

Neurosurgeon – Dr B
A Private Hospital

A Report by the
Health and Disability Commissioner

(Case 03HDC10773)



Health and Disability Commissioner
Te Toikey Hamora, Hauātanga

Parties involved

Mr A	Consumer
Dr B	Neurosurgeon / Provider
Dr C	Neurosurgeon
Dr D	Anaesthetist
Mr E	Consumer's Lawyer

Complaint

On 18 July 2003 the Commissioner received a complaint from Mr A concerning the services provided to him by Dr B, neurosurgeon, and a private hospital. The following issues were identified for investigation:

Dr B

Whether the care provided by Dr B following Mr A's operation on 21 March 2002 was of an appropriate standard, with particular reference to:

- *mobilisation*
- *fluid and drain.*

The Private Hospital

Whether the care provided by the private hospital following Mr A's operation on 21 March 2002 was of an appropriate standard, with particular reference to:

- *mobilisation*
- *fluid and drain.*

An investigation was commenced on 16 December 2003.

Information reviewed

- Letter of complaint from Mr E on behalf of Mr A dated 17 July 2003, with the following attachments:
 - Copy of Mr A's ACC claim
 - Letter from Mr E to ACC's Neurological and Spinal Surgery advisor
 - Copy of correspondence between Mr E and the private hospital
 - Letter and attachments from a District Health Board to Mr E
 - Copy of information provided by Pacific Surgical Supplies Ltd
 - Letter from Dr B to Mr E dated 7 May 2003
- Letter from Mr E dated 15 October 2003 with the following attachments:
 - Initial assessment report for Mr A's vocational rehabilitation through ACC
 - Independence allowance assessment report
 - Letter and attachments sent to Mr E by the private hospital on 7 October 2003

- Letter from the Chief Executive Officer of the private hospital, dated 26 January 2004, including a summary of the care provided by a senior staff nurse, the private hospital.
- Mr A's private hospital medical records
- Letter to the Commissioner from Dr B, dated 28 January 2004
- Information obtained via a telephone call with Dr B on 26 July 2004
- Mr A's District Health Board medical records
- Mr A's ACC file
- Letter from Dr B, dated 20 October 2004
- Letter from Mr E, dated 8 November 2004

Independent expert advice was obtained from Dr Venkataraman Balakrishnan, neurosurgeon.

Information gathered during investigation

Background

Mr A (a 54 year old man) had a history of lower back pain. His pain had been managed since 1995 with a lumbar brace after a CT scan revealed a bulging lumbosacral disc prolapse compressing the left S1 nerve root. Mr A aggravated his symptoms when lifting heavy bags and, in December 2000, underwent a lumbosacral discectomy, performed by Dr B, neurosurgeon. Approximately one year after this operation Mr A twisted his back and experienced a recurrence of lower back pain. An MRI scan suggested the presence of a recurrent disc prolapse at the lumbosacral level.

Operation and tear of dura

At 3pm on 21 March 2002 Dr B conducted a revision of the L5/S1 discectomy and decompression at the private hospital. During the surgery Mr A's dura¹ was torn, causing a cerebrospinal spinal fluid (CSF)² leak.

Dr B repaired the tear and inserted a low-pressure Medinorm drain. In the event of a CSF leak following surgery it is important that the patient avoids straining and sudden postural alteration, so as not to exacerbate the CSF flow and to allow the leak to resolve. The choice of drain is important in controlling the CSF flow to prevent the onset of symptoms and complications associated with a CSF leak.³ With regard to his choice of drain, Dr B advised me:

“Mobilisation is generally relativised to the patient in that one wants to avoid either straining, which can cause an exacerbation of C.S.F. flow, or a sudden postural alteration which can also cause problems with drains. The Medinorm drain is supposed to be

¹ The dura is the thick outer membrane covering the brain and spinal cord.

² Cerebrospinal fluid is a clear nutrient-rich fluid that surrounds the brain and spinal cord. It is contained by the dura.

³ Symptoms associated with a cerebrospinal fluid leak include a headache, which is often worse when sitting up and improves when the patient is lying down, a runny nose, and nausea. Infection can be a complication of a cerebrospinal fluid leak.

pressure controlled so that this will not happen. Therefore, my normal practice regarding a c.s.f. leak into a lumbar spinal wound is to either get primary closure, or if there is still c.s.f. evident in the wound post-operatively, to keep the patient on bed rest for 24-48 hours, allowing them to mobilise only to go to the toilet and only if trying to go to the toilet on the bed using a pan causes more stress than would be involved in getting up to use the toilet in the normal manner. In either case, one aims to have a pressure controlled drain in the wound or a gravity drain (with no rather than low suction). If there is a gravity drain this must be clamped if the patient gets up and so sometimes it is safer to have a low pressure vacuum drain to eliminate that risk. The gravity drain has the disadvantage that it is sensitive to the patient's posture whereas a Medinorm pressure control drain on low pressure does not have that disadvantage. In Mr A's case, we used a Medinorm pressure controlled drain to try and control the c.s.f. egress and avoid the need for further surgery and advised Mr A to stay in bed for 24-48 hours ... These management instructions are usually negotiated with the patient and the nurse depending on what is happening with the drainage and the wound healing in the first 48-72 hours after surgery."

Dr B advised that a Medinorm pressure-controlled drain was deliberately used to avoid any problems arising from a change of posture, given that some patients find it difficult to remain on strict bed rest for 48 hours.

Postoperative instructions regarding mobilisation

Mr A was returned to the ward at 5.40pm. The progress notes record that he was "sleepy but rousable". In accordance with his standard practice in the case of a CSF leak, Dr B's postoperative plan was to keep Mr A on bed rest for 24-48 hours, allowing him to mobilise only to go to the toilet.

Dr B's instructions to staff at the private hospital regarding postoperative care following spinal surgery are both general (ie, through standing orders for spinal surgery – not specific to different types of spinal surgery), and specific (ie, specific instructions written in the patient's progress notes). Dr B's standing orders for spinal surgery at the time of Mr A's surgery were:

"Post-op

If HNPU [has not passed urine] after 4 hours – ID [indwelling] Urethral catheter

1st day Up to toilet and shower with physio and nursing assistance

2nd day Mobilize around room only with assistance

3rd & 4th days Mobilize around ward."

Dr B did not record his postoperative instructions in Mr A's progress notes on 21 March, including that Mr A was to remain on bed rest for 24 hours following surgery. However, he is confident that he verbally advised Mr A to remain on bed rest after the operation (although he could not recall exactly what he had said or when). Dr B advised that the instructions for non-mobilisation are particularly important when there is a CSF leakage, and that it is his normal practice to mention his instructions to the patient within the hearing of the nurses so that

everyone knows what is expected. He noted that although such instructions are given post-surgically, they need to be reinforced during the recovery period.

Mr A stated that he was not advised against mobilisation after the surgery. He submitted that no advice was given either to him or the nursing staff about postoperative mobilisation. Dr B commented that Mr A may not recall the advice about mobilisation because he suffered a significant head injury after the operation.

Mr A submitted that even if non-mobilisation instructions had been given to him verbally by Dr B, the advice was: given postoperatively when Mr A's ability to understand may have been impaired by medication; on Dr B's own admission, not communicated directly to nursing staff, who may or may not have overheard any communication to Mr A; and was not "re-affirmed" at any point.

On balance, I am satisfied that, as per his usual practice, Dr B verbally instructed Mr A to remain on bed rest immediately after surgery (except for toileting purposes).⁴

Mobilisation and condition on 21 and 22 March

An entry in the progress notes at 9.30pm on 21 March records that Mr A was log rolling well with the assistance of a nurse. It was recorded that Mr A stood out of bed but did not pass urine. It is not clear from the progress notes whether Mr A stood out of bed assisted or unassisted by the nursing staff. The total drainage through Mr A's Medinorm drain at that time was 340ml. Mr A states that he stood up because he was experiencing head pain. He hoped standing up would ease the pain. He was given oral medication for discomfort with good effect.

A few hours later, at 1am on 22 March, a note was made in the progress notes that Mr A "[passed urine] 300mls via bottle. Stood by bed, moving well, no disc[omfort]". Again, it is unclear whether Mr A mobilised assisted or unassisted by nursing staff.⁵

At 3.20am Mr A passed 260mls of urine into a bottle. The notes also record "Redivac [sic] total 370ml settled".

Dr B advised me that "Mr A got out of bed in the middle of the night and his drain fell on the floor."⁶ However, there is no other record of Mr A's drain falling on the floor, either in the progress notes or in Dr B's other correspondence. This matter is not relevant to Mr A's treatment and I do not consider that I need to resolve it to form my opinion.

At 7.50am Dr D, anaesthetist, reviewed Mr A. He noted that Mr A was comfortable, but had nausea from his tramadol medication. Dr D suggested Mr A continue with analgesia, but not Tramadol.

⁴ I note that this is consistent with Mr A's subsequent mobilisation to toilet with nursing assistance and Dr B's subsequent written instructions the next day (see below).

⁵ Mr A submitted that this record in the nursing notes supports the position that neither he nor the nursing staff were aware of the importance of non-mobilisation.

⁶ Letter to Mr A's lawyer, dated 7 May 2003.

At 8.30am the progress notes record that Mr A had a headache, and his wound/drain site was leaking “+++”.

At 10.30am an entry notes “drain site padded. No new ooze through this.”

Dr B reviewed Mr A on 22 March, although the time of the review is not recorded in the progress notes. Dr B made the following entry:

“To remain mainly lying down (except [to pass urine] and [for bowel movements])
Drain to remain until I review (on suction)
[Antibiotics] as charted ... I will review tomorrow.”

At 1.20pm a nursing entry in the progress notes records:

“Headache remains. On bedrest except to [pass urine] into bottle ... ooze on drain site. 550ml + total drainage into drain. Blood stained serous fluid. Seen by [Dr B] who is aware of the above. Message also left with theatre staff to get Mr B to reassess [Mr A] before he leaves. Unable to dipstick drainage as bloodstained.⁷ Washed in bed. Tolerating food and fluids with no nausea. IV fluids stopped ... no tingling in extremities or numbness.”

At 7.50pm the progress notes record (retrospectively) that Mr A was feeling nauseous, and his headache pain intensity had increased after he sat up to void. Dr D was contacted, and he advised the nursing staff to recommence intravenous fluids. Mr A was also given paracetamol. Moderate drainage and ooze were recorded. The notes further record:

“Discussed pain relief for headache. x2 large vomits ... approx 15 mins later [patient] turned onto side, small convulsion/seizure experienced (approx 5 secs). [Dr D] called.”

Dr D reviewed Mr A at 7pm. Dr D noted that Mr A had a severe headache and neck pain. On observation he was clammy, his chest was clear, and he was moving all limbs. Dr D recorded: “Prob – ↓CSF volume → headache. Continue IV fluids. Strict bedrest”.

The 7.50pm entry in the progress notes further records:

“ECG normal. Concerned [with] ‘excruciating’ pain in head. Both pupils reactive and equal. All other neuro obs WNL [within normal limits]. Fentanyl 200mg bolus [given] by Dr [D]. Fentanyl PCA [patient-controlled analgesia] commenced. Boluses of 120mg [given]. Pain now 1-2 on pain scale (most headache some posterior cervical region).”

The fluid balance chart records 300mls of drainage at 8pm, bringing the total drainage to 860mls.

⁷ The senior staff nurse at the private hospital advised me that this refers to being unable to dipstick the ooze to confirm the presence of CSF because of blood being present. She noted: “It is impossible to tell the blood/serous fluid/CSF composition by looking at the bottle as CSF mixes with serous ooze.”

At about 8.10pm the notes record that Mr A was settled, resting and responsive, although “very clammy and sweaty”. It is recorded that an ECG showed sinus bradycardia. His blood pressure was noted as being stable. Dr D was to contact Dr C, who was covering for Dr B. It appears that nursing staff also attempted to contact Dr B directly, but were unable to do so.

At 10.30pm the nursing notes record (retrospectively):

“Dr [D] rang; Contact [Mr C] gave following instructions 1) drain off suction 2) slightly raise feet of bed 3) insert IDC [indwelling catheter] (done 450mls) 4) encourage to lie prone. [Mr A] declined same; currently on his back.”

The fluid balance chart records that at 9.10pm the drain was taken off suction, and an indwelling catheter inserted at 9.30pm. The progress notes record in the 10.30pm entry that Mr A was settled and comfortable, although concerned about “headache pain” and the possibility of the pain returning. His pupils remained reactive and equal and he remained orientated to person and place. It appears that a further attempt was made to contact Dr B, because the notes record: “unable to contact Dr B. To remain on STRICT bed rest ... [total] 310mls this duty (haemoserous) 870 [total].”

Overnight the total drainage from Mr A’s drain was recorded as 310mls.

Condition on 23 March

The progress notes record at 5.10am that Mr A slept periodically for short periods. His discomfort levels were recorded as one (out of five) for both his back pain and headache. At 5.10am he was noted to be alert and watching rugby on television.

Mr A was reviewed by Dr D at 9.45am. He recorded that Mr A was feeling much better, and 100ml of fluid had drained overnight. His plan for care was for: “bedrest & lie up no more than 15°. Food and encourage fluids. [Decrease] PCA basal rate if a bit drowsy.”

Mr A was reviewed by Dr C, although the time is not recorded in the notes. Dr C recorded: “Following a complaint of severe headache yesterday evening the suction in the drainage bottle was stopped. He was advised to lie prone ... Today he feels much better.”

At 2.30pm the progress notes record:

“[Observations satisfactory]. Orientated time, place, person. Afebrile. Tolerated very light diet and fluids with no nausea ... Headache still slightly there. PCA used regularly. Moving well in bed. Need reminded (sic) to stay on side ([Dr C’s] instructions) and not to move so much in bed ...

Wound site dressing seen by [Dr C] and orders were to change dressing. Not yet changed as drain site started to ooze++ again into bed. Dressing repadded but still continues to ooze. 20ml into drain this duty. Ooze is a haemoserous colour. Still unable to contact [Mr B]. [Mr C] contacted and to change dressing with combined dressing and Tegederm (clean wound with iodine). Put suction back on drain.”

At 10pm the nursing notes record that earlier in the evening Mr A had got himself out of bed. He had slight confusion and a sudden onset of neck pain and headache. He was returned to bed by nursing staff. The notes record:

“Contacted [Dr D]. Advised to give IV bolus via PCA until comfortable. Tilt bed foot end to allow CSF drainage back to head. Contacted [Dr C] 200ml in drain (blood stained, not clear). Advised to take drain off suction. Scant further ooze.”

At 7pm, Dr B reviewed Mr A. It appears that Dr B’s review occurred subsequent to the above events. Dr B recorded: “Drainage less since suction stopped. Remain off suction lying flat until tomorrow. If OK then can lie normally tomorrow. Review drain etc tomorrow PM.”

The nursing note entry at 10pm further records:

“[Seen by] [Mr B] later in duty (see note [above]). Remains on bedrest. Drain off suction. Scant further ooze ... settled [and] slept for rest of duty.”

24 March

At 6.40am the progress notes record:

“[Patient] sat up to have a drink of water at around 0415hrs and vomited ... Appeared to sleep reasonably well most of the duty but seems more restless since that episode at 0415hrs. Wound drain drained another 30mls overnight (without suction). Also leakage directly from wound site ... Appears to be quite vague ? confused at times.”

The nursing notes record at 7.30am that Mr A was “slurring his words” and said “he feels ‘drunk’”. It was noted that his headache continued, and he had increased ooze from his wound – “Dressing saturated [with] haemo-serous wound ooze.” His headache pain was rated at one to two out of five. Dr B was contacted and asked to reassess Mr A.

At around 7.45am Dr B phoned the ward and discussed Mr A’s condition. On Dr B’s instruction Mr A was transferred to a public hospital. Dr B notified the neurosurgical registrar of Mr A’s transfer. Mr A’s admission note at a public hospital, completed by the attending house surgeon, stated:

“Mobilised against advice this a.m. On analgesia. Subsequent sudden onset headache.”⁸

Mr A was subsequently diagnosed with a subarachnoid bleed. The wound was reopened at the public hospital and the dural defect located, sutured and sealed. Mr A suffers a range of ongoing complications as a result of the subarachnoid bleed, including constant pain and decreased mental acuity.

⁸ I accept that this note does not accurately reflect the totality of Mr A’s symptoms prior to his admission to the public hospital, which included ongoing headache that had been present before he mobilised on 23 March. However, my opinion does not turn on this point and I do not consider that further investigation of this matter is necessary.

In response to this complaint, the Chief Executive Officer of the private hospital advised me that he asked Dr B “to be more specific about mobilisation protocol in his standing orders”.

On 5 November 2002 ACC declined Mr A’s claim of medical error but accepted that he had suffered a medical mishap.

Independent advice to Commissioner

The following expert advice was obtained from Dr Venkataraman Balakrishnan, an independent neurosurgeon:

“I, V Balakrishnan, Consultant Neurosurgeon, employed by the Capital & Coast District Health Board, at Wellington Hospital, am providing this expert advice to the Health & Disability Commissioner as requested by the Investigator.

I received a letter from the Investigator H&D Commissioner, dated 17 May 2004, requesting expert advice to the Health & Disability Commissioner with reference to the above file No: 03/10773, by 21 June 2004. I apologise for the delay due to workload and time taken to survey supporting literature on this particular issue. I thank [the Investigator] for extending the due date.

My qualifications are M.B.,B.S., M.S., FRACS. I have been practising Neurosurgery since I obtained my qualification in 1966 and have been a Consultant Neurosurgeon in New Zealand since 1977.

I confirm that I have been instructed to provide an opinion to the Commissioner on case No: 03/10773, and that I have read and agree to follow the Commissioner’s Guidelines for Independent Advisors Appendix H.

Please refer to your previous correspondence dated 25 September 2003, and my general comments on the clinical issues of the above mentioned case.

...

I reviewed the following supporting information and documents provided:

- Letter of complaint from [Mr E] on behalf of [Mr A] dated 17 July 2003, with the following attachments (labelled A, pgs 1-75):
 - Copy of [Mr A’s] ACC claim
 - Letter from [Mr E] to ACC’s Neurological and Spinal Surgery advisor
 - Copy of correspondence between [Mr E] and [the private hospital]
 - Letter and attachments from [the District Health Board] to [Mr E]
 - Copy of information provided by Pacific Surgical Supplies Ltd
 - Letter from [Dr B] to [Mr E] dated 7 May 2003

- Letter from [Mr E] dated 15 October 2003 with the following attachments (labelled B, pgs 76-112):
 - Initial assessment report for [Mr A's] vocational rehabilitation through ACC
 - Independence allowance assessment report
 - Letter and attachments sent to [Mr E] by [the private hospital] on 7 October 2003
- Expert report provided to the Commissioner by Dr Balakrishnan, neurosurgeon, on 13 October 2003 (labelled C, pgs 113-115)
- Letter from [the Chief Executive Officer] at [the private hospital], dated 26 January 2004 (labelled D, pgs 116-120)
- [Mr A's] [private hospital] medical records (labelled E, pgs 121-205)
- Letter to the Commissioner from [Dr B], dated 28 January 2004 (labelled F, pgs 206-207)
- [Mr A's] [District Health Board] medical records (labelled G, pgs 208-407)
- [Mr A's] ACC file (labelled H, pgs 408-500)

Opinion:**Specific reference to Mr A's post-operative mobilisation:**

- It is the surgeon's responsibility to instruct the patient and the nursing staff, on how to manage the patient and when to mobilise the patient, as the only person who knows what was done during the operation and how the dural defect was repaired. Either strict bed rest or lying in a prone position with head down prevents build up of spinal fluid in the lumbar subarachnoid space may be needed. This may give time for the dural defect to seal naturally.
- Draining about 340ml of fluid, by 9.00pm suggests that the dural defect has not been adequately sealed allowing excessive fluid being siphoned into the drain container.
- Early mobilisation in this situation is not appropriate as sitting up, standing, straining, and gravity, can encourage excessive fluid siphoned into the drain container. Excessive drainage of spinal fluid, allow the brain to sag, tearing the veins causing either subdural or, rarely subarachnoid and /or intracerebral haemorrhage.
- The post operative plan to mobilise the patient within 24 hours was inappropriate as there was high volume of drain in the Medinorm drain – 340ml drained by 9.00pm.
- I can not find any record that this plan has been implemented, other than a verbal instruction to the nursing team.

- The patient and the nursing team should be strictly instructed on the consequence of dural tear, repair and consequence of excessive drainage of spinal fluid.
- It may be appropriate to discuss with the patient the consequence of early mobilisation and the reasons for the strict bed rest, either lying flat or prone with head down position. This may be difficult if the patient is distressed with headache, confused, disorientated and vomiting due to overdrainage of spinal fluid.

Specific reference to [Mr A's] post-operative drain:

- Medinorm drain is a prevacuumed system and the suctioning force can not be controlled. According to the manufacturer's description, the volume of the containers are different with the same suction force of 150mm of Mercury (150mm of Hg).
- The cerebrospinal fluid pressure in the lumbar region is between 130 and 170mm of Hg and so the prevacuumed drain will be siphoning at the rate of 150mm of Hg, depleting the spinal subarachnoid space. Cerebrospinal fluid is produced at the rate of 600-700 ml per day and the subarachnoid space can hold up to 140-150ml of fluid.
- Insertion of 'any type drain' and conservative approach to manage spinal fluid leakage is a controversial topic. There is no standard way of managing this problem and it is believed that, draining excessive spinal fluid will allow the dural defect to seal, within few days, however, by inserting a 'vacuum drain' may encourage more spinal fluid constantly pass through a small dural defect, not allowing the defect to seal by itself. On the other hand, an alternative management of reducing spinal fluid build up in the spinal subarachnoid space helps the defect to seal and so draining spinal fluid from the subarachnoid space using a fine catheter away from the dural tear has been practised and this proved successful in many instances.
- The nursing records confirm that the volume of drainage has been recorded appropriately. It is commendable that the nursing staff, although not trained to nurse neurosurgical patients, were concerned about the volume of fluid drained and took immediate action to contact the surgeon in time.
- In general conservative measures, adequate fluid replacement, positioning of the patient and insertion of fine drain into subarachnoid space at a different level should allow the dural defect to seal by itself. (Ref 5), However, if there was excessive drainage within 24-36 hours and the patient is disturbed due to low volume of brain fluid, other surgical measures to seal the dural defect should be considered. In this situation, re-opening of the wound, locating the actual site of dural defect, additional suturing with fat or muscle patch and sealing the defect with biological sealant have been practised to expedite patient recovery and have prevented major complications of excessive drainage of spinal fluid.

- Other procedure such as draining spinal fluid with a fine catheter, away from the dural defect (controlled drainage at a low rate) has been practised to resolve this problem.

General comment:

Excessive drainage of spinal fluid and its complications are well known to neurosurgeons. Dural tear during difficult spinal procedures, re-operation for recurrent disc or spinal stenosis are well documented and it is an inevitable/unexpected complication. Neurosurgeons have their own method of dealing with this situation, viz strict positioning of the patient or insertion of a fine drain away from the dural defect or early re-operation and closure of the dural defect by various means to prevent complications and expedite the patient's recovery and prevent chances of infection.

I am unable to find any reference to cerebral haemorrhage due to excessive drainage of spinal fluid by using 'Medinorm prevacuumed drain system', specifically used in lumbar discectomy.

Over drainage of spinal fluid in conditions where the cerebral pressure is high can cause reduction in brain volume, stretching of veins, haemorrhage and drying of the brain resulting in confusion, disorientation and even seizure(6).

Deliberate drainage of spinal fluid has been practised to assist spinal cord perfusion and complications, such as, subarachnoid haemorrhage, cerebral haemorrhage, cerebellar haemorrhage as in [Mr A's] case have been documented in literature(1) (2) (3) (4).

References:

1. 'Subdural haematoma after thoraco abdominal aortic aneurysm repair: an under reported complication of spinal fluid drainage'
Journal of vascular surgery 2002 July 36 (1): 47-50
2. 'Cerebellar haemorrhage as an early complication of spinal operations. 2 case reports and review of the literature'
Z Orthop Ihre Grenzgeb 1999 July-Aug; 137(4): 371-375
(Abstract in English)
3. 'Intracerebellar haematoma following thoraco abdominal aortic repair: an unreported complication of cerebrospinal fluid drainage.'
European Journal of Cardiothoracic Surgery. 2003 Oct; 24(4): 659-661.
4. 'Subdural haematoma following lumbar puncture'
Arch. Intern. Medicine. 2002, 162: 1904-1905.
5. 'Closed continuous drainage of cerebrospinal fluid via a lumbar subarachnoid catheter for treatment or prevention of cranial/spinal cerebrospinal fluid fistula'
Neurosurgery 1992: 30; 241-245.

6. 'Subarachnoid haemorrhage and intracerebral haematoma following lumboperitoneal shunt for pseudotumour cerebri: A rare complication.
Neurol. India 2002; 50:508-510'

Additional advice

On 14 September 2004, Dr Balakrishnan provided some additional advice:

“Further advice to clarify postoperative management:

1. Immediate postoperative plan from 21 March until the evening of 22 March 2004.

The operation was performed at 3 pm on 21 March 2002 and [Mr B] stated that he advised [Mr A] to remain in bed for 24 – 48 hours (except for self care purposes).

In my view, this was an appropriate plan in the first 24 hours, following surgery. As the dura was disrupted during surgery and to prevent further CSF drain, by gravity, instructions to keep the patient on bed rest was appropriate. Depending on the patient's pain control, urgency to pass urine, difficulty passing urine in lying position, should be evaluated and so sitting up, standing for short period to pass urine (in male patient) would be acceptable in this situation.

2. Post operative plan from 22 March until 24 March.

It has been recorded that by 9.30 pm on 21 March 02, there was CSF collection in the drain container and I believe, strict bed rest (not to stand up, mobilise, walk to the toilet) should be followed to prevent further drainage of cerebrospinal fluid.”

On 23 September 2004, Dr Balakrishnan discussed his advice with my Office. Dr Balakrishnan clarified that the care provided by [Dr B] was suboptimal, although he also made it clear that the failure was not major and that the decision in this case was a fine one (ie, finely balanced).

Expert advice provided to ACC and Mr A

On 30 October 2002 a neurological and spinal surgeon provided the following advice to ACC in relation to a claim made by Mr A:

“It is my opinion that this is a very rare complication of a lumbar discectomy. I have reviewed some of the records from the Department of Neurosurgery in [a city], and although several venous haemorrhages in the intracranial compartment associated with cranial surgery are documented, I can find no record of such a complication from a lumbar spinal operative procedure. I also have not been able to find a record of such a complication in the Neurosurgical literature.

Hence, I would agree that the patient has had a physical injury following surgical treatment. As documented above this followed the patient's mobilisation in the early days

following his lumbar disc prolapse excision, and necessitated his admission to the Department of Neurosurgery in [a city].

1. I believe that the injury can be attributed to the combination of a dural tear with a CSF leak, which is not an unusual complication following an operative procedure for a recurrent lumbar disc, and the placement of a vacuum drain.
2. [Dr B] is a registered Health Professional with a long experience of surgery of the spine and it is my impression that the treatment suggested was appropriate, and that the dural tear when dissecting a scarred nerve root is not an unusual complication.
3. I do not consider that the injury was caused by medical error on the part of a registered Health Professional. The appropriate treatment was suggested, and I believe it is normal practice to place a drain in a laminectomy wound that has been complicated by a CSF leak, although at times this is a low pressure vacuum drain. I do not believe there was a failure by the registered Health Professional to observe a standard of care and skill reasonably to be expected in the circumstances.
4. I do not believe that the injury was caused by a medical error on the part of the organisation. I am uncertain of [Dr B's] plans for mobilisation of the patient post operatively, but it is now general practice to mobilise such patients quite quickly.
5. I do believe that this patient's claim meets the criteria for medical mishap. The patient has suffered a personal injury with intraparenchymal cerebral haemorrhages, and I believe that this complication following a lumbar discectomy and CSF leak is extremely rare, in my experience less than 1% of cases. It is also my opinion that an intraparenchymal bleed in the cerebellum and brain is a severe complication. It is likely that this is going to affect the patient's ability to perform every day activities for more than 28 days.
6. I do not believe that there are any issues of competency which the ACC needs to refer to the relevant professional body and Health and Disability Commissioner for investigation. As mentioned above [Dr B] has a long experience of spinal surgery, the procedure described would be similar to that undertaken in any Neurosurgical service, and this is a rare and serious complication.
7. As mentioned above I believe the claim meets the criteria for medical misadventure but I don't believe it raises any issues that in the public interest the ACC should report to an appropriate authority. It is probable however, that in the teaching of Surgical Registrars it might be stressed that low pressure vacuum drains are used in the presence of a CSF leak as is currently the practice."

On 19 August 2003, in response to questions from [Mr A's lawyer], [ACC's expert advisor] provided the following advice to [Mr A]:

“I believe that if there is a significant cerebrospinal fluid leak after such an operative procedure either a low pressure or a no pressure drain (bottle with an air vent) should be used, and if the patient is to be mobilized, then this should be clamped while the patient is standing or sitting.

I believe that the excessive drainage of cerebrospinal fluid in this case is likely to have played a part in lowering the patient’s intracranial pressure and is likely to have been at least in part associated with the patient’s intracranial haemorrhage.”

Response to provisional opinion

Dr B

In response to my provisional opinion, Dr B accepted that his instructions to Mr A, “to remain lying down at all times”, “may not have been strict enough and enforced clearly enough”, but queried his obligation “to insist that Mr A comply in a stronger way such that it would override any tendencies he might have to relieve himself or attempt to relieve himself in inappropriate ways”. Dr B also stated: “I am not convinced that Mr A was sufficiently attentive to instructions so that this lack of rigour had a causative role in producing his subsequent problem. It seems to me that Mr A acted on several occasions contrary to the advice of nursing staff and other attendants and that in the circumstances his tendency in a mildly confused state to get up and move around to try and relieve his problems was what produced the difficulty.”

Mr A

Mr A remains adamant that he was not advised against mobilisation after the surgery. It was also submitted that there may have been a delay or confusion in contacting Dr B about Mr A’s deteriorating condition, after 8.00pm on 22 March.

Code of Health and Disability Services Consumers’ Rights

The following Right in the Code of Health and Disability Services Consumers’ Rights is applicable to this complaint:

RIGHT 4

Right to Services of an Appropriate Standard

- 1) Every consumer has the right to have services provided with reasonable care and skill.*

Other relevant standard

The Medical Council of New Zealand's *Good medical practice: A Guide for Doctors* (2000), states:

“3. In providing care you must:

...

keep clear, accurate, and contemporaneous patient records which report the relevant clinical findings, the decisions made, the information given to patients and any drugs or other treatment prescribed.”

Opinion: No Breach – Dr B

Operation

During the revision of Mr A's L5/S1 discectomy and decompression, his dura was torn causing a CSF leak. Dr B repaired this tear and inserted a low-pressure Medinorm drain.

Dr Balakrishnan advised me that dural tears during difficult spinal procedures or re-operation for recurrent disc or spinal stenosis are well documented, and an “inevitable/unexpected complication”. In addition, excessive drainage of CSF and its complications are well known to neurosurgeons. In his advice to ACC, their expert advisor also noted that a dural tear with a CSF leak is not an unusual complication following an operative procedure for a recurrent lumbar disc, and the placement of a vacuum drain.

I accept Dr Balakrishnan's and ACC expert advisor's advice that dural tears with CSF leakage are known complications of spinal surgery. There is no evidence that the dural tear was the result of a failure by Dr B to use reasonable care and skill during his surgery on Mr A.

Management of dural tear and CSF leak

The choice of drain used in the case of a dural tear and CSF leak is important. CSF flow needs to be controlled to prevent the onset of symptoms and complications associated with a CSF leak. The leak can be controlled by instructing the patient not to mobilise for 24-48 hours following surgery, and by using appropriate drainage. As Dr B advised, some patients find it difficult to remain on strict bed rest for 24-48 hours following surgery. Accordingly, he deliberately inserted a Medinorm pressure-controlled drain (low pressure), which has the advantage of not being sensitive to the patient's posture and therefore avoids the problems associated with a patient's change of posture in the postoperative period.

Dr Balakrishnan advised me that neurosurgeons have their own method of managing a dural tear and CSF leakage, and there is no standard way of managing the complication. In this respect, treatment by means of a drain and a conservative approach is a controversial topic. While draining excessive CSF may allow the dural defect to seal within a few days, inserting a ‘vacuum drain’ may also encourage more CSF to constantly pass through a small dural defect,

which could prevent the defect from sealing itself. An alternative option is to reduce CSF build-up in the spinal subarachnoid space using a fine catheter, which helps the defect to seal.

ACC's expert advisor advised ACC that it is normal practice to place a drain in a laminectomy wound that has been complicated by a CSF leak, although either a low-pressure or a no-pressure drain (bottle with an air vent) should be used. Dr B chose to manage the CSF leak by inserting a low-pressure Medinorm drain. In the advisor's opinion, Dr B's management of Mr A's CSF leak by a low-pressure Medinorm drain was appropriate, and Dr B did not fail to observe a standard of care and skill reasonably to be expected in the circumstances.

It was suggested in Mr A's case that the use of a low-pressure Medinorm drain could have contributed to excessive drainage of CSF and therefore the subarachnoid haemorrhage he experienced. I note, however, that neither Dr Balakrishnan nor ACC expert advisor could find reference to another patient who has experienced this complication.

In my opinion, Dr B's decision to use a low-pressure Medinorm drain was reasonable and he could not have anticipated the excessive CSF drainage that followed. Accordingly, Dr B provided services to Mr A with reasonable care and skill and did not breach the Code in relation to this issue.

Postoperative plan

Mr A was returned to the ward at 5.40pm on 21 March 2002. In accordance with his standard practice in the case of a CSF leak, Dr B's postoperative plan was to keep Mr A on bed rest for 24-48 hours, allowing him to mobilise only to go to the toilet (and only if going to the toilet using a bed pan would cause more stress than getting up).

My advisor informed me that Dr B's immediate postoperative plan for Mr A was appropriate. Although in this situation it is appropriate for a patient to remain on bed rest to control the CSF drainage, it is acceptable for the patient to sit up or stand for short periods of time to pass urine (depending on the patient's pain control, urgency to pass urine, and difficulty passing urine in a lying position). ACC's expert advisor advised ACC that "it is now general practice to mobilise [patients undergoing the same operation as [Mr A]] quite quickly". I accept my expert advice that Dr B's immediate postoperative plan for Mr A's management was appropriate.

Communication of postoperative plan to Mr A and nursing staff

Dr B's postoperative care instructions to staff at the private hospital for patients following spinal surgery are both general (recorded in his standing orders for spinal surgery) and specific. Dr B's standing orders for spinal surgery at the private hospital indicate that on the first postoperative day the patient may mobilise to go to the toilet and shower, with physiotherapy and nursing assistance. Dr B did not record his specific postoperative plan in Mr A's progress notes immediately after surgery.

There is disagreement whether Dr B verbally communicated his postoperative plan to Mr A and the nursing staff. Dr B's usual practice is to mention his instructions to the patient within the hearing of the nurses. Dr B is confident that, as per his usual practice, he advised Mr A to remain immobile following the surgery, although he cannot recall exactly what he said to Mr

A. Mr A submitted that no advice was given to him or the nursing staff about his postoperative mobilisation.

Dr B's postoperative plan for Mr A was consistent with his general standing orders for spinal surgery – the patient may mobilise on the first postoperative day with nursing assistance to go to the toilet. The nursing staff were aware of Dr B's standing orders. Accordingly, I am satisfied that there was no failure by Dr B to ensure nursing staff were aware of his proposed postoperative plan. In addition, I consider it likely that Mr A was verbally advised to remain on bed rest (except for toileting purposes), immediately after surgery.⁹ This is consistent with Mr A's subsequent mobilisation to the toilet with nursing assistance and Dr B's written instructions on 22 March.

Mr A submitted that if the instructions were given to him verbally by Dr B, his ability to understand the instructions at the time may have been impaired by medication. While the progress notes record that Mr A was "sleepy" when he returned to the ward at 5.40pm on 21 March, they also record that he was "rousable". There are no other notes of Mr A's postoperative acuity. Dr B could not recall when he verbally advised Mr A to remain on bedrest. Accordingly, I am unable to conclude that the instructions were given at a time when Mr A was impaired by medication to the point that he was not able to fully understand the instruction. However, I note that a clinician should ensure that any instructions given verbally to a patient in the postoperative period are given at a time when the patient is lucid and the instructions can be clearly understood. If the provider's assessment is that the patient is not lucid, provision should be made for those instructions to be communicated at a time when the patient is fully able to understand the information provided.

Opinion: Breach – Dr B

Care and treatment following mobilisation

Dr B reviewed Mr A again sometime between 10.30am and 1.20pm on 22 March. At the time of his review, Dr B was aware, or should have been aware, that:

- Mr A mobilised twice over the evening of 21/22 March.
- By 9.30pm on 21 March 340mls had drained through Mr A's Medinorm drain.
- On the morning of 22 March Mr A had developed a painful headache.
- The drain site was leaking "+++" (as recorded by nursing staff on the morning of 22 March).

⁹ In response to my provisional opinion Dr B stated that he advised Mr A to "remain lying down at all times". However, I am satisfied that this instruction was given with a caveat that Mr A was allowed to stand up to pass urine if necessary.

- By early afternoon on 22 March the total drainage from Mr A's Medinorm drain was "550ml+".

Accordingly, at the time of his review, Dr B was aware, or should have been aware, that there had been a high volume of fluid draining in the Medinorm drain. Dr B noted in the progress notes that Mr A was "on bedrest" and "to remain mainly lying down (except [to pass urine] and [for bowel movements])". Dr B noted that he would review Mr A again the following day.

My advisor informed me that the high volume of drainage in Mr A's drain (340ml by 9pm on 21 March, and 550ml by early afternoon on 22 March) suggested that the dural defect had not been adequately sealed. It was therefore inappropriate for Mr A to be mobilised from that time, as sitting up, standing, straining and gravity can encourage excessive CSF to siphon into the drain. My advisor noted that excessive drainage of cerebrospinal fluid can cause the brain to sag, tearing the veins and causing either a subdural or, rarely, a subarachnoid and/or intracerebral haemorrhage. Accordingly, Dr B's instruction to Mr A to remain "mainly lying down" except to pass urine and for bowel movements was inappropriate. At the time Dr B became aware of the high volume of drainage in Mr A's drain, he should have placed Mr A on strict bed rest (meaning that Mr A was not to stand up, mobilise, or walk to the toilet) to prevent further drainage of cerebrospinal fluid.

As it was, Mr A was placed on strict bed rest at 7pm on 22 March by Dr D, after Mr A's condition deteriorated. Later that night, Dr C gave instructions to take the drain off suction and to insert a urinary catheter to ensure that Mr A could stay on strict bed rest.

I accept my expert advice that once it was apparent to Dr B that there was a high volume of CSF collecting in the drain, strict bed rest (including not standing up, mobilising or walking to the toilet) was required to prevent further CSF drainage. In my view, Dr B's continued management plan for Mr A to "remain mainly lying down (except [to pass urine] and [for bowel movements])" was not sufficient in the circumstances. By not recording and implementing an appropriate management plan in response to the high level of CSF drainage, Dr B did not provide services with reasonable care and skill and breached Right 4(1) of the Code.

Although it is my opinion that Dr B breached Right 4(1) of the Code, I note my advisor's comment that Dr B's failure to implement a management plan of strict bed rest was not a major failing, and the decision in this case is finely balanced. In light of Dr B's response to my provisional opinion I also note that the breach in this case relates to Dr B's inappropriate management plan, as documented in Mr A's progress notes, rather than to any failure to verbally insist in a strong enough way that Mr A remain in bed. I agree with Dr B that a surgeon should not be held accountable for a patient's tendency to mobilise against clear advice. Unfortunately, clear advice that Mr A was to remain on strict bed rest was not documented until 7pm, by Dr D.

The progress notes record that from the time Mr A was placed on strict bed rest by Dr D until his transfer to the public hospital on 24 March, Mr A continued to move about in bed, and mobilised against advice from Dr D, Dr C, and subsequent advice from Dr B. He was reminded to stay immobile by the nurses and was returned to his bed when he tried to get out.

At the time of these incidents, Mr A was troubled by an exceedingly strong headache and possible confusion (both probably the result of excessive CSF drainage). I am satisfied that from the time Mr A was placed on strict bed rest by Dr D at 7pm on 22 March he received appropriate care and treatment. The doctors and nurses caring for him cannot be held responsible for Mr A's mobilisation following advice that he was to remain on strict bed rest. Accordingly, it is not necessary for me to comment further on his care from that time until his transfer to the public hospital.

Opinion: No breach – The private hospital

Fluid and drain

Dr B had the primary responsibility for managing Mr A's care. However, the private hospital, through its nursing staff, had an obligation to monitor and attend to Mr A's drain and advise Dr B of any problems. I note that Dr Balakrishnan has commended the nursing staff for their care. In my opinion, the private hospital provided services of an appropriate standard and did not breach the Code.

Mobilisation

It is a defence to a breach of the Code for a provider to show that it took reasonable steps in the circumstances to comply with the Code. The private hospital relied on a system of standing orders (for general instructions on patient care) and progress notes (for instructions specific to a patient) to ensure that surgeons' instructions were brought to the attention of other staff. In my opinion, by its system of standing orders for general instructions and progress notes for specific instructions, the private hospital took reasonable steps to ensure that there was adequate communication between surgeons and nursing staff and that nursing staff appropriately carried out the instructions given.

I am also satisfied that the private hospital's nursing staff took reasonable steps to comply with the management plan regarding Mr A's mobilisation, and therefore did not breach the Code. In addition, I note that in response to this case, the private hospital requested that Dr B be more specific about mobilisation protocol in his standing orders for spinal surgery.

Other comments

Although I accept that Dr B verbally conveyed his instructions for Mr A to remain immobile for 24 hours after the operation, I am concerned that he failed to document his instructions until almost 24 hours after the surgery.

I note Dr Balakrishnan's advice that Mr A and the nursing staff should have been strictly instructed on the dural tear and the repair, and the possible consequence of excessive drainage of CSF. I also note that Dr B accepts that the instructions about non-mobilisation were

particularly important given the CSF leak. Dr B also accepts that his instructions to Mr A, once given, needed to be reinforced during the recovery period.

I am mindful of Mr A's submissions that Dr B's instructions were given postoperatively, not given directly to nursing staff, and not "re-affirmed" by Dr B until written in the notes on the afternoon of 21 March. In the circumstances, there was clearly the potential for miscommunication with Mr A and/or the nursing staff about these instructions in the immediate postoperative period. In my view Dr B should have recorded his instructions in writing at the first opportunity.

Dr B stated that Mr A may not have been sufficiently attentive to his instructions and that, even if he had reinforced his instructions, Mr A would not have changed his behaviour. I accept that, for whatever reason, Mr A did mobilise against the instructions he was given. However, this does not alter Dr B's responsibility to ensure that his instructions were conveyed as clearly as possible both to Mr A and nursing staff.

When complaints about medical care involve conflicting verbal accounts of events, the information in the medical records is very important. If that information is missing, it becomes extremely difficult to establish the facts of a case – as has happened in this case. I draw Dr B's attention to the Medical Council of New Zealand's *Good Medical Practice: A Guide for Doctors* (2000), which states:

"3. In providing care you must:

... keep clear, accurate, and contemporaneous patient records which report the relevant clinical findings, the decisions made, the information given to patients and any drugs or other treatment prescribed."

I also draw Dr B's attention to the Medical Council of New Zealand's *Guidelines for the Maintenance and Retention of Patient Records* (October 2001), which state:

"1. Maintaining patient records

- (a) Records must be legible and should contain all information that is relevant to the patient's care.
- (b) Information should be accurate and updated at each consultation. Patient records are essential to guide future management, and invaluable in the uncommon occasions when the outcome is unsatisfactory."

Record-keeping is an important part of a doctor's practice. It may assist the doctor by confirming the key details of a consultation, including information given to the patient and follow-up actions. More importantly, as noted in *Cole's Medical Practice in New Zealand* (2001),¹⁰ keeping a proper medical record is "a tool for management, for communicating with

¹⁰ Edited by Dr Ian St George and published by the Medical Council of New Zealand.

other doctors and health professionals, and has become the primary tool for continuity of care”.¹¹ I recommend that Dr B review his record-keeping in light of the above statements.

Recommendations

I recommend that Dr B:

- apologise in writing to Mr A for his breach of the Code. This apology is to be sent to the Commissioner’s Office and will be forwarded to Mr A;
 - review his practice in light of this report.
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Follow-up actions

- A copy of this report will be sent to the Medical Council of New Zealand and the Royal Australasian College of Surgeons.
- A copy of this report, with details identifying the parties removed, will be placed on the Health and Disability Commissioner website, www.hdc.org.nz, for educational purposes.

¹¹ *Cole’s Medical Practice in New Zealand* (2001), ch 10, p.80.