made, which confirmed Ms. SWK's condition. Dr M has provided a detailed explanation as to why he recommended the extensive surgery that was ultimately performed. He notes that he considered the contraindications for revision surgery, which he weighed against the possible gains. All of the options were discussed at length with Ms. SWK, who at the time, was continuing to mentally and physically deteriorate due to the chronic pain she was suffering. In relation to her post-operative treatment, Dr M notes that there were no intraoperative signs that would have merited a reopening of the anterior approach immediately following surgery. Furthermore, if this had been done, he is of the view that this would have placed her at further risk.

Dr LA is of the view that the anterior trans-abdominal lumbar spine surgery carried out by Dr M was clinically unwise in light of Ms. SWK's medical history and religious beliefs. Furthermore, he is firmly of the view that the cause of her hypotensive episode should have been explored whilst she was in surgery, as opposed to post-operatively. He found that the

post-operative care provided to Ms. SWK by the ICU specialists at the Private Hospital was appropriate.

In response to Dr LA's report, Orthopaedic Surgeon, A/Professor RL, whilst acknowledging the concerns raised, is of the view that it was reasonable for Dr M, given his wealth of experience and the fact that he practices exclusively in spinal surgery, to recommend the revision spinal surgery ultimately conducted. He notes that there will always be significant variations between surgeons as to whether Ms. SWK was a suitable candidate for surgery, accepting that the risk in her case was perhaps more than usual given her religious beliefs. Ultimately, he is of the view that the medical management and surgical care of Ms. SWK by Dr M was technically appropriate. He highlights that whilst with the benefit of hindsight and knowledge of the tragic outcome, it could be concluded that the best course for Ms. SWK would have not to have had surgery, the decision by Dr M was well discussed and considered in the circumstances.

I find that whilst the revision spinal surgery ultimately conducted by Dr M on Ms. SWK was extensive, invasive and involved a high level of risk, particularly given her religious beliefs, the pre-operative consultation process and testing carried out was thorough and appropriate. As to the reasonableness of the surgery, it seems relevant to consider this in the context of a long-standing patient relationship, Ms. SWK's ongoing chronic pain and depression and Dr M's extensive experience as a spinal surgeon. With the benefit of hindsight, the decision to undertake revision spinal surgery considering Ms. SWK's religious beliefs may have involved a level of risk that was simply too high. However, there is no indication that Dr M did not consider all of the contraindications properly in this case, nor that Ms. SWK was not appropriately warned as to the possible complications. Relevantly, following Ms. SWK's death, Dr M now no longer offers elective spine surgery to patients, who decline to receive blood transfusions. The Private Hospital have also since changed their admission consent form to include questions as to whether a patient will consent to a blood transfusion.

Post-operatively, Ms. SWK's clinical presentation was somewhat complicated with further testing seeming to indicate that there was not a major bleed as a result of the procedure. Her condition deteriorated to the point that it was felt she was too unstable to undergo any further surgical intervention, and she unfortunately passed away a short time later. At autopsy, the exact site of the haemorrhage was unable to be determined, although significant haemorrhage into the abdominal cavity and into the tissues at the back of the abdomen, in the abdominal wall on the left and into the pelvic soft tissue, was found. I agree with Dr LA's view that the post-operative management and care provided to Ms. SWK whilst in the ICU was appropriate.

Should this investigation proceed to inquest?

Having considered all of the evidence and the expert advice obtained, I am of the opinion that the investigation would not be further advanced by the holding of an inquest and it would not be in the public interest to do so. The circumstances of Ms. SWK's death, including the decision to operate, as well as the post-operative care provided and the ultimate cause of death, are clearly established on the material obtained to date. Unsurprisingly, there is some difference in opinion as to whether it was wise for Dr M to have proceeded with the elective spinal surgery. This difference of opinion is unlikely to be resolved at inquest.

Pursuant to Section 45 of the Coroners Act 2003, I make the following findings:-

(a) The deceased person is Ms SWK.

(b) The cause of death was multi-organ failure, due to, or as a consequence of haemorrhage into the abdomen, pelvis and retroperitoneum, due to or as a

consequence of lumbosacral spinal surgery. The other significant condition noted was Ms. SWK's refusal of blood transfusion.

(c) Ms SWK died on 30 March 2011.

(d) Ms SWK died at a Private Hospital, Gold Coast.

(e) Ms SWK's death was caused by spinal surgery carried out on 28 March 2011.

James
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CORONERS COURT OF QUEENSLAND
SOUTHERN REGION
17 October 2017