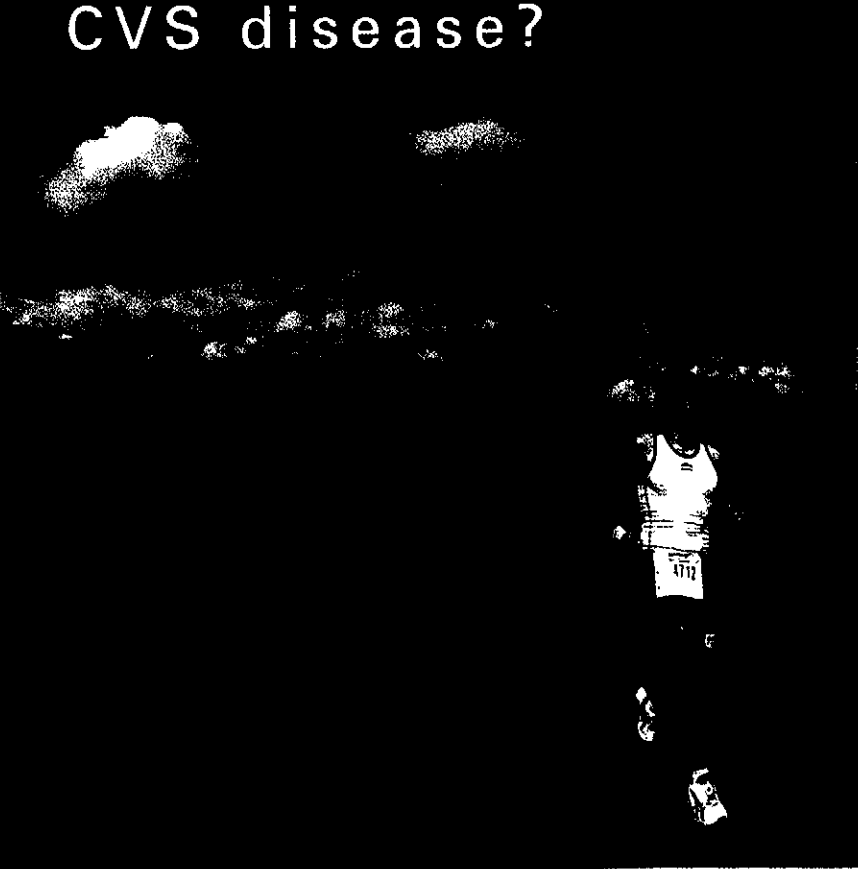


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Publisher Website: www.hmpg.co.za
Journal Website: www.samj.org.za



CLINICAL PRACTICE

'But it's just a spinal': Combating increasing rates of maternal death related to spinal anaesthesia

Z Farina, C Rout

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The number of women dying as a result of spinal anaesthesia during caesarean section in South Africa is steadily increasing in the triennial reports of the National Committee on Confidential Enquiry into Maternal Deaths (NCCEMD). This article postulates some of the reasons behind this phenomenon. The concern is raised that spinal anaesthesia is being undertaken inappropriately by poorly trained practitioners. A case is made for the rigorous application of known safety standards and for doctors to be appropriately trained in anaesthesia and to be solely responsible for the care of the mother during caesarean section. The need for doctors to be trained and prepared to administer general anaesthesia when required is noted.

S Afr Med J 2013;103(2):81-82. DOI:10.7196/SAMJ6308

The South African National Confidential Enquiry into Maternal Deaths is unique in that over the last 13 years¹⁻⁴ an increasing proportion of deaths associated with spinal anaesthesia for caesarean section has been reported (Fig. 1).

This article is a position statement based on the findings of the fifth *Saving Mothers Report* (2008 - 2010) published by the National Minister of Health.¹ We suggest possible causes for this phenomenon. Due to a lack of denominator data, the reasons for this increase remain speculative, but probably incorporate a combination of factors:

1. A rising rate of caesarean sections in SA (Fig. 2).
2. Advocacy of regional anaesthesia as being a safer option during caesarean section.^{5,6}
3. A misconception among SA doctors that spinal anaesthesia is inherently safe, leading to two issues which cause mortality and morbidity:
 - administration of spinal anaesthesia by doctors who are not fully trained or competent in managing anaesthetic complications
 - administration of spinal anaesthesia to patients, not because it is the best form of anaesthesia for the clinical scenario, but because it is the only form of anaesthesia that the doctor feels 'competent' to provide.

In the 2008 - 2010 report, for the first time, sufficient data were available to analyse deaths on an intention-to-treat basis. The analysis reveals a significant number of complications of general anaesthesia occurring in patients in whom spinal anaesthesia was intended. This emphasises the dangers of a loss of the skills needed to provide safe general anaesthesia, a phenomenon observed by Tsen.⁷ This is not an indictment of the move towards increased use of spinal anaesthesia, which internationally is recognised as having a lower mortality rate in appropriate cases and trained hands.⁶ This, however, does not mean that spinal anaesthesia is absolutely safe.

The misconception that spinal anaesthesia can be performed safely by a doctor in the absence of general anaesthesia skills is seen in advertisements placed for medical officers in SA. For example, one district hospital listed 'perform spinal anaesthesia' as a key competency.⁸ A more appropriate competency would be 'capable of

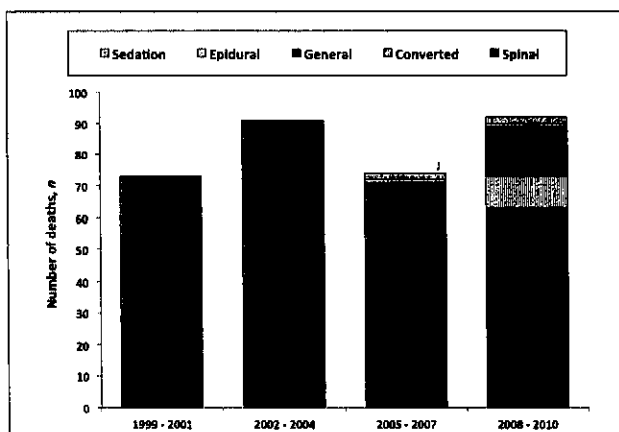


Fig. 1. Maternal deaths assessed to be directly due to anaesthesia (1999 - 2010). Taken from Pattinson et al.⁴

providing anaesthesia' and include all forms of anaesthesia relevant to the procedures required to be performed at a district hospital.

Another relevant concept is that of 'normalisation of deviance': Substandard care may be provided so often, without apparent consequence, that eventually inferior care becomes the new standard. Spinal anaesthesia is frequently started without first performing an adequate airway examination and considering the possibility of failed intubation. Similarly, oral antacid prophylaxis is no longer administered in many cases. The suggestion that these are important components of safe spinal anaesthesia is regarded as bizarre by many junior doctors attached to our training programme.

Similarly, it is often viewed as acceptable to inject spinal local anaesthetic, then leave the anaesthetised patient under the care of medically unqualified personnel while the doctor performs the surgery or assists. This occurred in 7/92 deaths due to anaesthesia listed in the 2008 - 2010 confidential report.⁴ This abandonment of the patient was deemed the primary event that led to death in 6/7 cases (86%). Abandonment was also documented in 7/169 deaths due to non-anaesthetic causes assessed for quality of anaesthesia.

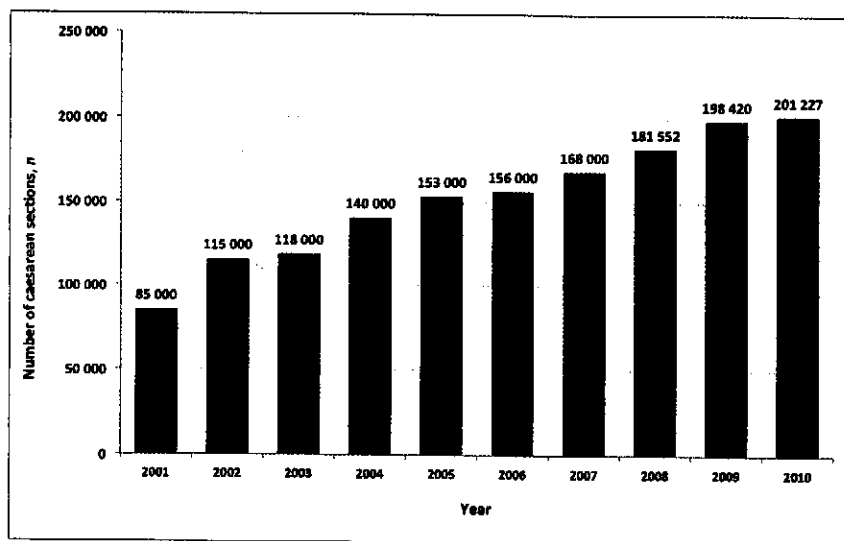


Fig. 2. Caesarean sections in provincial hospitals (2001 - 2010). Taken from Pattinson et al.⁴

In all these cases, the assessors could clearly identify abandonment. The numerous cases where documentation is too inadequate to reveal this problem are not included, and the real magnitude of abandonment in SA may be far higher. No hospital providing an operative obstetric service should place physicians in a situation where this is even considered as an option. Units that cannot provide adequate numbers of appropriately trained staff to avoid this practice should refer their operative obstetrics cases to the nearest available unit that can do so.

Conclusion

The provision of safe anaesthetic services at district-level hospitals must be made a healthcare priority. It is the responsibility of medical managers and hospital chief executive officers to ensure that their

staff possess adequate training and skills in both general and spinal anaesthesia. Although performance management contracts place considerable pressure on management to deliver in certain key areas, the threat posed by inadequately trained anaesthetists is sufficiently grave to justify this requirement.

All pregnant patients deserve a high standard of anaesthesia in every facility. The basic minimum standards of obstetric anaesthesia practice are:

1. An appropriately equipped operating theatre with all equipment and disposable items checked and in functioning order, as though the patient was receiving general anaesthesia (NCCEMD 2005 - 2007 equipment list).³
2. Full pre-anaesthetic examination by the doctor providing anaesthesia, including an airway assessment.

3. Administration of 0.3 M sodium citrate (30 ml) 0 - 30 minutes before the induction of anaesthesia.
4. Provision of anaesthesia appropriate to the patient and her clinical condition (although in most cases this will be spinal anaesthesia at a district hospital, provision must be made for safe general anaesthesia).
5. The use of an obstetric wedge to provide appropriate lateral tilt of the gravid uterus in all cases.
6. A doctor who has the exclusive responsibility of monitoring and stabilising the patient during anaesthesia (of whatever variety) and who must not be given the additional tasks of assisting the surgery or resuscitating the baby.

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Accepted 25 September 2012.



*Sturdy, upright oaks
Facing the wild south-east wind -
Indomitably.*

Haiku: Peter Folb

Appendix VIII. International classification of ROP

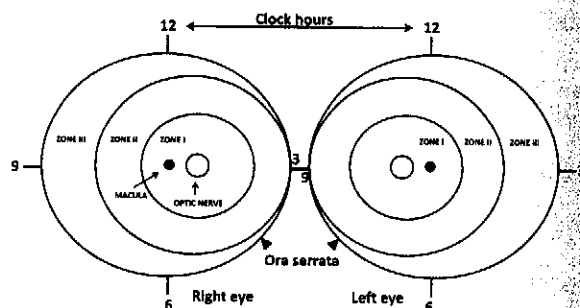
Stages (1 - 5)

1	Flat white demarcation line separates the vascular from the avascular retina
2	Ridge of fibrous tissue protrudes between the vascular and avascular retina
3	Blood vessels and fibrous tissue grow along the ridge and extend into the vitreous
4	Partial retinal detachment (4A - macula not involved; 4B - macula involved) is seen
5	Total retinal detachment has developed

Zones (I - III) and extent (clock hours)

I	The most central zone, centred on the optic nerve with a radius equal to twice the distance from the disc to the fovea
II	Extends concentrically from the edge of zone I to the nasal ora
III	The remaining temporal crescent

In addition, extent is denoted in the number of clock hours affected (1 - 12)



Plus disease

Blood vessels in the posterior pole appear tortuous and dilated. In addition, there may be vitreous haze, engorgement of iris vessels and poor dilatation of the pupil. The presence of plus indicates more severe ROP and rapid progression may follow.

Rush disease/AP-ROP (aggressive posterior ROP)

ROP in zone I with plus

Appendix IX. Neonatal nursery checklist for preterm neonates

- Diagnosis
 - Associated complications
 - Therapy indicated
 - Complications of therapy
 - Risk of intraventricular haemorrhage (IVH)
 - Risk of necrotising enterocolitis (NEC)
 - Risk of ROP
 - Risk of developmental delay
 - ROP booking (if applicable)
 - Date: _____
 - Venue: _____
 - Risk of hearing loss
 - Audiology booking (if applicable)
 - Date: _____
 - Venue: _____
 - If dysmorphic, has mother been counselled
 - Discharge medication
 - Date: _____
 - Venue: _____
 - Discharge summary given to mother
 - Road to Health Card summary
 - Six week follow-up at local clinic for immunisation
 - If retroviral disease (RVD) exposed: 6 week polymerase chain reaction (PCR) and Bactrim prophylaxis and nevirapine (NVP) (if breastfeeding)
- Doctor name and signature: _____
- Mother signature: _____