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19.1 Introduction

Medicolegal aspects of Chiari malformation and syringomyelia can be considered in three main sections. The first is personal injury claims, the second is medical negligence, and the third relates to an individual's inability to work whilst suffering from symptoms caused by these conditions.

19.2 Personal Injury

In this section we consider the relationship between Chiari malformation and syringomyelia and whiplash injuries or other minor trauma to the neck. A second, particularly important aspect of personal injury is that of post-traumatic syringomyelia, which occurs following major spinal injury.

19.2.1 General Considerations

In advising patients over such matters, the medical expert should be completely honest and not encourage claims that are or will prove untenable, if tested in court. Nor should the expert try to maximise or minimise the chances of a claim succeeding, according to whichever side in the legal contest instructed that medical witness. In an adversarial system of justice, the latter role falls to the lawyers. Under current English law, the expert is required to provide a report for the

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court, not for one side or the other, even though he or she will usually have been instructed by one side. The expert has to sign a declaration to this effect, in order to comply with court rules.

With compensation claims in English civil law, the test applied is “on the balance of probabilities”. This contrasts with criminal law where the test is “beyond reasonable doubt”. A specialist experienced in the treatment of syringomyelia may reasonably state that, in his or her opinion, such and such is the case, “on the balance of probabilities”. In English law, this means a likelihood of 51 % or greater. The medical expert’s opinion does not have to be backed by scientific data. Indeed, it is seldom possible to locate such evidence, in response to the many questions posed by lawyers. This does not mean, however, that the expert witness can ignore scientific evidence and he or she should endeavour to back up any opinions with evidence from the medical literature, whenever possible. Otherwise, he or she should present some logical reasoning to underpin the opinion offered.

Clearly, personal injury claims may be subject to exaggeration and sometimes outright fraud, but when it comes to conditions like posttraumatic syringomyelia, the plight and needs of the patient are very real. In these circumstances, the medical expert is often asked not to advise on causation but on matters of quantum. This latter concept involves issues such as prognosis and how dependent the patient is likely to become in the future, as a result of the injuries. In addition, on occasions, patients may be granted the right to return to court one more time, at a future date, to claim further compensation for delayed effects of an earlier injury. Whilst not encouraged by judges, who generally prefer to finalise claims coming before a court whenever possible, such “provisional damages” may be very appropriate in the case of a spinal cord injury victim, who may develop posttraumatic syringomyelia many years later. The right to claim provisional damages must be specifically reserved in the court order, at the time a case is settled. It also has to be related to the future occurrence of a specified risk, such as syringomyelia, or any surgery required for its treatment. The risk can be

expressed as either for life or for a limited period, depending upon the experts supporting opinion. To maintain a further claim for provisional damages, the patient has to “develop some serious disease or suffer some serious deterioration in his or her physical or mental condition” (Supreme Court Act 1981; County Courts Act 1984). Therefore, consideration needs to be given, by the experts and the lawyers, as to whether the deterioration is sufficiently serious to satisfy these criteria and justify a further award. In reality, this is likely to be governed by the need for additional care and other support arising from the deterioration. An expert will therefore need to consider and advise whether there is any further risk of a more serious secondary deterioration in the future. This will be particularly relevant to younger patients with a long life expectancy ahead of them. Hitherto, reactivation of cases of spinal cord injury has been uncommon but may take place more often in future, as many patients with spinal cord damage are now living to a good age. It is important to understand that a person has only “one bite of the cherry”; in other words he/she can only claim provisional damages once.

19.2.2 Hindbrain Hernias

A Chiari malformation is essentially a developmental anatomical abnormality and is not caused by trauma in later life. The clinical features that develop are largely a result of abnormalities of cerebrospinal fluid flow rather than being simply related to the displacement of the tonsils into the upper cervical spinal canal. In considering what might be regarded as the usual, constitutional presentation of a Chiari malformation, it can reasonably be stated that the mean onset of symptoms is the fourth decade of life. Notwithstanding this “natural” presentation of hindbrain hernias, one major study revealed that approximately 25 % of patients with Chiari give a history of the onset of their symptoms being precipitated by some form of physical injury (Milhorat et al. 1999).

Constitutional presentation of symptoms within the fourth decade has medicolegal implications. Consider a patient who is in his or her

fifth decade and who becomes symptomatic for the first time, after an accident. It could reasonably be argued that since that individual has already passed beyond the mean age for onset of symptoms, then, more likely than not, he or she would not have developed Chiari symptoms, had not the accident occurred. On the balance of probabilities, therefore, the accident was the cause of the onset of the symptoms. In contrast, consider a patient in her middle 20s, who develops symptoms consistent with a Chiari malformation, following an episode of trauma. It would be fair to reason that, had the accident not occurred, there was a greater than even chance that the hindbrain hernia would have become symptomatic before too long anyway. At the same time, it would be justifiable to propose that the trauma had accelerated the appearance of symptoms. Further, in this example, it would be logical to suggest that the onset of symptoms was brought forward by approximately 10 years, this being the difference between the patient's age and the accepted average age of onset of hindbrain hernia symptoms. This might be seen as a relatively arbitrary estimate, without much of an evidence base, but in the absence of better data, it may be accepted by the courts as reasonable guidance. Applying the legal test of the balance of probability, the client in this case would, more likely than not, have become symptomatic by approximately her middle 30s. An acceleration of onset of symptoms of 10 years then becomes a workable legal tool in order to consider compensation.

The presentation of clinical symptoms following a traumatic episode then raises the question of the mechanism involved. In a medicolegal debate, an expert on "the other side" might challenge the above reasoning by enquiring as to the exact mechanism by which the injury in question might have rendered the hindbrain hernia symptomatic. There are, of course, many people who have a Chiari malformation but who do not have any symptoms. A significant degree of whiplash injury could, in such individuals, result in further impaction of the cerebellar tonsils at the foramen magnum. This in turn might create, for the first time in that individual, a degree of obstruction to

cerebrospinal fluid (CSF) flow at the craniovertebral junction, generating the headaches that are so typical of a Chiari malformation. In addition, hyperextension of the neck, in the presence of herniated cerebellar tonsils, could easily result in a degree of contusion of the cervicomedullary junction, accounting for the onset of various somatic sensory disturbances.

19.2.3 Syringomyelia

The onset of symptoms attributable to a syringomyelia cavity, which is diagnosed for the first time after trauma, also raises a number of questions. Could post-traumatic impaction of a hindbrain hernia have led to the development of a syrinx, or is it more likely that any such cavity was present all along, albeit asymptomatic? If the latter was the case, then was the development of symptoms the result of associated musculoskeletal injury and not related to an incidental syrinx? In advising on such matters, the medicolegal expert should consider carefully the nature of the patient's symptoms and note any physical signs and decide whether these are more typical of syringomyelia or of musculoskeletal injury. An example is provided by the case of a young female in her 30s, who developed cervical radiculopathy involving multiple nerve roots, following an episode of trauma that involved a whiplash mechanism of injury. She had been completely asymptomatic beforehand. An MRI scan of the neck, performed within a week of the injury, demonstrated what appeared to be a significant syrinx within the cervical cord. There was no associated Chiari malformation or obvious injury to the vertebral column nor evidence of any previous significant injury. Over a few weeks, the clinical symptoms resolved, and repeat MRI scan then showed that the syrinx had collapsed. Further imaging, some time later, confirmed that the cavity remained collapsed, at which stage the patient remained asymptomatic. The question, from a medicolegal point of view, was whether the syrinx was pre-existing and asymptomatic but rendered symptomatic by the trauma or whether, after all, it formed rapidly after the

injury, only to collapse spontaneously, by some ill-defined mechanism. There is also the question of whether or not it might refill at some time in the future and then cause problems again.

19.2.4 Post-traumatic Syringomyelia

Post-traumatic syringomyelia is dealt with in more detail in Chap. 11. Whereas syringomyelia is a relatively rare condition in the community as a whole, it is very common in the population of spinal cord injury victims. Importantly, it has the capacity to add significantly to the disabilities that the victim already has, as a result of the original injury.

From a medicolegal point of view, the development of a true post-traumatic syringomyelia¹ is a direct result of the original spinal trauma. It therefore has a causal link with the original trauma. It is most commonly seen following major spinal trauma, in which there is both disruption of the spinal column and, usually, significant spinal cord injury. Its development is suspected when one sees ascending neurological deficit at an interval following spinal cord injury. Symptoms can develop within months of the trauma, but, more often, post-traumatic syringomyelia becomes manifest after an interval of several years. A post-traumatic syringomyelia cavity is classically defined as arising from the level of the lesion and ascending but, in practice, both ascending and descending cavities are seen. When such lesions are followed by serial imaging, they commonly remain unchanged and do not propagate further, in a cephalad or a caudal direction.

The causative mechanism of posttraumatic syringomyelia is a block to the passage of the CSF through the spinal subarachnoid channels. This is usually due to the formation of scar tissue, from blood products shed into the spinal theca at the time of the original injury. Once the obstruction is defined and dealt with at surgery, the syrinx

usually collapses quite rapidly. Unfortunately, there is then the risk of recurrent scar tissue formation, as the surgical wound heals, resulting in a recurrent blockage and refilling of the syringomyelia cavity.

19.2.5 Other Cystic Intramedullary Lesions

Not infrequently one encounters, on an MRI scan, a fairly localised, elliptical, cystic area within the spinal cord, extending over just a few segments (Fig. 19.1). Typically such lesions are seen in the cervical cord, commonly around C5–C7 but also at other levels, including C2. Neuroradiologists usually describe these appearances as a localised syrinx, but individual surgeons may use their own terms, such as “clefts” or “spindles”, to describe the appearance of these entities, in particular their

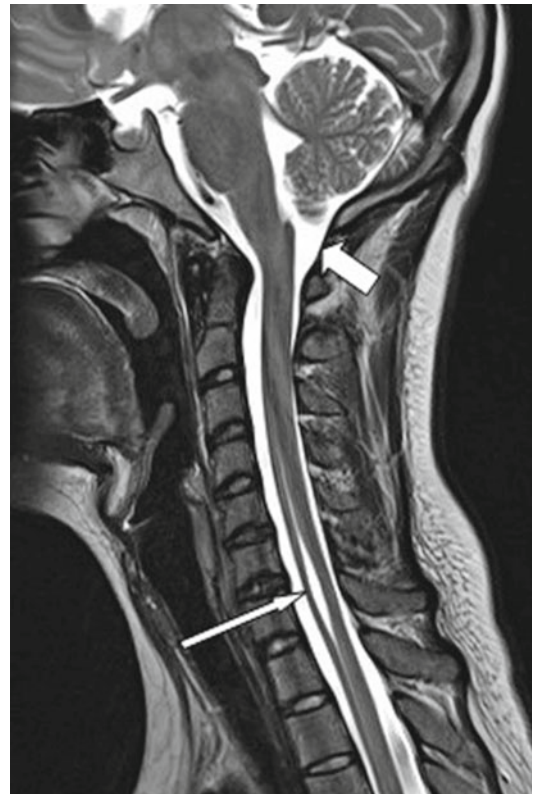


Fig. 19.1 MR image of a “cleft” or “spindle”. This T2-weighted midline sagittal MRI of the cervical spine shows a typical cleft (*long arrow*) behind the body of C7. The craniocervical junction is normal (*short arrow*)

¹True post-traumatic syringomyelia cavities should be distinguished from primary post-traumatic cysts. The latter are confined to the level of the original injury, whereas the former propagate beyond this level.



Fig. 19.2 MR image of a focal dilatation of the central canal. This T2-weighted midline sagittal MRI of the cervical and upper thoracic spine shows a short, persisting segment of the central canal behind C6 (*dark arrow*) but a much more prominent dilatation of the central canal in the upper thoracic cord, extending over several segments from T5 downwards (*white arrow*). The craniovertebral junction is normal

tapered ends. A similar type of lesion consists of focal dilatation of the central canal, often seen in the thoracic cord. These cavities usually extend over several segments of the cord (Fig. 19.2). Some authorities apply the term hydromyelia to these entities, regarding them as separate from other forms of syringomyelia. Such appearances need to be distinguished from simple persistence of the embryonic central canal, which takes the form of thin, CSF-filled cavities, often seen as skip lesions. These are not pathological entities.

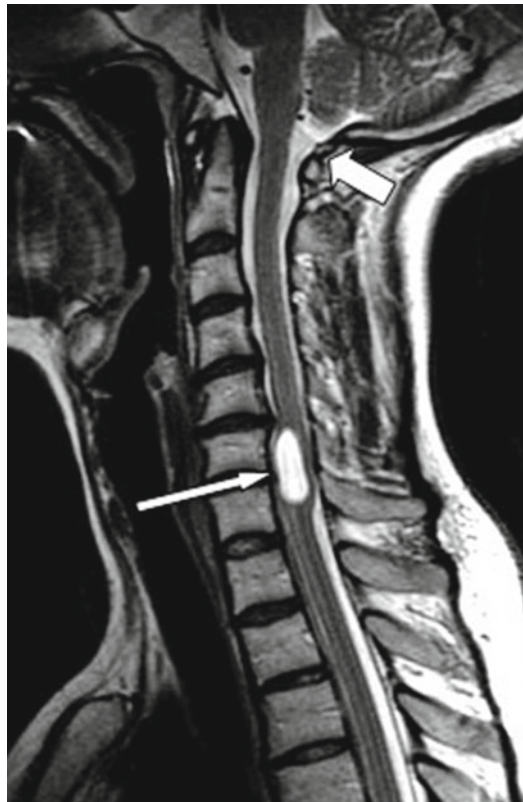


Fig. 19.3 MR image of a probable gliopendymal cyst. This T2-weighted midline sagittal MRI of the cervical spine reveals a short, "plump", CSF-filled cavity within the spinal cord (*long arrow*). The craniovertebral junction is normal (*short arrow*). The disc protrusion at the upper aspect of this lesion is unlikely to be related, and this appearance most likely represents that of a gliopendymal cyst, although contrasted images are needed to exclude an underlying neoplasm

Another type of intramedullary cavity, which also extends over just a few segments of the cord, has a more rounded appearance (Fig. 19.3). Some authorities regard these lesions as being gliopendymal cysts and distinct from syringomyelia (Saito et al. 2005). Exploring such a lesion will simply confirm that the appearance of the contained fluid is that of normal CSF, within otherwise normal cord tissue. Biopsy of the lining will reveal the presence of normal ependymal cells.

Whether or not these various lesions are separate conditions or part of the overall spectrum of syringomyelia, they all pose the same question as to just why they exist in the first place and why

they fill with cerebrospinal fluid – or at least a fluid with similar characteristics to CSF.

From the medicolegal perspective, the question arises as to whether clefts, spindles or focal dilatations of the central canal, when detected, should be regarded as incidental findings or whether they could be generating the patient's symptoms and whether, indeed, they could have arisen as a result of an accident in question. Many experts will declare that spinal cord clefts or spindles are not caused by or related to trauma, but others may find it difficult to disregard the existence of a relatively rare lesion, in the presence of neurological symptoms, whose onset bears a close temporal relationship to the accident in question. On the other hand, the type of symptoms as may be encountered in such cases is often equally consistent with a radiculopathy in the arms. This provides an alternative explanation that the much more common degenerative disc disease, which was previously silent, has been rendered symptomatic by the injury in question.

19.3 Medical Negligence

The purpose of this section is not to advise patients and lawyers when to take legal action over surgery, which has proven unsuccessful or led to complications. Nor is it to tell surgeons how to avoid becoming involved in litigation. Instead, we wish to highlight some of the commonly recognised complications of syringomyelia surgery, so that patients can be more fully informed, by the surgeon, before they agree to undergo an operation. It is also hoped that the surgeon might be better prepared to avoid some complications and to deal more effectively with those that do arise. The section considers, for the most part, unwanted outcomes following surgery, rather than errors in diagnosis.

In the United Kingdom, medical practitioners are regulated by the General Medical Council, and their guidance booklet "Good Medical Practice" underpins all professional activity (General Medical Council 2013). In addition, there are numerous standards, protocols and guidelines, published by various national and

international bodies (Clinical Standards Committee of the Society of British Neurological Surgeons 2002; National Institute for Health and Clinical Excellence 2012; World Health Organization 2009). Any of these publications may be referred to in assessing a surgeon's standard of practice in an individual case.

The specialist preparing reports in cases of alleged medical negligence should not set out to find fault with a colleague. A philosophy of "there but for the grace of God go I" will allow the author of the report to adopt an approach which is sympathetic to the colleague and which, thereby, will lead to more ready acceptance of any just criticisms which do have to be made. This will act, ultimately, for the benefit of the patient.

A landmark ruling in English law was that of Lord Denning, in the case of *Jordan vs Whitehouse* (Robertson 1981). This states that an "error of judgement is not the same as negligence". The UK House of Lords subsequently modified this to "error of judgement is not necessarily the same as negligence". An earlier, influential ruling led to what is known as the Bolam test (*Bolam vs Friern Hospital Management Committee* 1957). This states that a given line of medical management may be judged acceptable if it is followed (contemporaneously) by "a reasonable body of practitioners". A reasonable body can still be a minority. Even so, a later House of Lords decision ruled that any such management still needed to withstand logical analysis. This is known as the Bolitho test (*Bolitho vs City and Hackney Health Authority* 1997).

19.3.1 Patient Frustrations and Medical Uncertainties

The optimum management of any neurosurgical condition includes both making the correct diagnosis and administering appropriate treatment. The finding, on an MRI scan, of a Chiari malformation, syringomyelia or both can cause psychological distress to the patient, in addition to the somatic symptoms that have already developed. Frustration and anger can arise, as a result of

delays in diagnosis and differing opinions as regards management, offered by various clinicians the patient may have seen.

The detection of a Chiari malformation by no means always leads to surgical intervention. This is particularly the case with a patient who undergoes an MRI scan for some other purpose, and this shows the presence of herniated cerebellar tonsils. The borderline Chiari malformation is another example, where the tonsils protrude just a few millimetres below the rim of the foramen magnum and are not causing an obvious interruption of the CSF flow. In such cases the expectation of the patient is often directly influenced by the opinion expressed by the original advising clinician, who may be a primary care practitioner, a general physician, a neurologist or a neurosurgeon. In addition, many patients arm themselves with information and opinions from the internet, although such material can often, for a patient, be very misleading, confusing and frightening.

Troublesome pressure dissociation headaches,² in the presence of a well-formed hindbrain hernia, leave little doubt as to the potential role for surgery. The presence of an associated syrinx cavity adds further weight to the case for operative intervention. Sometimes, however, MRI scanning reveals what appears to be a significant Chiari malformation, but the presenting symptoms are not consistent with this diagnosis and headache may not even be a feature. Vague vestibular symptoms, somatic sensory disturbances and feelings of lethargy or fatigue are common enough in Chiari patients, but occurring in isolation from more clearly diagnostic symptoms, they leave some doubt as to their relevance to the anatomical abnormality. The neurosurgeon should consider the role of surgery in such cases with great care.

In medicolegal practice, one encounters, not uncommonly, a patient who has been told that he

or she has a condition that requires urgent surgery. This can cause emotional distress to the individual, who may feel that much time has already been wasted, delaying essential surgery. In truth, surgery for hindbrain hernia is seldom urgent, may not be necessary at all and always carries the risk of producing complications. There are many cases that can be treated conservatively, by observation and monitoring, rather than by proceeding immediately to surgery. The natural history of Chiari and syringomyelia is difficult to predict in an individual patient, and many cases of a mild or borderline Chiari malformation can be monitored for a number of years and never become symptomatic. Indeed, even people with an anatomically significant Chiari malformation can remain permanently asymptomatic. Except, therefore, in the cases of a very gross Chiari malformation, with progressive and deteriorating brainstem symptoms and signs, surgery should not normally be pronounced as being essential and seldom be seen as being required urgently.

19.3.2 Choice of Surgical Procedure

There are various types of surgery for Chiari malformations, with or without an associated syrinx. All are currently considered as being within acceptable practice (Table 19.1). As with many neurosurgical procedures, we do not have the evidence base to declare one method superior to

Table 19.1 Variations on the method of craniovertebral decompression

Stage 1. Decompression
Bony decompression alone
Foramen magnum only
Foramen magnum + posterior arch of C1
Bony decompression + dural slits
Bone decompression, dural opening + preservation of arachnoid
Dural opening and reduction of cerebellar tonsils
Stage 2. Repair
Muscle closure, leaving dura open
Duraplasty
Duraplasty and cranioplasty

²Headaches brought on by coughing, straining or bending forwards. The normal movement of cerebrospinal fluid, between the head and the spinal canal, is impeded by the herniated cerebellar tonsils. The resultant valve effect leads to transient rises in the intracranial pressure, generating short-lived but severe headaches.

another, and there are advantages and disadvantages to each approach. The surgeon should, however, be able to justify why he or she has a preference for a particular method. It is also fair to say that a surgeon may adopt a different method in differing circumstances, particularly in relation to the extent of any tonsillar herniation and whether or not these structures are reduced surgically. From the legal perspective, the surgeon should justify and record why there is a preference for a particular operation. He or she may be asked to provide justification for any decision made, several years after the primary consultation.

19.3.3 Consent

Most operations for hindbrain hernia and syringomyelia amount to major brain or spinal surgery and, as such, can never be carried out without risk of serious and potentially catastrophic complications. Consent for such procedures must therefore be fully informed. The nature of the operation and what is involved should be explained in full. The risks attendant upon the procedure, as well as the benefits that should be gained, must be emphasised. Alternative methods of treatment should be identified, and the natural history of the condition, left untreated, should be explained. All of this should be put to the patient in simple language and multiple consultations may be required. Explanatory literature or well-structured and responsibly constructed websites may provide the patient with helpful background explanatory material (see Chap. 18, “Further Reading” and Chap. 24, Useful Contacts). The patient should understand, however, that such material can only serve to help them understand what their medical advisors are saying. Any decision that the patient makes, regarding surgical treatment or otherwise, must be based on discussions with their own neurosurgeon. Websites or support organisations who offer advice to patients should always make this point clear and avoid making any statements that could influence a patient’s decision about which treatment to accept.

Once again, the surgeon should justify and record the advice given, to avoid future

misunderstandings with a patient. Cogent contemporaneous records are very credible and usually accepted as such by the courts.

19.3.4 Post-operative Complications

Given that it is impossible to predict all complications that may follow an operation, including surgery for Chiari and syringomyelia, a more reasonable approach is to draw the patient’s attention to all serious or frequently occurring complications. A broad approach may be simply to specify death and serious physical or mental disability, plus failure of the procedure to achieve its aims.

Some of the more frequently encountered complications of craniovertebral decompression are listed in Table 19.2. Sterile meningitis is a well-documented complication, and it is exactly as the name implies. The patient develops a meningitic illness, but there is no infection. The only treatment, besides expectant management, is with steroids, but these should be prescribed for a limited period only and are best reserved for the more severe cases. Aseptic meningitis can, however, only be diagnosed with confidence once CSF infection is shown not to exist. If bacterial meningitis has developed, it must be recognised promptly and treated appropriately.

It might be argued that aseptic meningitis is an inevitable consequence of a craniovertebral decompression, if the arachnoid is opened. The resultant meningeal inflammation will certainly lead to a degree of raised CSF pressure, which may be sufficient, on occasions, to cause CSF

Table 19.2 Complications of craniovertebral decompression

Posterior fossa haematoma
Supratentorial subdural haematoma
Pneumocephalus
Hydrocephalus
CSF leak
Chemical (aseptic) meningitis
Bacterial meningitis
Dorsal column sensory losses
Cerebellar infarcts

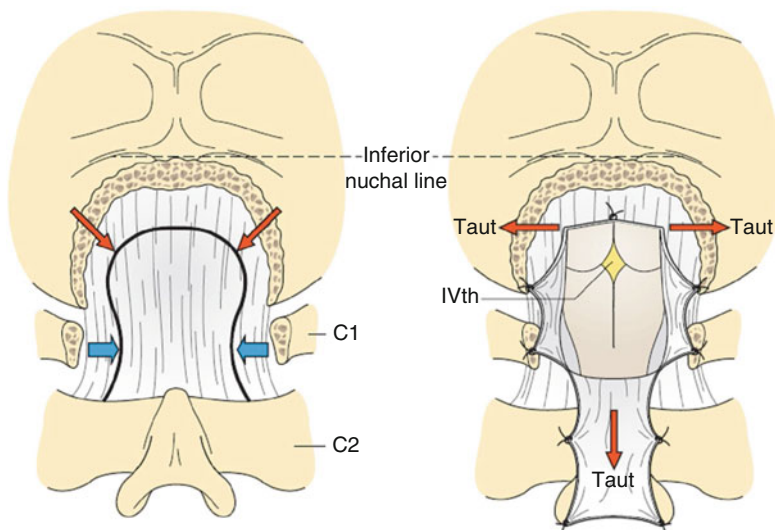


Fig. 19.4 A method of dural opening. One of us (GF) employs this method of dural opening routinely. Rather than using the conventional “Y”-shaped dural opening, the membrane is opened as an inverted “U”, creating a “tongue-shaped” flap, which is then sewn down, taut, over the C2 spinous process. The dura is then hitched laterally across the craniovertebral junction, opening up the CSF channels laterally and pulling the posterior fossa dura across, taut, superiorly. The tonsils are then reduced with

bipolar coagulation and, if necessary, hitched laterally with fine silk. This method allows the fourth ventricle to open into a newly created artificial cisterna magna, which itself communicates freely with the spinal CSF channels and the basal cisterns. It also provides good support for the cerebellum, irrespective of the amount of bone that has been removed, although this should normally be kept below the inferior nuchal line

leakage through the surgical wound. Such leakage should not, therefore, be regarded as the result of poor technique. On the other hand, it should be recognised and treated promptly. Hydrocephalus needs to be excluded first and then treated, if present. If the ventricular size is normal, then a simple reinforcing suture may stop the CSF leak, although temporary lumbar drainage of CSF may be needed or, indeed, preferred. In other circumstances, even when a CSF leak is not present, a post-operative lumbar puncture may be beneficial, in treating aseptic meningitis. It will lower intracranial pressure, encourage flow of cerebrospinal fluid across the craniovertebral junction and drain off blood-stained CSF, all of which may lessen the discomforts resulting from chemical meningitis.

A much discussed complication of craniovertebral decompression, albeit quite uncommon, is cerebellar slumping. If too much of the posterior fossa bone is removed, there is a risk that the cerebellum may descend, or slump, into the resultant

bony defect. This could lead to recurrent obstruction to CSF flow across the craniovertebral junction. Sometimes it may be difficult to avoid removing a fair amount of bone, particularly in cases of basilar invagination. Opening the dura as an inverted “U”, rather than using the more usual “Y”-shaped incision, may reduce the likelihood of this complication, even when bony removal has been quite extensive (Fig. 19.4).

19.3.5 Surgical Results

Success rates following surgery for uncomplicated Chiari malformations should be good in experienced hands, particularly as regards relief of pressure dissociation headaches and causing a syrinx cavity to collapse. In some circumstances, however, one should warn of a likely lower success rate. With some Chiari malformations, one may encounter, at surgery, significant arachnoid adhesions. In other cases it is posthaemorrhagic

or post-inflammatory scar tissue, rather than tonsillar herniation, which accounts for the obstruction to CSF flow across the craniovertebral junction. Scar tissue is always likely to be present in revisional operations and will result in a more serious block developing than that which existed originally and may even lead to the development of syringomyelia that was not present prior to the operative procedure. In all these situations, it may prove difficult to establish adequate CSF flow across the craniovertebral junction, and the likelihood of success is reduced at the outset. Importantly, the risk of damage to vital structures is also increased in these cases. These restrictions apply even in experienced hands and despite all care being taken. The patient should always be warned of these matters, and these warnings should be recorded in the medical records.

19.4 Employers, Social Services and Other Statutory Bodies

Any specialist may be asked to provide a report, for various government or other agencies, relating to a patient under his or her care (Table 19.3). The doctor preparing the report must, however, avoid conflicts of interest. In particular, if the report could act to the patient's detriment, then the professional relationship between the doctor and patient might be compromised. Equally, fear of such compromise, or even just sympathy for the patient, may prevent the doctor from providing an entirely honest and objective report. It is best, in such instances, for the doctor to provide factual details, which could not be disputed. Reports prepared from medical records will, in any case, often be limited in their scope, simply because entries will not usually have been made with the

Table 19.3 Agencies requesting reports

Employers
Social security and benefits agencies
Driving licensing authorities
Pension managers
Insurance companies
Charitable support organisations

Table 19.4 Common questions in insurance or employment reports

Name of the condition
When the diagnosis was made
Date when patient first noticed symptoms
Results of any investigations
Relationship of pathology to index injury
Details of any planned treatment
Disabilities and impairments
Prognosis

later production of medical reports in mind. It is usually only possible, in these circumstances, to summarise the patient's main symptoms and the resultant physical disabilities and functional impairments, as reported by the patient (Table 19.4). To make a more detailed assessment, the medical expert will need to interview and examine the patient, and it might even be better, in such circumstances, for the clinician to suggest that an independent assessment be sought.

An independent assessor will certainly need to identify and quantify the individual's disabilities and limitations, for which consultation with the patient is required. It is important to assess the past medical history and to scrutinise all available medical records, to distinguish problems caused by the syringomyelia from those which might have arisen from more common conditions, such as intervertebral disc disease. It is important to try and distinguish organic symptoms from those caused by psychological overlay. Equally, it would be unfair to the patient to say or imply that symptoms have a psychological basis, when they might well be genuine manifestations of syringomyelia.

Conclusions

Preparation of meaningful medicolegal reports is time-consuming and requires a good deal of thought and consideration, beyond just the reading of large volumes of documents. It is not an activity that appeals to all clinicians, but those who engage in this sort of work need to adopt an organised approach. Lawyers will often ask very specific questions at the outset. On other occasions, the initial instructions may be worded in a more general way, in which case

Table 19.5 Common questions in personal injury claims

Was the lesion caused by the injury in question?
By what mechanism did the injury cause the lesion to develop?
Was the pathology pre-existing but asymptomatic?
Did the injury render the lesion symptomatic?
Had the injury not occurred, would it have remained asymptomatic?
Was the pathology pre-existing and symptomatic but aggravated by the trauma?
By what interval was the onset of symptoms brought forward?
To what extent is the lesion responsible for the symptoms?
What is the prognosis?
Will any further treatment assist the patient?

Table 19.6 Common questions in medical negligence claims

Was the surgery properly indicated?
Why in this case was surgery considered and offered?
Was the patient adequately informed, prior to surgery, about:
The nature of the procedure
The intended benefits
The attendant risks
Alternative treatments
The natural history of the condition if left untreated
Has the patient come to harm as a result of the surgery?
Symptoms, including pain and suffering
Physical impairments
Resultant handicaps and effects upon
Activities of daily living
Social life
Employment
What is the likely prognosis?
Could any further treatment be of benefit?

the expert may choose to address certain predictable questions, which might follow (Tables 19.5 and 19.6). A well-structured template, for composing reports, is invaluable. Indeed many law firms will provide a structure of their own, for the expert witness to follow. Table 19.7 gives a list of suggested headings for the preparation of medicolegal reports. Expert witnesses should be prepared to cite references, particularly when making a point that might be challenged by a medical advisor for the other side. Equally important, if not more so, is the

Table 19.7 Suggested structure of a full medicolegal report

A front page with headings noting the client’s demographic details
The remit of the report
Instructing solicitors/agency
That the report is prepared for the court
Authors qualifications and experience
Basis of report – interviews, examinations and documents
Interview and examination of patient (usually stated within a preamble following the front page)
Review of medical records
Summary and opinion of medical history stating final opinion of author
Statement 1: followed by explanation
Statement 2: followed by explanation
... etc.
Range of opinions offered by other experts
Conclusion
Declaration ^a
References
Appendix: Lay explanation of syringomyelia/Chiari

^aEnglish courts currently require an expert witness to declare that he or she understands his or her duties to the court, in preparing the report. It is, in effect, the equivalent of taking an oath when giving oral evidence in court

need to make clear, to lawyers, their clients and the courts, some of the anatomical, physiological and other medical concepts that surround the diagnosis and treatment of syringomyelia and Chiari. Technical jargon should be replaced by lay terminology, and the use of lay explanations, as appendices to a report, may be of great value to the courts. A glossary of terms is usually appreciated by lawyers and impresses judges, most of whom, understandably, have limited or no understanding of syringomyelia.

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