QUEENSLAND COURTS

OFFICE OF THE STATE CORONER

FINDINGS OF INQUEST

CITATION:	**Inquest into the death of Ronald James Brockel**
TITLE OF COURT:	Coroners Court
JURISDICTION:	Brisbane
FILE NO(s):	2007/70
DELIVERED ON:	19 April 2013
DELIVERED AT:	Brisbane
HEARING DATE(s):	11 February 2010, 7 November 2012, 4 December 2012
FINDINGS OF:	Michael Barnes, State Coroner
CATCHWORDS:	Coroners: inquest, medical error; placement of feeding tube and review

REPRESENTATION:

Counsel Assisting:	Ms Jennifer Rosengren
Princess Alexandra Hospital:	Ms Patrica Feeney (instructed by Minter Ellison Lawyers)
Family of the deceased:	Ms Clair Balsillie

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The *Coroners Act 2003* provides in s.45 that when an inquest is held, the coroner's written findings must be given to the family of the person who died and each of the persons or organisations granted leave to appear at the inquest. These are my findings in relation to the death of Ronald James Brockel. They will be distributed in accordance with the requirements of the Act and posted on the website of the Office of the State Coroner

Introduction

Mr Brockel was 64 years old when he died at the Princess Alexandra Hospital (PAH) on 10 June 2006. Notwithstanding that his death was clearly causally linked to a medical procedure that occurred two days before, it was not reported to a coroner and a medical certificate showing the proximate cause of death as aspiration pneumonia consequent upon the insertion of a feeding jejunostomy tube (FJT) was issued by a hospital doctor.

Mr Brockel's sister, Clair Balsillie did not accept that her brother died of natural causes and made a complaint to the Health Quality and Complaints Commission (HQCC). In December 2007, she raised her concerns about the death with the Office of the State Coroner. After receiving some evidence from the HQCC, I concluded that the death may have been reportable as it appeared to be the unexpected outcome of a health care procedure.

The matter was therefore investigated by this office and an inquest was convened.

These are the findings of that inquest.

They:

- confirm the identity of the deceased person, how he died, and the date, place and medical cause of his death.

They also consider whether:

- there was a treatment option other than the insertion of a FJT;
- the FJT was inserted in the ileum or jejunum at the time Dr O'Rourke performed the surgery on 23 December 2004;
- radiological imaging ought to have been used to ascertain the placement of the FJT on 23 December 2004;
- the identification of the error in the placement of the FJT was made in a timely way;
- the management plan to minimise the risks of Mr Brockel aspirating following the surgery on 8 June 2005 was adequate;
- Mr Brockel's cerebral palsy resulted in a downgrading of the care that he received by medical and nursing staff.

This reports summarises the relevant evidence and then analyses it under heading corresponding with the list of issues.

The inquest

Those assisting me reviewed the material gathered by the HQCC in the course of its investigation of Ms Balsillie's complaint and obtained a report

from an independent general and gastrointestinal surgeon, Dr Rob Finch, who gave oral evidence at the inquest on 4 December 2012. He provided insightful opinions and critiqued the management of Mr Brockel's care. Mr Brockel's sister and niece were in attendance at the hearing and also asked questions of Dr Finch as did counsel for the staff of the PAH, Ms Feeney.

Counsel Assisting, Ms Rosengren, Ms Balsillie and Ms Feeney all made written submissions which greatly assisted me to make this report.

The evidence

Background

Mr Brockel had a number of medical conditions including cerebral palsy, kyphoscoliosis, oesophagel reflux, recurrent aspirational pneumonia and poor swallow co-ordination, malnutrition and a hiatus hernia. He lived at home and was cared for by his mother until he was aged 60. He also worked up until this time at a Cerebral Palsy League run business at Tingalpa. His job involved packing products for various companies. He retired and moved into the Moreton Bay Nursing Home in December 2000. The family was dissatisfied with his care and he was moved to the Pleasantville Nursing Home (the nursing home) at Wynnum in 2002. He had many hobbies and interests including listening to country music, watching western movies and supporting the Broncos and the Australian cricket team. He was a much loved member of his extended family.

In September 2004, Mr Brockel was referred to a speech pathologist as his family had reported a recent deterioration in his swallowing skills. It was reported he was coughing a lot and choking when eating.

The relevant report records that his weight had reduced from 62kg to 47kg over the previous three months. Ms Balsillie disputed the accuracy of these figures but whatever the precise weights were, it is clear that his weight had steadily declined over some months. It is certainly true that this accelerated after the procedure in December 2004, but it is also clear that he was not thriving before it.

The speech pathologist assessed Mr Brockel and considered him to be at a very high risk of aspiration and choking. She considered further assessments were required to determine the best and safest way for Mr Brockel to receive his food.[1]

Mr Brockel was referred to gastroenterology outpatients at the PAH. He was seen on 13 December 2004 by Terry Holt, senior registrar in gastroenterology. Dr Holt discussed Mr Brockel's future management with Dr Neville Sandford, consultant and it was agreed the insertion of a percutaneous endoscopic gastrostomy (PEG) tube was clinically indicated to prevent recurrent aspiration pneumonia secondary to Mr Brockel's oropharyngeal incoordination.

[1] F1 pg 329

Initially consideration was also given to repairing his hiatus hernia. However, it was concluded this was inappropriate because of the high surgical risk and the fact that his underlying oropharyngeal dysphagia would remain as a potential source of aspiration.

First PAH procedures

Mr Brockel was admitted to the PAH on 20 December 2004 for an endoscopy with a view to the insertion of a PEG. The endoscopy was performed on the following day by Dr Sandford with the assistance of Dr Leisa Barrett, registrar. The report of the procedure records that a small sliding hiatus hernia and a pharyngeal pouch were present. Further there was also an intra-thoracic stomach (meaning that Mr Brockel's stomach was sitting in the left thorax), with the consequence that it was not possible to identify a safe position to insert the PEG. For this reason the PEG insertion was not completed and Mr Brockel was referred for a radiological assessment to determine if an alternate position could be found to safely insert it.[2]

An unsuccessful radiological assisted attempt was made to insert the PEG on 22 December 2004. It was considered that it could not be inserted safely for two reasons. First, Mr Brockel had an atypical thoracic anatomy. Second, the presence of significant gas filled loops of bowel in his abdomen caused difficulties in locating the appropriate site.[3] Further it was considered the insertion of a PEG tube would have increased volumes of fluid in the stomach which increased the risk of aspiration.[4] In these circumstances a nasojejunal tube (NJT) was inserted for temporary feeding and Mr Brockel was referred to the upper gastrointestinal surgeons with a view to inserting an intra-operative feeding jejunum tube (FJT).

The surgery to insert the FJT was carried out on 23 December 2004 by Dr Thomas O'Rourke, surgical registrar. The benefit of inserting a FJT is that it is inserted in the jejunum, which is the section of the small intestine between the duodenum and the ileum which enables the feeds to by-pass the stomach. Food is primarily absorbed in the jejunum and for this reason it makes no difference from a nutrition perspective whether the feed is delivered via the stomach or directly to the jejunum via a FJT.

While it was thought that the FJT would avoid reflux of food/feed into the lungs, it was not anticipated that it would prevent reflux of gastric fluids into Mr Brockel's lungs. The greater concern was to cure the reflux of food/feed into his lungs as such an event has the potential to cause chemical and infective pneumonitis. Gastric fluid reflux is less pathological, especially when treated with acid lowering medications, such as Losec, which Mr Brockel had been prescribed.

[2] Ex C21 paras 5-7
[3] Ex C13
[4] Ex C11

At the time of carrying out the procedure, Dr O'Rourke had been working as a registrar in the Upper GI unit at the hospital for nearly six months. He had been involved in at least nine other insertions of FJTs whilst in this unit. While the majority of these other procedures had been a component of larger scale operations, at least two others had been undertaken using a small incision similar to the procedure he performed on Mr Brockel. Of these two, he had performed one unsupervised. I am satisfied he was adequately trained and experienced to undertake the procedure.

At the time of preparing his statement in May 2011, Dr O'Rourke had some independent recollection of the surgery. He recalls his assistant was also a registrar. He describes it as a *difficult procedure.*[5] He recalls that on account of Mr Brockel's kyphoscoliosis, it was difficult to position him on the operating table and obtain access to his abdominal cavity.

Dr O'Rourke made an incision in the left upper quadrant of Mr Brockel's abdomen and opened his peritoneum. He then identified the duodeno jejunal flexure (DJF) which is the point at which the duodenum terminates and the jejunum starts. It was located with the assistance of the assistant surgeon. Retractors were used to identify landmarks, being the peritoneal fold of the DJF and the inferior mesenteric vein. On account of Mr Brockel's kyphoscoliosis, it was necessary to place the retractors very deep. Dr O'Rourke recalls being satisfied that he had accurately identified both of these landmarks and then identified a suitable part of the jejunum to insert the 14 Fr FJT, which was approximately 15cm distal to the DIF. He considered the positioning of the FJT in this location would enable ready access to the abdominal wall. He secured the FJT through the bowel and tunnelled it through Mr Brockel's abdominal wall. He closed the incision and then further secured it to the skin with nylon sutures.[6]

At the conclusion on the surgery, Dr O'Rourke considered that while the procedure had been relatively complicated, he was confident the FJT had been placed in the correct position. He did not have any concern either then or in the peri-operative period that the tube had been incorrectly placed.

Post operative complications

Dr Barrett reviewed Mr Brockel on 27 December 2004. He was suffering from aspiration pneumononitis resulting in type 2 respiratory failure. She considered that while this was clinically concerning it was not alarming given his body habitus and underlying medical conditions.[7] Mr Brockel was also experiencing constipation with abdominal pain. She queried a possible bowel obstruction but was satisfied the bowel was not completed obstructed on account of the relatively small volume of aspiration from his nasogastric tube. Further, Mr Brockel's abdomen was distended but not tender and quiet bowel sounds were present.

[5] Ex C17 para 13
[6] C17 paras 17 & 18
[7] Ex C21 para 11

When Dr Barrett reviewed Mr Brockel on the following day his aspiration pneumonia and constipation had both improved. Dr Barrett was satisfied that if Mr Brockel had a small bowel obstruction it was resolving. He was also reviewed by the surgical team on this day and it was determined he was sufficiently well to restart feeds.[8]

Over the following three days, Mr Brockel had problems with feeds, respiratory effort and bowel movements. Dr Sandford requested an abdominal x-ray with a provisional diagnosis of an ileus and a chest x-ray to rule out acute pulmonary oedema. Mr Brockel's oxygen saturations had decreased to 68% overnight and his temperature was up to 38 degrees. These radiological investigations were undertaken on 31 December 2004.

Dr Thomas Hess, radiology registrar reviewed the images. With respect to the bowel, he identified a non–specific finding of gaseous distension that had been stable and had not changed over the previous five days. There was no evidence of a bowel rupture. In relation to the chest x-ray, Dr Hess identified that there appeared to be interstitial and alveolar opacification throughout both lungs which could be related to a diagnosis of pulmonary oedema. In relation to the position of the FJT, Dr Hess stated that on reviewing the images he was unable to see it. He explains that this is not particularly unusual as many of the tubes are not very radio-opaque and visibility as to the positioning of the tube requires the administration of contrast prior to imaging.[9]

When reviewed by Dr Barrett on 1 January 2005, she considered Mr Brockel had an ileus. She ordered that a bowel chart be started, that he remain off feeds for the day but with continuing IV fluids and that he sit out in his wheelchair. The records for 2 January 2005 indicate that when Dr Barrett reviewed Mr Brockel on this day his respiratory and abdominal issues were improving but his temperature was elevated. She ordered intravenous antibiotics while awaiting the results of a blood culture which had been taken. The plan was to await surgical review.[10]

An x-ay with contrast was taken on 4 January 2005. The purpose of the x-ray was to check the position of the *gastrostomy tube*. The contrast was injected down the tube to determine its position. Dr Tang, radiologist, reviewed the images and considered it appeared to be in the small bowel in the region of the pelvis. Dr Tang explained in his statement that it is difficult to be precise as to the exact positioning of these tubes within the small bowel. These tubes can appear higher or lower than they are actually positioned. One potential explanation for this can be a slight angling of the tube to accommodate a patient's positioning on the table.[11]

[8] Ex C21 para14-15
[9] Ex C16 para 22
[10] Ex C21 para 18
[11] Ex C18 para 8

On 5 January 2005, Mr Brockel remained constipated and he was given a bowel preparation via the FJT. His abdomen was still distended the following day.[12]

Mr Brockel was discharged from the PAH on 12 January 2005 after he began to tolerate his feeds.

He attended at the PAH emergency department on 26 January 2005. He had been febrile the previous evening and had vomited coffee ground material. The external tube was secured to the anterior abdominal wall and he was discharged on Losec, a reflux medication.

On 30 January 2005, Mr Brockel was re-admitted to the PAH. He presented with difficulty swallowing and aspiration. There was also a blocking of the FJT. On 2 February 2005 he again vomited coffee ground material. An upper gastrointestinal endoscopy showed multiple ulcers in his lower and mid oesophagus[13]. He was medicated and discharged the following day.

Mr Brockel was seen in the emergency department at the PAH on 10 February 2005. The FJT was blocked. It was flushed by a registered nurse and he was transferred back to the nursing home.[14]

On 15 February 2005, Mr Brockel was transported from the nursing home to the PAH emergency department with a three to four day history of nausea and difficulty in tolerating feeds. An abdominal x-ray and chest x-ray were requested for two reasons. First, to determine if there was a cause for decreasing food tolerance such as an obstruction to the passage of bowel contents. Second, to determine if there was evidence of aspiration of bowel contents into the lungs.

The abdominal x-ray report indicated the tip of the FJT was overlying the L2 vertebral body. Dr Ong explained in his statement that the exact position of the FJT could not be determined by the plain x-ray but it was performed because the x-ray referral was to exclude a bowel obstruction or ileus and a plain x-ray is commonly used for this.[15]

The medical records indicate that Dr Barrett ordered Mr Brockel's admission under the gastroenterology unit for the administration of intravenous fluids and medications, four hourly observations, a bowel chart and for blood tests to be taken the following morning. An abdominal x-ray showed gaseous distension of the small and large bowel. Mr Brockel had symptoms of a gastrointestinal haemorrhage and for this reason a gastrointestinal endoscopy was performed on 17 February 2005. It confirmed the presence of the oesophageal ulcers which were managed with an infusion of Losec.

[12] C6 pg 2
[13] Ex F1.2 pg 5
[14] C6 pg 4
[15] C19 para 7

In view of Mr Brockel's problem with recurrent reflux with resulting pulmonary aspiration, the possibility of a fundoplication was discussed with the upper gastrointestinal surgical group. Drs Allan and Callinan reviewed Mr Brockel on 22 February 2005 and considered he may have benefited from the procedure. On the following day the gastroenterology team requested a supine abdominal x-ray to ascertain whether the FJT had moved since the x-ray on 15 February 2005. The relevant x-ray result shows that it had not and that the tip was still overlying the L2 vertebral body.[16]

On 25 February 2005, Dr Allan discussed Mr Brockel with Dr Mark Smithers, consultant surgeon. Dr Smithers considered a fundoplication procedure was not technically feasible. On 27 February 2005, Mr Brockel started tube feeding with resulting diarrhoea. He was discharged to the nursing home on 3 March 2005.

On 12 March 2005, Mr Brockel was transported back to the emergency department at the PAH. His FJT had dislodged. Sutures had separated and there was a possible hole in the tube. A surgical registrar, Dr Lloyd removed the FJT in the emergency department and inserted a size 14 Foley's catheter to maintain patency of the tract. Foley catheters are not as effective as pigtail catheters for feeding purposes. However, they are more widely available, easier to insert and less prone to complications. For these reasons they are often used as a temporary measure to stop a tract closing when feeding tubes fall out.[17]

The Foley's catheter was attached to the anterior abdominal wall. Arrangements were made for Mr Brockel to be reviewed at the upper gastrointestinal outpatients department on 23 March 2005. He was discharged home.[18]

Mr Brockel was again transported back to the emergency department at the PAH in the early hours of the morning on 20 March 2005. Dr Christian Michael, registrar examined Mr Brockel. There was an obvious leakage in the FJT. He removed the size 14 Foley's catheter which had been inserted on 12 March 2005 and identified a defect with the balloon. He reinserted a new size 16 Foley's catheter without any resistance or difficulties. He hoped this larger catheter would provide a better fit. In his most recent statement, Dr Michael explained it was not possible to differentiate whether the new catheter was placed in the jejunum or the ileum. He said that imaging was not indicated in circumstances where the insertion was smooth and there was a free passage of fluid. It was intended to be a temporary measure only in circumstances where Mr Brockel had an appointment to be reviewed at the upper gastrointestinal outpatients department three days later[19].

On 23 March 2005, Mr Brockel attended the outpatients department for his scheduled appointment. A request for a further abdominal x-ray was made to

[16] Ex C19 appendix 4
[17] Ex 15.1 para 4
[18] Ex C6 pg 4
[19] Ex C9.1 paras 8-18

determine if there was free abdominal gas due to a perforation of the bowel. Dr Ong, radiologist was satisfied there was no perforation.[20] The images of the abdominal x-ray showed that the tip of the FJT was overlying the L4. He did not consider this represented a significant change.

Arrangements were made for Mr Brockel to return to the PAH's radiology department on the following day for the replacement of the feeding tube. Dr David Leggett, consultant radiologist reviewed Mr Brockel. He removed the Foley's catheter inserted by Dr Michael some four days earlier and proceeded to insert a 10 French gauge locking pigtail tube through the jejunostomy tract. He used a smaller sized tube to account for the possibility that the hole had closed up somewhat given the FJT had previously fallen out. He then checked the position of the tube by injecting contrast material into it. This confirmed the end of the new tube was in the small bowel and it was safe to proceed to feed through the tube. It did not enable a determination to be made of its precise location within the small bowel.[21]

Dr Barrett and Dr Patricia O'Connor reviewed Mr Brockel on this day and ordered that he be recommenced on feeds.[22] Dr Barrett reviewed Mr Brockel again the following day and determined that he was sufficiently well to be discharged and that he was to return in two weeks for upsizing of his pigtail catheter and a review on his nutrition.

On the next day Mr Brockel re-presented at the emergency department of the PAH with a blocked tube. It was unblocked with 50mls of water and he was discharged.

Mr Brockel again presented to the emergency department on 1 April 2005. It was reported that the FJT had become blocked after attempts to administer medication down it. Dr Barrett arranged for him to be admitted to the ward under the care of the gastroenterology team. Arrangements were made for a radiological insertion of the FJT. Dr Leggett upsized the pigtail catheter to a FR 14 to facilitate the administration of medications down it. An x-ray was taken to confirm that the replacement tube was in the small bowel.[23]

Dr Barrett was involved in the ward round on 6 April 2005. At the time Mr Brockel was awaiting a chest x-ray. He had continual diarrhoea and a faecal specimen had been ordered. At the ward round on the following day he was drowsy but his chest was clear. It was ordered that he continue on the faecal fat test for possible mal-absorption. He was on an altered feeding regime as ordered by the dietician. Two days later Mr Brockel was discussed at the gastroenterology unit meeting. His persistent diarrhoea was noted and his weight was down to 37kgs. The plan was for a flexible sigmoidoscopy, continued observation and review by Professor Paul Kerlin, senior visiting gastroenterologist.

[20] Ex C19 paras 10 & 11
[21] Exs C15 & C15.1
[22] Ex C21 para 24
[23] Ex C15 paras 9-12

Later that day Dr Barrett performed a sigmoidoscopy to rule out an inflammatory or infective colitis in the lower bowel as a cause for Mr Brockel's diarrhoea. Inflammation was excluded and biopsies were taken. The results of this procedure were unremarkable. Dr Barrett states in her statement that on the following day she had a discussion with Mr Brockel and explained to him that if his medical team were unable to correct his problems with diarrhoea and malnutrition, it may lead to infection and/or death.

When reviewed on 10 April 2005, Dr Barrett questioned whether Mr Brockel's feeds were going through his system quicker than they should have been. When reviewed again on 11 April 2005, Dr Barrett noted that he had passed over two litres of diarrhoea in the past 12 hours. His pulse rate and abdominal extension had increased. A contrast enema excluded a distal obstructing lesion. At this time Dr Barrett questioned a surgical complication and/or a possible ileus. She ordered an abdominal and chest x-ray and blood tests and prescribed analgesics. The results of the blood tests were available later that day, some of which were potentially life threatening. Aggressive replacement of electrolytes was commenced.[24] Dr Nivene Saad, consultant radiologist reviewed the x-ray images of the chest and abdomen. In relation to the abdomen Dr Saad's provisional diagnoses were bowel dilatation, distal large bowel occlusion or profuse bowel residue. With respect to the chest, the report indicates suboptimal visualisation of the lungs due to Mr Brockel's overlying left forearm.

At the ward round on 12 April 2005, it was noted that Mr Brockel was suffering from a pressure area on his head and back of his neck. His diarrhoea was continuing even in the absence of feeds and further input from a dietician was sought. At the ward round on the following day Mr Brockel was looking and feeling better. His diarrhoea output had decreased. A plan was implemented to recommence feeds via the FJT the following day. He had improved even further at the time of the ward round on the following day. His diarrhoea had settled.[25]

There were no further particular complications with Mr Brockel's care until overnight on 19 April 2005. His GCS was 4/15 and he was drowsy. Dr Barrett reviewed him on 20 April 2005 and considered his deterioration could possibly be explained by a loss of electrolytes through the gastrointestinal tract. Further bloods were ordered, along with a chest x-ray and a urine test. The blood results showed Mr Brockel's sodium levels had dropped. Such a drop can be associated with Addison's Disease and Dr Barrett ordered a single dose of steroids to treat this condition and then assess the response. Dr Barrett reviewed Mr Brockel on 21 April 2005. Mr Brockel was noticeably more alert. An ultrasound of the upper abdomen was ordered to exclude a possible obstruction of the bile ducts.

[24] Ex C21 para 36
[25] Ex C21 paras 37-39

Mr Brockel's condition was again discussed at the gastroenterologists' unit meeting on 22 April 2005. It was agreed he should undergo a series of small bowel tests, be placed on TPN and undergo the diagnostic test for Addison's Disease. He was reviewed later that day during the ward round. Plans were made regarding future management in the event of further episodes of diarrhoea over the weekend.[26]

The next occasion Dr Barrett reviewed Mr Brockel was at the ward round on 26 April 2005. He was still suffering from diarrhoea, with an unknown cause.

A further x-ray of the abdomen was undertaken on 27 April 2005. The reason for this was to exclude a perforation or obstruction. The report noted the images were grossly suboptimal because of difficulties in positioning Mr Brockel. Dr Tang stated that he has reviewed the images and the tip of the FJT is superimposed on the pelvis. He explained that it is difficult to ascertain its precise positioning but that it does not appear to be in the terminal ileum. He could not determine whether there had been any true change in position.[27]

A contrast series via the FJT was requested and performed on 29 April 2005. The reason for the request was to exclude an intestinal fistula. Dr Saad found the FJT to be in the terminal ileum and ascending colon. It did not exclude a fistula.[28]

Dr Allan was requested to review Mr Brockel on account of this finding. Dr Allan considered a laparotomy with resiting of the FJT in the correct position would be required. However at this time, Mr Brockel was grossly malnourished and in no fit state for an operation. Dr Allan recommended TPN via a peripherally inserted catheter (PICC line) until such time as he was in a better nutritional state to undergo the surgery. Unfortunately, Mr Brockel was troubled by recurrent sepsis that was probably related to PICC line infections. His nutrition gradually improved and his diarrhoea resolved.[29]

A further contrast series was performed on 30 May 2005. It was evident from the images that the FJT had probably initially been placed in the terminal ileum (at the end of the small bowel) and had subsequently migrated into the caecum/ascending colon (beginning of the large bowel).[30]

Dr Allan discussed Mr Brockel's future management with his consultant, Dr Smithers. It was decided that the FJT should be removed with a plan to reinsert it via a midline laparotomy in the coming week, provided Mr Brockel was sufficiently well to undergo a general anaesthetic. The FJT was removed on 3 June 2005. It was noted that the surgery was high risk but that Mr Brockel's outlook was bleak in the absence of such intervention.

[26] Ex C21 para 43-44
[27] Ex C18 paras 9-14
[28] Ex C14 paras 14-15
[29] Ex C1 pg 2
[30] Ex C1 pg 2

At Dr Barrett's review on 5 June 2005, consideration was given to inserting a Hickman's line. It was decided that this was contraindicated as it would have required Mr Brockel to have been subjected to an anaesthetic, in circumstances where the FJT was booked to be inserted only a few days later.[31]

Re-insertion of the FJT and death

The surgery was performed by Dr Allan on 8 June 2005. It was readily observable at the time of the surgery that the FJT initially inserted by Dr O'Rourke on 23 December 2004 had been inserted in the terminal ileum rather than the jejunum. There was no evidence of fistulation or perforation. A new FJT was then sited in the upper jejunum.

Dr Stanley Jones, senior visiting specialist in general surgery at the PAH assessed Mr Brockel as part of his ward round at approximately midday on 9 June 2005. He was made aware that during the previous night Mr Brockel had developed severe respiratory problems as a result of aspiration. He had vomited three times. At the time of Dr Jones' assessment, there was no evidence of any surgical complication within the abdomen. The FJT appeared intact and in position and Mr Brockel's abdomen was soft with no evidence of peritonitis.

Unfortunately, Mr Brockel's respiratory problems continued. He became gravely unwell with right lower lobe aspiration pneumonia. This was treated with high flow oxygen and broad spectrum antibiotics. He was not considered a suitable candidate for ventilation in the intensive care. He passed away in the early hours of 10 June 2005.[32]

It seems clear that the cause of Mr Brockel's death was respiratory failure as a result of aspiration. Dr Finch explained that Mr Brockel had an acute-on-chronic condition meaning that he had a number of pre-existing conditions including kyphoscoliosis, recurrent aspirations and gross malnutrition that had left him with a respiratory function that was compromised. It was against this background that he aspirated post-operatively following the surgery on 8 June 2005.[33]

Analysis of the evidence

This section analyses the evidence summarised above in the context of the issues identified as warranting investigation.

Decision to insert a FJT

The relevant medical records establish that Mr Brockel had deteriorated over the preceding months to the point where he was unable to maintain an adequate oral intake. Dr Finch explained the reasons for this were multifactorial and included:-

- Gastro-oesophageal reflux;

[31] Ex C21 para 63
[32] Ex C1 pg 3, Ex C 5.1 paras 10-12
[33] T3.13-14

- A large hiatus hernia with an intra-thoracic stomach;
- Disordered swallowing;
- Oropharyngeal dysphagia which had been diagnosed by a speech pathologist;
- A history of recurrent respiratory infections consistent with aspiration (confirmed by a video swallow in October 2004).[34]

Apart from the FJT, other possible treatment options to manage the inadequacy of Mr Brockel's oral intake at this time were:

- Repair the hiatus hernia;
- Insert a percutaneous gastronomy tube;
- Insert a nasogastric or nasojejunal tube; or
- Not treat at all.

In his report, Dr Debinski explains that even if the hernia had been repaired, it would not have addressed Mr Brockel's persistent oropharyngeal dysphagia and intestinal pseudo obstructions.[35] Dr Finch agreed with this. He also explained that there is significant morbidity and occasionally, mortality associated with repairing a hiatus hernia, particularly in a frail patient such as Mr Brockel.[36]

In relation to the percutaneous gastronomy tube, Drs Debinski and Finch considered it was precluded on account of Mr Brockel's intra-thoracic stomach.[37] Further, even if such a tube had been inserted it would not have addressed Mr Brockel's ongoing aspiration, either of saliva or from reflux of stomach contents.

With respect to the insertion of a nasogastric or nasojejunal tube, Dr Debinski opined either tube would probably have led to worsening aspiration or both tubes would only have been temporary measures as they frequently block, are uncomfortable and are invariably displaced. Dr Finch agreed with this. He also gave evidence that in his experience, patients tend to be only able to tolerate these tubes in their noses for a few weeks because the area around the nose frequently becomes sore and ulcerated.[38]

Dr Debinski states in his report that not surgically treating the inadequacy of Mr Brockel's oral intake would have been an option but an *ethically challenging* one.[39] Dr Finch considered it would have been a reasonable option if Mr Brockel and/or his family had indicated a preference for his future treatment to be managed in this way.[40] Such a preference had not been expressed by Mr Brockel or any member of his family.

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[34] Ex C20 pgs 1 & 2
[35] Ex C3
[36] T3.4.38
[37] Ex C3 pg 2 , C20 pg 2, T3.4.25
[38] T3.4-5
[39] Ex C3 pg 2
[40] T3.5.10

In short, the medical experts considered the decision to insert the FJT in December 2004 as reasonable and appropriate.[41] Having said this Dr Finch was at pains to explain that these tubes are usually inserted as a short term solution while a patient is recovering from an acute condition, with the aim for the patient to be restored to an adequate oral diet in the coming weeks or months.[42] He explained that FJTs are inappropriate for long term feeding as they are prone to misplacement, leakages and blockages.[43] He described the insertion of a FJT in Mr Brockel's case as a *palliative procedure.*[44]

I conclude that the decision to insert the FJT was appropriate in the circumstances.

Placement of the FJT on 23 December 2004

At the time Dr Allan replaced the FJT via a laparotomy on 9 June 2005, he had the opportunity to closely observe the small bowel. He was satisfied the initial FJT inserted by Dr O'Rourke on 23 December 2004, was positioned in the terminal ileum rather than the jejunum. Importantly he explained there was no scarring or defect present in the proximal jejunum consistent with the placement of the FJT in this section of the small bowel by Dr O'Rourke. Further, Dr Allan observed some minor scarring involving some loops of terminal ileum consistent with an uncomplicated sighting of the tube in this section of the small bowel.[45]

As to the positioning of the FJT in the caecum/ascending colon at the time of the laparotomy, Dr Allan considers that it had migrated from the terminal ileum to this position by virtue of the natural peristaltic actions of the small bowel, which propelled the contents of his bowel, including the FJT from the terminal ileum down into the colon.[46]

Dr Finch opined in his report that Dr Allan, as the operating surgeon, is in the best position to determine the placement of the original FJT.[47] Dr O'Rourke accepted that with the benefit of hindsight, it is probable he made an error in the placement of the initial FJT.[48]

Curiously, Professor Kerlin opined in a letter dated 10 April 2006 that it was most likely the tube had been correctly placed by Dr O'Rourke in the jejunum in December 2004 and had subsequently migrated into the ileum during one of the subsequent multiple exchanges.[49] Dr Finch responded to Professor Kerlin's opinion in this regard as follows:

[41] Ex C 3 pg 2, C 20 pg 1
[42] T3.4.3, T3.12.25, T3.31.36
[43] T3.9-10
[44] T3.24.19
[45] Ex C1 pg 3, Ex C1.1 paras 7-11
[46] Ex C1.1 para 9
[47] Ex C20 pg 1, Ex C3 pg 6
[48] Ex C17 para 28
[49] Ex C6.1

I would consider that to be a total nonsense quite frankly.[50]

Dr Finch went on to explain that Professor Kerlin's opinion is clearly without merit in circumstances where Dr Allan was satisfied at the time of surgery that the initial placement of the FJT had been in the terminal ileum as discussed above[51] One can only assume that Professor Kerlin did not ascertain Dr Allan's views prior to writing his letter of 10 April 2006. It would have been preferable that this had occurred, in circumstances where Dr Allan was in the best position to determine the placement of the original FJT and Professor Kerlin was proffering his opinion in response to concerns raised by Mr Brockel's family**.**

It is noted that in a letter dated 17 February 2009, Dr Ashby, Executive Director of the PAH frankly acknowledged to the HQCC that it appeared that an error had been made when the surgery was carried out by Dr O'Rourke in December 2004. He apologised for its occurrence and the fact that it had only been recently identified by the hospital.[52] Unfortunately, this letter was not written until more than three and a half years after Mr Brockel's death.

Mr Brockel's body habitus increased the risks for misplacement of the FJT in the terminal ileum.[53] Despite this increased risk, Dr Finch explained that it was appropriate for someone of Dr O'Rourke's level of experience and training to have undertaken the initial placement in December 2004.[54] Support for registrars performing placement of FJTs can to some extent be found in the fact that the replacement of the FJT in mid-2005 was undertaken by Dr Allan, who was also a registrar.

The technique adopted by Dr O'Rourke in placing the FJT was standard. It involved relying on anatomical features to identify the section of the jejunum where the tube was to be positioned. Dr Finch considered it most likely that Dr O'Rourke had initially correctly identified the correct section of the jejunum. He explained that each section of the small bowel looks identical and Dr O'Rourke probably put down the section of the jejunum he had initially identified and accidentally picked up a section of the terminal ileum, mistakenly assuming it was the section of the jejunum that he had initially identified.[55]

There is no doubt the misplacement of the FJT compromised Mr Brockel's nutritional intake in the following six months and is likely to have contributed to his deterioration, including malnutrition and weight loss.[56] The principal reason for this is that food is absorbed in the small bowel primarily by the jejunum. The ileum does not have the same absorptive capacity for nutrition.[57]

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[50] T3.14.28
[51] T3.14.31
[52] Ex A4
[53] Ex C20 pg 2
[54] T3.5-7
[55] T3.6.35, T3.7.39
[56] Ex C3 pg 5
[57] Ex C17 para 21

The fact of the misplacement of the FJT begs the question as to the likely medical outcome for Mr Brockel if the tube had been correctly placed in December 2004. Dr Finch thought that if this had occurred Mr Brockel's nutrition may have improved but is only likely to have prolonged his life for a period of time between a few months to a year or two.[58] This was because Mr Brockel suffered from a number of other medical conditions for which there was no medical solution. These included his cerebral palsy, hiatus hernia, inability to swallow and eat and his chronic aspiration. It was not expected that the FJT would address any of these problems.[59]

I conclude the FJT inserted on 23 December 2004 was positioned in the terminal ileum rather than the jejunum. This was not due to any lack of care or skill by the clinicians involved, but rather by the complications caused by Mr Brockel's condition.

While the error can be understood, the failure of the PAH to acknowledge that it had occurred for over three years, despite its staff being aware of this fact, is more difficult to explain. It suggests there was a significant problem with the way the case was reviewed and the manner in which the hospital responded to the complaint made by Mr Brockel's family.

Utilising radiological imaging for placement of the FJT

It is not routine for radiological imaging to be undertaken at the time of, or immediately after the insertion of a FJT to ensure its correct positioning in the jejunum because the most reliable method of determining the correct placement of the tube is the visual observation of it by the surgeon at the time it is inserted.

As described above this was the method used in this case.

As is also clear from the failure of repeated x-rays over a number of months to identify the misplacement of the tube, it is unlikely that using radiological imaging at the time of the procedure would have prevented the error. The overwhelming evidence is that x-rays, with or without contrast, can confirm the tube is placed in the small intestine but can not assist identifying its precise location.

I conclude the procedure was appropriately carried out without the use of radiological imaging to confirm the siting of the tube during or immediately after the procedure.

Should the misplacement have been identified sooner?

Dr Debinski opined in his report that the misplacement of the FJT was difficult to identify because of confounding issues, including the initial reassurances of radiological investigations. However, prior to 29 April 2005, while all of the

[58] T3.13.1, T3.30
[59] T3.21-22, T3.27.35

images confirmed that the FJT was positioned in the small bowel, none of them confirmed that it was positioned in the jejunum.[60]

A CT scan could have potentially identified the positioning of the FJT within the small bowel.[61] The medical records indicate that no CT imaging was undertaken prior to the tube misplacement being identified on contrast images in late April 2005. These contrast images showed a mucosal pattern more consistent with the large bowel rather than the small bowel, which indicated the FJT was more likely to be in the large and not the small bowel.[62]

The experts are in agreement that the recognition of an error in the placement of the FJT was late with the result that Mr Brockel had a prolonged period of malnutrition. Dr Finch explained:

> *The bias here is the fact that this has been placed surgically so virtually everyone else in the hospital will consider it is in the right spot by virtue of the fact that that is the most reliable way of getting it in the right spot. It would only be probably from the surgical side of – of his treatment where someone would be likely to think maybe we have got it …. wrong, should we try and image him further. But virtually everyone else in the hospital would have just considered blindly and quite … reasonable I think, that it was in the right spot.*[63]

Dr Finch says in his report that the gastroenterologists were focused on medical causes for Mr Brockel's various presentations and the radiologists who reported the various images, would simply have observed whether the FJT was in the small bowel and not which part of it. [64]

The medical records establish that Mr Brockel had multiple presentations at the PAH for several tube replacements, some of which were imaged. There were regular adjustments to his feeding regime based on the assumption that his diarrhoea and malnutrition related to feed content and volume of delivery rather than an aberrant tube placement. This was not unreasonable in circumstances where it is noted that patients can suffer from diarrhoea even with the correct placement of a FJT.[65]

Dr Finch made the following comment:

> *I don't think there was any indication to image the tube in the very short period after the surgery had been done, but given that the patient failed to thrive as you would expect with increased feeding and suffered with diarrhoea, it is a*

[60] Ex C2 pg 3
[61] T3.8.5
[62] T3.9.1
[63] T3.8.29
[64] Ex C20 pgs 2&3
[65] T3.13.18

> *shame that … there was no sort of imaging done … weeks or months after the tube. Not to say that … even if a CT had of been done that it would have definitively given the diagnosis.*[66]

As to a potential trigger for the ordering of a CT scan, Dr Finch said:

> *It's a cumulative thing, you've got a patient who is not thriving and people are searching for answers and may be that [CT scan] would have been - could of, should have been part of the work-up.*
>
> *I think like most bad outcomes in medicine or surgery there are a number of small things that contribute but there's not one glaring trigger or glaring fault that I can see.*[67]

Dr Finch considered that once the misplacement of the FJT was recognised on 29 April 2005, there was prompt and appropriate management by the surgical team.[68]

I conclude that by late March or early April there was sufficient indication the tube might be wrongly positioned to have reasonably prompted the undertaking of a CT scan to try to confirm whether this was the case. It seems that did not happen because the clinicians responding to Mr Brockel's continuing decline accepted the surgeon's assurance that the tube had been correctly placed in the jejunum.

Confirmation bias is a common heuristic whereby people give undue emphasis to evidence that validates or supports their existing beliefs and expectations and excuse or explain away information that does not. People in all walks of life fall into this error and to harshly criticise the doctors involved in this case for doing so would involve the making of a similar mistake: hindsight bias.

Management subsequent to 8 June 2005

Dr Finch was satisfied that an appropriate management plan was implemented following the replacement of the feeding tube to reduce the risk of Mr Brockel aspirating. In particular, Mr Brockel was prescribed two antiemetic medications and was nil by mouth. While the risk of a patient aspirating in the post-operative period is increased in a patient who has a pre-existing history of aspiration, it can occur with any patient in the post-operative period and it is a risk that cannot be entirely eliminated.[69]

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[66] T3.10.10
[67] T3.11.10
[68] Ex C20 pg 3
[69] T3.28.1

Impact of cerebral palsy on patient care

There is no evidence Mr Brockel was provided with inferior medical or nursing care because of his disability. To the contrary, while it is regrettable that the initial FJT was incorrectly placed, the experts concurred that every reasonable effort was made to look after him.[70]

I conclude the extensive investigations and tests undertaken in the months following the initial misplacement of the FJT demonstrate that concerted efforts were made to ascertain and correct the causes of Mr Brockel's post operative decline. I find no evidence that his disability caused any diminution in the quest to provide optimal health care.

Summary of conclusions

I conclude that the decision to insert the FJT was appropriate in the circumstances.

I am satisfied Dr O'Rourke was adequately trained and experienced to undertake the procedure.

I conclude the FJT inserted on 23 December 2004 was positioned in the terminal ileum rather than the jejunum. This was not due to any lack of care or skill by the clinicians involved. Rather the error came from the complications caused by Mr Brockel's condition.

The independent expert evidence was to the effect that the technique adopted by Dr O'Rourke in placing the FJT was standard. It involved relying on anatomical features to identify the section of the jejunum where the tube was to be positioned. The mistake was very regrettable, but it was understandable. I conclude the procedure was appropriately carried out without the use of radiological imaging to confirm the siting of the tube during or immediately after the procedure.

I understand the distress Mr Brockel's unexplained deterioration over the last six months of his life and his death caused his family. They have my sincere condolences. However, I do not accept the submission that the error amounted to a criminal offence and I do not consider disciplinary action against the clinician who performed the procedure is warranted. Such action is remedial in focus and there is no basis to conclude that eight years after the events the doctor is in need of further training.

For reasons I have detailed earlier, I conclude it is likely the misplacement of the FJT compromised Mr Brockel's nutritional intake in the following six months and is likely to have contributed to his deterioration, including malnutrition and weight loss. It is impossible to say what the outcome would have been had the procedure been performed correctly. He may have survived and enjoyed a reasonable quality of life for a considerable period.

[70] Ex C3, T3.11.35, T3.23.20

However, it should also be acknowledged that Mr Brockel suffered from a number of other medical conditions for which there was no medical solution. These included his cerebral palsy, hiatus hernia, inability to swallow and eat and his chronic aspiration. It was not expected that the FJT would address any of these problems.

For the reasons I have detailed in the report, the possibility of the FJT being wrongly placed should have been investigated sooner. It seems that did not happen because the clinicians responding to Mr Brockel's continuing decline accepted the surgeon's assurance that the tube had been correctly placed in the jejunum.

Confirmation bias is a common heuristic whereby people give undue emphasis to evidence that validates or supports their existing beliefs and expectations and excuse or explain away information that does not. People in all walks of life fall into this error and to harshly criticise the doctors involved in this case for doing so would involve the making of a similar mistake: namely, critiquing their conduct with hindsight bias.

While the error can be understood, the failure of the PAH to acknowledge that it had occurred for over three years, despite its staff being aware of this fact, is more difficult to explain. It suggests there was a significant problem with the way the case was reviewed and the manner in which the hospital responded to the complaint made by Mr Brockel's family.

I accept the evidence indicating an appropriate management plan was implemented following the replacement of the feeding tube to reduce the risk of Mr Brockel aspirating, albeit not successfully.

There is no evidence Mr Brockel was provided with inferior medical or nursing care because of his disability. To the contrary, while it is regrettable that the initial FJT was incorrectly placed, the experts concurred that every reasonable effort was made to look after him appropriately.

Findings required by s45

I am required to find, as far as is possible, who the deceased person was and when, where and how he died and the medical cause of death. As a result of considering all of the material contained in the exhibits and the oral evidence given at the inquest, I am able to make the following findings.

Identity of the deceased – Ronald James Brockel

How he died – Mr Brockel died from post operative complications that combined with acute-on-chronic conditions traceable to his congenital cerebral palsy

Place of death – He died at the Princess Alexandra Hospital Buranda, Queensland

Date of death– Mr Brockel died 10 June 2005

Cause of death – The cause of his death was aspiration pneumonia following the insertion of a jejunostomy tube.

Comments and recommendations

Section 46 provides that a coroner may comment on anything connected with a death that relates to public health or safety, the administration of justice or ways to prevent deaths from happening in similar circumstances in the future.

This death happened nearly eight years ago. Much has changed in the way hospitals respond to such matters in the intervening period. Further, the complicating factors of this case are rarely encountered. In the circumstances, I do not consider I could make any meaningful recommendations that are likely to prevent deaths occurring in similar circumstances or otherwise contribute to public health and safety.

I close this inquest.

Michael Barnes
State Coroner
Brisbane
19 April 2013