*P1 HQA v Newcastle-upon-Tyne Hospitals NHS Foundation Trust

No Substantial Judicial Treatment

Court
King's Bench Division

Judgment Date
8 August 2025

Report Citation
[2025] EWHC 2121 (KB)
[2026] P.I.Q.R. P1

King's Bench Division

Geraint Webb KC

8 August 2025

Bolam test; Brain damage; Breach of duty of care; Causation; Clinical negligence; Heart; Informed consent; Preliminary issues; Surgical procedures;

H1 *Personal injuries—clinical negligence—breach of duty—open heart surgery—catastrophic damage to aorta—informed consent—whether a second opinion would have been sought—pre-operative planning and preparation—management of risks of surgery—whether surgeon negligent when operating—preliminary issues*

H2. H was born with congenital heart issues. Aged 25, she underwent elective open-heart surgery on 3 May 2022. During the operation, the operating surgeon accidentally cut the wall of the aorta with the saw, causing catastrophic haemorrhaging. H sustained a serious hypoxic brain injury. An action for negligence was brought against the relevant health authority, alleging that the consenting procedure was inadequate and occurred too late, the pre-operative planning/preparation and management of the risks was inadequate, and that the injury to the aorta was itself a result of negligence. A number of preliminary issues were tried to determine whether there had been breaches of duty, whether any breaches led to a loss of time which may have impacted upon the outcome, and whether, if a breach of duty in respect of informed consent was found, H would have opted to postpone her surgery in favour of awaiting a second opinion.

H3. **Held,** that the surgeon fell below the requisite standard of care in not taking the step of exposing and preparing the femoral vessels in advance of the sternotomy in order to facilitate cardiopulmonary bypass in the event of the occurrence of the known and foreseeable risk (being a medium to high risk) of aortic injury during the course of the sternotomy. On the limited evidence available, approximately 13 minutes would have been saved had there been no breach of duty in respect of pre-operative planning/management. There was however no breach of duty in respect of the pleaded allegations concerning intraoperative skill and care, as the catastrophic injury to the aorta that occurred was a known and foreseeable risk of injury inherent in the sternotomy surgery, and the risk materialised without negligence on the part of the surgeon. He misjudged the depth of the blade of his oscillating saw but this may well have been a momentary misjudgment, which fell squarely within the category of a risk of error which could not be eliminated entirely, even by the use of reasonable skill and care when performing this complex surgery. There was a breach of duty in failing to ensure that H received advice as to the *P2 risks of the proposed surgery in an outpatient appointment with the operating surgeon in advance of the day of surgery, and a negligent failure to advise her that prior to commencing the sternotomy, the femoral vessels could be exposed and prepared in order to attempt to mitigate the severity of the injuries which might result from the foreseeable and known risk of aortic injury occurring. Had she received such advice then, on the balance of probabilities, H would have elected to proceed with

the sternotomy with the option of the femoral vessels being exposed and prepared in advance. She would not have elected to postpone the surgery in any event.

H4 Cases referred to:

Bolam v Friern Hospital Management Committee [1957] 1 W.L.R. 582; [1955-95] P.N.L.R. 7; (1957) 101 S.J. 357 QBD
Bolitho v City and Hackney Health Authority [1998] A.C. 232; [1997] 3 W.L.R. 1151; [1998] P.I.Q.R. P10 HL
C v North Cumbria University Hospitals NHS Trust [2014] EWHC 61 (QB); [2014] Med. L.R. 189
Chester v Afshar [2004] UKHL 41; [2005] 1 A.C. 134; [2005] P.I.Q.R. P12
Correia v University Hospital of North Staffordshire NHS Trust [2017] EWCA Civ 356; [2017] E.C.C. 37; [2017] Med. L.R. 292
Johnstone v NHS Grampian [2019] CSOH 90; 2019 G.W.D. 38-622
Maynard v West Midlands RHA [1984] 1 W.L.R. 634; (1984) 81 L.S.G. 1926; (1983) 133 N.L.J. 641 HL
McCulloch v Forth Valley Health Board [2023] UKSC 26; [2024] A.C. 925; [2023] P.I.Q.R. P19
Montgomery v Lanarkshire Health Board [2015] UKSC 11; [2015] A.C. 1430; [2015] P.I.Q.R. P13
Petrodel Resources Ltd v Prest [2013] UKSC 34; [2013] 2 A.C. 415; [2013] 3 W.L.R. 1
R. v Inland Revenue Commissioners Ex p. TC Coombs & Co [1991] 2 A.C. 283; [1991] 2 W.L.R. 682; [1991] S.T.C. 97 HL
Snow v Royal United Hospitals Bath NHS Foundation Trust [2023] EWHC 42 (KB); [2023] Med. L.R. 143; (2024) 196 B.M.L.R. 109
Wiszniewski v Central Manchester HA [1998] EWCA Civ 598; [1998] P.I.Q.R. P324; [1998] Lloyd's Rep. Med. 223

H5 Legislation referred to:

Civil Evidence Act 1995

H6. Judgment of Geraint Webb KC, sitting as a Deputy High Court Judge, in the King's Bench Division on 8 August 2025, determining preliminary issues in the clinical negligence action brought by HQA (by her husband and litigation friend, HQK) against Newcastle-upon-Tyne Hospitals NHS Foundation Trust.

H7 Representation

Howard Elgot and Megan Crowther (instructed by Hay & Kilner LLP) for the Claimant.
Erica Power (instructed by DWF Law LLP) for the Defendant. ***P3***

Judgment

Geraint Webb KC:

A. Introduction

1. This is a judgment in relation to three preliminary issues in a clinical negligence action. An anonymity order has been made, pursuant to which the Claimant is to be referred to as HQA and the Claimant's husband and litigation friend as HQK.

2. The Claimant was born with congenital heart issues. She underwent elective open-heart surgery on 3 May 2022, when she was 25 years of age. The surgery was performed by Mr Mohamed Nassar, a Consultant in Paediatric and Adult Congenital Cardiac Surgery, at the Freeman Hospital, Newcastle-upon-Tyne.

3. It is common ground that during the course of cutting through the sternum, a procedure known as a sternotomy, Mr Nassar unintentionally cut the wall of the Claimant's aorta, causing catastrophic haemorrhaging. It took around 20 minutes to establish sucker bypass and 24 minutes to establish full cardiopulmonary bypass during which time the Claimant sustained a serious hypoxic brain injury. As a result of that injury the Claimant lacks litigation capacity, as confirmed by an expert report from Professor Ann Mortimer, Consultant Psychiatrist, dated April 2025.

4. There are three key allegations of negligence:

a. The Claimant contends that the consenting procedure was inadequate and occurred too late. It is claimed that the Claimant would have sought a second opinion and postponed her surgery had an earlier and appropriate consenting process been undertaken by the Defendant and she would have opted for a variant of the procedure to expose and prepare relevant femoral vessels in advance of the sternotomy to facilitate the establishment of cardiopulmonary bypass in the event of injury to the aorta;
b. The Claimant alleges that the pre-operative planning/preparation and management of the risks of injury to the aorta were inadequate, particularly in respect of the steps taken to mitigate the consequences of the known risk of aortic injury. Appropriate mitigation would have included exposing relevant femoral vessels in advance of the sternotomy as set out in (a) above. It is contended that this breach of duty resulted in unnecessary delay in establishing cardiopulmonary bypass;
c. It is alleged that the injury to the aorta was itself a result of negligence on the part of Mr Nassar when performing the sternotomy.

B. The Preliminary Issues

5. On 19 June 2024 Master Armstrong ordered that

> "A preliminary issue shall be tried between the Claimant and the Defendant as to the following specific issues:
>
> a. Has there been a breach (or breaches) of duty as pleaded in the Amended Particulars of Claim?
>
> b. On the balance of probabilities, how much time would have been 'saved' but for the established breach(es) of duty? ***P4***
>
> c. If a breach of duty in respect of informed consent is found, on the balance of probabilities, would the Claimant have opted to postpone her surgery in favour of awaiting a second opinion (with evidence as to the issues of who, where and when that second opinion would have likely been provided [sic])"

6. I will consider the above three preliminary issues in the following order:

> a. **Issue 1(a):** was there a breach of duty in respect of the pleaded allegations concerning the pre-operative planning/preparation and risk management?
>
> b. **Issue 1(b):** was there a breach of duty in respect of the pleaded allegations concerning intraoperative skill and care?

c. **Issue 2:** in the event that a breach of duty under 1(a) being established, how much time would have been saved but for such breach(es)?

d. **Issue 3:** was there a breach of duty in respect of the pleaded allegations concerning informed consent and, if so, on the balance of probabilities, would the Claimant have opted to postpone her surgery in favour of awaiting a second opinion?

C. Procedural history

7. Liability reports were originally obtained on behalf of the Claimant from two experts in cardiothoracic surgery in September 2022. In a report dated 10 September 2022 Professor Daniel Kennan, Professor of Cardiothoracic Surgery, expressed his opinion that there had been various breaches of duty on the part of the Defendant. A "screening report" dated 18 September 2022 and an Addendum report dated 24 September 2022, were also obtained on behalf of the Claimant from a Mr Jon Anderson, a senior cardiothoracic surgeon. Mr Anderson expressed his opinion, in both reports, that there had been no breach of duty.

8. Thereafter, the Claim Form was issued on 3 March 2023. The original Particulars of Claim set out allegations of negligence which were largely consistent with the report of Professor Kennan.

9. Permission was then sought on behalf of the Claimant to serve an Amended Particulars of Claim, which permission was granted at a case management conference of 19 June 2024, on condition that the Claimant disclosed copies of the reports of both Mr Jon Anderson and Professor Keenan to the Defendant. The Claimant was also given permission to rely on an expert report in cardiothoracic surgery from Mr John Yap, no permission apparently being sought in respect of Professor Keenan. The Amended Particulars of Claim struck through various allegations of negligence, including an allegation that the aorta was severed negligently, an allegation that the Claimant should have been established on cardiopulmonary bypass prior to the sternum being opened, and an allegation that a different surgical approach should have been utilised.

10. Witness statements were served in January 2025, including a statement from the surgeon, Mr Nassar. Expert reports were exchanged in March 2025. The Defendant then applied, on 20 May 2025, to serve a supplementary statement from Mr Nassar which, it was said, was necessary to address certain issues raised by Mr Yap's report, including in respect of the surgical technique used by Mr Nassar to open the sternum. That further statement from Mr Nassar prompted the Claimant's legal team to indicate that they would apply to amend the Amended Particulars of ***P5*** Claim, including by re-instating an allegation that the aorta was injured as a result of negligence.

11. Mr Yap and the expert instructed by the Defendant, Mr Roberts, were able to meet and agree a joint statement dated 26 May 2025 which encompassed discussion of the proposed amendments to the allegations of negligence indicated by the Claimant.

12. A number of applications were therefore live at the start of the trial, including (a) the Defendant's application to serve Mr Nassar's second witness statement, (b) the Claimant's application for permission to serve a Re-Amended Particulars of Claim, and (c) the Defendant's consequential request for permission to serve a Re-Amended Defence. On the second day of trial the Defendant applied to serve a third witness statement from Mr Nassar responding to the new allegations of negligence. Those matters were very largely dealt with by consent, save in respect of cost consequences.

13. Another issue which was the subject of applications at the start of trial concerned the evidence of Mr Amir Mohamed, senior registrar in cardiothoracic surgery, who had assisted Mr Nassar in the relevant surgery.

14. The Defendant had served a witness statement from Mr Mohamed in January 2025, but Mr Mohamed had, by that stage, moved to Kuwait. The Defendant attempted to obtain the permission of the relevant authorities in Kuwait to enable Mr Mohamed to give evidence from Kuwait by video-link, but no substantive response was received from those authorities. By the time of trial Mr Mohamed no longer had a visa permitting entry to the UK. On 13 June 2025, one working day before trial, the Defendant's solicitors served an application seeking permission to adduce Mr Mohamed's statement as hearsay evidence under s.2 of the Civil Evidence Act 1995 .

15. In response, the Claimant applied at the start of the trial to call Mr Mohamed to give oral evidence pursuant to CPR 33.4 . The Defendant's solicitors confirmed that Mr Mohamed was willing to travel to give evidence either by video-link from the USA or, if a visa could be obtained, by attending trial in the UK. As a matter of practicality, it was agreed that all other witnesses would give evidence, including the experts, so as not to delay matters and then Mr Mohamed's evidence could be taken, out of turn, once the logistical issues had been overcome. In the event, Mr Elgot, counsel for the Claimant, withdrew the application to call Mr Mohamed once all the other evidence had been adduced. I therefore have had regard to Mr Mohamed's witness statement as hearsay evidence pursuant to the Civil Evidence Act 1995 .

16. It is unfortunate that the various procedural issues had not been raised and resolved well in advance of trial. However, I am grateful to both legal teams and the parties for their pragmatic and co-operative efforts to deal with the issues which arose by agreement insofar as possible. I am also grateful to both experts for their constructive approach in dealing with the emerging issues and evidence.

D. Background facts

17. The Claimant was born in 1996 with congenital pulmonary atresia (that is, a defect of the pulmonary valve which controls blood flow from the right ventricle to the pulmonary artery which, in turn, carries blood from the heart to the lungs) ***P6** and a ventricular septal defect (that is, a hole in the wall separating the right and left ventricles).

18. She underwent a number of surgical procedures, including:

a. A right, modified, BT (Blalock-Thomas-Taussig) shunt between the aorta and the pulmonary artery in 1996, at the age of four days old, via a thoracotomy.
b. A left modified BT shunt in 1997, when one year old, via a thoracotomy;
c. Repair of the pulmonary atresia and ventricular septal defect with a Contegra conduit (that is, a valved pulmonary conduit made from animal tissue) in 2001, when aged four and a half, via a sternotomy with cardiopulmonary bypass;
d. Replacement of the Contegra conduit in 2003, when aged six, via a re-sternotomy with cardiopulmonary bypass;
e. An attempted percutaneous pulmonary valve implantation via the right groin in 2013 which resulted in a balloon rupture in the right femoral vein during a cardiac catheterization procedure, following which there was a need for an exploration to retrieve the balloon.
f. A successful percutaneous replacement of the pulmonary valve in 2016.

19. Between 2014 and 2021 the Claimant had three children.

20. In September 2021 the Claimant was seen by Dr Jansen, the Claimant's lead treating Consultant Cardiologist from 2019 until 2022. The Claimant reported being breathless on minimal exertion and being fatigued at work, associated with progression of pulmonary stenosis, aortic regurgitation and aortic dilation. Dr Jansen considered that the pulmonary valve required replacement and she discussed the possibility of a Personalised External Aortic Root Support (" **PEARS** ") procedure which involves the production of a bespoke 'jacket' which is then placed around the aorta to provide support to the dilated aorta and which can also assist with the management of the valve.

21. On 15 September 2021 the Claimant's condition was discussed at a Joint Adult Congenital Cardiology/Cardiac Surgery Multi-Disciplinary Team (" **MDT** ") meeting at the Freeman Hospital to consider further intervention. The consensus was that there was a clear indication for pulmonary valve replacement. There was also discussion as to whether the Claimant required concomitant aortic valve surgery. It was decided to proceed with a repeat cardiac MRI to assess the degree of aortic regurgitation.

22. The MRI scan was performed on 12 November 2021. It showed severe aortic regurgitation and a dilated left ventricle and dilated aortic root and ascending aorta. A letter to the GP and to the patient dated 23 November 2021 expressed an initial view about surgery.

23. The Claimant was discussed again at an MDT meeting on 15 December 2021 attended by 5 cardiologists, 3 surgeons including Mr Nassar, and 3 registrars. The MRI results were reviewed and it was agreed that the Claimant required (a) pulmonary valve replacement surgery to treat the significant stenosis (narrowing) of her previous valve; (b) that she should be offered a PEARS procedure for her dilated aorta; and (c) that if, following the PEARS procedure, the aortic valve remained incompetent then the aortic valve should be repaired or replaced during the same surgery. ***P7***

24. Dr Jansen says that she called the Claimant to discuss the outcome of the MDT, although there is no note of that call. Mr Nassar was the only surgeon at the hospital who carried out PEARS. I am informed that his secretary sent a letter on 29 December 2021 inviting the Claimant for a pre-operative assessment.

25. In January 2022 the Claimant attended a preoperative assessment clinic with the consultant anaesthetist and a coronary angiogram was performed. It was recorded that the Claimant was suffering worsening symptoms of chest pain, palpitations and shortness of breath. The Claimant also had a CT coronary angiogram to assist with surgical planning and for the printing of the PEARS 'jacket', being a bespoke medical device. Mr Nassar was not available to see the Claimant.

26. On 17 April 2022 the Claimant was admitted to her local hospital, Darlington A&E, with chest pain and breathlessness. She had a CT angiogram on 18 April 2022 which noted that her heart was enlarged. On 19 April, the Claimant spoke to Dr Rybicka, an adult congenital heart consultant, by telephone, and it was agreed to bring the Claimant's surgery forward in light of her recent emergency admission and deteriorating symptoms.

27. On 24 April 2022 the Claimant was admitted to the Freeman Hospital to undergo planned cardiothoracic surgery by Mr Nassar on the following day. Mr Nassar was, again, unavailable on 24 April and so the Claimant was seen by Dr Mohamed, Mr Nassar's senior registrar. According to Dr Mohamed's witness statement, the Claimant already knew the kind of surgery she was due to have, having had detailed discussions with Dr Jansen. He says that he "ended up quoting a mortality (risk of death) of around 20%" and that the Claimant signed a consent form recording this risk. In the event, the surgery was cancelled because of a lack of beds in the Intensive Therapy Unit (" **ITU** ").

28. On 2 May 2022, a bank holiday Monday, the Claimant was re-admitted to the Freeman Hospital for planned surgery by Mr Nassar on the following day. On the morning of Tuesday 3 May, Mr Nassar saw the Claimant and she signed a consent form which stated that there was a 5-10% risk of mortality. Mr Nassar's evidence is that he considered that Dr Mohamed had overestimated the risk of mortality. He says that he tore up Dr Mohamed's risk assessment as he did not want there to be two different consent forms on file because this might cause confusion.

29. According to Mr Nassar, he reviewed the Claimant's CT scans from January 2022 prior to the surgery. He apparently considered that the aorta was in close proximity to the sternum but that it was not adhered to the sternum. He recognised the real risk of injuring the aorta when performing the sternotomy, but his clinical judgment was that it was not necessary or appropriate to place the Claimant on bypass given the risks that this would involve.

30. The Claimant was brought into theatre at around 10:45 on 3 May 2022. Mr Nassar had two clinicians assisting him, to help lift the sternum during the process of opening the chest. Mr Nassar says that he performed "point of care" testing with the anaesthetist which involved using ultrasound to check the position and patency of the groin vessels to be used intraoperatively in emergency, that is if the patient needs to be established on cardiopulmonary bypass. He says he marked the Claimant's femoral vessels using a skin marker on both the left and right side - marking both a vein and an artery on both sides - for use if required. He says that his preference was to use the left groin as access if required given the previous complication with a balloon rupturing in the artery on the right side. Supplies of blood and blood products were also put in place in case of emergency. ***P8**

31. According to his first statement, knife to skin occurred at around 12 noon and he says he spent the next 25 minutes " *meticulously freeing the cardiac structures prior to sternotomy* ". In the course of performing the sternotomy, Mr Nassar accidently cut the wall of the aorta.

32. Mr Nassar could not stem the bleeding sufficiently by applying compression to the damaged aorta. His anaesthetic colleagues activated the massive transfusion protocol and the Claimant was given blood and blood products. Mr Nassar states that he recalls exposing the vessels in the left groin, in preparation for emergency bypass. At some stage, Mr Nassar was joined in theatre by two other consultants, Mr Fabrizio De Rita and Professor Stephen Clark, to provide assistance. They would have had to respond to the emergency call and "scrub in". In his first witness statement Mr Nassar stated that his best estimate is that they would have been present in theatre within ten minutes of the injury occurring. Mr De Rita attempted to cannulate the left femoral vessel, but when he placed a cannula in the left femoral artery it dissected. The fact that cannulation was not attempted before Mr De Rita arrived in theatre gives some indication of the time spent exposing and preparing the groin vessels. Mr De Rita started exposing the vessels in the right groin for cannulation.

33. In the meantime, Mr Nassar says that he was able to canulate the ascending aorta and bypass was established using the central cannulation. The operation proceeded to repair the ascending aorta and relace the pulmonary and aortic valves. The PEARS procedure was not undertaken due to the injury to the aorta.

34. The anaesthetic intraoperative note of 3 May 2022, timed at 13:58 BST, states: "saw accidently cut through the aorta causing massive haemorrhage". Mr Nassar says now that when he refers to the saw slipping, he means that it went to a greater depth than he intended, rather than any actual loss of control.

35. There is a note in the medical records from Dr Jansen, timed at 20:12 on 3 May 2022, recording her conversation with the Claimant's husband by phone that evening. Mr Nassar also telephoned the Claimant's husband when he finished the surgery which was late evening on 3 May 2022. He subsequently met with the Claimant's parents on his return to the UK.

36. The Intensive Care Medicine admission note of 4 May 2022 timed at 01:54 similarly describes the intraoperative events as "during sternotomy saw accidently cut through the aorta causing massive haemorrhage. Massive Transfusion protocol activated and bloods with blood products given without delay".

37. A Cardio Services Communication Note dated 12 May 2022 authored by a James Park refers to a discussion with the Claimant's husband. It is recorded that the injury "was 'not on the cards' when she went for surgery". The Claimant's husband's evidence was that these were the words used to him, albeit his recollection was that they came from Mr Nassar but they may have been Mr Park's words. The note records "we have reached the stage where it would be appropriate to concentrate on symptom management and withdraw life support once this has been achieved" and arrangements were made to contact the specialist nurses in organ donation. In the event, life support was not withdrawn and the Claimant's condition eventually began to improve, but this note illustrates the seriousness of the injuries sustained by the Claimant.

38. The operation note was not written by Mr Nassar until 19 May 2022, some 16 days after the operation. Mr Nassar says that this is because he flew to Kenya on 4 May 2022, the day after the Claimant's surgery, on a medical charity mission ***P9*** and that it was not possible for him to complete the operation note before he left. The operation note states: "chest re-entry through redo-sternotomy was complicated by injury to the aorta causing catastrophic haemorrhage". The note does not explain how the aorta was injured.

39. A letter was sent to the Claimant's GP, stated to be typed on 1 June 2022, by the Defendant Trust which included the statement "During sternotomy saw cut through the aorta causing massive haemorrhage". There is no mention of the dissection of the left femoral artery during attempted cannulation for the bypass. It is recorded that "Managed to get onto CPB after 20 minutes downtime with cerebral Sats persistently below 20 during resuscitation period with severe hypotension and no cardiac output". This reflected the wording in the intensive care admission note of 4 May 2022.

40. The Defendant Trust operated the Datix online incident reporting system. It appears that no entry was made on Datix contemporaneously in respect of the Claimant's surgery of 3 May 2022. I have not seen the Trust's policy in relation to the incidents which should be reported on Datix. Nor was any Serious Incident investigation instigated contemporaneously.

41. Some details concerning Datix and the position in relation to Serious Incident investigations were provided by the Defendant, via the Fourth Witness Statement of Rachel Thompson, solicitor for the Defendant, served during the course of the trial. Ms Thompson explains that a pre-action letter of claim was sent to the Trust on 28 July 2022 which prompted internal investigations. This resulted in a Serious Incident triage on 10 October 2022 at which it was determined that the incident did not meet the relevant criteria to trigger a Serious Incident investigation because the injury was a recognised complication of surgery. The incident appears to have been considered further at a Clinical Governance (Mortality and Morbidity) meeting on 14 October 2022. Thereafter, a "retrospective datix" report was submitted on 2 February 2023, apparently at the request of legal services. The report does not mention the dissection of the femoral artery. The report states that the case was "awaiting review", but there is no evidence that any subsequent review was carried out.

E. Relevant law

42. The legal test for establishing negligence by a doctor in diagnosis or treatment is whether the doctor has acted in accordance with a practice accepted as proper by a responsible body of medical opinion (*per* Lord Hamblen and Lord Burrows JJSC in *McCulloch v Forth Valley Health Board [2023] UKSC 26* at [1]).

43. That test, often referred to as the " *Bolam* " test or, more recently as the "professional practice test", is derived from the direction given to a jury by McNair J in *Bolam v Friern Hospital Management Committee [1957] 1 W.L.R. 583* at 587. A clinician:

> "…. 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 this particular art… Putting it the other way round, a man is not negligent, if he is acting in accordance with such a practice merely because there is a body of opinion that would take a contrary view…" ***P10**

44. A claimant will therefore not succeed in establishing negligence merely by demonstrating that there is a body of competent professional expert opinion which disagrees with the judgment taken by the relevant clinician, provided that there is a body of competent professional expert opinion which supports that judgment as reasonable in the circumstances. The test recognises that a range of different views may legitimately be held about the same issue by different professionals.

45. Lord Scarman summarised the position as follows in *Maynard v West Midlands RHA [1984] 1 W.L.R. 634* at 638E:

> "Differences of opinion and practice exist and will always exist in the medical and other professions. There is seldom only one answer exclusive of all others to problems of professional judgement. A Court may prefer one body of opinion to the other, but that is no basis for a conclusion of negligence."

46. In *Bolitho v City and Hackney HA [1997] UKHL 46; [1988] A.C. 232* the House of Lords recognised an important qualification to the *Bolam* test, namely that a court may, in a rare case, reject the professional opinion if it is incapable of withstanding logical analysis (again, see also *McCulloch v Forth Valley Health Board [2023] UKSC 26* at [1]). It is for the court, not for medical opinion, to determine the standard of care required of a professional in the circumstances of the case. Lord Browne-Wilkinson provided the following summary:

> "These decisions demonstrate that in cases of diagnosis and treatment there are cases where, despite a body of professional opinion sanctioning the defendant's conduct, the defendant can properly be held liable for negligence (I am not here considering questions of disclosure of risk). In my judgment that is because, in some cases, it cannot be demonstrated to the judge's satisfaction that the body of opinion relied upon is reasonable or responsible. In the vast majority of cases the fact that distinguished experts in the field are of a particular opinion will demonstrate

> the reasonableness of that opinion. In particular, where there are questions of assessment of the relative risks and benefits of adopting a particular medical practice, a reasonable view necessarily pre-supposes that the relative risks and benefits have been weighed by the experts in forming their opinions. But if, in a rare case, it can be demonstrated that the professional opinion is not capable of withstanding logical analysis, the judge is entitled to hold that the body of opinion is not reasonable or responsible.
>
> I emphasise that in my view it will seldom be right for a judge to reach the conclusion that views genuinely held by a competent medical expert are unreasonable. The assessment of medical risks and benefits is a matter of clinical judgment which a judge would not normally be able to make without expert evidence. As the quotation from Lord Scarman makes clear, it would be wrong to allow such assessment to deteriorate into seeking to persuade the judge to prefer one of two views both of which are capable of being logically supported. It is only where a judge can be satisfied that the body of expert opinion cannot be logically supported at all that such opinion will not provide the benchmark by reference to which the defendant's conduct falls to be assessed."

47. Ms Power also relied upon the helpful summary of the relevant principles at paragraph 20-25 of the judgment of Green J, as he then was, in *C v North Cumbria University Hospitals Trust [2014] EWHC 61 QB; [2014] Med. L.R. 189* . ***P11** In particular, the following guidance, at [25], concerning conflicting expert opinion in clinical negligence claims, is of relevance:

> "i) Where a body of appropriate expert opinion considers that an act or omission alleged to be negligent is reasonable a Court will attach substantial weight to that opinion.
>
> ii) This is so even if there is another body of appropriate opinion which condemns the same act or omission as negligent.
>
> iii) The Court in making this assessment must not however delegate the task of deciding the issue to the expert. It is ultimately an issue that the Court, taking account of that expert evidence, must decide for itself.
>
> iv) In making an assessment of whether to accept an expert's opinion the Court should take account of a variety of factors including (but not limited to): whether the evidence is tendered in good faith; whether the expert is "responsible", "competent" and/or "respectable"; and whether the opinion is reasonable and logical.
>
> v) Good faith: A *sine qua non* for treating an expert's opinion as valid and relevant is that it is tendered in good faith. However, the mere fact that one or more expert opinions are tendered in good faith is not *per se* sufficient for a conclusion that a defendant's conduct, endorsed by expert opinion tendered in good faith, necessarily accords with sound medical practice.
>
> vi) Responsible/competent/respectable: In *Bolitho* Lord Brown Wilkinson cited each of these three adjectives as relevant to the exercise of assessment of an expert opinion. The judge appeared to treat these as relevant to whether the opinion was "logical". It seems to me that whilst they may be relevant to whether an opinion is "logical" they may not be determinative of that issue. A highly responsible and competent expert of the highest degree of respectability may, nonetheless, proffer a conclusion that a Court does not accept, ultimately, as "logical". Nonetheless these are material considerations…"Competence" is a matter which flows from qualifications and experience. In the context of allegations of clinical negligence in an NHS setting particular weight may be accorded to an expert with a lengthy experience in the NHS. Such a person expressing an opinion about normal clinical conditions will be doing so with first hand knowledge of the environment that medical professionals work under within the NHS and with a broad range of experience of the

> issue in dispute…"Respectability" is also a matter to be taken into account. Its absence might be a rare occurrence, but many judges and litigators have come across so called experts who can "talk the talk" but who veer towards the eccentric or unacceptable end of the spectrum. …A "responsible" expert is one who does not adapt an extreme position, who will make the necessary concessions and who adheres to the spirit as well as the words of his professional declaration (see CPR35 and the PD and Protocol).
>
> vii) Logic/reasonableness: By far and away the most important consideration is the logic of the expert opinion tendered. A Judge should not simply accept an expert opinion; it should be tested both against the other evidence tendered during the course of a trial, and, against its internal consistency… A judge will ask whether the expert has addressed all the relevant ***P12** considerations which applied at the time of the alleged negligent act or omission … a matter of some importance is whether the expert opinion reflects the evidence that has emerged in the course of the trial. Far too often in cases of all sorts experts prepare their evidence in advance of trial making a variety of evidential assumptions and then fail or omit to address themselves to the question of whether these assumptions, and the inferences and opinions drawn therefrom, remain current at the time they come to tender their evidence in the trial. An expert's report will lack logic if, at the point in which it is tendered, it is out of date and not reflective of the evidence in the case as it has unfolded… If on analysis of the report as a whole the opinion conveyed is from a person of real experience, exhibiting competence and respectability, and it is consistent with the surrounding evidence, and of course internally logical, this is an opinion which a judge should attach considerable weight to…"

48. In *Montgomery v Lanarkshire Health Board [2015] UKSC 11; [2015] A.C.1430* the Supreme Court held, at [82] that a distinction is to be drawn between "on the one hand, the doctor's role when considering possible investigatory or treatment options and, on the other, her role in discussing with the patient any recommended treatment and possible alternatives, and the risks of injury which may be involved". As explained at [83]:

> "The former role is an exercise of professional skill and judgment: what risks of injury are involved in an operation, for example, is a matter falling within the expertise of members of the medical profession. But it is a non sequitur to conclude that the question whether a risk of injury, or the availability of an alternative form of treatment, ought to be discussed with the patient is also a matter of purely professional judgment. The doctor's advisory role cannot be regarded as solely an exercise of medical skill without also leaving out of account the patient's entitlement to decide on the risks to her health which she is willing to run (a decision which may be influenced by non-medical considerations). Responsibility for determining the nature and extent of a person's rights rests with the courts, not with the medical professions."

49. The Supreme Court confirmed, at [87] (*per* Lord Kerr and Lord Reed JJSC), that a doctor is under a duty

> "…to take reasonable care to ensure that the patient is aware of any material risks involved in any recommended treatment, and of any reasonable alternatives or variant treatments. The test of materiality is whether, in the circumstances of the particular case, a reasonable person in the

> patient's position would be likely to attach significance to the risk, or the doctor is or should reasonably be aware that the particular patient would be likely to attach significance to it".

50. At [89] the following point is also of particular relevance:

> "…it follows from this approach that the assessment of whether a risk is material cannot be reduced to percentages. The significance of a given risk is likely to reflect a variety of factors besides its magnitude: for example, the nature of the risk, the effect which its occurrence would have on the life of the patient, the importance to the patient of the benefits sought to be achieved ***P13** by the treatment, the alternatives available, and the risks involved in those alternatives. The assessment is therefore fact-sensitive, and sensitive also to the characteristics of the patient."

51. In summary, whilst the *Bolam* test is applicable to the choice of treatment options, it is not applicable to the discussion of those options and their attendant risks with the patient. In respect of the discussion of those options, the doctor is under a duty to take reasonable care to ensure that the patient is aware of any material risks in treatment and of any reasonable alternative or variant treatments so that the patient can make an informed decision.

52. In *McCulloch v Forth Valley Health Board [2023] UKSC 26* , the Supreme Court returned to the issue of informed consent and considered the applicable test in circumstances in which the doctor failed to make the patient aware of an alternative treatment in a case where the doctor's opinion was that the alternative treatment was not reasonable and that opinion was supported by a responsible body of medical opinion. The court confirmed that the *Bolam* test remained the correct legal test for the purposes of determining which treatments were reasonable alternatives (clinically appropriate). Once the *Bolam* test had been applied to determine the reasonable alternative treatments, the doctor was then under a duty of care to inform the patient of those reasonable alternative treatments and their material risks.

53. In emphasising both the difficulties which can arise from a late consenting process and the importance of clinical record keeping, Mr Elgot for the Claimant also placed reliance on *Snow v Royal United Hospitals Bath NHS Foundation Trust [2023] EWHC 42 (KB)* , in which the Defendant admitted a failure to obtain informed consent. The Defendant also accepted that it was "sub-standard to consent a patient on the day of the operation" in relation to major surgery of the type in question. The Defendant's expert accepted that anything a patient was told and signed on the day of surgery does not constitute informed consent and that consent should have been obtained "weeks in advance", at [102]. The judge held that the Defendant was negligent in relation to record keeping, at [99], and that the surgeon had a total disregard for the need for clinical governance, training, mentoring, supervision, and record keeping, at [105].

54. The Claimant also relies on *Chester v Afshar [2004] UKHL 41* , where a patient established that had she been properly warned of the material risks, she would not have had the surgery on the day she did. The House of Lords held that the test for causation was established even if this involved some departure from the normal rules of causation, as the importance attached to the claimant's right to make an informed decision justified applying a special rule. The parties were agreed that legal arguments as to the application of *Chester v Afshar* to the facts of this case (as opposed to findings of fact relevant to those issues) fall outside the scope of this trial of the identified preliminary issues.

F. Third party reports relied on by the Claimant

The Royal College of Surgeons Report 2021

55. Mr Elgot sought to rely on a report on the Adult Cardiac Surgical Service unit at the Defendant Trust by the Royal College of Surgeons dated 23 July 2021. The report followed concerns about the culture in the department, including allegations of bullying by adult cardiac consultant surgeons, issues with attendance at, and the ***P14** efficacy of, MDT meetings, and discord within the unit regarding the allocation of 'unstable' cases. The report was critical of a number of aspects of the unit, including in respect of the culture surrounding reporting and the reporting of all patient safety incidents on Datix, the online incident reporting system.

56. It is stated on the first page of the report that the information provided indicated *"the unit was comprised of seven adult cardiac surgeons ... three congenital cardiac surgeons and four thoracic surgeons…".* In the circumstances, Mr Elgot, counsel for the Claimant, submitted that the report applied to the congenital cardiac surgeons and so included the team to which Mr Nassar belonged.

57. The Defendant objected at the outset of the trial to the Claimant's reliance on the report on the basis that, it was said, the report was irrelevant to the congenital cardiac unit. In the course of their evidence both Mr Nassar and Dr Jansen made clear that they did not understand the report to relate to the congenital cardiac surgeons and that their understanding was that it was confined to the adult cardiac surgeons.

58. Mr Elgot's alternative point was that even if the report was not directly applicable, it is likely that there was some overlap in respect of the working practices and culture of the Defendant Trust's adult cardiac surgeons and adult congenital cardiac surgeons.

59. I have considered the report and have concluded that it does not expressly claim to apply to the congenital cardiac surgeons, notwithstanding the manner in which the unit is described. I have no reason not to accept the clear evidence for Mr Nassar and Dr Jansen that the focus of the inquiry by the RCS did not concern the congenital cardiac surgeons. Nor do I consider that it is appropriate to assume, without more, that the unit comprising the congenital cardiac surgeons were affected by the same culture or failings as the adult cardiac surgeons. In all the circumstances, I have therefore reached the conclusion that it is not appropriate to place weight on the findings of the RCS report.

The Leeds report 2021

60. Shortly before the start of the trial the Claimant made a specific disclosure application to seek an unredacted copy of a report by the Leeds Teaching Hospitals NHS Trust entitled: "An independent and external review to understand events that took place in the Adult Cardiac Surgery Department at the Newcastle Upon Tyne Hospital NHS Foundation Trust, between the period 1 January 2018 and 1st June 2021".

61. The Leeds report states that it relates to "a series of cases in which poor outcomes occurred" which was brought to the attention of the Clinical Governance and Risk Department at the Defendant Trust in May 2021. The Defendant served evidence in response to the application explaining why it considered the report to be irrelevant to the issues in this case, not least as it was said that the report related to an individual surgeon, who was not Mr Nassar, nor connected to the case in any way and, again, related to the adult cardiac surgery department and not the congenital cardiac surgery department. Mr Elgot indicated at the start of the trial that the application was not pursued. Again, for the sake of completeness, I confirm that I have reached the conclusion that it is not appropriate to place weight on the findings of the Leeds report in this case. ***P15**

G. Guidance of the RCS and the GMC

62. Mr Elgot drew my attention to various guidance documents produced by the Royal College of Surgeons and the General Medical Council. He placed particular emphasis on the following as evidence of the relevant standard of care:

a. RCS – Good Surgical Practice 2014 guidance:

"1.3 Surgeons must ensure that accurate, comprehensive, legible and contemporaneous records are maintained of all their interactions with patients.

Ensure that a record is made by a member of the surgical team of important events and communications with the patient or supporter…

Ensure that there are clear … operative notes for every procedure. The notes should accompany the patient into recovery and to the ward and should give sufficient detail to enable continuity of care by another doctor. The notes should include:

… Any problems/complications…."

b. RCS – Consent: Supported Decision-Making – A Guide to Good Practice 2018

"Key principles

…

In addition to the consent form, a record of discussion (including contemporaneous documentation of the key points of the discussion, hard copies or web links of any further information provided to the patient, and the patient's decision) should be included in the patient's case notes…"

4.8 Timeframe for consent discussions and the signing of the consent form

… Patients should be given enough time to make an informed decision regarding their treatment, wherever this is possible and not adverse to health. This may require that the discussion takes place over more than one session for particularly complex or life changing decisions. The process of consent should begin well in advance of the treatment …

… the consent form should be signed at the end of the discussion, provided the patient has reached the decision to go ahead with a treatment. This will allow the patient to take away a copy of the form alongside all relevant information, for reference and reflection. For an elective procedure they should also receive a letter or a copy of the letter to the GP/the referring doctor that gives an account of the discussion that has taken place…

4.10 A decision-making record

The signing of a consent form by a patient does not amount to valid consent for treatment … the patient's consent will be invalid if they have not been given the appropriate information, communicated in a way that they can understand well enough to make a decision.

In addition to completing the consent form, surgeons should maintain a written decision-making record that contains a contemporaneous documentation of the key points of the consent discussion…. This could be in the form of a letter to the patient and their GP/referring doctor. The record should also contain documentation of any discussion around consent with the patient's supporters and with colleagues. Any written information given to the patient should also be recorded and copies should be included in the patient's notes…" ***P16**

63. Various GMC guidelines were similarly relied upon in terms of good record keeping and the consent process, including the GMC's "Guidance on professional standards and ethics for doctors, Decision making and consent" 2020. That guidance sets out seven principles of decision making and consent, including:

> "Principle One: All patients have the right to be involved in decisions about their treatment and care and be supported to make informed decisions if they are able".
>
> …
>
> Principle Four: Doctors must try to find out what matters to patients so they can share relevant information about the benefits and harms of proposed options and reasonable alternatives, including the option to take no action"
>
> …
>
> 8. The exchange of information between doctor and patient is central to good decision making. It's during this process that you can find out what's important to a patient, so you can identify the information they will need to make the decision.
>
> 9. The purpose of the dialogue is:
>
> a. to help the patient understand their role in the process and their right to choose …
>
> b. to make sure the patient has the opportunity to consider relevant information that might influence their choice between the available options
>
> c. to try to reach a shared understanding of the expectations and limitations of the available options….
>
> 31. You must be clear about the scope of decisions so that patients understand exactly what they are consenting to… Agreeing the scope of the patient's consent with them in advance is particularly important if:
>
> ….
>
> (d) there is a significant risk of a specific harm occurring during an intervention, which would present more than one way to proceed…"

64. Ms Power submitted that the GMC guidelines do not add anything to the duty of care set out in *Montgomery* , relying on *Johnstone v NHS Grampian [2019] CSOH 90* , at [131] in which Lord Glennie observed that GMC guidance may set out good practice and will therefore inform the content of the *Montgomery* duty of care, but they are not prescriptive of the steps which a doctor must take in dealings with the patient when it comes to allegations of negligence. I adopt a similar approach in this case: the guidance of the RCS and GMC to which I have been referred may assist in relation to issues concerning the appropriate standard of care, but they provide no more than guidance in this regard.

H. Overview of the factual and expert evidence

Factual witness evidence

65. As a result of the hypoxic brain injury sustained during the surgery, the Claimant was not in a position to give evidence. However, certain WhatsApp messages from the Claimant to her mother have been disclosed. The Claimant's messages on the morning of her surgery, 3 May 2022, demonstrate that she was clearly very concerned about the prospect of the surgery

being cancelled for a second time: ***P17*** "I'm starting to worry again incased [sic] it get cancelled" and "It's really bad if they cancel again".

66. I heard oral evidence from the Claimant's husband and Litigation Friend, the Claimant's mother and the Claimant's aunt. All three were evidently trying to assist the court and to give accurate evidence. I am very grateful to all three.

67. Whilst the Claimant was taken to hospital appointments by family members, she attended the relevant consultations with the clinicians by herself. The Claimant's husband gave evidence as to the Claimant's history of congenital heart issues and also as to the events following the surgery on 3 May 2022 as well as detailed evidence concerning the on-going care of the Claimant which he has provided, together with the Claimant's mother and aunt, and the impact of the Claimant's injuries on the Claimant and on their three young children. Together, the three witnesses describe very clearly the serious on-going difficulties which the Claimant faces in daily life, including impacts on her cognition, on her sight, on her loss of independence and in relation to ongoing depression.

68. Some limited aspects of the evidence of the Claimant's husband touched on points which he said that the Claimant told him in relation to the consenting process. In large part, this evidence is said by the Claimant's husband to be information which the Claimant has remembered and told him about since the incident as opposed to information which the Claimant relayed to him prior to the surgery. Ms Power, on behalf of the Defendant, objected to such evidence in circumstances in which the psychiatric report of Professor Ann Mortimer dated April 2025 made clear that, in her opinion, "owing to extensive retrograde amnesia occasioned by lengthy hypoxaemia, [the Claimant] is unable to recall either of the two consenting procedures to any meaningful degree" and "this has rendered her incapable of discussing what she was told, what she understood, and what, if anything, she did about it".

69. Having had regard to Professor Mortimer's report, I do not consider it appropriate to place weight on the few fragments of the Claimant's recollection relating to the consenting process which the Claimant's husband relays in his statement. At best, those are likely to be partial and incomplete recollections and, as a result, may be materially misleading.

70. The Defendant called Dr Jansen to give oral evidence. Dr Jansen is a consultant Adult Congenital Cardiologist, employed by the Defendant Trust since 2016. She graduated as a cardiologist in 2010. She first met the Claimant in 2019 when the Claimant was 23 years old and pregnant with her third child. She had ongoing contact with the Claimant throughout 2021 and in the months prior to the surgery on 3 May 2022. The notes of the ward round with Mr Nassar on the morning of the surgery record her as being present. It is evident that the treating cardiologist provides a pivotal role in relation to the treatment of a patient with congenital heart issues such as the Claimant. Dr Jansen was, in my view, attempting to provide fair and accurate evidence for the assistance of the Court.

71. Mr Nassar was also called by the Defendant. He has been a consultant in Paediatric and Adult Congenital Cardiac Surgery with the Defendant Trust since 2016, having graduated (in 2001) and trained in Egypt until 2008 when he moved to France. He has practised in England since 2012 and took up his consultancy post in 2016.

72. A high proportion of Mr Nassar's surgery, approximately one third, is "re-do" surgery, that is, the patients have had surgery which has involved opening the chest ***P18*** on previous occasions, sometimes on multiple previous occasions. Between 2016 and the Claimant's surgery in 2022 he states that he has performed over 650 cardiac procedures and at least 193 of those were "re-dos". The Claimant's surgery in May 2022 was only the second time in which he has experienced a catastrophic injury to the aorta; on the other occasion, involving a child, the bleeding was controlled immediately and did not require emergency bypass.

73. As noted at [14] and [15] above, a witness statement from Mr Mohamed was served and his evidence was admitted under the Civil Evidence Act . The Claimant did not adduce any evidence which contradicts the contents of Mr Mohamed's statement to any material extent. In relation to the limited matters he deals with in his statement, I am satisfied that it is appropriate to place weight on the contents of his statement.

Expert evidence

74. Mr John Yap, instructed by the Claimant, is an NHS consultant cardiac and aortic surgeon. He has been a full time NHS consultant in cardiac surgery for 22 years. In 2003 he became a consultant at The Heart Hospital, University College Hospital, which unit, in 2015, amalgamated with St Bartholomew's Hospital and he has been the senior surgeon for major aortic surgery at Barts Heart Centre since 2015. He is the convenor of the Barts Aortic MDT which meets every two weeks. In his oral evidence he stated that this is the largest aortic unit in the country. His aortic surgery is about one third of his work

and includes congenital aortic cases. He is therefore involved in the aortic aspects of the adult congenital cardiology unit, but he was careful to emphasise that he is not a congenital cardiac surgeon.

75. Mr Neil Roberts, instructed by the Defendant, has been a consultant cardiac surgeon for over 14 years. In 2011 he became a consultant at The Heart Hospital and from 2015 has been at the Barts Heart Centre. He has been a colleague of Mr Yap, working at the same centres, since being a consultant. He has performed more than 2,500 open heart procedures. Approximately 5% of this surgery could be classified as aortic, including aortic valve surgery, though he explained that the term "aortic surgeon" tends to be used for those specialising on the aortic arch and above; he does not take part in the Barts Aortic MDT. He was elected to be Dean for the Society of Cardiothoracic surgery in 2019 and is heavily involved in surgical training, being a full examiner in the FRCS (C-Th). He was Surgical Clinical Governance lead from 2015 to 2019 at the Barts Heart Centre.

76. As is apparent from the above, unlike Mr Nassar, neither Mr Yap nor Mr Roberts is a consultant in congenital cardiac surgery. Neither, therefore, were able to provide expert evidence on certain aspects of the surgery which the Claimant was due to undergo on 3 May 2022, including the PEARS procedure. However, the key issues in this case concern the re-do sternotomy, preparatory steps for the sternotomy having regard to the risks posed by the proximity of the aorta, and the consenting process. Both Mr Yap and Mr Roberts are experienced in re-do sternotomies although neither perform re-do sternotomies as frequently as Mr Nassar. Mr Yap has particular experience of sternotomies in the context of aortic surgery in addition to his expertise in cardiac surgery. In addition to his expertise in cardiac surgery, Mr Roberts has particular experience in terms of clinical governance and teaching; he explained that safe approaches to re-do sternotomies is an issue which comes up regularly in this role and he is familiar with a range of surgical approaches and ***P19*** clinical opinions regarding the problems posed. Mr Roberts agreed, in cross-examination, that re-do sternotomies in cases with an enlarged aorta are rare and he only has experience of a "handful" of such cases. Both experts were candid about the limits of their expertise and I am satisfied that both were well placed to provide opinion evidence on the key issues which they addressed, including interpretation of the pre-operative CT imaging.

77. Ms Power made various criticisms of Mr Yap's evidence, including Mr Yap's failure to include the required CPR Part 35 declaration in his report. Mr Yap apologised for this omission and accepted full responsibility for the fact of its omission. There was also some force in Ms Power's submissions that, during cross-examination, it became evident that on certain issues Mr Yap had overstated the position in his report and on other issues he had changed his position to some extent since his report. These criticisms do, however, have to be seen in the correct context of an expert having to respond to emerging evidence, including witness evidence from Mr Nassar as to the surgical technique he employed. Having had the benefit of hearing Mr Yap give oral evidence, I am satisfied that his evidence was given in good faith and that he was endeavouring to assist the court by providing his honestly held, and often strongly held, expert opinions.

78. Similarly, Mr Roberts' opinion evidence was also developed and refined as further information became available. In particular, his written report omitted to consider, at least in any detail, the important issue of the proximity of the aorta to the rear of the sternum (see [94] below), which issue was critical to the risks of the surgery and the preparatory steps which should be taken; he only addressed this issue in the joint statement. In general terms, however, he was careful and considered in his approach to giving evidence and, again, I am satisfied that his evidence was given in good faith and that he was endeavouring to assist the court by providing his honestly held expert opinions.

79. In her skeleton argument Ms Power indicated that the Defendant intended to rely upon the report of Mr Anderson, one of the two experts originally instructed by the Claimant, and which, in summary, was supportive of the Defendant's position. In response, Mr Elgot, for the Clamant indicated, somewhat ambitiously, that the Claimant sought to rely on the report of Professor Keenan, the second expert originally instructed by the Claimant and which, in summary, was supportive of the Claimant's case. Ms Power opposed that application and objected to Professor Keenan's report remaining in the bundle.

80. The reports of Mr Anderson and Professor Keenan had been considered by Mr Yap and Mr Roberts. Mr Roberts noted in his report that certain of his views accorded with certain of the views expressed by Mr Anderson. In circumstances in which Mr Yap and Mr Roberts had considered the reports of Mr Anderson and Professor Keenan I indicated my provisional view that the relevant reports should remain in the bundle and that the issue of reliance on those reports could be addressed in due course in the event that either party sought to place weight on aspects of those reports. Neither Ms Power, nor Mr Elgot, considered it necessary to pursue their respective applications in light of that preliminary indication. Ultimately, limited reference was made to the reports of either Mr Anderson or Professor Keenan during the trial.

81. Whilst I note that certain of Mr Roberts' opinions are consistent with Mr Anderson's views, I do not consider that I am assisted by the opinions set out in the report of Mr Anderson. This is because Mr Anderson's report was prepared at ***P20*** a

very early stage of the proceedings and he did not have the benefit of the far more extensive evidence that has been considered by both Mr Yap and Mr Roberts, including the witness statements and oral evidence of Mr Nassar, and further because I have had the benefit of oral evidence from Mr Yap and Mr Roberts, which evidence has been tested in cross-examination. Neither Mr Yap nor Mr Roberts have sought to place any particular reliance on the opinions expressed by Professor Keenan in his report which was also prepared at a very early stage and without the benefit of the much more detailed information now available; even if it were permissible to do so, I do not consider that it would be appropriate to place weight on it.

I. Preliminary Issue 1(a) surgical planning/preparation and risk mitigation

Summary of the issue

82. By the time of trial, the core allegation in respect of surgical planning and preparation was that the Defendant was negligent in failing to expose suitable femoral/groin vessels and failing to prepare those vessels (including by slinging them) in advance of the sternotomy to facilitate the establishment of more rapid cardiopulmonary bypass in the event of injury to the aorta. Further, it was alleged that taking such steps would have allowed the surgeon to check that the vessels were appropriate for cannulation, that the right size cannula was selected in advance for the vessel, and would have rendered the vessels easier to handle and to cannulate in the event of emergency. The Claimant's case was that such steps were the minimum mitigating measures which were appropriate given the significant risks of injury to the aorta arising from the proximity of the aorta to the rear of the sternum.

83. Mr Elgot confirmed in closing that allegations relating to the alleged failure to carry out CT scanning of the groin vessels (as opposed to ultrasound) and allegations of a failure to establish whether the vessels were "pristine" were not pursued.

84. It was also alleged that there was a failure, in advance of commencing the sternotomy, to agree and note the size of the femoral cannula that would be needed. Mr Nassar's evidence was that there was the usual "huddle" to discuss such matters and that the agreed estimated cannula size would have been marked on a board in the theatre. I accept Mr Nassar's evidence that matters such as cannula size would have been agreed in advance. Insofar as this allegation remained in issue and was not formally abandoned, I am satisfied that there was no failure to agree on the size of femoral cannula which would be required in the event of an emergency bypass.

Factual evidence

85. Mr Nassar's evidence was that he reviewed the most recent CT angiogram from January 2022, prior to the operation. The experts agreed that "all scans and data" should be reviewed for the purpose of the risk assessment (including the 2016 scans), albeit that both accepted that the most recent imagery was likely to be the most relevant and informative. There was no evidence before me to suggest that the 2016 scan would have revealed any material information which was not available from the 2022 scan. I do not consider that any failure to review the 2016 scan is material in any way. ***P21**

86. Mr Nassar did not comment in his first witness statement on his calculation from the CT imaging of the distance between the posterior table of the sternum and the distended aorta.

87. His oral evidence was more detailed. He explained that in the Claimant's case he did not expect the aorta to be adherent to the sternum. He said that, when reviewing scans, he sometimes uses a measuring tool to assist in establishing distances, but does not recall if he measured the distance from the back of the sternum to the aorta in the case of the Claimant. He also explained that his technique of performing the sternotomy meant that he could assess whether the aorta was adherent before he used the saw as he progressed in 5cm sections up the sternum.

88. As to his decision not to expose the femoral vessels in advance, he explained that there was a balancing exercise of different factors, with particular reference to how difficult the surgeon considered the entry to the chest would be based on the CT imaging. His decision not to expose the femoral vessels was based, he says, on three factors: (a) he had carefully reviewed the CT imaging and "it was not anticipated to be any more difficult than other re-do patients"; (b) given the congenital nature of the Claimant's heart issues, he was not keen to expose the groin vessels as he wanted to avoid any unnecessary risk of damaging those vessels as they may be required for use in future surgery; and (c) he wanted to avoid the risks of infection by creating an additional wound given that the risks of infection are heightened in a patient undergoing multiple concomitant cardiac interventions.

89. Mr Nassar's oral evidence was that if his review of the 2022 CT scans had led him to conclude that the aorta was adherent to the sternum then the chances of damaging the aorta would be "extremely high" and, in such circumstances, he would have

exposed the groin vessels in advance of the sternotomy in order to reduce the time taken to establish cardiopulmonary bypass in the event of injury to the aorta. However, Mr Nassar did also accept in cross-examination that the proximity of the aorta to the rear of the sternum increased the risk of aortic injury. He stated that if he had exposed the vessels in advance, it was not his practice to sling the vessels as this could cause injury and bleeding and interfere with distal leg perfusion in case of artery and venous drainage.

90. During his oral evidence, Mr Nassar sought to counter Mr Yap's assessment as to the proximity of the aorta to the rear of the sternum, which Mr Yap had illustrated by two stills taken from the CT imaging. Mr Nassar produced copies of four slides taken from the CT imaging to explain that imaging can be adjusted for contrast/brightness and that depending on the adjustments made, one can obtain a clearer image of the position of the external wall of the aorta. He said that his images gave a more accurate presentation of the position of the aorta and showed a larger gap between the rear of the sternum and the outer surface of the aorta wall than the slides produced by Mr Yap.

Expert evidence

91. **The risks posed by the surgery:** The experts agreed that, using the Euroscore system, the risk of mortality was 6%-9%. Some time was spent in cross-examination and in submissions on whether the Euroscore system (risk of mortality of 6%-9%) adequately reflected the true risks posed in congenital cases (as compared, in particular, to an alternative assessment model known as "PEACH") and/or in cases in which the aorta is close to the rear of the sternum. Whilst the risk of mortality ***P22** is clearly of relevance to the advice given to the Claimant in terms of the risks of the procedure, and provides an important context to the magnitude of the risks involved, the critical risk in question in relation to mitigation steps was the risk of injury to the aorta as opposed to the risk of mortality *per se* .

92. In his report Mr Yap states that "a 3rd time re-sternotomy is inherently risky. The presence of a closely applied ascending aortic aneurysm to the back of the sternum increases the risk of injury significantly…. If the aorta is closely applied to the back of the sternum, the chances of injury to the aorta is predictably high. This was the case with [the Claimant]".

93. Mr Yap reproduced a still from the 2016 CT scan showing, in his view, that, at least in one place, the gap between the aorta and the back of the sternum was only 1.46mm to 2.23mm, but that one needed to allow for the thickness of the wall of the aorta which could be between 1.5mm and 3.5mm, accounting for the entirety of that 1.46mm to 2.23mm. Mr Yap concluded that: "This would suggest that there was no tissue plane between the aorta and the sternum in this case. It is reasonable to say that the aorta would predictably be breached by the saw when the sternum was opened".

94. Mr Roberts did not directly address the CT scans or the proximity of the aorta to the sternum in his report nor, therefore, the specific risks arising from the sternotomy having regard to the CT scans. This is surprising given that he concluded that there was no need for Mr Nassar to take any greater mitigating measures (including exposing the femoral vessels) than he had in fact taken.

95. In their joint statement the experts agreed that "the aorta was closely applied to the sternum on the CT scan. The experts agreed that based on measurement on the CT Contrast scan, the aorta was within 3mm of the sternum." The experts also agreed that "a tissue plane is space between two structures filled with body tissue" and that "if two structures are adherent then there would be no tissue plane" and that "if the structures are not adherent there would be a tissue plane (space) between them".

96. Mr Yap considered that "the risk of aortic injury should have been considered medium to high as it was a 3rd re-sternotomy and the CT scan showed the aorta was adherent to the back of the sternum… an adherent pressurised aorta to the back of the sternum would almost inevitably result in the aorta being opened". In his oral evidence he was clear that even if the aorta was not in fact adherent, it was still extremely close to the sternum in places. This should therefore be considered to be a case of a medium to high risk of aortic injury as the risk must be assessed by reference to where the aorta is closest to the sternum as that will give rise to the greatest risk, not the average distance between the aorta and the sternum. The thrust of his evidence was that his CT still demonstrated that, in places, the aorta was too close to the sternum to enable a surgeon to be confident that there was any real tissue plane. Mr Nassar's four stills did not change his assessment in this regard.

97. Mr Roberts, conversely, considered that "the risk assessment made by the operating surgeon (low to medium) was reasonable given the information he had, the review of the CT scan, and in relation to his particular technique as described in the supplementary witness statement … and the high volume of redo surgery he performs as a congenital surgeon".

98. Mr Roberts agreed, however, that on the CT image used by Mr Yap as an illustration in his report, and on the contrast selected, it was reasonable to say that there appeared to be only a 1.4mm gap between the wall of the aorta and the rear

P23 of the sternum, although this was only one image and it would be necessary to review the totality of the imagery. The experts disagreed on whether the aorta was adherent to the back of the sternum. Mr Yap considered that it was adherent when one took into account the expected aortic wall thickness. Mr Roberts considered that there was "some space" between the aorta and sternum.

99. **The steps required to mitigate the risk of aortic injury:** In his report, Mr Yap says this:

> *"[43] With the significant risk of injury to the aorta on sternotomy, all reasonably competent and logical surgeons would have prepared for this risk with mitigating actions. ... There were a range of options that could have been considered. Mr Nasser's* [sic] *action of marking the sites for the femoral vessels with ultrasound and no further was completely inadequate considering the predictably extreme risk of aortic injury….*
>
> *...*
>
> *[45] When an injury to an important underlying organ happens, the time it takes to establish cardiopulmonary bypass equates to the time it takes to perfuse the brain and other vital organs. So, time is of the essence. With such a high predictable risk of aortic injury in this case, no reasonably competent surgeon approaching this issue logically would have failed to at least expose the peripheral vessels for emergency cannulation.*
>
> *[46] Exposure of the femoral artery and vein in an elective setting is a very safe and straightforward procedure. This simple procedure allows the surgeon to cannulate and establish cardiopulmonary bypass quickly and safely when required in an emergency setting… I have no statement as to the difficulty that Mr DeVita* [sic] *faced. I could not ascertain whether the cannulation was done by Seldringer's technique or direct cannulation with x clamps. Trying to expose the femoral vessels and to also cannulate them in an emergency with stress and adrenaline surge made the procedure very challenging. If the femoral vessels were exposed and slung [in advance], these actions would have allowed the operator to examine the quality and calibre of the exposed femoral vessels. This would allow the operator to match the size of the cannula to the vessel. Cannulating a femoral artery with an oversized cannula can result in a dissection especially in an emergency setting with stress and urgency. The detrimental effect of stress on technical and non-technical (decision making, situation awareness) skills during surgical procedures are well established (ref: "The effects of stress on surgical performance: a systematic review Adam Tan et al, Surgical Endoscopy (2025) 39: 77-98.)*
>
> *[47] In this case Mr Nasser* [sic] *failed in his duty to consider the CT scan findings and the severe risk of injury to the aorta and did not take the necessary steps to minimise the time for brain hypoxia by the delay in establishing cardiopulmonary bypass…*
>
> *...*
>
> *[49] Even in moderate risk of injury, the Mayo group recommended preparation for cardiopulmonary bypass on re-sternotomy by exposing and preparing the femoral vessels…. The Mayo clinic group's chart is the reasonable course of action.*
>
> *[50] In this case if Mr Nasser* [sic] *had at least prepared [the Claimant's] femoral vessels for cannulation, he would have been able to assess the vessels* ***P24*** *directly and consider their suitability for cannulation. We do not know from Mr DeVita* [sic] *what problems he faced when cannulating the left femoral artery in the emergency resulting in a dissection.*
>
> *[51] The Mayo Clinic group had recommended at least the exposure of the femoral vessels even in a moderate risk case. This was not done in [the Claimant's] case. The time saved in establishing cardiopulmonary bypass with the preparation of the femoral vessels would be related to the time it took Mr DeVita* [sic] *to expose the vessel and cannulate. The brain is very sensitive to hypoxia*

> *and many factors may play a role in brain injury. Any logical and competent cardiac surgeon would always act to minimise brain hypoxic time."*

100. In cross-examination, Mr Yap put the matter more succinctly. He summarised the position by saying that that injury to the aorta is a recognised risk of a sternotomy and the fact that the aorta was, on any view, very close to the rear of the sternum meant that any surgeons would need a plan for "how do I get out of this if it [injury to the aorta] happens?". His answer to that question was that it was going to be necessary to expose the femoral vessels in advance so as to reduce the risks of hypoxia in the event of injury to the aorta.

101. His references, at paragraphs 49 to 51 of his report, quoted above, to the recommendations of the Mayo Clinic Group, are to a paper entitled " *High-risk reoperative sternotomy – How we do it, How we teach it* " by Siddharth Pahwa et al, World Journal for Pediatric and Congenital Heart Surgery, Vol 11, issue 4, July 2020, p459. This recommends preparation for cardiopulmonary bypass on re-sternotomy by exposing and preparing the femoral vessels even in moderate risk cases. The authors explain that exposing and preparing the vessels in advance means that "Bypass can then be instituted quickly in the event of iatrogenic injury…". As noted above, in his report Mr Yap stated that this was "the" reasonable course to take. He conceded in cross-examination, however, that it was "a" reasonable course of action rather than "the" (only) reasonable course of action.

102. Mr Roberts disagrees with Mr Yap. His position was that:

> *"[2.5.7] The strategy to mark the groin vessels to allow immediate cannulation if required, in my opinion, would be supported by a reasonable and responsible body of cardiac surgeons.*
>
> *[2.5.8] The options available to a surgeon are to image the vessel and mark the skin only, percutaneously wire the vessel and place a sheath prior to resternotomy, there is an option of opening the groin and slinging the vessels to be ready to cannulate without giving Heparin should an emergency occur or there is the option of opening the groin and cannulating the vessel – this requires full Heparinisation and having the ability to establish cardiopulmonary bypass straight away in this scenario. It is my summary opinion that each surgeon makes a risk assessment in each case and decides which strategy to use. It is absolutely not the case that every redo sternotomy procedure has femoral vessels opened and slung.*
>
> *[2.5.9] I note Mr Nassar's statement which outlines his strategy. I do not identify any breach of duty in his approach. It is logical and reasonable."*

103. As noted above, however, Mr Roberts offered this opinion notwithstanding the absence of any discussion in his report as to the risks posed in this case having regard to the CT scans and the proximity of the distended aorta to the sternum. ***P25**

104. The critical evidence on this issue was set out in the joint statement. The experts agreed that Mr Nassar's planning of the sternotomy was "within the practice of a reasonable body of cardiac surgeons IF the court accepts that the level of risk of aortic injury was low"; but they are agreed that the precautions taken were not acceptable if the risk of aortic injury was high.

105. Mr Yap's position, as set out in the joint statement, was that "if the court accepts that the aortic risk was "medium to high" – then slinging the groin vessels was the minimum level of mitigation required in this case taking into consideration the presence of significant aortic regurgitation but agrees that many reasonably competent surgeons would use a higher level of mitigation such as commencing cardiopulmonary bypass before sternotomy".

106. Mr Roberts's position is that if the court finds that the risk of aortic injury was high then just exposing and slinging the groin vessels would not have been sufficient. He did not expressly deal, in writing, with the position if the risk of aortic injury was properly to be assessed as "medium to high". Mr Roberts, in cross examination, described the decision as to whether to expose the femoral vessels in advance as a "small decision". He said that the "big decision" was whether to establish the

Claimant on cardiopulmonary bypass prior to undertaking the sternotomy, and it was common ground between Mr Yap and him that in the Claimant's case Mr Nassar could not be criticised for deciding against establishing bypass at the outset.

107. Mr Roberts expressed the view that "a few extra minutes were taken to open the groin which is quick and easy to do…. 3-5 minutes might have been saved." In his view, however, most of the time lapse which occurred in the event was due to "the second unforeseen event which was the dissection of the femoral artery, which could not have been foreseen by pre operative imaging…". Mr Yap takes the view that "if the peripheral vessels … were exposed and prepared for cannulation, this would reduce the time to commence cardiopulmonary bypass. The time required to expose femoral artery [sic] can be unpredictable depending on the size of the vessels, the patient's body habitus and the competency of the surgeon. The dissection of the femoral artery during cannulation by the surgeon on probability [sic] would not have happened if the femoral artery was exposed and ready".

Discussion

108. Mr Yap is an aortic surgeon and I am satisfied that he is very familiar with assessing the risks posed to atypical aortas by surgical procedures, including sternotomies and re-do sternotomies. Mr Roberts clearly also has relevant experience, but he candidly accepted in cross-examination that his experience of re-do sternotomies involving enlarged/distended aortas is more limited; he said this: "it [i.e. relevant experience] is there, but a handful of cases".

109. The evidence before me does not demonstrate that the aorta was adherent to the inner wall of the posterior table of the sternum. However, I am satisfied that the wall of the enlarged aorta was in close proximity to the inner surface of the posterior table of the sternum. I recognise Mr Nassar's point that adjusting the contrast/brightness of the CT scan imagery may enable a more accurate understanding of the position of the exterior wall of the aorta than is apparent from the single CT still in Mr Yap's report, but this does not detract from the agreed evidence of the experts that the wall of the aorta was "closely applied to the ***P26*** sternum" and was, at least in places, "within 3mm of the sternum". That description does not exclude the possibility that, in places, the distance may have been smaller than 3mm – meaning that there might be very little by way of a tissue plane.

110. Given that I am not satisfied that the aorta was adherent, I consider that Mr Yap's assertion in his report that a sternotomy would " *almost inevitably result in the aorta being opened* " overstates the position. As Ms Power pointed out in cross-examination, if that were the reality then the balance would tip in favour of establishing the Claimant on cardiopulmonary bypass prior to opening the sternum whereas Mr Yap did not criticise Mr Nassar for failing to take this mitigating step.

111. Nevertheless, I do accept the general thrust of Mr Yap's evidence that even if the aorta was not adherent to the rear of the sternum, it was sufficiently close to the rear of the sternum, at least in places, to mean that no surgeon could be confident, in a re-do sternotomy, of being able to open the sternum without causing injury to the enlarged aorta. Mr Yap's oral evidence on this was clear: "When you have an aorta that is applied so intimately to the back [of the sternum], we are not sensitive enough to just cut the bone layer and not get beyond".

112. I accept Mr Yap's assessment, as an experienced aortic surgeon, that even if the aorta was not actually adherent to the rear of the sternum, it was in close enough proximity to the sternum, at least in places, that the risk of injury to the enlarged aorta on this third re-do sternotomy, with attendant risks of variations in the thickness of the sternum and risks of adhesions, should properly be classified as "medium to high" rather than "low to medium".

113. The approach of the experts in the joint statement, namely that one must first determine the nature of the risks of aortic injury before determining the appropriateness of the decision as to whether to expose the femoral vessels, is the logical and correct approach. Mr Yap was clear in the joint statement and in his oral evidence that exposing and preparing the femoral vessels was the minimum level of mitigation required if the risk of aortic injury was "medium to high".

114. It is notable, in my judgment, that Mr Roberts, clearly a careful and thorough surgeon, did not directly address the question of the proximity of the aorta to the sternum in the case of the Claimant in his report despite offering the opinion that Mr Nassar's approach to the surgery, including his decision not to expose the femoral vessels, was reasonable and logical. It seems to me that an expert cannot properly give evidence as to whether Mr Nassar's approach accorded with a practice accepted as proper by a responsible body of surgeons without considering the particular risks posed by the proximity of the enlarge aorta to the rear of the sternum in the Claimant's case.

115. In the joint statement, Mr Roberts set out his view as to the appropriate action if the risk of aortic injury was high (cardio-pulmonary bypass would have been required from the outset) and if it was "low to medium" (marking the femoral

vessels would have been appropriate). It is unfortunate that he did not set out his opinion as to the steps which should have been taken (i.e., whether femoral vessels should have been exposed and prepared) if the risk of aortic injury was properly assessed as "medium to high".

116. Mr Roberts suggested that there may have been complications arising from "vessel spasm" if the femoral vessels had been exposed in advance. Mr Yap's evidence was that steps could have been taken to mitigate any issues in relation to vessel spasm and that he did not consider this to be a valid reason for not exposing the vessels in advance. In any event, I was unpersuaded by Mr Roberts' concerns ***P27*** about vessel spasm in circumstances in which both experts were agreed that if the risk of aortic injury was "high" then the femoral vessels should have been exposed and prepared in advance, presumably notwithstanding any risks of vessel spasm.

117. I take on board the fact that Mr Nassar considered that his surgical technique (see [87] above) enabled him to progress in a staged progress and satisfy himself that the aorta was not adherent to the sternum prior to sawing through the next section of the sternum, but the evidence was that this technique still left the surgeon largely "blind" (as Mr Nassar himself accepted, see [127] below) as to the precise location of the aorta in relation to the rear of the sternum when using the saw.

118. Given the "medium to high" risk of injury, I am satisfied that Mr Yap is correct to say that exposing and preparing the relevant groin vessels as a preparatory step in case emergency bypass can properly be characterised as the minimum level of mitigation required in this case.

119. To the extent that Mr Roberts disagreed with Mr Yap's clear evidence that proper practice (within the meaning of the professional practice test) required the femoral vessels to be exposed if the risk of aortic injury should properly have been assessed as "medium to high", then the basis of any such disagreement was not set out in his written report nor the joint statement and nor was it adequately explained and justified. Further, and in any event, I do not consider that Mr Roberts's evidence can be said to amount to evidence that a responsible body of cardiac or congenital surgeons would accept the mere marking of the femoral vessels as proper practice in the event that the risk of aortic injury was properly assessed as being "medium to high". Nor do I consider that there was adequate evidence to establish that any such practice would be capable of withstanding analysis in accordance with *Bolitho* .

120. I accept that exposing and preparing the peripheral vessels might only have saved a few minutes (a point considered in more detail below), but, as Mr Yap explained, time is of the essence when it comes to establishing full cardiopulmonary bypass in the event of a catastrophic haemorrhage of the aorta. I address the issue as to whether the risk of dissection of the femoral artery might have been mitigated had the vessels been exposed and prepared in advance at paragraphs [154] to [161] below.

121. It follows that I do not accept that there was any valid basis for Mr Nassar's evidence that he did not consider that exposing and preparing the femoral vessels in advance was necessary because he did not anticipate that the Claimant's re-do sternotomy was likely to be "any more difficult than other re-do patients". Indeed, Mr Nassar accepted in cross-examination that the Claimant's aorta was "close" to the sternum (but not adherent) and that the closer the aorta is to the sternum, the higher the risks of the surgery. As Mr Yap explained, the surgical procedure of the sternotomy is simply not sensitive enough to enable the surgeon to be confident of cutting through only the bone layer without risking injury to an enlarged aorta which is so closely applied. This is consistent with the evidence given by Mr Nassar in his third statement when explaining the complexities of the procedure and the difficulties in judging how deeply one is cutting when using the oscillating saw (see [127] below).

122. For the reasons set out above, in my judgment, Mr Nassar fell below the requisite standard of care in not taking the step of exposing and preparing the femoral vessels in advance of the sternotomy having regard to the medium to high risk of aortic injury posed by this third re-do sternotomy in circumstances in which the Claimant's enlarged aorta was closely proximate to the rear of the sternum. ***P28***

J. Preliminary Issue 1(b): intraoperative skill and care

Summary of the issue

123. As noted above, the allegation of negligence in respect of the injury to the aorta was re-introduced by the Re-Amended Particulars of Claim for which permission was granted at the start of the trial. This amendment arose out of the more detailed explanation provided by Mr Nassar in his second witness statement of the technique he used to perform the sternotomy by way of response to points raised in the report of Mr Yap; permission was granted for service of the second witness statement

at the start of the trial. The essence of the allegation is that Mr Nassar failed to grip the saw adequately, such that he lost control of it and/or that he used excessive force when cutting the anterior table of the sternum.

Factual evidence

124. In his second witness statement Mr Nassar explained that he did not use the oscillating saw to saw through the sternum in one motion. Rather, his technique was firstly to open the skin and subcutaneous layer and then to place four sutures through the anterior table (i.e. the upper section) of the sternum (two stitches on each side) to allow the two surgical assistants to lift the sternum upwards. Mr Nassar explained that he then extends the incision into the muscle of the abdominal wall to create an access space underneath the sternum from which he dissects away any adhesions from the underside of the posterior table of the sternum (i.e. the surface closest to the cardiac structures). He then progresses upwards from the lower section of the sternum in five centimetre sections, cutting through only the anterior table of the sternal bone (i.e. leaving the bone marrow and the posterior section intact) whilst the assistants pull on the sternal stitches to lift the sternum away from the heart and aorta. Once the saw is through the upper table of the sternum, he uses scissors to cut the bone marrow and the lower table of the sternum, thereby leaving the five-centimetre section completely open. He then repeats the process for the next section until the whole sternum is opened.

125. Mr Nassar's evidence was that the Claimant did not have any significant adhesions between the posterior table of the sternum and the aorta and that the aorta was not adherent to the sternum. As to the slipping of the saw, he said this in his witness statement:

> *"Unfortunately, however, the saw slipped whist I was going through a section of the anterior table of the sternum. It went straight through the bone marrow and the posterior table and caused the aortic injury".*

126. In his oral evidence, Mr Nassar emphasised that English was not his first language and, at times, he did struggle slightly in finding the most appropriate words to describe the details of events. He emphasised that he thinks that his description of the saw "slipping" may have caused confusion as what he meant was that he cut slightly more deeply than he had intended, rather than that he lost control of the saw.

127. In his third statement Mr Nassar further explained that using the oscillating saw is a "blind procedure in the sense that you cannot see through the sternum and so a surgeon must use their clinical experience and judgment to judge the depth that the saw has gone through. We do that by feeling for resistance" (original emphasis). ***P29*** He also explained that there will be varying levels of resistance in re-do surgery where you are going through an area which has healed following a previous sternotomy, meaning there can be different degrees of bone density. The fact that the saw slipped through the posterior table of sternum was, he explained, a recognised complication of re-do surgery.

The expert evidence

128. The experts agreed that at any time in cardiac surgery there is always a risk of unintended entry into tissue, including by a saw in a re-sternotomy. Mr Yap said that this was complex surgery and that a reasonably competent surgeon who is qualified to perform such a procedure would be expected not to let the saw 'slip'. Both agreed, however, that surgeons cannot entirely eliminate the risk of inadvertent damage when operating; it is a known and recognised risk.

Discussion

129. Mr Elgot's primary submission is that it is now apparent that Mr Nassar intended to saw through only the anterior table of the sternum and then to use scissors to cut through the bone marrow and posterior table. However, Mr Nassar did, in fact, cut through not only the anterior table but also the bone marrow and the posterior table and, further, any tissue plane and, further, the aortic wall. In essence, it is said that this evidences a significant loss of control of the cutting depth of the saw and was negligent. Mr Elgot's submission was that piercing the aorta whilst attempting to cut through only the anterior table is *not* an inherent risk of a sternotomy and was negligent. The error arose because Mr Nassar let the saw slip and/or used too

much pressure and, either way, he failed to control the instrument adequately. The Claimant contends that the court should infer negligence from these facts (*res ipsa loquitur*).

130. It is clear, in my view, that Mr Nassar misjudged the depth of the blade of his oscillating saw. This may well have been a momentary misjudgement and it may have been a misjudgement of a matter of a few millimetres. Such a misjudgement, in my view, falls squarely within the category of a risk of error which cannot be eliminated entirely even by the use of reasonable skill and care when performing a complex surgery involving a re-do sternotomy of this nature. It was a known and recognised risk of the re-do sternotomy. Indeed, it was the very existence of this known risk which required consideration to be given as to appropriate mitigating steps. It is very unfortunate and deeply regrettable that that risk eventuated, but the fact that it did eventuate was not, in my judgment, a result of negligence on the part of Mr Nassar in the manner in which he handled the oscillating saw.

131. Weight was placed by Mr Elgot on the delay in completing the operation note and on the fact that the operation note itself does not explain the mechanism of the injury. It is a matter of some concern that the operation note was not written up immediately after the surgery, but was only completed by Mr Nassar some 16 days later and did not then provide any information as to how the aorta came to be injured. This falls a long way short of the RCS guidance, quoted at [62.a] above, that operative notes should accompany the patient into recovery.

132. I appreciate that Mr Nassar was travelling abroad shortly after the surgery concluded to provide medical services for a charity. I have not seen the flight details, but in examination in chief Mr Nassar stated that he had to be at the airport ***P30*** at 04:00. Mr Nassar also says that he was present at the ICU handover, the record of which gives a "collection time" of 01:54. The operation note should clearly have been completed immediately after the surgery if at all possible. If Mr Nassar was entirely unable to complete the note, then he could have delegated that task to one of the other surgeons who was present for a significant part of the surgery, liaising with Mr Nassar as necessary.

133. It is also unfortunate, in my judgment, that the operation note was not more transparent about what had happened. The explanation that "Chest re-entry through redo-sternotomy was complicated by injury to the aorta causing catastrophic haemorrhage" does not begin to explain how the injury occurred. It is not clear from that note, for example, whether the injury was caused by the saw or during the course of attempting to dissect any adherence or any adhesions.

134. Nevertheless, insofar as it was suggested by Mr Elgot that I should draw adverse inferences from either the delay in producing the operation note or from the incomplete content of the note, I do not agree. There was an explanation, albeit not a complete explanation, for the delay in producing the operating note. Similarly, insofar as it was suggested that there was any deliberate attempt on the part of Mr Nassar or the Defendant Trust to conceal what had happened during surgery, I do not agree. The clarity of the other medical records on the fact that the injury was caused by the saw demonstrate that there was no attempt to disguise this fact: (a) Dr Leong, the anaesthetist, recorded in an anaesthetic intraoperative note timed at 13:36 BST on 3 May 2022, that "Saw accidently cut through the aorta causing massive haemorrhage"; (b) the ITU admission note (see [36] above) recorded the fact that the injury was caused by the saw; and (c) the physiotherapy initial assessment record of the following day, 4 May 2022, similarly states: "during sternotomy saw accidently cut through the aorta causing massive haemorrhage".

135. Mr Elgot also takes the point that there is an apparent tension between the Defendant's position that this incident was not a patient safety incident as the injury was a known complication of the re-do sternotomy and the fact that the incident was, ultimately, reported on Datix, but not until February 2023. The issue in relation to Datix reporting only appears to have been raised by the Claimant at the outset of the trial and was not pleaded. The Defendant's evidence on Datix reporting was therefore limited and put together at speed during trial. I do not consider that it is appropriate for me to comment further on the Datix reporting issue in the circumstances. Again, insofar as it was suggested by Mr Elgot that I should draw adverse inferences from the delayed Datix reporting, I do not accept that it would be appropriate to do so.

136. In summary, in my judgment Mr Nassar was not negligent in respect of his control of the oscillating saw during the surgery and the intraoperative injury was not the result of any negligence on the part of Mr Nassar.

K. Preliminary Issue 2: how much time would have been 'saved' but for the established breach(es) of duty?

Summary of the issue

137. It is common ground between the parties that had the femoral vessels been exposed and prepared in advance of the sternotomy then full cardiopulmonary bypass would have been achieved more quickly following the injury to the aorta,

P31 but there is disagreement between the experts as to how much time would have been saved by adopting this course. The Claimant's pleaded case is that " *had the artery been exposed and slings placed in advance, a process which takes some 5-10 minutes, some 5 to 10 minutes would have been saved from the overall period of hypoxia in the event of emergency* ".

138. In addition, there is an issue between the parties as to whether the dissection of the femoral artery during the attempt at cannulation was caused or contributed to by the failure to expose and prepare the vessels in advance of the sternotomy. This was an issue which was raised by the Claimant's amendments in July 2024. The amended pleading on causation alleges that " *the cause of the dissection was iatrogenic, occurring as a result of the panic of the emergency; and would not have occurred had preparations been made in advance for bypass and cannulation* ".

Factual evidence

139. As explained at [32] above, following the injury to the aorta Mr Nassar attempted to stem the haemorrhage before moving to expose the left femoral vessels for cannulation to enable cardiopulmonary bypass to be established. At some point, Mr De Rita joined in theatre. There is no clinical note identifying the time when Mr De Rita joined in theatre.

140. Mr Nassar's evidence was that his best estimate is that Mr De Rita would have been present in theatre within ten minutes of the injury occurring. Once Mr De Rita was in theatre, Mr Nassar moved to focus on attempts to stem the haemorrhaging of the aorta and so was not in a position to give direct evidence as to the circumstances in which the groin vessel dissected when Mr De Rita, an experienced consultant surgeon, attempted cannulation.

141. No witness statement was served by the Defendant from Mr De Rita notwithstanding that the amendments to the Particulars of Claim relating to the dissection of the vessel had been made in July 2024 and factual statements were not served until January 2025. Accordingly, there is no evidence from Mr De Rita as to the time when he joined in theatre, nor the circumstances in which the femoral artery dissected when he attempted cannulation. There is no evidence from him, therefore, as to whether the dissection was a random occurrence as claimed by the Defendant, or whether it was caused or contributed to be the "panic" of the emergency as claimed on behalf of the Claimant. Mr Elgot also emphasised that, as a result, we had no evidence from Mr De Rita as to why the dissected artery needed to be repaired with a bovine pericardial patch, which, it was suggested by Mr Yap, might indicate damage from use of a cannula which was too large.

142. Similarly, there was no witness statement served from Professor Clark who also joined theatre to assist in the emergency. It is not clear to me from the evidence precisely what aspects of the surgery Professor Clark assisted with. Mr Mohamed's statement did not deal with the surgery itself, albeit that he was in theatre for at least part of the surgery; again, it is not clear to me from the evidence precisely what roles Mr Mohamed assumed at different points in the surgery.

143. There is limited information available on intraoperative timings from the medical records. In his first statement Mr Nassar had stated that heparin, an anti-coagulant, was administered once the cannula was sited and that once the activated clotting time (" **ACT** ") was available it was safe for the Claimant to go on bypass. However, in his second statement Mr Nassar corrected this statement and explained that in ***P32*** an emergency situation of this nature one would not wait for the ACT measurement before placing the patient on bypass. Mr Roberts also accepted that it is likely that the heparin was administered before the cannula was sited. It is unfortunate that Mr Nassar's evidence was erroneous on this issue.

144. The aortic injury is recorded as having occurred at 12:25. The perfusion report records heparin as having been administered at 12:32, some 7 minutes later. There is also a note in the perfusion report recording "crashed onto sucker bypass at 12:45", some 13 minutes later, which would have been shortly after central cannulation (of the aorta) was achieved by Mr Nassar. Thus, there was a period of approximately 20 minutes from the aortic injury until sucker bypass. Full bypass was recorded as being achieved at 12.49, some 24 minutes later.

Expert evidence

145. Mr Yap's written evidence was that "at least 10 mins and probably more" would have been saved had the vessels been exposed in advance of the sternotomy, leaving aside the issue of the dissection of the femoral artery. In cross-examination he said that just to expose and cannulate might take 5 to 10 minutes in normal circumstances, but in the stressful situation of a catastrophic haemorrhage and depending on the quality and position of the vessel, then "10 minutes or more" is a reasonable estimate.

146. It is not alleged that there was any negligence on the part of Mr De Rita in relation to the dissection of the left femoral artery during attempted cannulation. The experts agreed that "vessel dissection is a rare event either during elective

cannulation of vessels or during emergencies. The experts agree that vessel dissection cannot be predicted in advance and may occur in a non-negligent event." They also agreed that "surgical performance can be impaired to some extent in an emergency situation, but that surgeons are trained to act calmly in these situations."

147. Mr Yap referred to a paper entitled " *Complications Associated with Femoral Cannulation During Minimally Invasive Cardiac Surgery* " Lamelas et al, Annals of Thoracic Surgery 2017; 103:1927 in support of his evidence that it is very rare to cause a dissection of a femoral artery when using an appropriately sized cannula by direct introduction; the data from the paper indicated 2 such injuries in the 2,645 cannulations considered, or 0.075% of those cases. He questioned whether the correct sized cannula was used and whether the use of a bovine patch to repair the artery might indicate that damage had been caused by the use of too large a cannula.

148. Mr Yap also makes the point that the detrimental effect of stress on technical and non-technical (decision making, situation awareness) skill during surgical procedures are well recognised. In support of this proposition he refers to the paper *The effects of stress on surgical performance: a systematic review* Adam Tan et al, Surgical Endoscopy (2025) 39: 77-98.

149. Whilst accepting that dissection can occur in any event, Mr Yap's opinion was that had the relevant groin vessels been exposed and prepared prior to commencing the sternotomy then it would have been "possible to examine and assess the quality and calibre of the vessel directly" and would have provided greater certainty as to the choice of the cannula size. He also considers that "exposed vessels would generally be easier to cannulate." Mr Yap considers that dissection of a vessel of this nature is rare and probably "would not have happened if the femoral artery was exposed and ready". In the joint statement he says "the failure to expose the ***P33*** vessel before sternotomy materially contributed to the vessel dissection when it was canulated. A prepared vessel is always going to be easier to handle. Haemostasis would have been done during preparation." In other words, the inevitable bleeding associated with newly exposed vessels would have been controlled during the course of preparing the vessels in advance, making them easier to handle when subsequently attempting cannulation.

150. Mr Roberts' position was that "a few minutes extra were taken to open the groin which is quick and easy to do" and that "3-5 mins might have been saved" and, separately "less than 5 minutes" would have been saved by exposing the vessels in advance. He also takes the view that the dissection of the femoral artery was entirely independent of the decision not to expose and prepare the vessel in advance; it was, in his opinion, "a random, unforeseen event that on the balance of probability was not due to panic". He says that the main delay was the (non-negligent) time taken to obtain central cannulation following the (non-negligent) dissection of the femoral artery on attempted cannulation, which, as noted above, he considered would have occurred even if the vessels had been exposed in advance.

Discussion

151. There is limited evidence available from the clinical records which assists on the issue of how long it initially took to attempt cannulation. If Mr Nassar is correct to suggest that Mr De Rita would have taken ten minutes to respond to the emergency bleep and scrub in and, further, that it was Mr De Rita who attempted to cannulate the femoral artery, then it seems that at least ten minutes passed between the aortic injury and any attempt at cannulation. Mr Nassar's time was occupied during this ten-minute period by an initial attempt to stem the haemorrhaging and then by having to expose and begin to prepare the femoral vessels. There is no reliable evidence as to how much time, if any, Mr De Rita took in preparing the femoral vessels before attempting cannulation.

152. Whilst I have no direct evidence on the point, I think it is likely that Mr Nassar would have appreciated relatively swiftly (say, within one or two minutes) that his efforts to stem the catastrophic haemorrhaging were unlikely to be successful and would have moved rapidly to exposing the femoral vessels. If this is correct, then it seems that the majority of this ten-minute period, perhaps something like 8 minutes, would have been spent on exposing and preparing the femoral vessels.

153. Taking Mr Yap's evidence in its totality, his position was that ten minutes or more is a reasonable assessment of the time that would have been saved had the femoral vessels been exposed and prepared in advance of the sternotomy. I also see the force of Mr Yap's evidence that attempting to expose, prepare and cannulate a femoral vessel in the context of a catastrophic haemorrhage may be more difficult and take longer than would usually be the case precisely because blood pressure will be lower as a result of the haemorrhage, rendering it harder accurately to locate the relevant blood vessels.

154. There is then a separate, but linked, issue as to whether the femoral artery would have dissected in any event had the femoral vessels been exposed and prepared in advance of the sternotomy. The only person who could possibly offer direct

evidence as to the circumstances in which, and the reasons why, the femoral artery dissected is Mr De Rita, but the Defendant served no evidence from Mr De Rita. ***P34***

155. I accept Mr Yap's evidence on the following points: (a) if the relevant vessels been exposed at the outset, in a non-emergency setting, then an assessment could have been made as to the quality and calibre of the vessel directly (and at a time when blood pressure in the vessels was normal); (b) such an assessment would have provided greater certainty as to the choice of the cannula size; (c) that "a prepared vessel is always going to be easier to handle. Haemostasis would have been done during preparation" and that "[pre] exposed vessels would generally be easier to cannulate"; and (d) the detrimental effect of stress on technical skills during surgical procedures are well recognised.

156. Whilst I accept the evidence of the experts that dissection of an artery can occur in any event, I am satisfied that had the relevant vessels been exposed in advance then it would have been substantially easier to cannulate the femoral artery for the four reasons identified by Mr Yap and set out above and that, for these reasons, the risk of accidental dissection of the artery would have been reduced. I accept Mr Yap's expert opinion evidence that, in such circumstances, it is more likely than not that cannulation would have been achieved without dissecting the femoral artery had the relevant vessels been exposed and prepared in advance.

157. Mr Elgot invited me in closing submissions to draw an adverse inference from the fact that the Defendant had failed to serve a witness statement from Mr De Rita explaining the circumstances in which the femoral artery dissected. In support of this submission, Mr Elgot relied on the following principles set out by Brooke LJ and distilled from his review of the relevant caselaw in *Wisniewski v Central Manchester Health Authority, Court of Appeal, [1998] P.I.Q.R. P324* , page 340:

> "(1) In certain circumstances a court may be entitled to draw adverse inferences from the absence or silence of a witness who might be expected to have material evidence to give on an issue in an action.
>
> (2) If a court is willing to draw such inferences, they may go to strengthen the evidence adduced on that issue by the other party or to weaken the evidence, if any, adduced by the party who might reasonably have been expected to call the witness.
>
> (3) There must, however, have been some evidence, however weak, adduced by the former on the matter in question before the court is entitled to draw the desired inference: in other words, there must be a case to answer on that issue.
>
> (4) If the reason for the witness's absence or silence satisfies the court, then no such adverse inference may be drawn. If, on the other hand, there is some credible explanation given, even if it is not wholly satisfactory, the potentially detrimental effect of his/her absence or silence may be reduced or nullified".

158. To similar effect, in *Prest v Petrodel Resources Limited [2013] UKSC 34* Lord Sumption adopted (with a certain modification in the context of ancillary financial relief claims) the following summary provided by Lord Lowry with the support of the rest of the committee in *R. v Inland Revenue Commissioners, Ex p TC Coombs & Co [1991] 2 A.C. 283* , at 300:

> "In our legal system generally, the silence of one party in face of the other party's evidence may convert that evidence into proof in relation to matters which are, or are likely to be, within the knowledge of the silent party and ***P35*** about which that party could be expected to give evidence. Thus, depending on the circumstances, a prima facie case may become a strong or even an overwhelming case. But, if the silent party's failure to give evidence (or to give the necessary

> evidence) can be credibly explained, even if not entirely justified, the effect of his silence in favour of the other party may be either reduced or nullified."

159. Given (a) that this trial of preliminary issues was focused on the issues of alleged breaches of duty and the time that may have been saved but for any such breaches; and (b) the pleading of a positive case that the femoral artery dissected as a result of "panic of the emergency" and would not have dissected had the relevant vessels been exposed and prepared in advance; and (c) that dissection of a femoral artery on cannulation is not a common event; and (d) that it is possible that the dissection of the femoral artery may have caused delay in establishing cardiopulmonary bypass; and (e) that Mr Nassar was not able to give evidence as to the circumstances in which the femoral artery dissected, then I would have expected efforts to be made by the Defendant to obtain a witness statement from Mr De Rita explaining the circumstances in which the femoral artery dissected when he attempted cannulation.

160. No proper explanation has been advanced by the Defendant to explain the absence of a witness statement from Mr De Rita. Mr Nassar's understanding that Mr De Rita is no longer employed by the Defendant trust and may now be resident in Italy does not constitute an explanation of the failure to serve a witness statement from Mr De Rita. Consideration could, of course, have been given to serving a statement from Mr De Rita together with a Civil Evidence Act Notice if it was anticipated that there would be difficulty in calling Mr De Rita to give oral evidence. I also note that the CMC directions order sealed on 20 June 2024 directed, in relation to witness statements, that "for the avoidance of doubt statements of all concerned with the relevant treatment and care of the Claimant must be included".

161. In the circumstances, even if I had not already reached the conclusions set out at [156] above, then it would, in my judgment, have been appropriate to draw an inference from the failure of the Defendant to serve a witness statement from Mr De Rita. The appropriate adverse inference to draw, in my judgment, would be that Mr De Rita's evidence would have supported the Claimant's case that the failure to expose the relevant groin vessels in advance of the sternotomy caused or contributed to the difficulties which led to the dissection of the femoral artery under the pressures of the emergency with which Mr De Rita was faced when called into theatre to assist Mr Nassar. Such an inference would have been consistent with Mr Yap's opinion evidence on this issue, as set out at [155] above.

162. Mr Yap did not specifically address the additional time which he says would have been saved had the femoral artery not dissected. However, in the joint statement he expressed the view, in answer to question 18, that the dissection would probably not have happened had the femoral artery been exposed and prepared in advance and, in response to question 19, he gave his overall opinion that "at least 10 minutes and probably more" would have been saved had the femoral vessels been exposed and prepared in advance.

163. As noted at paragraph [144] above, the perfusion report records the aortic injury occurring at 12:25, sucker bypass at 12:45, being 20 minutes after the injury and which would have been shortly after cannulation was established via the aorta, and ***P36*** full bypass at 12.49, some 24 minutes after the injury. On the balance of probabilities, I find that 13 minutes (being 65% of the 20 minute period taken to achieve sucker by-pass and 54% of the 24 minute period to full bypass) would have been saved had the femoral vessels been exposed and prepared in advance of the sternotomy. This is in accordance with Mr Yap's evidence, dealing with matters in the round, that "at least 10 minutes and probably more" would have been saved had the femoral vessels been exposed and prepared in advance. In other words, I accept the evidence that it was "probably more" than 10 minutes and, doing the best I can on the limited evidence, I have assessed the "probably more" element as an additional 3 minutes when taking into account both the issue of the time saved by exposing and preparing the femoral vessels and the additional time taken in relation to the dissection of the artery.

164. Insofar as it may be helpful to break this assessment down further, I attribute approximately 6-8 minutes to the time taken to expose and prepare the femoral vessels (taking into account both Mr Roberts' assessment of 3-5 minutes and Mr Yap's assessment of 5-10 minutes) and the remaining 5-7 minutes to the time which would have been saved had the femoral artery not dissected, which dissection I have found, on the balance of probabilities, to have been caused by the lack of advance exposure and preparation of the femoral vessels. I emphasise that these are not, and cannot be, scientifically valid calculations; they are approximate estimates, on the balance of probabilities, based on an assessment of the limited contemporaneous evidence and the expert opinion evidence before me. As noted above, had a witness statement been served from Mr De Rita, then he may have been able to provide additional clarity in respect of the timings.

165. This second preliminary issue was limited to the question as to the period of time that would have been saved in the absence of the breach of duty. Accordingly, no evidence was adduced on issues of causation in terms of the neurological consequences, if any, of this period of delay and so, unless capable of agreement, such matters will fall to be determined at a future date.

L. Preliminary Issue 3: was there a breach of duty in respect of informed consent and, if so, would the Claimant have opted to postpone her surgery in favour of awaiting a second opinion?

Summary of the issue

166. It is alleged that the Defendant was negligent in:

a. delegating the consenting procedure on 24 April 2022 to Mr Mohamed who, it is said, was unable adequately to assess the Claimant's risk of mortality or morbidity (not least as he was not a specialist in the PEARS procedure);
b. failing to provide the Claimant with any adequate information as to the risk of the surgery, including the risks posed by the very high risk of adhesions between the aorta and the sternum from previous surgery and the fact that the CT imaging showed the aortic aneurysm closely applied to the back of the sternum;
c. failing to provide for adequate discussion concerning the risks of surgery with the surgeon and steps to mitigate damage should a haemorrhage occur (including discussion about exposing the femoral vessels); ***P37***
d. failing to ensure that the consenting discussion was undertaken by the operating surgeon well in advance of the day of surgery in order to give the family and the Claimant time to consider the risks of the operation and alternative and variant treatments.

167. There are, therefore, two categories of allegations in relation to the consent process: (a) allegations as to the content of the discussions concerning the risks and mitigation measures and (b) an allegation as to the timing of the consent process, namely that it occurred too late, on the day of surgery.

168. It is also contended on behalf of the Claimant (paragraph 53 of the Re-Amended Particulars of Claim) that had the risks of the procedure been properly and timeously discussed with the Claimant (and her family) and had they been given time to consider the risks, the Claimant (and her family) would have chosen to postpone the surgery in order to consider the risks and benefits of surgery with and without exposing and slinging suitable vessels. It is further contended that the Claimant (and her family) would probably have sought a second opinion and that the second opinion would have advised that precautions should be taken in the form of exposing and slinging suitable vessels.

169. Mr Elgot submitted that if surgery had taken place on a different day, then, on the balance of probabilities, the injury to the aorta would not have occurred, with reliance placed on *Chester v Afshar [2004] UKHL 41* .

170. Ms Power drew my attention to the Court of Appeal's analysis in *Correia v University of North Staffordshire NHS Trust [2017] EWCA Civ 356* at [28]: "…if a claimant is to rely on the exceptional principle of causation established by *Chester v Afshar* , it is necessary to plead the point and support it by evidence" *per* Simon LJ *)* and submitted that the *Chester v Afshar* point was inadequately pleaded.

171. In *Correia* the court noted, at [28], that "it was not the appellant's case that she would not have had the operation, or would have deferred it or have gone to another surgeon". In the present case, in contrast, it is pleaded that had the risks been properly discussed and had the Claimant been given adequate time to consider them then "the Claimant and her family would have chosen to postpone the surgery in order to consider the risks and benefits of surgery with and without exposing suitable vessels and placing slings around the artery". Similarly, it is pleaded that the second opinion "would have been that precautions should be taken in the form of exposing suitable vessels…". It is right to note, however, that the pleaded case concerning the seeking of a second opinion and delay of the surgery are confined to the allegation that the consenting process should have advised as to the possibility of exposing the femoral vessels as a form of risk mitigation. The position is sufficiently pleaded, in my view, to mean that it is appropriate for me to make the relevant factual (or counterfactual) findings on this issue, albeit that the parties are agreed that the legal analysis of the Claimant's reliance on *Chester v Afshar* , is not a matter for determination at this stage.

Factual evidence

172. It is contended on behalf of the Claimant that following the MDT decision on 15 December 2021 "for surgical PVR and PEARS aortic valve repair/replacement" there should have been a letter to the Claimant explaining the MDT outcome and the plan for surgery, but no such letter was sent. ***P38***

173. Dr Jansen was clear that she was not in a position to provide detailed information to the Claimant about the risks of the proposed surgery as she is not a surgeon and was not undertaking the operation. Her evidence was that it would have been her standard practice to call the Claimant after the MDT meeting on 15 December 2021, and she believes she would have done, but she does not have a note of having called the Claimant. She says that she would have explained that the Claimant "should expect to hear from the surgeons with regard to the waiting list and pre-operative assessments (including potential imaging)".

174. When the Claimant attended for pre-assessment on 20 January 2022 she was seen by the consultant anaesthetist, but not by Mr Nassar, who was unavailable. The clinical notes for that day record: "Risks mentioned: infection (mainly chest, blood), need for prolonged ventilation, renal failure requiring RRT, prolonged ITU stay. She had no answer and is awaiting discussion with the surgeon to sign consent". Under "Any issues to Flag" it is recorded: "not seen consultant - ? surgical plan – MN [Mr Nassar] not available today. Secretary contacted and will arrange consultant review – pending."

175. In his first statement, Mr Nassar asserts that the Claimant was aware of the kind of surgery she might require as she had spoken to Dr Jansen and had "been on the waiting list for many months and had attended a pre-operative assessment". Dr Jansen, however, was not the surgeon and not able to provide details in respect of the risks of the surgery. Only Mr Nassar was able to advise the Claimant on the risks of the surgery as only he, within the hospital, carried out the PEARS procedure. In fact, the Claimant was not seen by Mr Nassar until the morning of the surgery on 3 May 2022.

176. In the event, the surgery was initially expedited to 24 April 2022 and the Claimant saw Mr Mohamed on that day. According to Mr Mohamed's witness statement, he used the Euroscore system to calculate the mortality risk, but he seems to have considered that the result (which he does not state) was an underestimate; he says that he "ended up quoting a mortality (risk of death) of around 20%. This was a very considerable risk and I remember was one which [the Claimant] specifically asked about. She asked me why it was that high. It was higher than she had been expecting and she was quite shocked. I discussed with her that I considered she was higher risk than normal cardiac patients because she had previously had other interventions so was likely to have adhesions in her chest". Mr Mohamed's evidence was that "the Claimant accepted all of the risks discussed, including a 20% risk of death, and had no further questions during our appointment".

177. Mr Nassar says that he offered to speak to the Claimant before she left hospital on 24 April but she "declined to wait". I am not satisfied, on the very limited evidence before me, that the Claimant had been informed that it was the surgeon who wanted to speak to her. In any event, and as Mr Yap emphasises, this is unlikely to have been an opportune moment to discuss the risks of the surgery given that it is likely that the Claimant would have been distressed at that point in time by the last minute cancellation of her surgery after having gone through the inevitable anxiety of preparing herself for a major operation.

178. The evidence of the Claimant's husband was that "we would have wanted to take reasonable steps to see what could be done to minimise the risks of surgery" and "[i]f it had appeared to us that the surgeon was reluctant to take steps to minimise the risks we would have wanted at the very least a second opinion and we might have delayed the surgery until we were firmly of the understanding that ***P39*** we understood the risks and that they were going to be limited to a reasonable level".

179. On 2 May 2022 the Claimant was re-admitted to the Freeman Hospital for planned surgery by Mr Nassar on the following day. In his first statement Mr Nassar does not say when he saw the Claimant to go through the consent process. However, given that 2 May was a bank holiday Monday, Mr Nassar accepted in his oral evidence that he probably only saw the Claimant on the morning of Tuesday 3 May. The consent form is dated 3 May 2022.

180. Mr Nassar says that he completed a new consent form with the Claimant and would have gone through each of the ten risks set out on the consent form, which included the risk of mortality, as well as explaining, in re-do cases, that "the heart is stuck to the back of the breast bone and that the first part of the operation is to free the heart from the bone. I say to them that if the first part of the operation goes well, then the overall risk of death reduces from 10% to around 2-3%. I would discuss that if anything went wrong in surgery, they may end up in intensive care with machines helping to keep them alive. I would warn them that sometimes they may wake up with an incision in their groin if we have been required to start the heart lung (cardiopulmonary bypass) machine through the groin vessels. I would always give my patients the opportunity to ask questions and clarify anything that they were unsure about".

181. The clinical records contain a "Cardiothoracic Surgery Ward Round Note" recorded as being timed at 09:22 on 3 May 2022 which includes the following:

> **"Consultant Leading Ward Round**
>
> ACHD ward round – MN, KJ, ACHD nurse specialists
>
> Plan and requested actions
>
> …
>
> - New consent form signed
>
> - Await transfer to theatre"

182. It is apparent from the Claimant's disclosed WhatsApp messages, that she texted her mother at 09:14. Prior to this point in time, there is no suggestion in her texts that the Claimant had been seen by a surgeon and, indeed, her texts demonstrate that she was acutely worried that the operation might be cancelled for a second time. She then texted again, at 09:17, to state: "All the surgeons just come in its going a head so next 2 hours they will come for is [sic]".

183. These texts are consistent with the timing of the note of the surgery ward round. The texts, read with the ward round note, suggest that Mr Nassar may have spent a maximum of about 3 minutes with the Claimant in the ward round, that is, the period of time which is bookended by the Claimant's two texts of 09:14 and 09:17. This also seems to have been when the second consent form was signed given the entry (timed at 09:22) on the Ward Round Note: "new consent form signed". Mr Nassar has not suggested that there was any different occasion on which he took additional time to see the Claimant and to explain the benefits and risks of the proposed surgery with her.

184. The ward round note records Dr Jansen as having been in attendance. She says this in her statement: "I did see [the Claimant] very briefly when she was admitted to the ward prior to going into theatre". The description "very briefly" seems to be consistent with the three-minute timing referred to above. She provides no evidence in her statement as to the consent process undertaken by Mr Nassar. ***P40***

185. There are no other contemporaneous records relating to the consenting process. Mr Elgot notes that the lack of other contemporaneous records providing further details of the consenting process is at odds with the RCS guidance cited at [62] above.

186. The consent form signed by the Claimant on 3 May 2022 states that there was a 5-10% risk of mortality. There is no contemporaneous record of the Claimant being informed that her enlarged aorta was closely proximate to the rear of the sternum, nor that she was informed of the risks that this posed. Mr Nassar accepted in cross-examination that the aorta was "close" but not adherent and that the closer it is to the sternum, the higher the risks of the surgery. As noted at [121] above, this is somewhat at odds with his assertion that there was no reason to anticipate that this surgery would be any more difficult than other re-do sternotomies. Mr Nassar's evidence is that he nevertheless considered Dr Mohamed's risk assessment to overestimate the risk of mortality and that he tore up Dr Mohamed's consent form as he did not want there to be two different

risk assessments on file because this might cause confusion. Mr Nassar agreed with Mr Elgot's statement that he should simply have put a line through the first consent form, rather than ripping up a medical record.

187. It is possible that Mr Nassar reviewed the CT imagery on the morning of 3 May 2022 before the ward round and before undertaking the consenting process, but it was clear to me that Mr Nassar did not have any specific recollection of the sequence of events in this regard.

188. Mr Nassar's evidence is that he would not discuss with a patient the possibility of exposing groin vessels as a means of facilitating an emergency bypass in the event of damage to the aorta. He said that this level of detail was not appropriate and that he is not aware of any colleagues who would have such a discussion. He also stated that "it is important that my patients know about the risks of serious injury or death, but it is not necessary to discuss with them the mode of death. They are (understandably) usually extremely anxious about the surgery".

189. Dr Jansen explains that had the Claimant sought a second opinion then she would have been happy to support and to try to find another surgeon, but that the Newcastle Freeman is "generally the last stop" with patients being referred to it, rather than the other way around as it is regarded as a centre of excellence.

Expert evidence

190. As to the issue of the timing of the consent process, in their joint statement the experts agreed that "in an ideal world complex surgery should be discussed in an outpatient clinic with the operating surgeon". Mr Yap's evidence was that it was "unthinkable" that the Claimant was not offered an outpatient consultation with the operating surgeon to discuss the benefits and risks of the proposed operation given its complexity.

191. Mr Roberts considered that, taken as a whole, the Claimant had been given enough information to enable her to understand the major risks and benefits of the proposed surgery and, in any event, there was no other suitable surgical options for her. He also emphasises that there was a 7 day period between the original consenting process undertaken by Mr Mohamed on 24 April and the second admission on 2 May and then a further consenting process by Mr Nassar. ***P41**

192. As to the content of the risk assessment in terms of the risk of mortality, the experts both used the Euroscore calculation method to estimate the risk of mortality and agreed that this comes out at either 6% or 9% depending on whether one is estimating for the known two procedures ("surgical PVR and PEARS") or also including the third possible procedure ("+/- aortic valve repair/replacement").

193. As to the possibility of exposing the femoral vessels in advance of the sternotomy, Mr Roberts' evidence was that a reasonable body of cardiac surgeons would not discuss the details of cannulation for bypass and emergency cannulation strategies with patients. He says that it is not part of his practice and he is not aware of any cardiac surgeon who discusses cannulation strategies about re-do sternotomy as part of the consent process. In their joint statement, both experts agreed that details of cannulation strategies would not be discussed with patients as part of standard practice unless the patient asked.

194. The experts also agreed that if a patient ever asks for a second opinion and wants to cancel surgery whilst this second opinion is obtained, then all reasonable surgeons would facilitate this. Mr Yap makes the point that there are seven other congenital heart surgery units in the UK and it would have been easy to ask for a second opinion. He states that the relevant units at St Bartholemew's Hospital and Great Ormond Street Hospital have weekly MDT meetings, held virtually, and discuss patients from the UK and abroad.

Discussion

195. I do not consider that there was a breach of duty on the part of the Defendant in "delegating" the consenting process to Mr Mohamed on 24 April 2022. The evidence indicates that Mr Mohamed was an experienced clinician and, as Mr Nassar's registrar, it seems likely that he had an adequate understanding of the intended surgery. In any event, if the surgery had not been cancelled on 24 April then it seems likely that Mr Nassar would have reviewed the consent form prior to operating, as he did on 3 May 2022, and would then have seen the Claimant to inform her that, in his opinion, the risk of mortality was 5-10% rather than 20%.

196. In terms of the specific information imparted to the Claimant, the consent form of 3 May 2022 records a risk of mortality of 5-10% and this is broadly consistent with the estimation arrived at by both experts, namely 6-9%, derived with the assistance of Euroscore. Insofar as it continued to be argued on behalf of the Claimant that inadequate information was

given to the Claimant by Mr Nassar as to the risk of mortality of the proposed surgery, I do not accept that there was any breach of duty on the part of the Defendant in this regard.

197. I am troubled by Mr Nassar's actions in tearing up the previous consent form which the Claimant signed on 24 April 2022. Had it not been possible to obtain a statement from Mr Mohamed and/or had he forgotten the details of his assessment of the risk, then it is possible that the facts of the April consent process would not have been before this court. Mr Nassar was not able to justify his actions in destroying this clinical record and he accepted that he could, and should, have made clear that it was superseded by drawing a line across the consent form or otherwise marking it as an obsolete form. However, there was no pleaded breach of duty in relation to this issue and, in any event, the advice which Mr Nassar did in fact give in respect of the risks of the surgery, including of mortality, was not, ***P42*** in my judgment, negligent; whether any regulatory issues arise from the destruction of a medical record is a separate matter.

198. The other aspect of the Claimant's pleaded case on the content of the consent process was the allegation that Mr Nassar was in breach of duty for failing to explain the steps which could be taken to mitigate the risk of mortality or serious injury posed by the proposed surgery. In particular, it is alleged that Mr Nassar should have explained that there was an option of exposing the groin vessels in advance of the sternotomy in order to facilitate emergency cardiopulmonary bypass should it be required.

199. As set out at [188] above, Mr Nassar's clear evidence was that he would not provide this level of detail to a patient about possible risk mitigation. Mr Roberts' evidence was that a reasonable body of cardiac surgeons would not discuss the details of cannulation for bypass and emergency cannulation strategies with patients. In the joint statement, the question answered by the experts was whether it would be standard practice to discuss the steps to be taken "in the event of aortic injury". The question posed in the joint statement did not ask, in terms, whether a surgeon should discuss the options which might be taken in advance of the sternotomy to mitigate the injury that might be suffered in the event of aortic injury. However, it is clear that neither Mr Yap nor Mr Roberts considered that a surgeon would typically explain that there was an option to expose the femoral vessels in advance of the sternotomy.

200. In circumstances in which I have found that it was negligent not to expose the femoral vessels in advance of the sternotomy given the medium to high risk of aortic injury in this case, it follows, in my judgment that it was negligent not to advise the Claimant that exposing and preparing the femoral vessels was a variant form of the standard sternotomy procedure and one which, in the Claimant's circumstances, was appropriate in light of the risks.

201. However, if I am wrong in my assessment that the Defendant was negligent in failing to expose the femoral vessels, then the issue does arise as to whether the Claimant should nevertheless have been advised of the fact that the sternotomy could be carried out either with the femoral vessels exposed and prepared, or not. This is an issue which goes to the question of the level of detail which a surgeon should provide to a patient in relation to the surgical procedure in order to enable the patient to make a properly informed decision.

202. A reasonable person in the patient's position would, in my view, be likely to attach significance to the fact that the risk of mortality in this case was 5-10%, with a separate, and no doubt higher, risk of aortic injury. A patient who is informed that the procedure can be carried out with or without taking a step which may facilitate more rapid establishment of cardiopulmonary bypass in the event of aortic injury, is in a position to begin to ask questions to explore the pros and cons of the options and so give informed consent. The surgeon would then be likely to have to explain why they consider that one variant is more appropriate. No doubt, in such circumstances, Mr Nassar would have explained his reasons for concluding that it was not appropriate to expose and prepare the femoral vessels in advance (see [88] above).

203. The advisability of taking a step, such as this, to mitigate potential risks undoubtedly involves medical considerations, but not only medical considerations. As noted in *Montgomery* at [89], the nature of the risk, including the effect which its occurrence would have on the life of the patient and the importance to the patient ***P43*** of the benefits sought to be achieved may be of relevance, rather than merely the percentage chance of the risk materialising.

204. Whilst Mr Yap and Mr Roberts were of the view that details of cannulation strategy did not need to be discussed with a patient, it seems to me that they were both approaching this issue as one concerning the technical details of the surgery, rather than asking themselves whether a patient should be informed as to the existence of a variant of a surgical procedure which has the capacity to reduce the risk of death and/or permanent brain injury in the event that the foreseeable and known risk of aortic injury eventuates. It was agreed by all the surgeons that the assessment of the risk of aortic injury should inform the

decision as to whether the femoral vessels should be exposed in advance of sternotomy. The difference between the surgeons was whether the risks in this case warranted such a step being taken.

205. The Claimant was in her mid-twenties with three young children; whilst she was prepared to take the risks inherent in the surgery given the absence of any real alternative options, had she been informed that steps could be taken to minimise the risk of death or permanent brain damage in the event of aortic injury then she may have consented to the surgery, but only provided that such steps were taken. The very process of being required to explore the risks of the surgery and the options to mitigate those risks with the patient, and to hear the concerns and questions of the patient, may itself inform the thinking of the surgeon. The GMC and RCS guidance set out at [62] and [63] above and, further, the GMC guidance quoted in *Montgomery* at [77], emphasises the collaborative nature of the consent process and the need to try to reach a shared understanding of the expectations and limitation of the available options. Even where the surgeon continues to recommend one particular course over another, the patient is at least equipped to decide whether to proceed on the recommended basis or whether they wish to seek a second opinion.

206. When one is dealing with surgery such as this, which involves a risk of mortality of 5-10% for a young patient with three young children in a case in which the patient's enlarged aorta was proximate to the rear of the sternum, leading to a real risk of aortic injury, I can see no good reason why a surgeon should take it upon themselves to determine whether a risk-mitigation step of this nature should or should not be taken without first discussing the availability of the option with the patient as part of the consenting process. To the contrary, as identified in *Montgomery* , at [83], the patient has an entitlement to decide on the risks to her health which she is willing to run. It is not for the surgeon to determine, for the Claimant, what the Claimant's risk appetite should be. In all the circumstances of this case, it was, in my judgment, a breach of the duty of care owed by the surgeon not to explain to the Claimant that an option was available which might mitigate, to some extent, the risks consequential upon the inherent risk of aortic injury.

207. In the present case, the injury sustained by the Claimant means that I have no direct evidence from the Claimant as to whether she would or would not have been persuaded to proceed without the femoral vessels being exposed and prepared. There is clearly a real difficulty in relying on statements made with the benefit of hindsight in a case of this nature. However, I do place some weight on Mr Mohamed's evidence that the Claimant was "quite shocked" by the risk of mortality that he quoted (albeit of 20%) and that she "specifically asked about this". I also accept the evidence of the Claimant's husband (see [178] above) that the Claimant ***P44*** "would have wanted to take reasonable steps to see what could be done to minimise the risks of surgery".

208. Had the risks inherent in the proximity of her enlarged aorta to the sternum been fully explained to the Claimant and had the option of exposing the femoral vessels to reduce the risks consequential upon injury to the aorta been explained to her then, it seems more likely than not that the Claimant would have opted for the variant which improved her chances of survival and mitigated the risks of more serious brain damage in the event of aortic injury – at least in the absence of compelling reasons not to do so. Whilst there were some "cons" involved in exposing the femoral vessels (see [88] above), they were limited and, in any event, the surgeons agreed that the femoral vessels should have been exposed if the risk of aortic injury was medium to high. In my judgment, it is therefore likely, on the balance of probabilities, that had the Claimant been properly informed as to this option then she would have opted to proceed with the sternotomy provided that the femoral vessels were first exposed and prepared. There is no evidence before me to suggest that Mr Nassar would have refused to take this preliminary step had the Claimant requested it.

209. As to the timing of the consent process, I accept the force of the Defendant's submission that the consenting process in this case must be seen in the relevant context of a patient with serious congenital heart issues and under the care of a consultant cardiologist and who has received ongoing support and advice on her congenital conditions and appropriate treatment.

210. Nevertheless, even taking into account the Claimant's long history of receiving consultant care for her congenital heart issues, the complexity and seriousness of the proposed surgery was such that the Claimant should have been booked in for an outpatient appointment to see the operating surgeon in advance of the day on which the surgery was scheduled. This is what the clinical notes for the 20 January 2022 pre-operative assessment indicate would happen given that Mr Nassar was not available on that day to see the Claimant and it is what should have happened. In my view, this goes beyond what should have happened "in an ideal world" (the words used in the joint statement of the experts).

211. In my judgment Mr Yap was correct when he stated in his report that in this case, a third re-do sternotomy, with a medium to high risk of aortic injury given the proximity of the aorta to the sternum, it was unacceptable practice for the surgeon to see the patient for the first time on the day of the intended surgery in order to explain the risks of the operation for the purposes of seeking to obtain informed consent. This opinion evidence is also consistent with the RCS's guidance,

quoted at [62.b] above, to the effect that the process of consent should begin well in advance of treatment, that the patient should be able to take away a copy of the signed consent from for reference and reflection, and that a letter should be sent to the GP giving an account of the discussion that has taken place. In my view a good reason would be required to explain and justify a failure to see a patient in the position of the Claimant as an outpatient in advance of surgery.

212. Mr Nassar's explanation as to why no appointment was arranged for the Claimant to see him as an outpatient well in advance of the surgery was unsatisfactory. He said "I assume we tried", but he was unsure as to what, if any, steps were taken in this regard. His evidence was that his clinic would usually be on a Wednesday, but might be cancelled if there were emergencies. He suggested that patients were often contacted at short notice when spaces emerged in his schedule and he did ***P45*** not appear to consider that it was part of his responsibility to identify which patients should attend his clinic. I was left with the impression that there were no clear systems in place to (a) identify which patients should be seen as a matter of priority and (b) to ensure that these patients were contacted. This might be an incorrect impression, but, if so, then it is unfortunate that Mr Nassar was not able to explain the system pertaining to his clinic more satisfactorily. I have seen no documentary evidence of any effort being made on the part of the Defendant to contact the Claimant to arrange an appointment following 20 January 2022. I agree with Mr Yap's characterisation of the consenting process in this case as "chaotic".

213. In the absence of a good reason to explain and justify the failure to see the Claimant in advance of the day of surgery, the Defendant fell below the requisite standard of care in failing to ensure that the Claimant was contacted for an outpatient appointment to see Mr Nassar in advance of the day of the surgery.

214. When Mr Nassar did eventually see the Claimant, on the morning of the surgery of 3 May 2022, the contemporaneous evidence, set out at [183] above, suggests that he may have spent only three minutes with the Claimant during the ward round to explain the benefits and risks of the surgery and obtain her signature on the consent form. If this is correct, then it seems a very short period of time to devote to the consenting process, even taking into account the fact that this followed on from the previous consenting process with Mr Mohamed in April.

215. In any event, it is apparent from the Claimant's WhatsApp messages to her mother on 24 April 2022 and on the morning of 3 May 2022 (see [65] above) that she was exceedingly keen for the surgery to proceed without further delay. The Claimant had attended accident and emergency on 17 April because of her worsening symptoms and her surgery had been expedited on this basis. As set out at [208] above, on the balance of probabilities, the Claimant would, in my judgment, have consented to the procedure on the basis that the femoral vessels were exposed and I have no reason to believe that Mr Nassar would have refused to proceed on that basis. In the circumstances, I do not consider that it is likely that there would have been any need for a second opinion nor, in any event, do I find that the Claimant would have elected to postpone the surgery on 3 May 2022.

216. In the circumstances, it is not necessary to engage with the further questions as to who, where and when any second opinion would have likely been provided as such issues do not arise. In case I am wrong on my conclusions, it is evident that there were other tertiary referral centres to which the Claimant could have been referred (including Mr Yap's MDT at Barts, see [194] above) and Dr Jansen is clear that she would have endeavoured to refer the Claimant for a second opinion had she asked. Had the Claimant obtained a second opinion then it seems likely that the advice as to the risks of mortality would have been the same, namely 5-10%. If the evidence of Mr Yap and Mr Roberts is correct then, on the balance of probabilities, another surgeon would not, in fact, have advised the Claimant of the existence of the option to expose and prepare the femoral vessels as a means of mitigating the consequences of aortic injury. However, as set out above, in my judgment, such advice should have been given in accordance with the principles set out in *Montgomery* .

217. In light of the agreement between counsel that the determination of the preliminary issues should be narrowly confined to findings of fact and should not deal with the legal issues of causation which arise in relation to the Claimant's ***P46*** reliance on *Chester v Afshar* , I make no comment on the application of the legal principles set out in that case.

M. Conclusion

218. For the reasons set out above, my findings on the preliminary issues are as follows:

a. **Issue 1(a):** was there a breach of duty in respect of the pleaded allegations concerning the pre-operative planning/management?

Yes. There was a breach of duty in failing, in advance of commencing the sternotomy, to expose and prepare the Claimant's femoral vessels in order to facilitate cardiopulmonary bypass in the event of the occurrence of the known and foreseeable risk (being a medium to high risk) of aortic injury during the course of the sternotomy.

b. **Issue 1(b):** was there a breach of duty in respect of the pleaded allegations concerning intraoperative skill and care?

No. The catastrophic injury to the aorta which eventuated was a known and foreseeable risk (being a medium to high risk) of injury inherent in the sternotomy surgery. That injury eventuated in the absence of negligence on the part of the surgeon.

c. **Issue 2:** in the event that a breach of duty in respect of pre-operative planning/management is established, how much time would have been saved but for such breach(es)?

On the limited evidence available, approximately 13 minutes.

d. **Issue 3:** was there a breach of duty in respect of the pleaded allegations concerning informed consent and, if so, on the balance of probabilities, would the Claimant have opted to postpone her surgery in favour of awaiting a second opinion?

Yes. There was a breach of duty in failing to ensure that the Claimant received advice as to the risks of the proposed surgery in an outpatient appointment in advance of the day of surgery.

There was also a breach of duty in failing to advise the Claimant that prior to commencing the sternotomy the femoral vessels could be exposed and prepared in order to attempt to mitigate the severity of the injuries which might result from the foreseeable and known risk of aortic injury occurring.

Had the Claimant received such advice then, on the balance of probabilities, the Claimant would have elected to proceed with the sternotomy on 3 May 2022 with the option of the femoral vessels being exposed and prepared in advance. She would not have elected to postpone the surgery in any event.

219. I am very grateful to both Mr Elgot and Ms Crowther and to Ms Power for their detailed submissions and to both Mr Yap and Mr Roberts for their careful and thorough expert evidence.

220. As this judgment is limited to preliminary issues, further directions will be required both in relation to consequential matters and in relation to the next procedural steps. ***P47**

