Chua Thong Jiang Andrew *v* Yue Wai Mun and another
[2015] SGHC 119

Case Number : Suit No 893 of 2012

Decision Date : 04 May 2015

Tribunal/Court : High Court

Coram : Woo Bih Li J

Counsel Name(s) : Ramasamy Chettiar (Acies Law Corporation), Evelyn Tham, Chua Lynn Ern, Alvin Mun, Edwin Chua, Lawrence Chua and Yek Nai Hui (Lawrence Chua & Partners) for the Plaintiff; Lek Siang Pheng, Mar Seow Hwei and Andrea Gan (Rodyk & Davidson LLP) for the first Defendant; Kuah Boon Theng, Alicia Zhuang and Felicia Chain (Legal Clinic LLC) for the second Defendant.

Parties : Chua Thong Jiang Andrew — Yue Wai Mun and another

Tort – Negligence – Breach of duty

4 May 2015 Judgment reserved.

Woo Bih Li J:

Introduction

1 The plaintiff Chua Thong Jiang Andrew ("Andrew") was a patient of the first defendant Dr Yue Wai Mun ("Dr Yue"), an orthopaedic surgeon who was employed by the second defendant Singapore General Hospital Pte Ltd ("SGHPL"). Andrew underwent a spine surgery performed by Dr Yue and brings this claim against both defendants (collectively "the Defendants") for negligence and against SGHPL for breach of contract as well.

Background

2 Andrew was 47 years of age and was generally in good health in April 2007. Two weeks before 20 April 2007, Andrew experienced some back pain. In the morning of 20 April 2007, he again felt pain in his back and decided to see Dr Chua Thiam Eng ("Dr Chua"), a general medical practitioner who was his company doctor. However, Andrew collapsed while on the way to Dr Chua's clinic. He was assisted back to his office. Dr Chua came to Andrew's office at about 10am to examine him. He gave Andrew a pain relieving injection and a muscle relaxant. However, about half an hour later, Andrew lost all sensation and power in both his lower limbs. Dr Chua was contacted and informed of Andrew's condition. Dr Chua recommended that Andrew be brought to a hospital in an ambulance immediately.

Andrew's admission to SGH

3 At about 12pm, Andrew was brought in an ambulance to Singapore General Hospital ("SGH"), which is operated by SGHPL.

4 Andrew was first seen by Dr Teoh Hui Joo ("Dr Teoh"), a medical officer at the SGH Department of Emergency Medicine ("DEM"). She examined Andrew and noted that he had zero motor power in his lower limbs, with diminished sensation below the T11 level of the thorax. She also recorded that Andrew's anal tone was lax.

5 Dr Teoh referred Andrew's case to SGH's Department of Orthopaedic Surgery. Dr Ng Yung Chuan Sean ("Dr Ng"), a medical officer from that department, came over to the DEM and also examined Andrew. He found that Andrew had zero motor power in his lower limbs, decreased sensation below the T11/T12 level, and that Andrew's anal tone was lax.

6 Laboratory blood tests and X-rays of Andrew were done. Dr Ng contacted Dr Yue, who was the spine consultant on second-line call that day, at 2pm and informed him of Andrew's condition. Dr Yue assessed the X-ray images taken of Andrew's thoracic and lumbar spine outline and found them unremarkable. He instructed that an urgent Magnetic Resonance Imaging ("MRI") scan of Andrew's thoracic and lumbar spine be done. He also instructed that Andrew be admitted to a High Dependency Unit ("HDU") ward.

7 Andrew's MRI scan images were available to Dr Yue online at about 5pm, although the formal radiologist report was not issued yet. Dr Yue was of the opinion that Andrew had suffered an acute disc prolapse at the thoracic level, *ie*, T10/T11 level and that it was predominantly on the left side. A disc prolapse, which was also referred to as a disc herniation at the trial, is often called a "slipped disc" in layman's language. The disc consists of an outer fibrous ring called an annulus surrounding a soft nucleus. A disc prolapse occurs when part of the nucleus pierces through the annulus into the spinal canal. Then, it may or may not compress the spinal cord. The symptoms that Andrew was exhibiting were caused by a disc prolapse compressing his spinal cord. Andrew's condition, however, was rare because Andrew's disc prolapse was at the thoracic spine (*ie*, higher up around the chest level) rather than the lumbar spine (*ie*, lower down around the lower back), the latter being more common. A prolapsed disc at the thoracic spine is more challenging for a surgeon than one at the lumbar spine. [note: 1]

8 At about 5.30pm, Dr Chua Chi Ming Kelvin ("Dr Kelvin Chua"), a house officer from the SGH Department of Orthopaedic Surgery examined Andrew. He did a scoring of Andrew's status on the American Spinal Injury Association ("ASIA") Impairment Scale. He found Andrew to be of ASIA A status. I will say more about this status later.

9 After Dr Yue was informed that Andrew had been admitted to an HDU ward, he went to see Andrew. He discussed Andrew's condition with him and the need for urgent surgery to remove the disc prolapse that was causing the spinal cord compression.

10 There is some dispute as to who was present at this time and what Dr Yue said. Andrew and his wife alleged that both of them were present then. Andrew said that from the discussion with Dr Yue, he got the impression that the chances of recovery after surgery were good. On the other hand, Dr Yue said that Andrew's wife was not present. He said that he informed Andrew that the prognosis after surgery was poor. In any event, it is not disputed that Andrew consented to the surgery although he alleges a lack of informed consent on which I will elaborate later.

The first surgery

11 The operation commenced at about 8.45pm that night. I shall refer to this operation as "the first surgery". The details of the surgery are helpfully set out in Dr Yue's opening statement at para 13 and I repeat them below:

> 13. Specifically, [Dr Yue] performed "T10 total decompression laminectomy, T10/11 discectomy, left transforaminal interbody fusion with local bone graft, and instrumentation with Expedium screws". In so doing, he adopted what is also commonly known as "the postero-lateral approach". That is to say, he operated from [Andrew's] back and approached the prolapsed disc

laterally at an angle. As the name of the operation suggests, there were essentially four main stages involved in this operation:

a) First, screws were inserted into the vertebrae to affix the rods necessary to stabilise the spine. This stage is referred to as "instrumentation with Expedium screws".

b) Second, a part of the T10 vertebra known as the lamina was surgically removed to allow visualisation of the spinal cord within the dural sac, and to allow access to the prolapsed disc material. The left T10/11 facet joint was also removed to allow the prolapsed disc material to be approached posteo-laterally [*sic*]. This stage is referred to as "T10 total decompression laminectomy".

c) Third, the prolapsed disc material at the T10/T11 level was removed to the extent possible, so as to relieve the pressure on the spinal cord. In addition, disc material within the disc space was also removed to allow the placement of the bone graft. This stage is referred to as "T10/11 discectomy".

d) Fourth, to prevent the vertebrae from collapsing onto each other and to increase stability, the disc space was filled with bone graft. This stage is referred to as "left transforaminal interbody fusion with local bone graft".

12 The postero-lateral approach is also referred to as the transfacetal approach. This means that Dr Yue operated from Andrew's back and approached the T10/T11 prolapsed disc laterally at an angle through the facet joint. [note: 2] I will refer to the approach as the "posterior approach" for simplicity. The surgery was performed with the aid of magnifying loupes.

13 Dr Yue asserted that before he closed up, he did a visual inspection of the spinal cord within the dural sac (which is transparent). He saw that there was a gap between the spinal cord and the dura and that the spinal cord was free. The spinal cord was pulsating in tandem with Andrew's heartbeat. To him, this demonstrated that there was no more significant constriction of the flow of the cerebral spinal fluid surrounding the spinal cord. He was of the view that Andrew's spinal cord was adequately decompressed and closed up.

Events subsequent to the first surgery

14 Four days later on 24 April 2007, Dr Yue had a meeting with Andrew's family, including his wife and siblings.

15 Andrew had not regained any significant neurological function after the first surgery. Dr Yue said he explained at the meeting that the outcome was not unexpected given the poor prognosis. If there was any improvement, this might take many months to manifest. Andrew's position was that Dr Yue sounded optimistic and mentioned that he could do much better than a previous patient who was walking with the aid of crutches.

16 On the same day, Andrew was transferred to SGH's Department of Rehabilitation Medicine. The next day, Dr Yue left Singapore for an overseas conference.

17 On 7 May 2007, Andrew's brother, Edwin Chua ("Edwin"), spoke to Dr Chang Wei Chun ("Dr Chang"), a consultant orthopaedic and trauma surgeon with a private practice at Gleneagles Medical Centre. The family was concerned about what they perceived to be a lack of improvement in Andrew's condition. Dr Chang suggested that a second MRI scan be done.

18 On 8 May 2007, Andrew requested SGH to do a second MRI scan. He was advised against it as the MRI post-surgery would not be clear and the use of contrast dye then might harm his kidneys. He was also informed that a second MRI scan could not be scheduled immediately as his was not an emergency case.

19 Andrew then requested and was granted home leave on the same day. He went to see Dr Chang who ordered an MRI scan to be done at Gleneagles Hospital ("Gleneagles"). Apparently, an X-ray and CT scan were also done there. Based on the second MRI scan and the report of a radiologist, Dr Michael Lin ("Dr Lin"), Dr Chang was of the view that there was still disc compression on the spinal cord. This was 18 days after the first MRI and the first surgery. He recommended that a second surgery be done. In the meantime, Andrew returned to SGH that day.

20 I will refer to:

(a) the first MRI scan done at SGH on 20 April 2007 as "the SGH MRI scan"; and

(b) the second MRI scan done at Gleneagles on 8 May 2007 as "the Gleneagles MRI scan".

21 The next day, Andrew was discharged from SGH at his own request. He was then admitted to Gleneagles as a patient. He was examined by Dr Chang and Dr Timothy Lee ("Dr Lee"), who is a consultant neurosurgeon. Both of them recommended that a second surgery be done. He was informed that in view of the lapse of time since the onset of paraplegia and the first surgery, his prognosis was extremely poor. Nevertheless, he decided to go ahead with the second surgery.

The second surgery

22 The second surgery was done by Dr Lee as the lead surgeon with the assistance of Dr Chang on 10 May 2007. This was 20 days after the first surgery was done. The second surgery was described as "an anterior decompression through a thoracotomy" approach. [note: 3] This means that the surgery was done from the front through the chest. [note: 4] I will refer to this approach as the "anterior approach" for simplicity. After the second surgery, there was no significant neurological improvement. He was discharged from Gleneagles on 25 May 2007.

Subsequent treatment and improvement of Andrew's condition

23 Following his discharge from Gleneagles, Andrew was transferred to Changi General Hospital and later to Ang Mo Kio Community Hospital ("AMK Hospital") for about another three months.

24 After his discharge from AMK Hospital, he went back a few times for further rehabilitation therapy. He stopped such therapy as he considered it too expensive to continue.

25 On 3 October 2008, Dr Chang examined Andrew. Andrew was still confined to a wheelchair and could not stand.

26 About two years after the first surgery, upon the encouragement of Andrew's physician friend who practiced Traditional Chinese Medicine, Andrew started to go swimming and was more physically active. Andrew then started to see significant improvement and after some time could move robotically, and, if his legs were very stiff, walk with the aid of a walking frame. [note: 5]

27 Andrew was examined by Dr Teh Peng Hooi ("Dr Teh"), a consultant orthopaedic surgeon in

private practice, on 7 October 2011. Dr Teh noted that Andrew could walk very slowly and with difficulty using a walking frame. His lower limbs were weak with muscle strength generally of grade three motor power. He was just able to lift up his legs by himself off the examination couch. Sensation to touch was present in his legs (from the groin downwards) but it was an impaired sensation.

28 Dr Teh examined Andrew a second time on 16 January 2012. He noted again that Andrew could walk slowly and with great difficulty using a walking frame. There was slight impairment to touch below the umbilicus downwards to the groin region. Left leg sensation to touch was better than the right leg but both legs' sensation was impaired. He was able to lift up both legs momentarily, with the left leg for a longer time than the right.

29 On 10 September 2013, Andrew went for another MRI scan at Gleneagles.

30 In the meantime, Dr Yue did not hear further from Andrew until he received a letter of demand from Andrew's solicitors dated 29 June 2009. The writ of summons was filed more than three years later on 17 October 2012.

The allegations and issues

31 The statement of claim ("the SOC") made various allegations of negligence against Dr Yue. The same allegations were made against SGHPL. It was not disputed that if Dr Yue was negligent, SGHPL would be vicariously liable for his negligence. The SOC also made additional allegations of negligence against SGHPL. However, on the first day of trial, Andrew's counsel informed the court that he was dropping some of the additional allegations of negligence against SGHPL. In so far as these additional allegations were repeated in his allegations of breach of contract against SGHPL, they were also dropped. However, SGHPL pointed out in its closing submissions at paras 56–57 that Andrew had also quietly dropped other allegations without informing the court. These other allegations were not pursued at trial. I agree and I need not dwell on them.

32 The remaining allegations against the Defendants were the allegations of negligence pleaded against Dr Yue at para 15 of the SOC. I will restate them as follows:

(a) Andrew had not given informed consent for the surgery performed by Dr Yue as Dr Yue had not informed Andrew about the posterior and anterior approaches.

(b) A second MRI scan ought to have been ordered at SGH after the first surgery. This would have revealed a continuing compression of the spinal cord and resulted in a second surgery being undertaken immediately thereafter which would in turn have improved Andrew's chances of recovery from paraplegia.

(c) The posterior approach adopted by Dr Yue was inappropriate as the disc prolapse was a central one.

(d) Dr Yue failed to completely decompress the prolapsed disc which continued to compress on Andrew's spinal cord.

These allegations became the issues to be determined. In addition, there was the fifth issue of causation, that is, whether any negligent conduct had in fact impeded Andrew's recovery. In my analysis below, I deal with issues (c) and (d) together because they are closely intertwined for reasons that will become apparent.

The law

33 There was no dispute on the applicable legal principles. In Singapore, the leading authority on medical negligence is the Court of Appeal decision in *Khoo James and another v Gunapathy d/o Muniandy and another appeal* [2002] 1 SLR(R) 1024 ("*Khoo*"). There, the Court of Appeal reiterated that the test is as stated in *Bolam v Friern Hospital Management Committee* [1957] 1 WLR 582 ("*Bolam*"). As McNair J in *Bolam* put it at 587:

> … [A doctor] is not guilty of negligence if he has acted in accordance with a practice accepted as proper by a responsible body of medical men skilled in that particular act … Putting it the other way round, a [doctor] is not negligent, if he is acting in accordance with such a practice, merely because there is a body of opinion who would take a contrary view. …

34 The Court of Appeal in *Khoo* also accepted that this test was supplemented by the House of Lords decision in *Bolitho v City and Hackney Health Authority* [1998] AC 232 ("*Bolitho*") in that a court was not bound to find for a defendant doctor simply because a body of experts testified in his favour. An expert view had to satisfy the "threshold test of logic" (see *Khoo* at [63]).

35 The Singapore courts have not followed a suggestion, said to be from English courts, that a different approach applies to medical advice as opposed to diagnosis and medical treatment (see *D'Conceicao Jeanie Doris (administratrix of the estate of Milakov Steven, deceased) v Tong Ming Chuan* [2011] SGHC 193 ("*D'Conceicao*") and *Tong Seok May Joanne v Yau Hok Man Gordon* [2013] 2 SLR 18).

36 Recently, the United Kingdom Supreme Court did apply a different approach from *Bolam* and *Bolitho*, based on patient or personal autonomy, for advice from a medical practitioner (see *Montgomery v Lanarkshire Health Board (General Medical Council intervening)* [2015] 2 WLR 768).

37 It is not necessary for me to consider whether such an approach should apply in Singapore for medical advice because, as I shall elaborate below, the facts here do not give rise to any liability on the part of the Defendants even if such a different approach should apply.

The parties and their witnesses

38 Before I elaborate on the parties' respective cases for the issues and my views thereon, I will elaborate first on the parties and their witnesses.

39 Andrew was the first witness. His lead counsel was Mr Ramasamy K Chettiar ("Mr Chettiar") who was assisted by solicitors from Lawrence Chua & Partners ("LCP"). Andrew himself was working as an office manager in LCP at the time he was first brought to SGH because of his paraplegia. He has apparently returned to part-time work with another law firm after his second surgery. Two of Andrew's brothers, Lawrence Chua ("Lawrence") and Edwin, are practising with LCP. Indeed, Lawrence was present by Andrew's side, sitting behind Mr Chettiar, on many days of the trial. Therefore, Andrew had more than ordinary access to legal advice. He would have been familiar with the legal and evidential burden he had to discharge.

40 The witnesses for Andrew were:

Witness	Name	Relationship

PW1	Andrew	Plaintiff.
PW2	Dr Chang	He is a consultant orthopaedic and trauma surgeon and was the one who advised that a post-surgery MRI be done and who advised that a second surgery be done. He assisted Dr Lee in the second surgery (see [17] and [22] above).
PW3	Dr Chua	He was the general medical practitioner who first attended to Andrew before Andrew was brought to SGH (see [2] above).
PW4	Cheong Geok Ching, also known as Audrey.	She is Andrew's wife.
PW5	Edwin	He is Andrew's brother.
PW6	Dr Lee	He is a consultant neurosurgeon who also advised that a second surgery be done. He was the lead surgeon in the second surgery (see [21] and [22] above).
PW7	Dr Lin	He was the radiologist at Gleneagles who issued the MRI report on Andrew (see [19] above).
PW8	Dr Teh	He is a consultant orthopaedic surgeon (see [27] above) who was called as an independent medical expert to testify on the inadequacy of the posterior approach.

41 As indicated in the background facts, Dr Chang and Dr Lee were the surgeons who advised Andrew that there was still spinal cord compression after the first surgery and to undergo a second surgery to remove the compression. They performed the second surgery on Andrew. Therefore, both Dr Chang and Dr Lee were not independent expert witnesses. Andrew's position was that any opinion from either of them was still admissible. The weight to be given to any such opinion was a separate matter.

42 The Defendants did not dispute the admissibility of any opinion evidence from either Dr Chang or Dr Lee. However, SGHPL stressed that they were not independent witnesses.

43 I add that Dr Chang was known to Edwin even before Andrew had become paraplegic. They had apparently come to know each other in the course of previous civil litigation cases in which Edwin relied on Dr Chang for his expert opinion on personal injuries.

44 In the absence of any objection by the Defendants and the absence of the benefit of submissions about the non-admissibility of such evidence, Dr Chang and Dr Lee were allowed to give opinion evidence. Indeed their opinion evidence was inextricably intertwined with their factual

evidence and it would have been impractical, if not impossible, to try and separate one from the other.

45 Dr Chang was also the medical expert who continued to support Andrew's case after Dr Chang gave his evidence. Mr Chettiar literally turned to Dr Chang from time to time when Mr Chettiar was cross-examining Dr Yue and his witnesses.

46 The witnesses for the Defendants were:

Witness	Name	Relationship
DW1	Dr Yue	First Defendant.
DW2	Dr Ng	He was the medical officer from the SGH Department of Orthopaedic Surgery who examined Andrew on 20 April 2007 and contacted Dr Yue that same day (see [5] above).
DW3	Dr Kelvin Chua	He was the house officer who scored Andrew as an ASIA A status (see [8] above).
DW4	Dr P Chandra Mohan	He was the SGH radiologist who issued an MRI report on Andrew.
DW5	Dr Peh Chin Guan Wilfred	He is a senior consultant and head of the Department of Diagnostic Radiology at Khoo Teck Puat Hospital and was an independent expert witness for Dr Yue.
DW6	Dr Hee Hwan Tak	He is a specialist in orthopaedic surgery and a spine surgeon in private practice and was an independent expert witness for Dr Yue.
DW7	Dr Pang Boon Chuan	He is a consultant neurosurgeon in private practice and was an independent expert witness for SGHPL.
DW8	Dr Wong Hee Kit	He is head of and a senior consultant in the University Spine Centre and head of the Department of Orthopaedic Surgery in the Yong Loo Lin School of Medicine, National University of Singapore. He was an independent expert witness for Dr Yue.

Having set out the issues as well as the witnesses for the parties, I will now turn to address the issues proper.

Whether Andrew had given informed consent

47 In my view, the pleaded allegation that Andrew had not given informed consent because Dr Yue had not informed Andrew about the anterior approach was without merit.

48 First, as SGHPL's opening statement pointed out at para 18, Andrew's own medical experts did not suggest that it was standard or accepted practice to discuss alternative surgical approaches with

a patient when obtaining consent for surgery.

49 Secondly, Andrew had conceded in his closing and reply submissions that he was not taking issue with the surgical approach *per se*. [note: 6] Accordingly, it was surprising that Andrew's closing submissions cited the decision of Tay Yong Kwang J in *D'Conceicao* for the proposition that a patient should be advised on alternative treatment options. In any event, Tay J's reference to alternative treatment options is different from alternative surgical approaches. Andrew should not have made this allegation about lack of informed consent in the first place. That is probably why he presented his argument about lack of informed consent in a different context which I will come to later.

50 Thirdly, it was not disputed that Dr Yue honestly held the view, whether rightly or wrongly, that the posterior approach was the more appropriate one. His reasons were stated in paras 36–39 of his affidavit of evidence-in-chief ("AEIC"). I need not repeat all his reasons except to say that in his view, the posterior approach was appropriate because the prolapsed disc was located more to the left and was assessed to be soft and discrete, and the anterior approach requires more time to prepare for. The latter also involves more risks than the posterior approach. For example, the anterior approach requires the collapsing of one lung. There is also increased risk to the heart and larger blood vessels in terms of bleeding and increased risk of lung infection. If Dr Yue had discussed both the posterior and the anterior approaches with Andrew, it is obvious that he would have recommended the posterior approach since that was the approach he preferred. Dr Yue would not have suggested that the posterior approach might be inadequate to reach the prolapsed disc. There is no evidence that Andrew would have tried to obtain a second opinion or second guess Dr Yue's choice of surgical approach or that he would have withheld his consent. In my view, there was no reason for Andrew to do so as Dr Yue was certain of the approach he was going to use and its suitability. Furthermore, there was urgency in executing the operation without delay.

51 I note that para 12 of Andrew's opening statement alleged that if Andrew had been informed that the prognosis was poor, he would have sought a second opinion. This submission was on the premise that Andrew had not been informed that the prognosis was poor. This submission was different from the pleaded allegation above that suggested that if Andrew had been informed about the surgical alternatives, he would have obtained a second opinion. Andrew is not entitled to change his case. In any event, it is clear from the evidence that if Andrew had been informed that the prognosis was poor, he would still have elected to undergo surgery without a second opinion. That is precisely what happened when he elected for the second surgery without a third opinion, even though it is common ground that he was told then that the prognosis was extremely poor (see [21]). Furthermore, Andrew admitted that he would have consented to the first surgery even if he had been informed that the prognosis was poor. [note: 7]

52 Andrew's closing submissions then presented the issue of informed consent in a different context. At paras 54(a), 59 and 60, Andrew submitted that Dr Yue breached his duty to Andrew when he did not disclose to Andrew that he would not be performing a complete decompression of the prolapsed disc. There was some dispute as to whether Dr Yue's duty was to perform a "complete" decompression or an "adequate" decompression. As I will elaborate later, I am of the view that Dr Yue's duty was to achieve "adequate" decompression. For now, it is sufficient for me to say that in any event, this submission was off the mark. It is clear from the evidence that Dr Yue tried to remove as much of the prolapsed disc as was possible such that it was not compressing the cord. Also, as already mentioned, Dr Yue was of the view that the posterior approach was a suitable one for him to do what he needed to do. There was no suggestion, until Andrew's closing submissions, that Dr Yue had deliberately decided to do less even before he commenced the operation. Indeed, this suggestion ignored the fact that Andrew's closing and reply submissions did not pursue the allegation that the

posterior approach was inappropriate. I find the suggestion that Dr Yue had decided not to do a complete decompression which he should have then informed Andrew about to be made without regard to the facts and other submissions. If Andrew was alleging that Dr Yue was negligent in his execution of the surgery, that was a different point.

Whether Dr Yue should have ordered a second MRI scan to be done immediately after the first surgery

53 Andrew alleged that Dr Yue was negligent because he did not order a second MRI scan to be done immediately after the first surgery. I shall refer to this as "the Second MRI Scan Allegation". The suggestion was that a second MRI scan would have led to the discovery that Andrew's spinal cord was still compressed by the prolapsed disc whereupon Dr Yue should have immediately done a second surgery to remove the residual disc prolapse. Dr Yue's failure to order the second MRI scan resulted in the second surgery (done by Dr Chang and Dr Lee) being undertaken too late and Andrew's prospects of recovery were therefore impeded. [note: 8]

54 However, if Andrew fails to establish that the prolapsed disc was still compressing his spinal cord after the first surgery, it follows that even if Dr Yue ought to have ordered a second MRI scan, this omission did not affect Andrew's prospects of recovery.

55 On the other hand, even if Dr Yue was not negligent in not ordering a second MRI scan to be done immediately, this would not exonerate him if indeed the prolapsed disc was still compressing Andrew's spinal cord and this was attributed to Dr Yue's negligent conduct in executing the first surgery.

56 Therefore, if there is a finding that Andrew has failed to establish that the prolapsed disc was still compressing his spinal cord after the first surgery, it will effectively dispose of the Second MRI Scan Allegation. Nevertheless, I will still deal with this allegation as Andrew made much of it.

57 Before I continue, I would say that it is undisputed that Andrew did not ask Dr Yue to do a second MRI scan. However, after Dr Yue left for an overseas engagement, Andrew requested SGH to do a second MRI scan and this was not acceded to (as elaborated above at [18]). I am of the view that it is immaterial whether Dr Yue was in Singapore or not and it is also immaterial whether Andrew made a request to Dr Yue himself to do a second MRI scan. The issue is whether Dr Yue ought to have ordered a second MRI scan irrespective of any request from Andrew. I add that it is not in dispute that Andrew requested the second MRI scan only after Dr Chang gave this advice in response to queries from Edwin as elaborated above.

58 On Andrew's side, the Second MRI Scan Allegation was supported by Dr Chang and Dr Lee. Dr Teh did not give evidence on that allegation.

59 In Dr Chang's AEIC, he gave the following evidence:

> A3: Generally, when the patient's condition does not improve immediately or soon after surgery, a surgeon would be concerned as to whether something had gone wrong. It is normal and expected of a surgeon to do an MRI scan immediately to rule out any errors that may have occurred in the course of the surgery. MRI is a non-invasive procedure that is generally offered to patients. It gives the surgeon an opportunity to take remedial action as time is of the essence. Erwin M.J. Cornips et al in "Thoracic disc herniation and acute myelopathy: clinical presentation, neuroimaging findings, surgical considerations, and outcome" J Neurosurg Spine 14:520-528, 2011, …, found that "[r]emarkable recovery is possible even

with profound neurological deficit, a delay of several days, in the elderly, and in the presence of myelomalacia".

It is only natural for the surgeon to suggest an MRI scan post surgery when Andrew's condition did not improve at all. It is not the other way around.

60 He also asserted at p 6 of his AEIC that Dr Yue should have ordered a second MRI scan to understand why Andrew's condition did not improve after surgery.

61 In oral testimony, Dr Chang did not assert that it was standard practice to order a second MRI scan immediately after surgery. [note: 9] Instead, he asserted that Andrew should have been seen as an individual and since his family was concerned about his lack of improvement, then a second MRI should have been done to check if there was any residual disc prolapse. An MRI scan was a non-invasive procedure. He emphasized that it was no skin off a doctor's nose to simply order the second MRI scan. [note: 10]

62 Dr Lee's response in A2 of his AEIC was similar to that of Dr Chang's on the Second MRI Scan Allegation. Therefore, I need not set out Dr Lee's response here.

63 In oral testimony, Dr Lee appeared to accept that it was not standard practice to order a second MRI scan immediately after surgery. However, he emphasized that each patient had to be considered individually. If a patient did not improve and the patient was concerned, he would order a second MRI scan. There was no risk in doing a second MRI scan. He wondered "[w]hat's the big deal" in ordering such a scan. [note: 11]

64 On the other hand, Dr Yue said in para 76 of his AEIC that another MRI scan is not usually done post-surgery unless the result is unexpected. In Andrew's case, the result of a lack of improvement immediately after surgery was not unexpected for reasons which I will elaborate later. Furthermore, another MRI scan immediately after surgery might not be accurate as it would be difficult to distinguish further spinal cord compression from post-operative changes such as tissue swelling. The presence of pedicle screws would also make it more difficult to interpret the second MRI scan.

65 Dr Wong Hee Kit ("Dr Wong"), an independent expert witness for Dr Yue, supported Dr Yue's position that a post-operative MRI is not routinely done after spinal surgeries in Singapore. It is done when the result of the surgery is not what the surgeon expects. [note: 12]

66 It seemed to me that both Dr Chang and Dr Lee were taking the view that Dr Yue should have accommodated the concerns of Andrew's family about his lack of improvement post-surgery by ordering a post-operative MRI scan. That is why Dr Chang remarked more than once that it was no skin off a doctor's nose to just order the post-operative MRI scan, and Dr Lee remarked "[w]hat's the big deal".

67 It is worthwhile to remember that it was Dr Chang who suggested that a second MRI scan be done.

68 As mentioned above, the issue is whether Dr Yue was negligent because he did not order a second MRI scan to be done post-surgery. The legal question is not whether it was any skin off his nose to do it or what the big deal was. Such remarks were off the mark and did not reflect well on the credibility of Dr Chang and Dr Lee respectively.

69 Furthermore, the point is not whether Dr Chang should have ordered a second MRI scan but whether Dr Yue was negligent for not ordering it. Dr Chang and Dr Lee's responses appeared to try and explain why Dr Chang ordered it rather than to try and establish that Dr Yue was negligent for not doing so. I add, for completeness, that Dr Yue did order an X-ray to be done after the first surgery to check that he had performed the surgery at the correct level of Andrew's spine (*ie*, the T10/T11 level), but not an MRI scan.

70 I am of the view that a general statement such as looking at the patient as an individual did not advance Andrew's position at all. Dr Yue did not dispute that Andrew had to be considered as an individual. Dr Yue's point was that there was no reason to order a post-operative MRI scan so soon after the first surgery unless Andrew's post-operative condition was unexpected.

71 This brings me to the prognosis for Andrew and why Dr Yue did not find Andrew's lack of improvement after the surgery to be unexpected, which I alluded to at [64] above. Andrew's prognosis depended on his condition before the first surgery. It was not disputed that he was paraplegic. According to Dr Yue, Andrew's neurological status was ASIA A. As mentioned above at [8], this grade was determined by Dr Kelvin Chua. He was a member of Dr Yue's medical team who had examined Andrew to do a formal assessment of Andrew's ASIA status before the first surgery was carried out. The ASIA A grade meant that Andrew had no motor or sensory function present in the sacral segments S4 to S5. ASIA A is the grade that indicates the greatest degree of neurological impairment and thus indicates the case is the most severe. ASIA E, on the other hand, indicates the least degree of neurological impairment.

72 The ASIA A grade was important to Dr Yue. First, it meant that the prognosis for Andrew was extremely poor even with surgery. Therefore this meant that after the first surgery Dr Yue did not expect any immediate or significant improvement. Secondly, it meant that it was very unlikely that Andrew would ever recover fully.

73 Dr Lee agreed that if Andrew's condition pre-surgery was ASIA A, then the prognosis for him was poor. [note: 13]

74 Dr Chang initially agreed that the prognosis for Andrew was grave. [note: 14] However, he then changed his evidence and said Andrew had a high chance of recovery after a successful surgery and that Andrew did not have a poor prognosis for recovery. [note: 15]

75 Andrew disagreed that he was an ASIA A case for various reasons. First, he had been examined by Dr Ng (see [5] above). Dr Ng's notes had an arrow pointing downwards with the words "sensation below T11/12". Dr Ng said this meant that there was less sensation and not an absence of sensation. Andrew submitted that this therefore suggested that there was no total loss of sensation as an ASIA A grade would suggest.

76 Secondly, Andrew was sent to SGH's Department of Rehabilitation Medicine after the first surgery. There was a handwritten note from Dr Tay San Sar, the Registrar of that department to Dr Yue and his team written on or about 23 April 2007. In that note, Andrew was graded as ASIA B. This appeared to contrast with an initial ASIA A grading because if Andrew was truly ASIA A pre-surgery, it was not likely that he would improve to ASIA B so quickly even after surgery.

77 One possible reason for the apparent difference was that Andrew was suffering from spinal shock at the time of his examination by Dr Kelvin Chua and/or Dr Ng, which made his symptoms appear worse than they actually were, and after the spinal shock had worn off, his true condition

emerged. However, Dr Yue was of the view that spinal shock is not necessarily in play unless there is trauma to the spinal cord like a fracture or a fall from height. [note: 16]

78 There was also another piece of evidence about a subsequent examination of Andrew by Dr Chang on 3 October 2008 (see [25] above). Dr Chang himself assessed Andrew to be ASIA A then.

79 In my view, any suggestion by Dr Chang that Andrew had a high chance of recovery even if his status was ASIA A or that the prognosis was not poor for an ASIA A patient was contradicted by Dr Chang's own earlier evidence that the prognosis was grave for ASIA A patients (see [74]). Furthermore, as mentioned above at [73], Dr Lee agreed that ASIA A meant a poor prognosis. In my view, as ASIA A is the most serious grade, it must logically mean that the prognosis is the worst.

80 In any event, it is unnecessary for me to elaborate further on the detailed arguments of the parties as to whether Andrew was ASIA A or ASIA B or to conclude whether he was either one or the other. The reason is that even if Andrew was not ASIA A and was ASIA B instead, this did not mean that his prognosis was not poor. Neither Dr Chang nor Dr Lee had suggested this. It is true that the prognosis would not be as poor as an ASIA A grade but it was still not good. More importantly, even if Andrew was ASIA B, this did not mean that an immediate and a marked improvement post-surgery was expected. There was no such suggestion by Dr Chang or Dr Lee.

81 It seems to me that neither Dr Chang nor Dr Lee had paid much attention to Andrew's pre-operative condition. They did not ask for a medical report on him from SGH and indeed no such request was made by Dr Chang before he suggested that a post-operative MRI scan be done or before Dr Chang and Dr Lee concluded that there was still cord compression based on the Gleneagles MRI scan and Dr Lin's report. At that time, they also did not ask to look at the SGH MRI scan images taken prior to Andrew's first surgery.

82 It was not the evidence of Dr Chang or Dr Lee that Andrew's post-operative condition was unexpected. Their evidence was that since there appeared to be no improvement and Andrew's family was concerned, a post-operative MRI scan should have been done. For Dr Chang, it was not irresponsible to order the post-operative MRI scan just to see the state of the spinal cord. [note: 17] As such a scan was non-invasive, he would order it "at the drop of a hat just to make sure that everything is still fine". [note: 18]

83 There was no medical literature to support the position taken by Dr Chang and Dr Lee that a post-operative MRI scan should be done immediately or soon after surgery in the circumstances.

84 It will be recalled that in Dr Chang's AEIC (see [59] above), he had cited an article from Erwin M J Cornips *et al*, *Thoracic disc herniation and acute myelopathy: clinical presentation, neuroimaging findings, surgical considerations, and outcome* (J Neurosurg Spine, Vol 14, April 2011) at pp 520–528 with the statement that, "Remarkable recovery is possible even with profound neurological deficit, a delay of several days, in the elderly, and in the presence of myelomalacia". However, the statement was a distraction. It did not support the Second MRI Scan Allegation. Ironically, that same article had another statement (at p 521) that, "Postoperative neuroimaging included … MR imaging to assess accuracy of spinal cord decompression *after 3 months*" [emphasis added]. This statement implied that it was not part of the standard of care of a spine surgeon to order a post-operative MRI scan immediately or soon after the first surgery.

85 Indeed, at one stage during his oral testimony, Dr Lee said that a post-operative MRI scan should be done not immediately but, say, some three or six months later. [note: 19] However, he then

began to qualify his evidence by saying that he would order a scan immediately if it was clinically needed. By that he meant that he would order such a scan if the patient did not get better or if the patient got worse after surgery. He agreed that if no improvement was expected, there was no need to order such a scan. [note: 20] He then sought to add that he would order the scan if the result was unsatisfactory but he could not explain adequately why the result would be unsatisfactory if no improvement was expected at the material time. To him the result was unsatisfactory so long as there was no improvement, whether or not an improvement was expected. [note: 21] I found Dr Lee's explanation illogical and unconvincing.

86 However, Andrew suggested that if he was already paraplegic with ASIA A grade at the material time, that condition could not deteriorate further. Hence, it was not logical to say that a second MRI scan would be done if his condition had deteriorated. I do not accept that argument.

87 Andrew's argument would then mean that a second MRI scan should be done simply because his family was concerned about his slow improvement or as a matter of course. The former would in turn lead to the absurd conclusion that a doctor is negligent if he does not comply with a request from a patient or his family whatever his own opinion may be. The latter is not supported by evidence.

88 The most important point against the Second MRI Scan Allegation was that neither Dr Chang nor Dr Lee himself ordered a post-operative MRI scan after the second surgery even though there was still no improvement in Andrew's condition, although they did say that no improvement was expected because of the lapse of time between the first and the second surgery.

89 Various reasons were given by Dr Chang and Dr Lee for not doing so. I will mention only the reasons given by Dr Lee as they included Dr Chang's reasons. Dr Lee gave four reasons: [note: 22]

(a) All approaches to remove the disc prolapse had been done already. By this, he meant that Dr Yue had used the posterior approach and he had used the anterior approach. There was no other approach.

(b) Andrew was Dr Chang's patient and not his.

(c) Dr Lee had fished out a calcified fragment during the second surgery. He saw the dura glistening. He did not think there was anything else to do.

(d) Cost was also an issue.

90 I will deal with reasons (a) and (c) together. In summary, what Dr Lee was saying was that he saw no reason to order a post-operative MRI scan because in his mind he had already done all he could. However, that was precisely Dr Yue's position. In his mind he had already achieved the decompression. It was not as though he had any doubt about the adequacy of the posterior approach or what he did. The post-operative X-ray he ordered was only to check that he had operated at the right level of Andrew's spine.

91 As regards reason (d) on the cost issue, Dr Lee appeared to contradict himself when he said later in re-examination that an MRI scan "does not cost that much". [note: 23] Furthermore, Dr Chang did not mention cost as a reason for not ordering a post-operative MRI scan after the second surgery.

92 Lastly, Dr Lee was tested about reason (b), that is, that Andrew was Dr Chang's patient and

not his. He was asked whether he did suggest to Dr Chang to order a post-operative MRI scan. Surprisingly, Dr Lee said that he probably did. [note: 24] Yet he could not remember Dr Chang's response, "Because it was a minor thing". [note: 25]

93 Dr Lee's evidence was telling. Dr Chang had never suggested that Dr Lee had mentioned that Dr Chang should order a post-operative MRI scan after the second surgery or that they had had a discussion whether to order one or not. In my view, Dr Lee did not make that suggestion to Dr Chang. It did not cross his mind or Dr Chang's to order that scan. However, when Dr Lee was pressed to explain why no such MRI scan was ordered in the light of his opinion that Dr Yue should have ordered one after the first surgery, he gave an untrue explanation that he did suggest it to Dr Chang.

94 Andrew argued that the omission of Dr Chang and Dr Lee to order a post-operative MRI scan after the second surgery is not an apple for apple comparison to Dr Yue's omission to order one after the first surgery. When Andrew was at SGH, the spinal cord decompression had to be done within what Dr Chang referred to as "the golden hour". With so many days delay between the first and the second surgeries, the prognosis would only get worse. [note: 26] In my view, that is not the point and, in any event, it was not a reason given by Dr Lee or Dr Chang for not ordering a post-operative MRI scan. Dr Chang and Dr Lee had suggested that a post-operative MRI scan should have been ordered even if the result of a surgery was not unexpected. Therefore, even though Andrew's condition after the second surgery was not unexpected, they should have ordered a post-operative MRI scan to be consistent with their own evidence. They did not. Their omission spoke volumes. It contradicted the Second MRI Scan Allegation.

95 I appreciate that if a different surgeon from a different clinic or hospital is asked to give a second opinion, he may want to suggest that another MRI scan be done before giving that opinion. However, it appears from the conduct of Dr Yue and also of Dr Chang and Dr Lee that the surgeon who has done the surgery in question is not required to order a post-operative MRI scan so soon after surgery unless there is some valid reason to do so. The absence of improvement, when improvement is not expected at the material time, is not such a reason. The patient's family's concern, without more, is also not a valid reason. There was no standard of care which required Dr Yue to order the post-operative MRI scan in the circumstances.

96 In the circumstances, I am of the view that Andrew has not established the Second MRI Scan Allegation.

Whether the posterior approach was appropriate and whether Dr Yue had adequately decompressed the prolapsed disc

97 The next two issues would have been whether the posterior approach was appropriate and whether Dr Yue had adequately decompressed the prolapsed disc. However, as mentioned above, Andrew had said in his submissions that he was not taking issue with the surgical approach *per se*.

98 I will still deal with the "issue" about the appropriateness of the posterior approach to some extent as it reflects on the credibility of Andrew's medical experts, especially Dr Chang, who also gave evidence on the issue about adequate decompression. Moreover, the evidence and the arguments on both these issues overlap.

Terminology

99 Before I continue, I will elaborate on some words which were used for the trial.

100 The SOC alleged that Dr Yue did not achieve "complete" decompression of the prolapsed disc. The Defendants say he achieved "adequate" decompression.

101 First, no definition was offered by Andrew's medical experts as to what was meant by "complete" decompression. Secondly, in the first page of the article by Cornips and others which Dr Chang referred to in his AEIC, the expression "adequately" decompressed is used. Thirdly, in Andrew's reply pleading, he himself alleged in para 4 that Dr Yue had failed to achieve "adequate" decompression. Therefore, it appeared that Andrew was using the terms "complete" and "adequate" decompression interchangeably. However, Andrew appeared to insist in his submissions that there must be "complete" decompression. This description gave the impression that every iota of disc prolapse must be removed. That impression is not supported by medical evidence or logic. For example, if there was still any part of the disc merely protruding into the spinal canal after the first surgery but which was not even touching the spinal cord, it would not be regarded as medically significant. I have used the adjective "adequate" as I think that the word "complete" gives the wrong impression that every iota of disc prolapse must be removed. I will also mention that words like "touch", "impinge", "indent" and "compress" were used in the trial either interchangeably or to distinguish between non-compression and compression of the spinal cord depending on who was using the word. This added to the confusion.

102 Andrew argued in para 23 of his reply submissions that the objective of Dr Yue's surgery was "to relieve all cord compression because any contact can cause significant symptoms to an individual. Cord tolerance varies from one individual to another and there is no objective evidence to show how much of a contact a cord can tolerate before symptoms begin." He also argued that when his experts referred to "complete" decompression, they meant the absence of any contact with the spinal cord.

103 It seems to me that Andrew has misunderstood the position of the Defendants. First, the Defendants do not say that it is acceptable for residual disc prolapse to be touching the spinal cord. Therefore, they do not accept that there was residual disc prolapse touching the spinal cord after the first surgery. Secondly, it is their alternative position that even if there was residual disc prolapse touching the spinal cord, it is for Andrew to establish that this compressed the spinal cord and that it in fact impeded his recovery. The Defendants are not saying that Dr Yue intended to leave residual disc prolapse touching the spinal cord or that he omitted to ensure that none touched the spinal cord after surgery. Hence, they argued that even if there was residual disc prolapse touching the spinal cord, this did not compress the spinal cord and was not significant for various reasons. It was in that context that a distinction was being drawn by the Defendants between touching and compressing the spinal cord and the question of significance was raised.

104 As for the use of MRI scans and CT scans, it is useful to note that MRI scans may show the spinal cord and soft tissue like the disc and CT scans show calcified or bony material. [note: 27]

105 I continue with the two issues.

The location of the prolapsed disc that caused the spinal cord compression

106 First, the location of the prolapsed disc, *eg*, whether the location was left, central or right, was important to the two issues. I add that I am here referring to the prolapsed disc which caused Andrew's paraplegia and not to just any disc herniation. The importance of this qualification is self-evident and will also become clearer later.

107 There was much dispute and confusion over the location of the prolapsed disc that had caused or was perceived to have caused Andrew's paraplegia:

(a) Dr Yue said that the relevant prolapsed disc was predominantly on the left side. [note: 28]

(b) Dr Mohan's MRI report dated 20 April 2007 concluded that, "There is an acute central disc protrusion at the T10/11 level causing severe canal stenosis with cord compression."

(c) Dr Lin's radiological report dated 8 May 2007 stated (at p 2) that, "There is a central and right paracentral disc protrusion of T10/T11 disc noted with moderate spinal canal stenosis."

(d) Dr Chang's first report dated 18 May 2007 (eight days after the second surgery) referred to the SGH report by Dr Mohan which stated that there was an acute central disc protrusion. He also referred to the Gleneagles report by Dr Lin which showed "a central and right paracentral disc protrusion still impinging on the thoracic cord."

(e) Dr Chang's second report dated 4 November 2008 again referred to the SGH and Gleneagles reports. He reiterated that the latter showed "a central and right paracentral disc protrusion" although this time he said the disc was "still compressing", and not just "impinging", on the spinal cord.

(f) Dr Chang's third report dated 23 February 2011 (at p 4) followed his second report. However, the third report contained pictures of some MRI and CT scans. Fig 3 at p 4 of this third report referred to an image from the SGH MRI scan with the following words, "T1-weighted image, showing a mainly left-sided disc protrusion, occupying~70% of the crosssectional area of the spinal canal".

(g) Dr Lee's report dated 11 September 2008 said that the Gleneagles MRI scan showed "a central and right paracentral disc protrusion with compression of the spinal cord."

(h) Dr Teh's report dated 26 January 2012 proceeded on the premise that Dr Yue was addressing a central disc protrusion in the first surgery.

(i) Para 6 of the SOC referred to the SGH report by Dr Mohan about an "acute central disc protrusion". Para 8 of the SOC referred to the Gleneagles report by Dr Lin about a "central and right paracentral T10-11 disc protrusion with moderate spinal canal stenosis." Then para 15(a) of the SOC alleged, as one of the particulars of negligence, that Dr Yue knew or ought to have known that Andrew had a "central disc prolapse".

(j) Dr Chang's AEIC sworn on 30 July 2013 relied on the SGH report by Dr Mohan and said that the cord compression was at the centre and not just to the left.

(k) Likewise, Dr Lee's AEIC sworn on 13 August 2013 also relied on the SGH report and alleged that it was a "central disc prolapse".

108 Dr Yue had formed the opinion that the relevant disc prolapse was predominantly left-sided by looking at the SGH MRI scan as the formal report by Dr Mohan had apparently not been issued yet. Dr Yue's opinion appeared to be inconsistent with Dr Mohan's report about a central disc protrusion. The apparent inconsistency was addressed by Dr Mohan when he gave his oral testimony, which I shall elaborate on later.

109 As for Andrew's case, it is important to bear in mind that when Dr Chang and Dr Lee concluded that there was still spinal cord compression after the first surgery, they did so without the benefit of the SGH MRI scan or Dr Mohan's report. They were looking at the Gleneagles MRI and CT scans and

also apparently placed much reliance on the Gleneagles report by Dr Lin.

110 It appears that by the time Dr Chang issued his first report dated 18 May 2007, he had received the SGH report (and perhaps the SGH MRI scan images as well) because his first report referred to the description used by Dr Mohan, *ie*, an acute central disc protrusion. Even then, Dr Chang appeared to place more reliance on the Gleneagles report since he said in all three of his reports that the Gleneagles MRI scan showed a central and right paracentral disc protrusion "still" impinging or compressing on the spinal cord. As mentioned above, Dr Lee's report dated 11 September 2008 said that the Gleneagles MRI scan showed a central and right paracentral disc protrusion with compression of the spinal cord.

111 The SOC relied on Dr Yue's knowledge of a central disc prolapse as part of the particulars of negligence. Dr Chang's and Dr Lee's AEICs focused similarly on a central disc prolapse.

112 The question therefore was where the relevant disc prolapse was before the first surgery. Was it predominantly left or central or both central and right paracentral?

113 All counsel and Andrew's medical experts had used the word "central" to refer to the mid-line of the spinal cord. The words "right paracentral" were used to refer to an area right of the mid-line. They had assumed that when Dr Mohan referred to "central" in the SGH report, he was referring to the mid-line as well. Hence, the SOC and the AEICs of Dr Chang and Dr Lee, and of Dr Teh as well, stressed that the relevant disc prolapse was central and not predominantly to the left. In relation to two of Andrew's medical experts, *ie*, Dr Chang and Dr Teh, this difference had a material bearing on the issue of whether the posterior approach was an appropriate one.

114 When Dr Mohan eventually gave evidence, he explained that radiologists use anatomical structures to classify the location of a disc prolapse. [note: 29] From a radiologist's point of view, the word "central" did not just refer to the mid-line. It was a reference to a zone which included part of the disc on either side of the mid-line. [note: 30] Dr Mohan's explanation was not challenged by Andrew. Therefore, Dr Mohan's use of the word "central" was not necessarily inconsistent with Dr Yue's opinion that the relevant disc prolapse was predominantly left because, by that description, Dr Yue meant more to the left of the mid-line rather than at the mid-line. In any event, Dr Mohan accepted in his oral testimony that it was more left than mid-line. [note: 31]

115 Unfortunately, the evidence of Andrew's medical experts on the location of the relevant disc prolapse was confusing and unreliable. For example, para 4 of Dr Chang's third report had referred to and relied on the Gleneagles report about a central and right paracentral disc prolapse "still" impinging or compressing on the spinal cord. This gave the impression that the relevant disc prolapse was originally right and paracentral right. Yet, Fig 3 of his third report (which was also at p 4) referred to an SGH MRI scan image and described the disc protrusion as mainly left-sided (see [107(f)] above).

116 There was no explanation in the third report as to whether the original disc protrusion was mainly left sided or central and right paracentral or whether the latter was a new prolapse which did not exist at the time when the SGH MRI scan was done or an old one which was not relevant.

117 To add to the confusion, the last paragraph of p 1 of Dr Chang's third report said that the SGH MRI scan, "showed **acute T_{10}-T_{11} central disc prolapse causing cord compression**" with a reference to Figures 1, 2 and 3 in the report [emphasis in original]. However, as mentioned above, the words below Fig 3 described the disc protrusion as mainly left-sided. The description of a central disc protrusion was repeated in the first paragraph under "Opinion" in p 9 of Dr Chang's third report which

said that Andrew had experienced sudden onset of paraplegia due to "acute large central disc protrusion". The seventh paragraph of that section, also at p 9, said that if an anterior approach was used there would have been less chance of incomplete decompression leaving behind significant central and right paracentral disc protrusion and graft extrusion. Therefore, Dr Chang had used various descriptions without realising that they were not the same:

(a) central and right paracentral;

(b) mainly left-sided; and

(c) central.

118 It appears to me that Dr Chang had conflated all the descriptions because he was relying on different sources of information:

(a) the central and right paracentral description was the description used in the Gleneagles report. Perhaps that was also Dr Chang's perception of the Gleneagles MRI scan. By then the left disc prolapse had been removed by Dr Yue;

(b) the description of the prolapse as being left-sided was perhaps from his own subsequent observation of the SGH MRI scan; and

(c) the description of the prolapse as being central was probably because he relied on the SGH report by Dr Mohan.

119 The situation did not improve when Dr Chang gave his oral testimony. Initially, he said that the relevant disc prolapse before the first surgery was at the left. He then said it was at the centre and left, and then he said it was predominantly in the centre. [note: 32] Then he agreed with a suggestion that it was predominantly left-sided. [note: 33]

120 Dr Chang's opinion was that the posterior approach could be used if the disc prolapse was at the left but that approach could not and did not reach the prolapse at the centre, *ie*, the midline. [note: 34]

121 As for a right paracentral disc prolapse, Dr Chang said that this might have arisen after the first surgery because the SGH MRI scan did not show any herniation to the right, *ie*, right of the midline. Therefore, he did not expect Dr Yue to remove something that was not there.

122 Unfortunately for Dr Chang, he was completely off the mark when he said that the SGH MRI scan did not show any prolapse on the right side. Dr Yue and various other experts, including Dr Lee and Dr Teh, were of the view that there was another prolapse between the midline and the right and this could be seen from the SGH MRI scan. Dr Yue did not seek to remove this prolapse because he was of the view that it was darker in colour than the one predominantly on the left. This suggested that the one on the right was a chronic one and was not the cause of Andrew's sudden paraplegia.

123 As for Dr Lee, he agreed that the relevant disc prolapse was more lateral towards the left but he said that there was a central and a right component as well. [note: 35] Yet, neither his AEIC nor Dr Chang's AEIC had mentioned a failure or omission by Dr Yue to remove that component.

124 Furthermore, in oral testimony, Dr Lee's evidence on the right component vacillated. At one

time he said there was mild compression on the right side. Then he claimed that he did not say that it was clinically insignificant and in his opinion it was significantly compressing the spinal cord. [note: 36] The next day, he said it was a bulge and not a herniated disc. The difference was that in herniation, the disc "actually come[s] all the way out". [note: 37] The right component was not significantly pressing on the spinal cord. When the court asked him whether he was saying that Dr Yue should have removed the right component, he said he had to think about this first. Eventually, he said he did not think Dr Yue ought to have removed the right component in the first operation and he also agreed that it did not cause any symptoms to Andrew before the first surgery. [note: 38]

125 Therefore, references to a right component were a red herring. They arose because the Gleneagles report from Dr Lin referred to a central and right paracentral disc protrusion, but Dr Lin did not have the benefit of comparing the SGH MRI scan with the Gleneagles MRI scan. Neither did Dr Chang nor Dr Lee at the material time. They did not even ask for the SGH MRI scan or report to compare with the Gleneagles one before the second surgery was done. To be fair to Dr Lin, his report did not explicitly say that the central and right paracentral disc protrusion was compressing the spinal cord. His report was that there was such a protrusion "noted with moderate spinal canal stenosis", which means a narrowing of the canal because of the protrusion. Dr Lin explained in oral testimony that he did not think it was for him to say whether the spinal cord was in fact compressed. Apparently, Dr Chang and Dr Lee had taken the words in his report to mean that the central and right paracentral disc protrusion was in fact compressing the spinal cord at the material time although they would have considered the images from the Gleneagles MRI scan too. Furthermore, coming back to the pleadings, it will be remembered that the particulars of negligence in para 15(a) SOC stated that Andrew had a central disc prolapse and not a central and right paracentral disc prolapse. This in itself would already have precluded him from pursuing any allegation about a right protrusion.

The appropriateness of the posterior approach

126 In Dr Teh's oral testimony, he said he would decompress all the disc protrusions totally even though the most important protrusion was the central one. [note: 39]

127 To recapitulate, Dr Chang was of the view that the posterior approach was not appropriate when the protrusion was central. He maintained this view even though he accepted that the disc protrusion was predominantly left.

128 Dr Chang's evidence was undermined by Dr Lee, who was another of Andrew's witnesses. It will be recalled that Dr Lee was the lead surgeon in the second surgery. Dr Lee's categorical view was that both the posterior and the anterior approaches were acceptable. To him, the question was whether Dr Yue had in fact decompressed the cord. In his view, Dr Yue had not done so.

129 However, Andrew pursued the allegation about the wrong approach during the trial. His third medical expert, Dr Teh, was of the view that because the protrusion was central, the posterior approach was unsuitable because it would not allow a surgeon to reach the centre. A surgeon using such an approach would be going in blind.

130 As can be seen, Dr Teh's opinion was premised on the relevant disc protrusion being central and not predominantly left. He based his opinion on the SGH report by Dr Mohan. [note: 40] At the time when he provided his report dated 26 January 2012, he had not seen the SGH or the Gleneagles MRI scans. He had only:

(a) the SGH report;

(b) the Gleneagles report;

(c) Dr Chang's first report (dated 18 May 2007);

(d) a report by Dr Yue dated 19 March 2008; and

(e) a letter from Rodyk & Davidson to Acies Law Corporation dated 18 December 2009 with annexures (which did not include any MRI scan).

131 As I have mentioned, Dr Mohan later explained that the word "central" in his report did not mean the disc protrusion was at the midline only or predominantly midline. He agreed that from the SGH MRI scan, the disc protrusion was predominantly left.

132 Notwithstanding the MRI evidence, Dr Teh maintained that the main problem was a central disc protrusion. He rationalised his opinion by stressing that too much emphasis was being placed on the MRI evidence. Such evidence had to be correlated with Andrew's symptoms. He emphasized that Andrew was paralysed in both legs. This pointed to a central disc protrusion. [note: 41] Even though he accepted that the paralysis of both limbs may also have been due to vascular reasons, *ie*, because the blood to the cord had been cut off and not just due to the mechanical compression of the cord, he maintained that the paraplegia indicated that a central disc protrusion was the main problem.

133 Following from this opinion, he was of the view that the posterior approach was inadequate. He referred to an article by Richard Bransford, M D *et al, Early experience treating thoracic disc herniations using a modified transfacet pedicle-sparing decompression and fusion* (J Neurosurg Spine, Vol 12, February 2010) at pp 221–231, which said that the anterior approach was the gold standard. He even went on to say that a surgeon who did not use the gold standard would be acting below the standard of care and would be negligent. [note: 42]

134 However, unfortunately for Dr Teh, that article did not support such a proposition. He agreed that it did not say that a posterior approach would be below the standard of care. [note: 43] The passage which he was citing from said at p 221, "Various posterior surgical approaches have been developed to treat [thoracic disc herniations], but the gold standard remains transthoracic decompression." In my view, this suggested that while the anterior approach was considered in that article to be the best approach, it did not suggest that a posterior approach was inadequate.

135 Furthermore, there was in fact another article by Bransford and some of the same co-authors as the article which Dr Teh had relied on. [note: 44] That other article was also published in the same year, *ie*, 2010, but in a different journal. That article compared anterior to posterior approaches in the management of thoracic disc herniations. That article stated that both techniques allowed for adequate decompression and equal improvement neurologically.

136 In response, Dr Teh suggested that that article extended to chronic cases whereas Andrew's case was an acute disc prolapse. However, Dr Teh had not previously mentioned the acute presentation in Andrew's case as a factor for saying that the posterior approach was inadequate.

137 Furthermore, Dr Teh faced another difficulty. He had also referred to an article by Paul M Arnold and Mark Bryniarski, *Emergency Thoracic Diskectomy for the acute onset of paraplegia: Report of two cases* (The Journal of Spinal Cord Medicine, Vol 27, No 5, 2004). However, as it turned out, that article did not support his opinion that paraplegia of both limbs suggested that only the anterior approach would do. Indeed, it appeared to contradict his opinion. I need not elaborate since

the appropriateness of the posterior approach is no longer in issue.

138 I will add, however, that Dr Teh appeared surprised when I mentioned Dr Lee's opinion to him that both approaches were acceptable. He was apparently unaware of Dr Lee's opinion. Nevertheless, Dr Teh disagreed with Dr Lee's opinion.

139 In my view, there were two disc protrusions. One predominantly on the left and one with a central and paracentral right component. The latter was chronic and was not the cause of Andrew's paraplegia. The cause of his paraplegia was the protrusion predominantly on the left. There was no third discrete component being a central component. The so-called central component in respect of the disc protrusion which was predominantly on the left was a small part of that protrusion. It did not mean that the posterior approach was inappropriate. That is why Dr Lee himself did not question that approach. As mentioned above, Andrew eventually caved in and accepted that the posterior approach was appropriate.

The adequacy of the decompression

140 I come now to the next issue, that is, whether Dr Yue had adequately decompressed the prolapsed disc.

141 Dr Lee had acknowledged that Dr Yue had done a good job in removing the prolapsed disc which was predominantly left. [note: 45] As I have stated above at [139], the central component was a small component of that prolapsed disc. The right and paracentral right disc protrusion was not the cause of Andrew's paraplegia.

142 However, Andrew argued that after the first surgery, part of the prolapsed disc was still compressing the spinal cord. Andrew relied not only on the evidence of his medical experts but also on the evidence of Dr Hee Hwan Tak ("Dr Hee"), who was an independent expert witness for Dr Yue. Andrew submitted that notwithstanding the sub-optimal quality of the Gleneagles MRI scan, Dr Hee was able to and did give evidence that something was indenting on the spinal cord. [note: 46]

143 I have considered Dr Hee's evidence. Initially, he said that there was residual disc indenting on the spinal cord but not significantly compressing the spinal cord. [note: 47] He then said that there "may be" a little bit of residual disc indenting the spinal cord. [note: 48] In his view, it was difficult to tell from the Gleneagles MRI scan because of the post-operative changes due to artefacts, swelling and haematoma. Hence, he said that there "may be" a little bit of disc left behind. [note: 49] Therefore, his evidence was not as unequivocal as Andrew's reply submission was suggesting. Dr Hee was not certain that there was some residual disc left behind or that it was indenting on the spinal cord. Even if it was, his view was that there was no significant spinal cord compression.

144 I should also mention the evidence of Dr Pang Boon Chuan ("Dr Pang") on this point. Dr Pang was an expert witness for SGHPL. He thought he could see a bit of disc prolapse at the midline but this was tiny or minute. [note: 50] In his view, it was very unlikely or not possible to get everything out. [note: 51] He added that "contact does not automatically, … , implies compression". [note: 52] He clarified that "we need to make a difference between compression and just having something there. It's not the same thing. I get the feeling that everyone thinks having a bit of disc there is all that is required for compression." [note: 53]

145 In his view, there was no significant compression of the spinal cord. [note: 54] There was great

reduction in the force transmitted through the disc. This was because any force would be transmitted to the pedicle screws and rods which Dr Yue had inserted (see [11] above). Furthermore, the spinal canal had been enlarged because the bony structures behind the cord had been removed. [note: 55]

146 In re-examination, Dr Pang added that the residual disc at midline was not touching the spinal cord. [note: 56]

147 Dr Peh Chin Guan Wilfred ("Dr Peh"), an independent radiologist who was a witness for Dr Yue, was of the view that the central component, which was slightly to the right, was an osteophyte/bony spur with a small disc component. This was a chronic component. [note: 57]

148 Dr Mohan, the radiologist from SGH, was of the view that there was no residual disc left of midline and there was calcified disc material or an osteophyte/bone spur right of midline based on the CT scan from Gleneagles. [note: 58]

149 Dr Wong was of the view that the Gleneagles MRI scan did not show any residual disc material. [note: 59]

150 Going back to Dr Yue himself, he had given evidence that before he closed up during the first surgery, he did a visual inspection. He saw that the spinal cord was free and pulsating in tandem with Andrew's heartbeat (see [13] above). This suggested that there was no disc touching the cord. Dr Yue was generally a credible witness on what he had done during the surgery and I saw no reason to disbelieve him on this point.

151 The Defendants emphasized that Dr Yue had not only removed the disc prolapse compressing the spinal cord from the front, he had also removed the bony structures behind the spinal cord. This meant that the spinal cord would have space to move backwards if there was still residual disc touching it from the front. Therefore, there would not be significant pressure on the spinal cord.

152 Furthermore, as mentioned above, Dr Pang was of the view that with the screws and rods inserted by Dr Yue into the vertebrae (see [11] above), any force coming through the vertebra would be reduced with the consequent reduction of force being transmitted through the disc.

153 However, Andrew submitted that there is no objective evidence to establish that any contact with the spinal cord was not significant. Therefore, the significance of that contact could only be correlated with a patient's symptoms. Andrew's point was that as his paralysis continued after the first surgery and the Gleneagles MRI scan showed disc material protruding into the spinal canal with the spinal cord still deformed, the logical conclusion was that the cord was still significantly compressed. [note: 60]

154 The burden of proof is on Andrew to establish that the relevant disc was still touching the spinal cord and, if so, that the contact was significant enough to compress the spinal cord and to impede his recovery. It is not for the Defendants to establish that there was no contact or no compression.

155 Andrew's submission about the deformity of the spinal cord made a number of assumptions:

(a) that if disc material was protruding into the spinal canal, this meant that it was touching the spinal cord;

(b) as the spinal cord was still deformed, this in itself suggested that there was contact with residual disc material after the first surgery;

(c) the deformation meant that there was compression significant enough to impede his recovery.

156 It is important to remember that if there was disc material protruding into the spinal canal, this did not necessarily mean that it was touching the spinal cord, let alone compressing the cord.

157 It appears to be common ground that the spinal cord appeared squashed, to use layman's language, when one views the images from the Gleneagles MRI scan, which was taken after the first surgery. This was the deformity which Andrew's submission was referring to. However, Andrew's submission on the deformity had overlooked one important fact. The spinal cord was already squashed before the first surgery was done. After the first surgery was done, the shape of the spinal cord had in fact improved. Furthermore, even if the first surgery had achieved adequate decompression, it would take time before the spinal cord regained its shape. The shape of the spinal cord would not just bounce back like a rubber ball as Dr Lee agreed. [note: 61]

158 As Dr Mohan said, the spinal cord's return to normal shape will probably take a long time. He had seen many cases where patients make a full recovery but yet the spinal cord remains the same narrow size prior to surgery. [note: 62]

159 Therefore, the deformation did not necessarily lead to the conclusion that there was residual disc prolapse touching or compressing the spinal cord.

160 The fact that Andrew's condition had not improved more over the years is equivocal. For example, the fact that his condition has improved, even though not as much as he would like, could also suggest that Dr Yue did achieve adequate decompression.

161 Furthermore, Dr Lee did not say that he in fact noticed any disc touching or compressing the spinal cord when he performed the second surgery. Indeed, it is telling that in his oral evidence, Dr Lee came up with a different explanation for the allegation that there was continued compression of Andrew's spinal cord after the first surgery.

The allegation of the negligently-inserted bone fragment

162 Dr Lee said that a bone fragment was the main cause of compression of Andrew's spinal cord. The fragment was from bone graft which Dr Yue had inserted as explained in the opening statement for Dr Yue (see [11] above). In Dr Lee's opinion, it was on the left side of the spinal cord. [note: 63] The other causes of compression were a middle or central bulge and a right bulge but the main cause was the fragment from the bone graft. [note: 64] The bulges in the middle or centre and the right one were from the disc and not from the bone graft. Although Dr Lee said that the central and right protrusions were bulges and not prolapses as such, [note: 65] he was not referring to some protrusions other than the central and right paracentral disc protrusions which I have addressed at length already.

163 Dr Lee's allegation about the fragment from the bone graft compressing the spinal cord met with many difficulties.

164 First, the SOC and the reply do not mention a fragment from the bone graft as compressing the

spinal cord. For example:

(a) Paragraph 6 of the SOC referred to an "acute central *disc* protrusion at the T10/11 level causing severe canal stenosis with spinal cord compression"[emphasis added].

(b) Paragraph 8 of the SOC stated that the Gleneagles MRI and CT scan showed a central and right paracentral T10/11 disc protrusion with moderate spinal canal stenosis. Although it also stated that bone graft was found, it is important to note that the allegation then was that bone graft was found *within* the T10/T11 disc and not that bone graft was found within the spinal cord as Dr Lee had orally testified. The bone graft in the disc may be in the vertebral column and is not necessarily protruding into the spinal cord. More importantly, the last sentence of para 8 of the SOC stated unequivocally, "The cause of the paraplegia was due to the disc protrusion still compressing the spinal cord."

(c) Paragraph 10 of the SOC stated that "Dr Yue did not completely decompress the prolapsed disc that was impinging on the spinal cord. Hence the Plaintiff remains a paraplegic despite the second surgery done at Gleneagles Hospital."

(d) Paragraph 15(a) of the SOC alleged that the transfacetal approach, *ie*, the posterior approach "will not give Dr Yue the visual and angle that he needs to completely decompress the front aspect of the cord. As a result the disc material was not completely removed and the spinal cord compression remained after surgery."

(e) Paragraph 4 of Andrew's reply stated that Dr Yue had failed to achieve adequate decompression of the prolapsed disc.

165 As can be seen, the allegations in the SOC and the reply pleading did not even allege that fragment from a bone graft was compressing the spinal cord. That is why I have not mentioned it as one of the issues arising from the pleadings. Notwithstanding my reminders to Andrew's counsel about the state of Andrew's pleadings, no application was made to amend his pleadings. Accordingly, Andrew is not entitled to assert, through Dr Lee, that a fragment from a bone graft was the main cause of compression before the second surgery.

166 However, for completeness, I will also deal with the evidence about the bone fragment being the main cause of compression.

167 Dr Chang had given three reports as elaborated above.

168 His first report dated 18 May 2007 stated that the Gleneagles MRI and CT scans showed a central and right paracentral disc protrusion still impinging on the spinal cord. He did not say that a CT scan also showed bone compressing the spinal cord, which was a suggestion he made only in his oral testimony which I will come to later.

169 While it is true that his first report did say that "[t]he T10-T11 disc and previously inserted bone graft were excised", he did not say that the bone graft was compressing the spinal cord. Instead, the report went on to say, "The prolapsed disc impinging on the cord was removed meticulously under microscope."

170 His second report dated 4 November 2008 was to the same effect. While he mentioned at p 2 that bone graft was excised, he again did not say that the bone graft was compressing the spinal cord. At p 3, he repeated that Andrew's spinal cord was still compressed by the T10/T11 disc

prolapse, not the bone graft.

171 Dr Chang's third report dated 23 February 2011 did say at p 9 that bone graft was found within the "protruding" T10/T11 disc but that sentence did not say that it was the bone graft that was compressing the spinal cord, which was what Dr Lee was saying.

172 Furthermore, while the penultimate paragraph of p 9 of the third report mentioned that graft extrusion had been left behind, this was in the context of a criticism about the posterior approach which Dr Yue had used. The criticism was that Dr Yue's approach did not enable him to see the front of the spinal cord to remove the offending disc. I find the reference to Dr Yue's approach which resulted in his leaving behind graft extrusion confusing. It was not disputed that Dr Yue was able to insert bone graft into the disc within the vertebral column. If he had inadvertently left some bone graft in the spinal canal as well, this was not because of the approach he had used.

173 Dr Chang's third report also contained images from MRI and CT scans. Figure 5 was an image taken from a Gleneagles CT scan done before the second surgery. The description below the image said, "Note residual prolapsed disc and calcified material at T10-T11". Figure 5 showed a whitish material apparently protruding into the spinal canal. However, it was common ground among the medical experts, including Dr Chang himself, that CT scans will show calcified or bony material and not disc material. The whitish material therefore was not disc material and part of the description was wrong. I mention this because it was yet another illustration of the lack of care by Dr Chang in his reports.

174 In Dr Chang's AEIC signed on 30 July 2013, he provided answers A1 to A6 to various questions. In A2, he mentioned that bone graft was used to fuse T10 to T11. He said, "This bone graft was noted to protrude 30% into the left side of the spinal cord, which also certainly did not help the situation".

175 In A4, Dr Chang said that Dr Lee and he performed the second surgery and they noted "that Dr Yue did not clear all the prolapsed disc material. In addition, there was some bone graft at the compressed site which likely aggravated the cord compression."

176 His AEIC was therefore saying that after the first surgery, the disc protrusion was still the main cause of spinal cord compression, not the bone graft.

177 Dr Lee's report dated 11 September 2008 said that the Gleneagles MRI scan showed a central and right paracentral disc protrusion with compression of the spinal cord.

178 Dr Lee's AEIC signed on 13 August 2013 also provided answers, *ie*, A1 to A4, to various questions. In A3, he said, "there was significant residual disc compressing the spinal cord. Additionally, there was protrusion of some bone graft at the compressed site." Yet he did not say that the protruded bone graft was compressing the spinal cord. Indeed in A3, he went on to say that Dr Yue did not achieve the goal of complete decompression because "the disc was still compressing the spinal cord when we performed the 2nd surgery."

179 Significantly, Andrew's opening statement dated 24 March 2014 still did not mention a bone fragment compressing the spinal cord. Instead, at para 2, the complaint was that Dr Yue did not completely decompress the prolapsed disc. At para 27, a similar allegation was made that a significant amount of disc material was still impinging on the spinal cord.

180 Such was the state of play as at 24 March 2014. I come now to the oral testimony of Dr

Chang. In examination-in-chief on 28 March 2014, he said that the main reason why Andrew was still paraplegic was the fact that the spinal canal had not been cleared of the disc and there was still compression of the spinal cord aggravated by further calcified bone material. [note: 66] He said bone graft was removed. It was mixed together with the disc. [note: 67] This was different from Dr Lee's oral testimony when Dr Lee said the bone fragment he removed was segregated. In any event, when the court asked Dr Chang whether he was saying that Dr Yue was negligent in how he had inserted the bone graft into the disc, Dr Chang said he was not saying that. [note: 68] By that he was suggesting that he did not want to comment as to whether Dr Yue had acted below the standard of care. But subsequently, Dr Chang changed his mind and he said that Dr Yue did not exercise the level of care expected of a surgeon of his calibre. [note: 69] Even then, as Dr Chang proceeded to list out Dr Yue's lapses, he did not identify the careless insertion of bone graft as one of the lapses.

181 I should mention that by the time Dr Chang was giving his oral testimony, Andrew had given discovery of a video recording of the second surgery to the Defendants. This discovery was given late but the authenticity of the video recording was not disputed.

182 Dr Lee signed a supplementary AEIC on 2 May 2014 with the aid of the video recording. He said he removed a (bone) fragment from within the spinal canal at "approximately 101:41". This was a reference to the time of the recording. The time he intended to refer to, as clarified in his oral testimony, was 1 hour 42 minutes and 30 seconds. [note: 70] His supplementary AEIC still did not explicitly assert that the fragment was compressing the spinal cord even at this point.

183 In his oral testimony, Dr Lee said he had already reached the spinal canal much earlier, at about 29 minutes into the video recording. He was certain of this as the curette he was using was disappearing into some sort of cavity. [note: 71]

184 However, according to Dr Chang's evidence, they did not reach the spinal canal until much later, nearer the end of the video recording.

185 In any event, as SGHPL submitted, although Dr Lee spent much time elaborating orally on the video evidence, Andrew's closing and reply submissions did not even rely on the video evidence. This was telling, especially since, as SGHPL put it, the video evidence was supposed to be the star attraction at the trial. Indeed, although Dr Lee said that the fragment was the main cause of compression (see [162] above), Andrew's closing submissions at para 43(c) states that the fragment had "contributed" to the compression of the cord. I am of the view that Andrew has downplayed the significance of the fragment, contrary to Dr Lee's oral testimony, because Andrew is aware that the fragment is not pleaded as a cause of compression, a point on which I had raised with his counsel.

186 Furthermore, if the fragment was removed from within the spinal canal and it was the main cause or one of the causes for the compression of the spinal cord, it was strange that the operating notes for the second surgery did not mention this fact. [note: 72] Indeed, Dr Lee even went so far as to say that he remembered that there was excitement when he remarked during the second surgery that there was a bone fragment. Yet he could not adequately explain the omission in the operating notes to mention this fact. All he could say was that Dr Chang wrote the notes and must have forgotten about this fact. [note: 73]

187 However, as already mentioned above, Dr Lee's own report dated 11 September 2008 also failed to mention the bone fragment as being a cause, let alone the main cause, of compression.

188 The medical experts for the Defendants could not tell from the video recording whether Dr Lee had removed a bone fragment and, if so, whether this was from within the spinal canal itself or from within that part of the disc that was not protruding into the spinal canal when Dr Lee was making his way to what he believed to be a disc prolapse in the spinal canal but before reaching it. One of their difficulties was that Dr Lee did not remove a rib head at the T11 level which would have marked out the boundary of the spinal canal. [note: 74] That would have aided them to tell whether he had reached the spinal canal at the time which he said he did.

189 It is clear to me that if indeed the bone fragment was the main cause or a cause of the compression, this would not have escaped the attention of Dr Chang or Dr Lee. The fact that it was not mentioned in the pleadings or in Dr Chang's three reports or Dr Lee's report as the main cause or a cause spoke for itself. The haphazard manner in which such a suggestion was being made did not aid Andrew's case.

190 For completeness, I would mention that Dr Pang did explain that Dr Yue would have packed mashed-up chips of bone graft into a cavity in the disc itself and it would be inevitable if a little bit had slipped into the spinal canal. He said, "It's just like pouring sands and a few grains, leaving a trail behind. It doesn't really mean anything". [note: 75] However, this is different from what Dr Lee was suggesting. Dr Lee was suggesting that Dr Yue had negligently left behind a piece of bone fragment in the spinal canal.

191 Accordingly, I conclude that Andrew has not established that there was residual disc prolapse touching the cord or that it was compressing the cord. He has also not established that a bone fragment inserted by Dr Yue compressed the spinal cord even if it were open to him to pursue this allegation.

Whether there was causation between the negligence, if any, and the loss

192 In the circumstances, it is not necessary to consider whether continued spinal cord compression in fact impeded Andrew's recovery.

Other findings and observations

Dr Yue's explanation on the prognosis

193 I now come back to one point which I have not yet elaborated upon.

194 As mentioned above, Dr Yue said that when he met Andrew first at the HDU ward on 20 April 2007, he did explain that Andrew's prognosis was poor. When he met Andrew's family on 24 April 2007, he said that he informed them that the outcome after surgery was not unexpected given the poor prognosis.

195 Dr Yue's closing submissions relied on some notes made on 7 May 2007 by one Dr Arthur Ng, who was apparently a medical officer at the Department of Rehabilitative Medicine. Dr Arthur Ng's notes recorded that Dr Yue had informed Dr Arthur Ng that Dr Yue had spoken to the patient (Andrew) even before surgery regarding the "not so good prognosis". However, Dr Arthur Ng was not called to give evidence about his notes, which would be hearsay evidence in any event. Furthermore, Dr Arthur Ng's conversation with Dr Yue was on 7 May 2007, which is many days after the 20 April 2007 discussion between Dr Yue and Andrew and the 24 April 2007 family meeting.

196 On the other hand, Edwin had made contemporaneous notes of the 24 April 2007 meeting

which he then summarised in an email, also dated 24 April 2007, which he sent to various persons including some of his siblings. The contemporaneous notes were not available at trial but his email was produced. [note: 76] There was no mention in that email that Dr Yue had mentioned that Andrew's prognosis was poor, although that email did contain the following information from Dr Yue:

> The nerves in the spinal cord will repair itself, very slowly (maybe 1mm per day), and we can only hope that sensation to the limbs will slowly return, until it reaches the toes.
>
> …
>
> [Dr Yue] has one patient who is still in crutches after sustaining injury to the T10. [Dr Yue] cannot say that this is to be expected as there are just too few cases involving injury to the T10.
>
> Andrew could do much better than the patient [Dr Yue] mentioned.

197 I am of the view that if Dr Yue had explicitly stated that Andrew's prognosis was poor, Edwin would have stated this in his notes and then in his email. As it was not mentioned in the email, Dr Yue's recollection appeared inaccurate as I place more weight on Edwin's email than on Dr Yue's memory.

198 As for the earlier discussion on 20 April 2007 with Andrew (whether in the absence or presence of Andrew's wife), the burden is also on Dr Yue to establish that he did specifically inform Andrew that his prognosis was poor. As can be seen from the evidence about the family meeting, Dr Yue's memory on this point regarding the 20 April 2007 meeting might also not be accurate.

199 Therefore, I find that Dr Yue has failed to establish that he did mention Andrew's poor prognosis on 20 or 24 April 2007 to Andrew or to his family respectively.

200 In any event, it is obvious that the omission made no difference to Andrew's consent to surgery as elaborated above at [51].

201 The point about Dr Yue's omission to inform Andrew or his family about the poor prognosis has no direct bearing on the issues before me. I have elaborated on it because it may be that Dr Yue was overly encouraging in his discussions. As mentioned above at [196], he had disclosed that another patient of his had improved to being in crutches after sustaining injury at the T10 level. While he had cautioned that he could not say that this was to be expected for Andrew, he did also say that Andrew could do much better than that patient. Yet, in cross-examination, Dr Yue pointed out that that other patient's pre-surgery status was not ASIA A. [note: 77] Therefore, to say that Andrew could do better than that patient may have given the family higher hope, although this did not mean that they should have expected immediate and significant improvement in the few days or weeks after the first surgery.

202 I add that Andrew's argument that Dr Yue had said that he was expected to do much better than that patient is not accurate. [note: 78] According to Edwin's email, Dr Yue said that Andrew "could" do much better and this was a reference to the eventual future after the first surgery and not the immediate future since Dr Yue had also cautioned that any recovery would be very slow.

203 There is a fine distinction between being overly encouraging and presenting the right picture without being discouraging. While it may be natural for some medical practitioners to offer more hope rather than less hope or none, it is useful for them to bear in mind the importance of getting the

balance right, difficult though it may be.

204 Andrew appears convinced that his condition would have improved if not for the negligence of Dr Yue. Ironically, the converse may be true. It may well be that if it were not for Dr Yue's surgery, Andrew would not even have improved to his present condition. Andrew appears to have attributed that improvement to the second surgery (and his exercises). However, it may be due to the first surgery instead. After all, Dr Chang himself doubted that the second surgery would help much, if at all, given the lapse of time between the first surgery (if it were poorly executed) and the second surgery. If the first surgery was indeed competently executed, then Andrew would owe a debt of gratitude to Dr Yue instead. I add that it is undisputed that although initially there was no available bed at the HDU on the day in question, Dr Yue personally intervened to ask for a bed to be made available for Andrew. Dr Yue also ensured that the first surgery was performed promptly.

Summary of findings

205 Ultimately the burden is on Andrew to establish his case and not on the Defendants to establish theirs. I now summarise my findings. It seems to me that Andrew and his medical experts had failed to appreciate that there was an important difference between the SGH MRI scan and the Gleneagles MRI scan.

206 The SGH MRI scan showed two disc protrusions. One which was predominantly left sided and one which was central and paracentral right.

207 The Gleneagles MRI scan only showed the latter because the former had been removed by Dr Yue. When Dr Chang and Dr Lee looked at the images from the Gleneagles MRI scan and considered Dr Lin's report, they did not have the benefit of comparing them with the images from the SGH MRI scan.

208 After the images from the SGH MRI scan and the SGH MRI report by Dr Mohan were made available to Andrew, his medical experts appeared to have placed more reliance on Dr Mohan's report than in considering the SGH MRI scan images. As Dr Mohan's report referred to an acute central disc protrusion, this appeared to fit in with Dr Lin's report although Dr Mohan's report did not refer to a paracentral right disc protrusion.

209 Furthermore, at some point in time, Andrew would have received Dr Yue's own report dated 19 March 2008, which referred to the disc protrusion which originally compressed the cord as being predominantly left. It appears that this report may have been dismissed by Andrew's medical experts as being self-serving. Had this report been considered more carefully with a further consideration of the SGH MRI scan images, his medical experts ought to have realised that actually there were two different disc protrusions, one of which was chronic as elaborated above.

210 It also appears that although various expert reports were obtained by the Defendants which supported Dr Yue's opinion that the disc protrusion which caused the compression before the first surgery was predominantly left-sided, Andrew's medical experts decided to stick to their initial opinion.

211 It was only during cross-examination that they came to accept reluctantly that there was a predominantly left disc protrusion which was the cause of Andrew's paraplegia before the first surgery.

212 Even then, a suggestion was still being pursued for Andrew that there was a central and a paracentral right disc protrusion which continued to compress the cord but the suggestion about a paracentral right disc protrusion was eventually given up.

213 The main argument then was that there was a central disc protrusion which had caused and continued to cause cord compression. However, this argument shifted to a bone fragment being the main cause when Dr Lee gave his evidence. The bone fragment argument then shifted back to the central disc protrusion being the main cause, with the bone fragment being only a contributory cause.

214 The many shifts in Andrew's case have damaged his claim beyond repair.

215 I find that Andrew has failed to discharge his burden of proof and I dismiss his claim against the Defendants. I will hear the parties on costs.

Observations on the conduct of litigation

216 I wish to make the following observations:

(a) As mentioned above, Andrew had withdrawn some allegations of negligence by the first day of trial. There was no factual evidence to support these allegations. Andrew's counsel intimated that the allegations were made based on advice from a medical expert but it is for counsel to check whether there is any evidence to support the advice. Bare advice is insufficient. It appears that these allegations were included in the belief that it is easier to withdraw allegations later rather than to apply for leave to make additional allegations later. While that may be true, the responsible approach is to make an allegation only if there is some evidentiary basis to do so.

(b) This litigation has highlighted the importance of adequately preparing one's case. The many shifts in Andrew's case did not reflect well on him and especially his professional advisers.

(c) Litigation can be costly and is often stressful, if not traumatic, for both the plaintiff and the defendant. Professionals should take more care to discharge their duties responsibly. Experts should take more care to ensure that they participate in the litigation not just to do a favour for one party or to earn a fee but because they genuinely believe in the opinions they express. The opinions must be supported by adequate time being spent to consider the allegations of each side and if necessary, to investigate further and to do research. They should put themselves in the shoes of the other side and give due regard to the opinions of experts from the opposing side. They must be willing to change their initial opinion if there is a valid reason to do so. One must not confuse intransigence with genuine conviction. Furthermore, a litigant should not blindly accept the opinion of his expert if he is in a position to assess the merit of that opinion.

(d) Dr Lee was one of Andrew's medical experts and the lead surgeon in the second surgery. Since his AEIC had accepted that both the posterior and anterior approaches were acceptable for Andrew's condition, it was surprising that Andrew still persisted in the trial with his allegation that the posterior approach was not suitable, apparently without clarifying the point with Dr Lee. As already mentioned, eventually Andrew conceded the point at the submissions stage.

(e) When Andrew filed his claim, the claim was made against both Dr Yue and SGHPL. As SGHPL did not deny that it was vicariously liable for any negligence of Dr Yue and there were additional allegations against SGHPL, it would have sufficed for Andrew to continue with his claim against SGHPL only. Yet he continued his claim against both Defendants even after he had stopped pursuing the additional allegations against SGHPL. I do not know why he continued with his claim against both Dr Yue and SGHPL, when a claim against either one should have sufficed. I add that Dr Yue is covered by insurance and this is known to Andrew. As it is, the costs have been increased by the participation of both Defendants as parties. In addition, Andrew had to

face two sets of counsel and medical experts instead of one.

217 I record my appreciation for the assistance rendered by Dr Yu Chun Sing who is Senior Consultant, Department of Orthopaedic Surgery, at Tan Tock Seng Hospital. He was an assessor appointed by the court and gave as much of his time as he could.

[note: 1] Notes of Evidence ("NE") 21/5/2014 p 58 lines 22-31, NE 27/6/2014 p 48 line 10

[note: 2] Dr Yue's closing submissions at para 41

[note: 3] Andrew's opening statement at para 1(f)

[note: 4] SGHPL's submissions at para 27

[note: 5] NE 1/4/2014 p 52 lines 8 to 30

[note: 6] Andrew's closing submissions at para 66(a) and reply submissions at para 40

[note: 7] NE 27/3/2014 p 32 line 16 to p 33 line 27

[note: 8] Para 15(d) of the SOC

[note: 9] NE 4/4/2014 p 96 at line 24

[note: 10] NE 28/3/2014 p 43 and 10/4/2014 p 32

[note: 11] NE 27/6/2014 p 154

[note: 12] Dr Wong's AEIC at para 13

[note: 13] NE 22/5/2014 p 23

[note: 14] NE 28/3/2014 p 30

[note: 15] NE 28/3/2014 pp 34-35

[note: 16] NE 10/9/2014 p 75 lines 11-29

[note: 17] NE 4/4/2014 p 95

[note: 18] NE 4/4/2014 p 96

[note: 19] NE 27/6/2014 p 3

[note: 20] NE 27/6/2014 p 7 line 25

[note: 21] NE 27/6/2014 pp 15-20

[note: 22] NE 27/6/2014 p 21

[note: 23] NE 27/6/2014 p 154

[note: 24] NE 27/6/2014 p 25

[note: 25] NE 27/6/2014 p 26

[note: 26] Andrew's reply submissions at para 57

[note: 27] NE 10/4/2014 p 35, 11/4/2014 p 3, 21/5/2014 p 25 and p 39

[note: 28] See para 6(b) of Dr Yue's defence and paras 52 and 53 of his AEIC.

[note: 29] NE 20/11/2014 p 17 lines 10-11

[note: 30] NE 20/11/2014 p 21 lines 21-26

[note: 31] NE 20/11/2014 p 21 line 28 to p 22 line 8, p 23 lines 10-12

[note: 32] NE 4/4/2014 pp 70-71

[note: 33] NE 4/4/2014 p 74

[note: 34] NE 4/4/2014 pp 78-81

[note: 35] NE 21/5/2014 pp 60-61

[note: 36] NE 21/5/2014 pp 53-54

[note: 37] NE 22/5/2014 pp 19-21

[note: 38] NE 22/5/2014 p 22

[note: 39] NE 9/9/2014 pp 57-60

[note: 40] NE 8/9/2014 p 42

[note: 41] NE 8/9/2014 pp 37-49

[note: 42] NE 8/9/2014 pp 70-73 and Dr Teh's supplementary AEIC at exhibit "TPH-1"

[note: 43] NE 8/9/2014 p 76

[note: 44] See Dr Hee Hwan Tak's AEIC at p 77

[note: 45] NE 27/6/2014 p 61 lines 5 to 11

[note: 46] Andrew's reply submissions at para 27

[note: 47] NE 26/11/2014 p 22 lines 13-14

[note: 48] NE 26/11/2014 p 23 lines 26-27

[note: 49] NE 26/11/2014 p 25 lines 24-28, p 27 lines 1-7

[note: 50] NE 26/11/2014 p 102, line 11, p 105, line 20, p 120 line 20, p 121, line 9

[note: 51] NE 26/11/2014 p 121 lines 9-10

[note: 52] NE 26/11/2014 p 83 line 18

[note: 53] NE 26/11/2014 p 102 lines 8-12

[note: 54] NE 26/11/2014 p 84 line 3, p 102 lines 2-4, p 92 lines 29-32

[note: 55] NE 26/11/2014 pp 94 & 95, p 105 lines 12-24

[note: 56] NE 26/11/2014 p 161 line 1

[note: 57] NE 25/11/2014 p 51

[note: 58] NE 20/11/2014 pp 45 and 57

[note: 59] NE 27/11/2014 p 31 line 21 and p 32 line 5

[note: 60] Andrew's closing submissions at para 43(d) (e), (f) and (g)

[note: 61] NE 27/6/2014 p 68

[note: 62] NE 20/11/2014 p 64 line 32 and p 75 lines 12-20

[note: 63] NE 21/5/2014 pp 15, 21, 24, 25, 37 and 38

[note: 64] NE 21/5/2014 pp 53-54, 61, NE 22/5/2014 pp 12-13, 19 & 22, NE 27/6/2014 p 130

[note: 65] NE 21/5/2014 pp 54 and 56, 22/5/2014 pp 12-13, 19-22, 27/6/2014 p 130

[note: 66] NE 28/3/2014 p 10 and p 74 and 78

[note: 67] NE 28/3/2014 p 14

[note: 68] NE 11/4/2014 p 40

[note: 69] NE 11/4/2014 p 43

[note: 70] NE 22/5/2014 pp 3-5

[note: 71] NE 22/5/2014 p 68 line 20 and p 69

[note: 72] NE 27/6/2014 pp 142-144

[note: 73] NE 27/6/2014 pp 143-145

[note: 74] NE 4/4/2014 p 69

[note: 75] NE 26/11/2014 p 121 lines 12-16

[note: 76] Agreed Bundle 123 and 124

[note: 77] NE 20/11/2014 p 90 line 28

[note: 78] Andrew's reply submissions at para 55