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Case No: TLQ/15/0046

IN THE HIGH COURT OF JUSTICE
QUEEN'S BENCH DIVISION

Royal Courts of Justice
Strand, London, WC2A 2LL

Date: 04/05/2016

Before Mr Justice Soole

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Between :

SARA HOSSEINI **(a protected party, by her litigation friend Michelle O'Connor)**	**Claimant**
- and -	
CENTRAL MANCHESTER UNIVERSITY HOSPITALS NHS FOUNDATION TRUST	**Defendant**

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Jeremy Roussak (instructed by Irwin Mitchell) for the Claimant
Judith Rogerson (instructed by Hempsons) for the Defendant

Hearing dates: 11th-14th April 2016

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Approved Judgment

I direct that pursuant to CPR PD 39A para 6.1 no official shorthand note shall be taken of this Judgment and that copies of this version as handed down may be treated as authentic.

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Mr Justice Soole :

1. This is the trial on liability and quantum of the claim by the Claimant (Sara), now aged 23, of clinical negligence at Defendant's Royal Manchester Children's Hospital ("the Hospital") on 30 January 2006 when she was 12. Sara had a pre-existing condition of cerebral palsy and had developed a progressive curvature of the lumbar spine (neuromuscular scoliosis). A correctional operation was performed on her by Mr Bradley Williamson, Consultant Spinal Surgeon at the Hospital. The scoliosis was corrected but she sustained damage to her cauda equina with consequent and permanent lower paralysis. Damage to the spinal cord is a known risk of such surgery. Sara brings this action by her mother Michelle O'Connor as litigation friend.

2. The essential allegations of breach of duty are :

   (1) failure by the Hospital's clinical neurophysiologists to appreciate that the monitoring of the spinal cord during the operation was providing no useful information; or therefore so to notify Mr Williamson ('the monitoring claim')

   (2) failure by Mr Williamson to carry out or adequately consider a 'wake up test' as an alternative ('the wake-up test claim')

   (3) failure by Mr Williamson, in the absence of monitoring or a feasible wake up test, to abandon the operation ('the abandonment claim').

3. As to causation there is an issue as whether the damage to the cauda equina occurred during the operation or post-operatively ('timing of damage'); and whether this makes a difference to the issue of liability. There are various issues on quantum.

Background to the surgery

4. Sara was born on 29.3.1993. Quadriplegic cerebral palsy was diagnosed. In due course she developed the neuromuscular scoliosis. This gave her increased difficulty in sitting and impingement of the lower ribs on the pelvis, which in turn caused ulceration of the skin and pain and discomfort. Prior to this surgery Sara was dependent on a wheelchair for mobility but could stand with support in a standing frame. She had normal sensation and some movement of her legs. She was continent but not always reliably so and had to wear nappies. From about 2001 she was fed through a nasogastric tube with oral supplementation.

5. Sara was seen by orthopaedic specialists at the Hospital on a number of occasions from October 2002 in connection with the progressive problems associated with the scoliosis and to consider the possibility of corrective surgery. There are two main reasons for treating neuromuscular scoliosis associated with cerebral palsy. The first is potential loss of the ability to sit. In the worst case the patient will be permanently lying down. The second reason is the pain and skin problems which result from the impingement of the ribs and pelvis.

6. There is no dispute that this surgery is a major undertaking and that it involves significant risk. Cerebral palsy scoliosis is stiffer than other types of scoliosis and may require a lengthy procedure to correct. This involves two stages of spinal intervention,

anterior and posterior, which may be performed on two distinct occasions or sequentially. In this case the two stages were performed sequentially and took some 11 hours. In such long and complicated procedures there is a recognised risk of damage to the spinal cord and consequent paralysis. There is no allegation of failure to give appropriate warning of that risk.

Witnesses

7. In support of Sara's claim on liability I heard the evidence of her mother and father (Mr Hosseini) and the expert evidence of Professor Robert Dickson, Consultant Spinal Surgeon. On behalf of the Hospital I heard Mr Williamson, the clinical neurophysiologists (Miss Olga Saj and Miss Beverley Harris) and the expert evidence of Mr Timothy Morley, Consultant Spinal Surgeon. In addition I read the expert evidence on neurophysiology (Dr Choudhary; Dr Cowan), radiology/neuroradiology (Dr Rankine; Professor Sellar), neurology (Dr Fletcher) and paediatric neurology (Dr Gayatri/Vadlamani). On quantum, I have heard the rival expert evidence on Sara's care needs from Ms Wills and Ms Gowans.

8. Mr Williamson is a leading specialist in this field and a former President of the British Scoliosis Society. There was a substantial challenge to the reliability of his evidence and Counsel for Sara (Mr Jeremy Roussak) submitted that his account should be approached with caution. This was on the basis of inconsistency and inaccuracy in his various statements in this case and in another case concerning scoliosis surgery performed by him at the Hospital (Zoe Vickers; operation 8.5.06) and lack of support from contemporaneous medical notes and records. I have given this close consideration. It should be emphasised that there was no challenge to his integrity. Mr Williamson is also, unsurprisingly, dependent on his evidence of his practice and contemporaneous notes and records, rather than specific recollection.

9. There was similarly a challenge to the reliability of the evidence of Ms Saj and Ms Harris. Again they were substantially dependent for recollection on their usual practice, to some extent supplemented by contemporaneous notes.

10. The rival experts in spinal surgery (Dickson/Morley) have each had very great experience in this specialist field. Professor Dickson retired in 2007. Mr Morley retired from the Royal National Orthopaedic Hospital in 2007 and stopped operating on patients with deformity in 2012/3. It was suggested to Professor Dickson in cross-examination that he had trespassed into advocacy for Sara's case. I reject that suggestion. Both experts demonstrated complete integrity and compliance with their duty to the Court. My task has been to weigh up their opposing opinions on the liability issues in this case.

Protection of the spinal cord

11. This case is concerned with two particular means of protecting the spinal cord from damage in the course of the operation, namely spinal cord monitoring and a "wake-up test".

12. Spinal cord monitoring using "somatosensory evoked potentials" (SSEPs) was developed in the 1970s. Stimulating electrodes are applied to the legs and the responses detected on the scalp, thereby monitoring the sensory pathways through the

spinal cord. These SSEPs can then be monitored on a screen throughout surgery so that the surgeon can have the opportunity of correcting the problem or stopping the surgery. However adequate tracings of spinal cord function cannot be guaranteed with neuromuscular conditions such as cerebral palsy. Accordingly, rather than wait until the day of operation, a pre-operative test is carried out. If unsuccessful that does not mean that it might not be achievable in theatre.

13. The wake-up test was developed in the 1970s. As its names implies this is not a continuing procedure throughout the operation. At a critical moment during surgery (notably tightening up metalwork when the spinal cord might be stretched) the procedure is halted, the anaesthesia lightened and the patient is woken up and asked to "wiggle your toes". If the patient is seen to comply with the command the patient is put back to sleep and the procedure is completed.

Preoperative assessment

14. On 12.11.04 Sara was seen by Mr Williamson. His letter to her GP notes the difficulty in the operation and concludes: "I have spent some time today talking to Sara's parents about the pros and cons of a surgical approach. They have spoken to some other parents and are quite set that they wish her to have surgical treatment. Furthermore, they wish her to have sequential rather than staged surgery. I have explained to them that this is a very major undertaking and that it will make no difference at all to her hip pain. Nevertheless, they wish to proceed and I will put her name on the waiting list."

15. Ms O'Connor confirmed that Mr Williamson had informed them that there was a risk of paralysis occurring from the waist down during surgery. She continues: "He did not mention the possibility of paralysis occurring after surgery. We decided to go ahead with the surgery as by this stage Sara's scoliosis was really bad and we had no choice."

16. On 6.7.05 Sara was admitted for the preoperative trial of monitoring. No useful tracings could be obtained. The report of the clinical physiologists (Olga Saj and E. Campbell) recorded: "Motor twitches could not be obtained at the ankle. Sara found it difficult to tolerate the procedure and no consistent cortical responses were recorded. It may still be possible to monitor the spinal cord during surgery."

17. On 11.11.05 Mr Williamson saw Sara again for pre-operative review. His subsequent letter to her GP said : "..She is troubled by impingement pain and it is increasingly difficult to seat her. I have explained to her parents that the only way to address this problem is surgery. I have explained the nature of the surgery, the probable outcome and have also mentioned the potential for complications, going into some detail with them. They are in no doubt that they wish to proceed and I will get her in within the next week or two."

18. Sara was admitted for surgery on 29.1.06. After pre-operative assessment she went home for the night and then came back the following day.

19. Mr Williamson's evidence was that the wake-up test can be traumatic and disorientating for the patient and requires a level of understanding which Sara did not have. He had seen her a number of times before the surgery and had assessed her level

of functioning as significantly below the level at which he would consider the wake-up test to be appropriate.

The operation

20. The operation duly took place on 30.1.06. It lasted about 11 hours. The first part of the operation was the anterior spinal release. The spine was approached through her chest and abdomen. Five or six vertebral discs were removed for the purpose of making the spine more flexible. However there remained insufficient flexibility and he took the decision to remove the L2 vertebral body back to the dura (membranes surrounding the spinal cord). He closed the wound and turned Sara prone.

21. The second part of the procedure was to expose the spine from behind, from the pelvis to the upper part of the thoracic spine, i.e. the extent of the deformity. This was to allow him to place implants in order to straighten the spine. This involved the insertion of rods either side of the spinal column which are connected to the vertebrae by hooks and screws. The small size of Sara's vertebral pedicles in her thoracic spine were smaller than the smallest screw available. He therefore used hooks on both sides. He said that hooks were not as strong as a screw but almost as good. From the T10 level downwards it was possible to place screws in the pedicles on the concave side of her curvature and in the L5 vertebrae it was possible to insert screws on the pedicles of both sides of that vertebra. Spinal fixation then continued. He bent the stainless steel rods to favour the shape of her spine and then removed the posterior element of L2 vertebra. The rod was placed to sit in the U-shaped top of the screw. Spinal fusion was completed with a bone graft.

The monitoring claim

22. Spinal cord monitoring continued throughout the operation but, as is common ground, at no point did it provide any useful signal. The note of Ms Saj and Ms Harris was prepared and dated the following day (31.1.06). It states: "No motor twitches could be obtained at the ankle. Cortical SSEPs were recorded from the tibial nerve at both ankles. Poor, low voltage and inconsistent responses were obtained from both legs. This continued throughout the procedure."

23. Ms Saj and Ms Harris both gave evidence. They had been clinical neurophysiologists since 1979 and 1977 respectively. Ms Saj had performed spinal monitoring since 2001. They were challenged as to whether they had in fact appreciated lack of useful signal and if so whether they had informed Mr Williamson of this. Ms Saj said that they had attempted to record a pre-operative reference trace on the day of surgery but this was poor and inconsistent. The equipment was set up to trigger an alarm when not reaching reference trace levels and these triggered frequently throughout the procedure and without any correlation to surgical activity. They did not see an improvement in the signal. She said that in a child with cerebral palsy it is sometimes the case that no useful monitoring can be obtained at all and this was the case with Sara. They had kept the surgeon updated throughout including the fact that the signal that was not producing any useful information.

24. Ms Harris' witness statement was in very similar terms. She added that in her experience, even if the patient does not have any pre-existing neurological injury, in approximately one in 10 cases it is simply not possible to obtain a good trace during

spinal cord monitoring. Some surgeons would dispense with monitoring after a trial period without good traces but other surgeons would continue the monitoring throughout the procedure even if no useful signal was being obtained.

25. Mr Roussak suggested that it was only when preparing their report the following day that they had, retrospectively, appreciated that the procedure had elicited no useful information. This was denied. In the course of cross-examination a new document was handed up on behalf of the Hospital which was the record sheet of "Intra-Operative Monitoring" for the day of operation. It was completed by Ms Saj, recorded the immediate pre-op results as "poor and inconsistent" and then provided the details of "Settings" and "Results" over the 11 hour period. Under "Results" it noted "References". She agreed that they must have thought that they had got a signal (hence the 'References') and said "We must have thought it was improving". They had altered the settings to try and improve the response. That was what they would do to try and improve the signal and was why they were there.

26. Ms Saj was taken to the log which they had completed during the 11 hours. It contained repeated notes of the alarm triggering but just one reference to "informed surgeon" (12.58). Ms Saj accepted that she had no memory of the detail but was having to reconstruct from documents. In general terms she remembered the monitoring being difficult on that day. As to 'informed surgeon' she was then taken to the Zoe Vickers case where she had been monitoring and Mr Williamson was the surgeon. In that case the log recorded "informed surgeon signal low" and "informed surg signal poor". She agreed that her note could have been more informative. In re-examination she added that it was the surgeon's decision whether to carry on monitoring. She said that they would have talked a lot to the surgeon about the response.

27. Ms Harris in cross-examination said that custom and practice was to discuss the monitoring with the surgeon. "Lamentably we did not write it all down". In re-examination she said that she could not think of anything they would discuss with the surgeon apart from the quality of the traces. They were positioned next to where the surgeon was. Their practice was to have a dialogue with him.

28. In the joint statement of the Consultants in Neurophysiology it was agreed that the traces obtained were not of monitorable quality and that the reference in the following day's report to 'inconsistent responses' was probably incorrect "…because we both agree that there were NO responses recorded and any markers made to indicate the responses **and** used as reference traces were way outside the expected latencies and is outside the range of practice existing even in 2005 and 2006. This could potentially mean that the surgeon could have been misled in believing that responses were recorded on a few occasions, which on hindsight, was not the case." (emphasis in original). Much would depend on what they had told the surgeon. If he had been informed that no useful traces had been obtained that would have been responsible practice. If they had informed him that poor traces had been obtained, that could have caused the surgeon to be misled.

29. Mr Williamson said that in a handicapped child the monitoring process of delivering the small electric shocks is unpleasant and distressing. Based on the results of 6.7.05 he had expected the monitoring to be difficult. The operation was undertaken with monitoring throughout.

30. Mr Roussak questioned the language of his first witness statement in which he said "I was aware that the neurophysiologists were having difficulties in obtaining a useful signal which is not uncommon in such patients. They attempted to obtain a useful signal throughout the procedure." He said that meant he was aware from what they had told him. He could not remember what was said but it would have been that they did not have anything useful to monitor from. He was aware that he was doing the procedure without useful monitoring. Having difficulties was the same and it was semantics to suggest otherwise. Furthermore in the same statement he had said that the monitoring was not producing a useful signal: para. 20.

31. Mr Williamson said that in those circumstances he was alert to whether there were any changes to Sara's physiological parameters. The experts agreed that these parameters (pulse, blood pressure, oxygen saturation and haemoglobin) were not a substitute for spinal cord monitoring or a wake up test.

32. Mr Williamson's lengthy operation note contained no reference to monitoring. The note ended "The patient was returned to the ICU in a good condition at the end of the procedure. There is was *(sic)* no change in her neurological status."

33. Mr Williamson's recollection of this operation and its consequences was further tested against his first statement in the Zoe Vickers case where he had stated "I remember Zoe because this is the only case I have ever had of a child who has suffered permanent paraplegia post-operatively". This was supplied shortly before trial and Mr Williamson provided a supplementary statement in which he said that he should have qualified the statement by adding "in a previously neurologically intact spinal deformity patient". He had had two child patients who had suffered permanent paraplegia post operatively (Zoe and Sara) but Zoe was, unlike Sara, pre-operatively intact neurologically and fully able to walk. He apologised for his oversight in that witness statement.

34. Mr Williamson said that the treatment of spinal deformities in children was his main specialist interest and that he had done many hundreds of spinal deformity procedures. This one was long and technically difficult but within the run of what you would expect. He did not accept that he had forgotten about Sara. He remembered it clearly because of subsequent events, i.e. the paralysis.

35. This factual issue cannot be considered in isolation from the rest of the evidence in particular concerning Mr Williamson's practice in the event that the monitoring information was of no use and the wake-up test could not be carried out.

36. As to his practice, he was taken to two documents. The first, published 2001, is entitled "The Management of Spinal Deformity in the United Kingdom Guide to Practice 2001". It has the revision date "two years from publication". It is prepared by the British Scoliosis Society of which Mr Williamson is a past President. The Society is described in the Guide as the professional group of surgeons clinicians and scientists with a special interest in this clinical discipline. Under "Surgical procedures" it states "7.c All spinal deformity operations are accompanied by a risk of neurological injury, including paraplegia… Electrophysiological spinal cord monitoring or the "wake up test" may reduce this risk and should be available at the discretion of the surgeon." The Hospital points to those final words.

37. In 2008 the Society published "Infants, children and young people with spinal deformity in the UK – recommended standards of care for patients with spinal deformity". As the document acknowledges Mr Williamson was its principal author. He accepted that the 2008 guidance reflected his own practice in 2006. The document (p.2) states that "The standards set out in this document are the minimum requirements for a paediatric spinal deformity service to be achieved over a period of time. The standards exist to promote excellence in spinal deformity care." The 'Table of recommended standards' unsurprisingly provides (item 1) that spinal surgery requires specialised surgical expertise and includes (item 5) reference to 'facilities and infrastructure'.

38. Under item 1 the stated aim is "To promote safe spinal deformities surgery". There follows a Rationale with eight points. The eighth point states "All spinal deformity surgery is accompanied by a risk of neurological injury, including paraplegia. Electrophysiological spinal cord monitoring reduces this risk and is essential for safe surgical practice during surgical procedures." The Claimant points to the word 'essential'.

39. Under item 5 there is a list of the essential clinical facilities which are required as a minimum. The first is "Electrophysiological spinal cord monitoring during spinal surgery, supported by a Consultant Neurophysiologist or an appropriately qualified person in Medical Physics."

40. If Mr Williamson had considered that spinal cord monitoring were mandatory in all circumstances this would have course be directly relevant to the factual issue of whether he was in fact aware that the monitoring on 30.1.06 was providing no useful information.

41. Mr Williamson's evidence in his second witness statement (29.1.16) was that on 20-30 occasions in his professional career he had operated in circumstances where the monitoring was unsuccessful and a wake-up test not possible. This was the only occasion on which the patient had sustained paralysis. By contrast, in his first witness statement in the Zoe Vickers case he had said that "The role of neurophysiological monitoring during surgery is of critical importance to me and I do not perform deformity surgery without it." In his third witness statement in this action (6.4.16) he said the sentence should have had the rider "when technically possible". He continued "Any surgeon with a practice involving the treatment of neuromuscular scoliosis will know that there are cases in which spinal cord monitoring is not possible, although (as in Sara Hosseini's case), neurophysiology monitoring is attempted. I was, and remain, a firm believer in the use of neurophysiology monitoring, but there is a cohort of patients where spinal cord monitoring is simply not possible, but who still require surgery, as we know how poor that patient's quality of life will become without surgery." Mr Williamson did not think that Professor Dickson's view was shared by surgeons who work with neuromuscular scoliosis patients.

42. As to the 2008 guidance he said that its focus was on the availability of facilities. It was not stating that surgery cannot proceed if the monitoring is not providing useful information.

43. In cross-examination he said that the Rationale 8 was essentially the saying the same as in 2001, i.e. that its use was at the discretion of the surgeon. The discretion was that

it would be used whenever it was technically feasible. He was not resiling from the word "essential" but was saying that in some cases it was not technically feasible. It was wrong to say that you should never proceed; it was a matter of considering the balance of risk and benefit.

44. Mr Roussak submits that this is not a credible reading of the 2008 guidance which he had drafted; and that the language of "essential" adds further weight to the conclusion but Mr Williamson must have proceeded with the operation in the belief that the monitoring was providing useful information.

Conclusion

45. In my judgment, the clinical neurophysiologists (Saj and Harris) were aware that the monitoring was providing no useful information and conveyed that information to Mr Williamson who proceeded with the operation in that knowledge. I found them to be impressive and reliable witnesses. They evidently have substantial experience and expertise in their monitoring work. Although on occasions they considered that they had a trace on which they could rely as a reference, they soon discovered that was that this was not so. The alarm was triggered repeatedly. They were working in close proximity to Mr Williamson and their practice was to have a continuing dialogue with him. I am satisfied that the effect of the dialogue was that he was informed that the monitoring was providing no useful information.

46. It is not surprising that they are heavily reliant for their evidence on their standard practice. Having heard them and assessed their professional quality I have no doubt that they complied with their usual practice. True it is that their log identifies but one occasion when they "informed surgeon" and contains no further information; and contrasts with the (limited) detail provided in the log for the Zoe Vickers case. However, given the very purpose of their job, the presence or absence of useful information was the only tenable topic. The note prepared by them on the following day was not, I am satisfied, a retrospective assessment but reflects the conclusion which they reached and advised Mr Williamson on the day. I have taken account of the expert evidence from the Consultant Neurophysiologists but am satisfied that he was not misled.

47. Equally I accept Mr Williamson's evidence that he was told of the lack of useful information. Mr Roussak understandably focused on the phrase "were having difficulties in obtaining a useful signal" but the later passage in the same witness statement says that the spinal cord monitoring "was not producing a useful signal". Although it would have been better if his operation note had included a note of the absence of useful monitoring I do not think the absence is significant.

48. I also accept Mr Williamson's evidence that he had performed such surgery, without monitoring or a wake-up test, on 20 to 30 occasions in the past; that he considered monitoring to be mandatory if it was technically feasible; but did not consider that an operation should never go ahead if monitoring was not feasible. The 2008 guidance is evidently open to the sort of analysis to which it was very properly exposed. However I accept from Mr Williamson that the intended focus was on the availability of monitoring facility and its use wherever technically feasible and that the word "essential" must be viewed in that context. In any event, I have no doubt that that is what Mr Williamson believed. In consequence the fact that he proceeded without

useful information from monitoring is consistent with his having been informed to that effect.

49. In reaching these conclusions I have taken account of his error in the evidence concerning Zoe Vickers, as well as the criticisms of all his evidence generally, but am quite satisfied as to what happened.

50. In the light of these findings the monitoring claim must fail.

The wake up test claim

51. I turn to the allegation that Mr Williamson should have carried out a wake-up test.

52. Ms O'Connor said that in none of the pre-operative assessments did Mr Williamson speak to Sara or ask her and her husband any questions about Sara's ability to respond. If he had asked whether she could understand basic commands or answer basic questions, e.g. as to her name or birthday, they would have told her that she could. Whilst "wiggle your toes" would not be understood, she would have understood an instruction to the same effect such as 'move your feet or 'kick your feet'. However she accepted the possibility that her response and co-operation might be inconsistent with strangers.

53. That possibility is supported by Dr Gayatri's examination on 14.1.11 from which she recorded that Sara "…responded to her name, smiled and followed simple instructions inconsistently. She spoke a few words in context and had full range of eye movements. Cooperation from here was limited and she had reduced facial movements."

54. Mr Williamson's evidence in his first witness statement was that he did not consider that Sara was in a position to cooperate. He elaborated this in his second witness statement. He did not doubt Ms O'Connor's evidence that Sara could cooperate with simple instructions in a domestic setting. However a wake-up test in the operating theatre was quite different. Even for adults with normal cognitive function it could be traumatic and disorientating. He had witnessed dangerous occasions when a patient had attempted to get off the operating table during the test or trying to pull out their endotracheal tube (Mr Roussak's riposte was that Sara would not be capable of either). He had seen Sara and her parents a number of times before surgery and in his assessment her functions were below the level where he would consider a wake-up test to be clinically appropriate.

55. In cross-examination he said that he did not do a rehearsal or dummy test (he had never seen one done) but from his interactions he was in no doubt that it was not feasible for her to cooperate. Even if such a test been successful he would not have had confidence that she could do it in the operating theatre. Even if done in the operating theatre, he would not know if she was not moving her legs because of something we had done or because she was not comprehending. He was very surprised at the suggestion that a wake-up test should have been performed.

56. As to the expert evidence, Professor Dickson in the joint statement said that Mr Williamson's view was not within the range of responsible opinion "… because each individual case requires to be assessed in its own right with which a range of responsible opinion would entirely agree." He said that there should have been a trial wake-up test; that the anaesthetist would go through the "wiggle your toes" process on the day before surgery and then repeat it as the last thing before anaesthesia, so that it was the last thing the patient remembered; that if necessary the patient's mother could be present during this aspect of the process and be the one to whisper into the ears; and that if the procedure was traumatic it was not being carried out properly.

57. In cross-examination Professor Dickson agreed that the key was whether the surgeon considered the test to be reliable in the particular case, so that the person to decide was the surgeon. He had huge experience of the test and it was not horrible. However he ultimately agreed that there was no point in going ahead if the surgeon did not have confidence in it.

58. Mr Morley agreed with Mr Williamson that Sara would not have had the capacity to undergo a wake-up test. He said that the test is not a reliable and useful test for patients with microcephaly and severe four-limbed cerebral palsy. He would be very unhappy to do so in a case such as this, not least from an ethical point of view. In cross-examination he accepted that his assessment of her capacity was not based on all the criteria which he had enumerated in the joint statement.

Conclusion

59. In my judgment the allegation that Mr Williamson was negligent does not succeed. As Professor Dickson ultimately accepted this was a decision for the individual surgeon. Mr Williamson is evidently a surgeon of particular experience and expertise. His opinion is supported by Mr Morley. Mr Williamson had seen Sara in pre-operative assessments and (as I accept) based on his observations and experience took the view which he did. Nor do I think that the absence of further questioning of Ms O'Connor or of Sara herself can be criticised. This was a matter of professional judgment and Mr Williamson's judgment was reasonable and responsible.

The abandonment claim

60. I turn to the question of the decision to proceed with the operation notwithstanding the absence of useful monitoring information and the unwillingness to deploy the wake-up test.

61. Professor Dickson's evidence was that, in such circumstances, surgery should have been abandoned. In the joint statement he said that to continue such surgery upon neuromuscular patients with severe cerebral palsy was neither a recognised nor responsible practice. He said that paralysis is the most dreaded complication of scoliosis surgery and it would be quite illogical not to use neurophysiological monitoring in the early detection of such problems. In the joint statement he said that in 2006 such monitoring "… was in routine use for a majority of scoliosis surgeons."

62. Cross-examined about "a majority" he said that he meant that he could not say for certain that all surgeons were using monitoring in 2006; and that the minority were not availing themselves of the current state-of-the-art. Pressed further he said that no reasonable practitioner would go ahead without monitoring or the wake-up test. This was because paralysis is a disaster and "the overwhelming problem we are trying to avoid". In his view the word "essential" in the 2008 guidance must mean "mandatory". He was dismissive of the reference in the 2001 guidance to the "discretion" of the surgeon. The 2001 document was a guide to practice; the 2008 guidance was more objective and set out what you should do.

63. Professor Dickson said that the risk/benefit analysis was against proceeding. He had agreed in the joint statement that she would now be more disabled if the operation had not proceeded but the difference would not be huge. The operation was not a panacea. The progression of deterioration should not extend beyond maturity. Given the extraordinary skills of Occupational Therapists and their ability to make patients more comfortable and deal with pressure sores, Sara probably would not have lost the ability to sit. He accepted that if she did lose that ability she would probably have to lie down permanently.

64. Mr Morley's opinion was that the absence of useful information from spinal cord monitoring was sometimes encountered in spinal surgery and was not a reason for abandoning the surgery. Sara clearly needed the surgery and there was no reason to suppose that surgery on another occasion would produce a better result. In the joint statement, to the question whether continuation in such circumstances was a recognised practice he answered "Yes, I would have continued following a careful risk/benefit exercise. Sara required surgical management for a very severe deformity." Without surgery the deformity would have progressed beyond maturity (because it was neuromuscular); she would have lost seating balance and her quality of life would have been severely impaired.

65. In cross-examination he said that in a career entirely related to spinal deformity he had never abandoned surgery in such circumstances. He would have gone on without question. It needed careful consideration of risks and benefits but that was something you do as you work. The benefit was the amelioration of the scoliosis. The catastrophic risk was paralysis. He would not go ahead on the basis that the risk of paralysis was better than scoliosis, but because it was the right thing to do. He also identified two (distinct) conditions where it was not possible to get monitoring and the surgery had to proceed.

66. I have substantially dealt with Mr Williamson's evidence above. In cross-examination he added that he had thought carefully about the risks and benefits before proceeding. The likelihood was that he had discussed it with Mr Dashti the second Consultant with him that day. He would have considered that without surgery there was no doubt that Sara's quality of life would have been very much worse; in particular because of the potential loss of ability to sit. It was the view of him and his colleagues that the quality of life would be better operated and paralysed rather than unoperated. That was not to be cavalier but an observation on the dreadful effect of neuromuscular scoliosis. He could not see anything that would have led to the conclusion that he can do it more safely on another day. The failure of monitoring was due to her physiology which was not going to change and he still could not reliably do a wake-up test. The

decision to proceed was not taken lightly. He agreed there was no record of such risk/benefit consideration.

67. In support of the contention that it was negligent to proceed with the operation in such circumstances Mr Roussak emphasised that the operation was elective. The benefits would be gained whenever the operation was done whereas the catastrophic complication of paralysis was irreversible. Mr Morley's evidence was focused on what he would have done rather than whether there was a body of responsible opinion. Mr Williamson's evidence that he had assessed the risks and benefits was not mentioned in the records nor in his witness statements, even after the allegation had been introduced by amendment. His assertion that he would have discussed the matter with Mr Dashti was raised for the first time in Court. As demonstrated in other respects (e.g. his statement in the Zoe Vickers case) his evidence should be treated with caution and was not reliable. His attempt to interpret the 2008 guidance, and in particular the use of the word "essential" was untenable.

68. Ms Rogerson submitted there was no evidence to conclude that monitoring would probably have been successful on another day. Professor Dickson had not been able to go that far. The decision to proceed was ultimately a matter for the surgeon. It was not credible to believe that Mr Williamson would have gone ahead without the risk and benefit analysis that he had described. Professor Dickson would not have carried out such an analysis since his view was that you should never proceed in such circumstances. The impact of not going ahead had to be taken into account. It was important to distinguish between idiopathic scoliosis and neuromuscular scoliosis. Mr Williamson's decision to proceed had the support of Mr Morley. The guidance in 2008 was distinct from 2001 and had been explained by its author.

Conclusion

69. In weighing up this and all issues in this case I have indeed had to be cautious in my assessment of Mr Williamson's evidence. On a number of occasions he has made significant statements which he has had to correct and has added recollections or evidence of usual practice which have not been mentioned before. For the present issue I have particularly had in mind his statement in the Zoe Vickers case that he does not perform deformity surgeon without monitoring, the language of Rationale 8 and its word 'essential' and the absence of any contemporaneous note of the risk/benefit analysis (including discussion with Mr Dashti) which Mr Williamson described for the first time in Court.

70. My conclusion is that I am not persuaded that Mr Williamson's decision to proceed was outwith the range of recognised and responsible practice.

71. In reaching this conclusion I have given particular weight to Mr Williamson's standing experience and expertise in this specialist field. Amongst other things this is demonstrated by his very role, at the request of the British Scoliosis Society, in drafting the 2008 guidance. In these circumstances his evidence of his own practice, if accepted, is significant. Although he has been incautious in his use of language on various occasions I am satisfied that his ultimate evidence was reliable. In particular I accept the qualification to his statement in the Zoe Vickers action, his evidence of the times when he has proceeded with surgery in the absence of useful monitoring or a wake-up test and that he did carry out the sort of risk/benefit analysis that he

described. I consider this would have been a relatively brisk assessment, of the type described by Mr Morley, as he stood there in theatre; and that he spoke to Mr Dashti. That he did so is consistent with the evidence of Ms O'Connor as to her subsequent discussion with Mr Dashti.

72. Although it would of course have been better if his note had recorded this I do not consider its absence to be significant. I bear in mind that the risk of paralysis had been squarely discussed with Sara's parents and it was known that the July 2005 attempt at monitoring had been unsuccessful.

73. I also accept Mr Williamson's account in respect of the 2008 guidance and in particular that it did not, despite the word 'essential', mandate that surgery should not proceed in the absence of monitoring or a feasible wake-up test. Mr Williamson was its principal author and his expertise provides a more reliable explanation of what was meant than linguistic analysis. In any event there is sufficient in the document to support the argument that the intended focus was on the availability of facilities.

74. As to the expert evidence, whilst I accept the strength of Prof Dickson's evident belief that it would be wrong to operate in such circumstances, I am not persuaded that this represents the only responsible opinion. True it is that Mr Morley's evidence was focused on what he would have done. However I regard the evidence of him and Mr Williamson, as experts in this field, as itself providing support for the conclusion that there was a responsible body of practitioners who would proceed. In 2006 the relevant guidance was provided by the 2001 document which referred to the discretion of the surgeon. Furthermore Professor Dickson acknowledged that it was only a majority of scoliosis surgeons who would use monitoring in 2006. Although he criticised that minority for not availing themselves of the state-of-the-art I am not persuaded that this was an irresponsible body of opinion.

75. For these reasons my conclusion is that Mr Williamson's decision to proceed rather than to abandon the operation was not negligent. Accordingly the claim does not succeed.

Timing of damage

76. Although this further issue as to the timing of the damage does not therefore arise, it has been fully debated in the trial and I should set out my conclusions. In any event my consideration of the factual and expert evidence on this issue has of course formed part of my overall assessment of the witnesses' evidence on the preceding issues.

77. The dispute is whether the damage to the cauda equina occurred in the course of the operation or at some early stage in the post-operative period.

78. However I accept Mr Roussak's preliminary submission that the success of the claim would not depend on this point. Thus, if it had been established that it was negligent to proceed with the operation, the claim should succeed even if the damage (paralysis) had occurred post-operatively. This is not a case where it can be said that such consequence of proceeding with the operation was too remote or outside the scope of the relevant duty of care, which was to take reasonable professional skill and care to guard against that very risk : cf. Lord Hoffmann's example of the mountaineering

accident in Banque Bruxelles SA v. Eagle Star v. York Montague [1997] AC 191 at 213F. If I am wrong on that I turn to consider the timing issue.

79. There is no dispute that there is complete obliteration of the spinal canal at the level of L2 or L3 and that this has resulted in compression of the cauda equina and the consequential paralysis and bladder/bowel deficit: see the reports of the radiologists, Dr Rankine and Professor Sellar. This is confirmed by the CT scan images. Professor Sellar concludes that the imaging does not demonstrate whether or not the damage to the spinal cord occurred intra-operatively or in the post-operative period.

80. On behalf of Sara it is said that it must have occurred at this stage of the operation when the metalwork was tightened. The Hospital submits that this is inconsistent with Mr Williamson's evidence that he conducted a post-operative test which demonstrated that she had suffered no neurological damage.

81. Mr Williamson's operation note concludes with the words "The patient was returned to the ICU in a good condition at the end of the procedure. There is was (sic) no change in her neurological status." His first witness statement says that it was important to check that Sara was able to move her legs following the end of the procedure. In order to do this, prior to her transfer from theatre to ICU, he asked the anaesthetist to lighten anaesthesia so that she would be able to move her legs. "When this was done I observed her moving her legs". It was this which led to the final section of his operation note. He saw Sara's parents after the operation and informed them that the operation had gone well and that Sara was not paralysed.

82. His second witness statement expands on this. He says that he "check[ed] for purposive leg movement by squeezing Sara's big toes to the point where it would be uncomfortable for her. In both legs Sara actively moved her legs away in response to this uncomfortable stimulus." In consequence he was satisfied that the operation had been completed without damage to her spinal cord and completed his note. The movement he observed was not reflex movement.

83. In cross-examination about the development of his evidence Mr Williamson said that as the case became clearer the point became clearer. He accepted that he might be constructing this from his note and his usual practice. He said that no spinal surgeon would leave the hospital unless satisfied that the patient's neurological status was unchanged. He did not accept that he had not followed his usual practice.

84. Asked how the undoubted damage could have occurred if he had done what he said he replied that he did not know why Sara is paralysed. He said that there could be remnants of vertebrectomy or there could be movement between the screw and the rod which he described as a recognised complication. There was only one screw in L3. It was inconceivable that the sequence of events, as confirmed by his note, would have taken place if she was paralysed. In re-examination he was taken to the operation note and the reference to insertion of a screw and said that it was possible for rotation to occur around that single fulcrum.

85. Ms O'Connor said that after the operation she and her husband saw Mr Williamson leaving. He stopped briefly to tell them that everything was fine and that there were no problems. He appeared to be in a rush. That night they also spoke to Mr Dashti who reassured them that everything had gone well. She had been worried about the

risk of paralysis. He told them that Sara's legs were fine and Mr Williamson had checked this himself.

86. Mr Hosseini gave evidence to similar effect. He said that they saw Mr Williamson in a corridor as he was leaving. He reassured them that the surgery had gone well before hurrying off and they were extremely relieved. He said that during Sara's time in ICU he never saw her move her legs. A few days later she was much more awake and began asking for her socks. At that point they discovered that she had no feeling in her legs.

87. In the joint statement Professor Dickson said that he would take the note "no change to neurological status" to mean that Sara could move her legs before and after surgery. He said that reflex leg movement could have been present in the post-operative period even if Sara had suffered the cord injury during surgery. This was because of "lumbar root escape"; i.e. because the L5 nerve root was less vulnerable and thus gave a false reassurance when the big toes were squeezed. However he acknowledged that a spinal surgeon of Mr Williamson's experience should be able to distinguish purposive leg movement from reflex leg movement.

88. As to the CT scan Professor Dickson said that it showed 60° of malrotation between the pedicle screws in L3 and L4; and that such a degree of post-operative malalignment would require either the metalwork to have pulled out or fracturing of the pedicles. Neither radiologist described any such appearances. Mr Morley said that the CT scan did not give any assistance on timing and noted the limits to observation in one plane.

89. As to lumbar root escape and reflex movement Mr Morley said that if there had been injury in the course of surgery Sara would have had a flaccid paralysis which would have been easily identified both visually and clinically. Furthermore withdrawal to pain would only have occurred if she was neurologically unchanged and with intact cord/conus function. The withdrawal reaction would involve a flexing of the hips, knees and dorsiflexing the ankle (pulling up the foot), which required L2 – 5 to be intact. He concluded that the spinal cord/cauda equina must have been intact when Mr Williamson tested her neurological status; so that there must have been some subsequent movement, possibly whilst being handled or turned by nurses.

90. In cross-examination Mr Morley said that you will never miss a flaccid paralysis and she did not have it. The only way she could have gone from apparent reflex to paraplegia is later movement. He disagreed that the toes squeezing could be a false positive. The metalwork was far from rigidly fixed. After the single screw the next double screw was at T10. However he agreed that Mr Williamson had not described the withdrawal reaction in the specific manner which he (Mr Morley) had demonstrated.

91. There is a subsequent note by Dr Assous, Spinal Fellow, dated 31.1.06 which states "Been moving legs". Dr Assous did not give evidence and the Hospital did not ultimately place any reliance on this potentially multiple hearsay note of evident ambiguity. The nursing notes contain no neurological observations of any kind.

92. The next mention of leg movement is a week later, on 7.2.16. Mr Mirza, Spinal Fellow, records "Father concerned re lack of lower limb movement. Father noted that

since surgery [8 days] ago, Sara has not moved her legs at all. Also no response to painful stimuli since surgery."

93. In support of his case Mr Roussak submitted that Professor Dickson's opinion must be preferred. If all went well in the operation, as Mr Williamson had evidently considered, the spinal column must have been rigidly fixed. The CT scan shows neither of the signs which would be associated with post-operative movement in an adequately fixed column, so that such movement cannot have occurred. The assertion that movement sufficient to obliterate the canal occurred without either of the two signs amounts to an assertion that the spine was inadequately fixed and that the operation was inadequately performed. There are no recorded neurological observations. Mr Williamson's account of his observations has changed and is unreliable and unsupported by contemporary documents. He was assuming that he carried out customary practice but in fact did not do so.

94. Ms Rogerson submitted that Professor Dickson overstated the extent to which the fixing is rigid and too readily dismissed the possibility of subsequent rotational movement which Mr Morley supported; that the CT scan does not give any useful assistance; that lumbar root escape is an oversimplification and that the response would involve rather more lumbar roots; that they would have been evident flaccid paralysis if damage had occurred; and that it is inconceivable that a surgeon of Mr Williamson's experience and expertise would not have done what he said he did. The final sentence of his operation note was consistent with having done so; and he would have recognised the difference between purposive leg movement and reflex movement. The evidence of Sara's parents as to their conversation with him and Dr Dashti was likewise consistent with such a test having been carried out.

Conclusion

95. I have found this the most difficult part of the case. My conclusion is that the damage probably did occur post-operatively. Supported by my assessment of him in the course of his evidence, I consider that a specialist surgeon of Mr Williamson's expertise would not have failed to carry out the standard practice of checking that there was no neurological change; that he would have done so in the way he indicated; that he would have distinguished between purposive leg movement and reflex leg movement; and that he did so on this occasion.

96. True it is that the detail of his test did not emerge until his second witness statement but I am satisfied that his evidence is reliable. His account is corroborated by the final sentence of his operation note and by the evidence of the reassurance that he felt able to give Sara's parents and which they subsequently documented in the course of the complaints procedure. I accept and prefer Mr Morley's evidence that there would have been evident flaccid paralysis had there been damage to the cord in the course of the operation.

97. In reaching this conclusion I accept that Mr Williamson must have considered there to be a rigid fixing. However I do not think that rigidity is guaranteed, not least on a child of Sara's size. I prefer Mr Morley's support for the possibility of movement, beyond the two instances given by Professor Dickson. I am not persuaded that the test gave a false reassurance and prefer Mr Morley's evidence that the response would have involved the nerve roots at L2-5. I do not consider that the fact of subsequent

movement would amount to negligence on the part of Mr Williamson. The operation was evidently complex and difficult and there is no evidence that the absence of rigidity can only be the consequence of negligent surgery. Accordingly there is no bar to reliance on this aspect.

Quantum

98. I will deal with the issues of quantum more shortly. As to life expectancy the Hospital relies on the report of Dr Gayatri, the Consultant Paediatric Neurologist who prepared reports on 18.1.11 and 27.11.13. However she was unwilling to provide a further report because Sara is now well outside paediatric age.

99. The Court gave permission for the parties to produce further expert evidence on this point. Only the Claimant took up this opportunity and this has produced the report of Mr Fletcher (29.10.15), Consultant Neurologist. He concludes that Sara's life expectancy is somewhere between the ages of 30 and 40. I accept this evidence and Mr Roussak's submission that the right course is to take the midway point, i.e. to age 35.

Pain and suffering

100. In consequence of the lower paralysis Sara now requires catheterisation four times daily and manual evacuation of her bowels. In addition there was a period of pressure sores which may recur. Before the surgery, although unable to walk, she had normal sensation and some spontaneous movement in her legs.

101. The Hospital's primary submission was that, if the operation had been abandoned, there is no likelihood that the operation would have proceeded on a later occasion. The consequence would have been progressive deterioration of the scoliosis, so that Sara's overall physical condition would have been significantly worse than it is now. There was therefore no 'net' pain and suffering; so there should be no award of general damages. The alternative submission was that the injuries fell within the Judicial College guideline for bladder/bowel injuries; but that account must be taken of the pre-existing deficit. An overall award - reflecting also the pressure sores - of £50,000 was suggested.

102. In addition to rejecting the primary submission Mr Roussak submitted that the appropriate guidance was in respect of paraplegia. Allowing for the pre-existing deficit, a figure of £110,000 was proposed.

103. In my view the Hospital's primary submission must fail. On balance I think it unlikely that the operation would have gone ahead on another occasion. Accordingly, and even allowing for the very best care from Occupational Therapists, Sara's condition would have seriously deteriorated. However there is no suggestion that this injury of lower paralysis would have occurred. Accordingly, if liability had been established, these injuries would fall to be compensated, regardless of the other injuries which would or might have occurred in any event. I agree that the guideline for paraplegia is more appropriate. Taking account of the pre-existing deficit and the life expectancy my figure would have been £90,000.

Care

104. The Hospital's first point is again that the overall cost of care would have been greater if the operation had not gone ahead; that the care required in respect of the bladder and bowel deficit was not qualitatively different from the care that would have been required in any event (Reaney v. University Hospital of North Staffordshire [2015] EWCA Civ 1119); and that therefore no net financial loss has been suffered.

105. As to the nature and cost of care there is a dispute between the experts Ms Wills (instructed on behalf of Sara) and Ms Gowans (instructed by the Hospital). Ms Wills assessed Sara in her home. Ms Gowans carried out a "desktop report" which included a telephone interview with Ms O'Connor.

106. As to the primary point, I am satisfied that the care which now has to be provided for the bladder/bowel deficit is qualitatively different and that compensation for the full cost of that care would have been appropriate.

107. As to the experts, I found Ms Wills' report and analysis to be the more thorough, considered and realistic. As to the gratuitous care by Ms O'Connor, the issues concerned the appropriate hourly rate for paid assistance and the appropriate deduction to reflect the fact that the care was gratuitous. I consider that Ms Wills' adoption of an aggregate rate reflecting the 24-hour care was more appropriate. In accordance with repeated authority my deduction would have been 25%, rather than the 33% proposed by the Hospital.

108. As to the future, Ms Wills proposed that this should be provided by an agency at Sara's Day Centre. This would require four hours a day as the minimum time which would be acceptable to agency staff. Ms Gowans suggested on the basis of somewhat exiguous evidence that the necessary care could be provided by District Nurses; alternatively that Ms O'Connor, possibly assisted by 'brokerage services', should employ carers directly.

109. In my view Ms Gowans' proposals were unrealistic and inappropriate. The provision of care by District Nurses is quite uncertain and it would be wrong to force her to rely on the uncertainties of NHS provision: see also the Law Reform (Personal Injuries) Act 1948, section 2(4). Direct employment would in my view be unreasonable to impose on Ms O'Connor with all her other obligations to Sara and to her child aged 5. I would have accepted Ms Wills' proposal.

110. As to the residual items I would have allowed the claim for a mattress and the past travel at Ms Wills' more realistic mileage rate.

Conclusion

111. I have of course the very greatest sympathy for Sara and for her family. However my conclusion in the light of all the evidence is that this claim of clinical negligence does not succeed.