Caesarean Sections at Juba Teaching Hospital 2008 - 2009

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Summary

A summary and analysis of all recorded emergency and elective caesarean sections (CS) performed at Juba Teaching Hospital (JTH), Juba, Southern Sudan from October 2008 to September 2009 was made. During this period 430 CS were performed giving a mean of 1.2 each day, the main reason being cited as obstructed labour. Thirty of the babies delivered by CS died giving a neonatal morality rate of 7%. Due to various /non-comprehensive reporting methods it is difficult to measure the maternal mortality rate associated with CS. Overall 11.2% of all deliveries were CS, in accordance with WHO targets[1]. The majority of caesarean sections were performed using a general anaesthetic or ketamine (79% for emergency and 62% for elective surgery). These rates are much higher than those in the published guidance of best practice in the UK (Royal College of Anaesthetists Guideline 2006) [2].

Method

Surgical operations performed in each of the three operating theatres at JTH are recorded in logbooks. There is a single handwritten logbook for each theatre, each containing operative data since 2005. The information recorded for all operations includes date, patient age, operation type, indication for surgery, surgeon, anaesthetist and anaesthetic type. For caesarean sections additional maternal and foetal data are recorded including birth weight, foetal gender and mortality.

All caesarean sections from 1st October 2008 to 30th September 2009 recorded in these logbooks have been anonymously summarised. Non operative deliveries are recorded in the labour ward logbook. The monthly birth rate for the same period, incorporating foetal death rate and maternal death rate has been summarised from this source material.

Results

Number of caesareans by month

In the year studied 430 caesareans were performed at JTH. This gives a mean of **1.2 CS per day**. Operations were performed throughout the week and by a variety of grades of surgeon. There was a fairly even spread of operations performed throughout the year – see Figure 1.

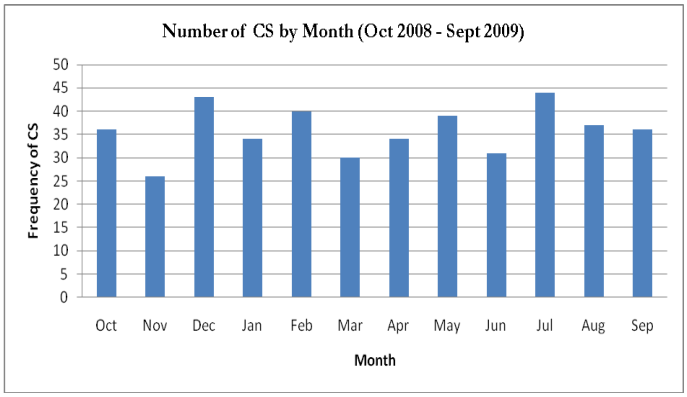


Figure 1.

Caesarean neonatal mortality

Table 1 shows the number of foetal deaths at delivery by CS by month giving an overall **neonatal mortality rate at CS of 7.0% of all CS deliveries.**

Table 1. Number of neonatal deaths recorded at delivery by CS. Oct 2008 – Sep 2009

Month	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Neonatal mortality	1	2	5	5	1	5	0	2	1	3	3	2	**30**

Caesarean maternal mortality

Calculating the number of maternal deaths directly related to CS is difficult. The operating theatre logbooks did not record *any* maternal deaths directly but this is known to be inaccurate. The original patient records for maternal deaths were not kept and we cannot be certain how many mothers died

during or after CS. There are some data recorded by midwifery staff on labour ward, but it is unclear whether these are comprehensive for JTH. From these data, five deaths of mothers who had CS are recorded during the research period giving a CS maternal mortality of at least **1.2%**. Anecdotally at least one of these was a death-on-table of a mother having an elective CS under general anaesthetic due to anaesthetic complications (aspiration). There is not a comprehensive approach to recording hospital-wide maternal mortality but using records from the labour ward logbook and senior midwifery staff we can assume that the range of maternal mortality from *non operative* deliveries is between **0.26 – 0.59%.**

Non operative deliveries

3402 babies were delivered in the labour ward during the year. There were 158 recorded foetal deaths and 9 maternal deaths. Of these vaginal deliveries, discrepancies in the various recording methods employed demonstrate a **maternal mortality ranging between 0.26% - 0.59%** and **neonatal mortality of 4.6%.**

Combining vaginal and CS deliveries, total deliveries were 3832 and total neonatal deaths recorded were 188. Thus combined (CS and vaginal delivery) **neonatal mortality was 4.9%**. It's also noted that there may have been more postoperative neonatal and maternal deaths than recorded in the logbooks at the time of surgery, but the reporting systems in JTH at present are insufficient to quantify these. The above mortality rates should therefore be considered a minimum.

Table 2 summarises the number of vaginal and CS deliveries by month. Also included is the proportion of total births that are delivered by CS. World Health Organisation targets[1] suggest a range of between 5% and 15% of live births should be delivered by CS.

Table 2. Number of vaginal and CS deliveries by month Oct 2008 – Sep 2009

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total
Vaginal deliveries	243	338	275	271	246	281	282	312	269	260	315	310	**3402**
CS	36	26	43	34	40	30	34	39	31	44	37	36	**430**
Total Births	279	364	318	305	286	311	316	351	300	304	352	346	**3832**
% by CS	12.9	7.1	13.5	11.1	14.0	9.6	10.8	11.1	10.3	14.5	10.5	10.4	**11.2%**

Indication for surgery

The indication for surgery was recorded for almost every patient and the overwhelming majority (77%) of CS were performed due to obstructed labour. Labour pain was the second most common cause, followed by previous CS and placenta praevia – see Figure 2. Eighteen separate indications for operation were found in the logbooks, with some of these including premature rupture of membranes (PROM), cord prolapse, antepartum haemorrhage and placental abruption occurring only once. These have been recorded in the 'Other' section and account for 6% of operations. Indications were recorded by non medically-qualified anaesthetic practitioners rather than obstetricians.

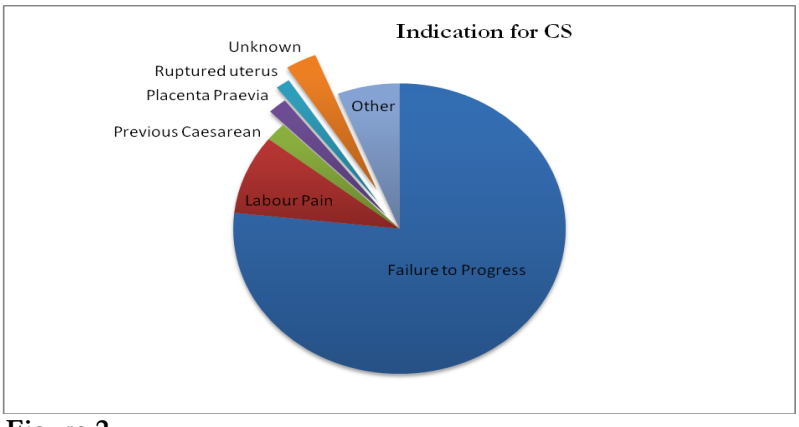


Figure 2.

The section marked 'Other' has been expanded in Table 3 to fully account for all the surgical indications recorded.

Table 3. Further indications for CS Oct 2008 – Sep 2009.

Indication for CS	Frequency	Percentage
Failure to Progress	330	76.7
Labour Pain	38	8.8
Previous CS	9	2.1
Placenta Praevia	8	1.9
Ruptured Uterus	6	1.4
Breech Presentation	6	1.4
Severe Pre-eclampsia	4	0.9
Eclampsia	3	0.7
Large Foetus	2	0.5
Antepartum Haemorrhage	2	0.5
Placental Abruption	2	0.5
Twins	1	0.2
Foetal death	1	0.2
Maternal age	1	0.2
Premature Rupture of Membranes	1	0.2
Oligohydramnios	1	0.2
Transverse Presentation	1	0.2
Cord Prolapse	1	0.2
Unknown	13	3.0
Total	**430**	**100**

Operating surgeon

In most cases, the operating surgeon's name was recorded. To preserve anonymity, these surgeons have been grouped into Consultant, Medical Officer (UK Senior House Officer equivalent) or House Officer depending on their grade – see Figure 3. In two cases, no name of the surgeon was recorded.

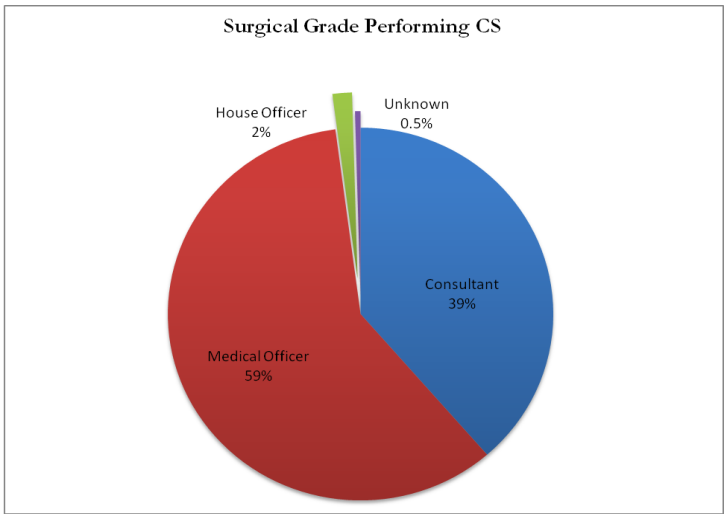


Figure 3.

Emergency and elective CS

CS were labelled in the logbooks as elective or the specific indication for emergency CS – Table 4 shows the numbers and percentages of each. Frequently, when a delivery was recorded as 'Elective' no further indication was specified.

Table 4. Emergency and elective CS from Oct 08 – Sept 09

	Emergency	Elective	Unknown	Total
Frequency	396	29	5	430
Percentage	92.1%	6.7%	1.2%	100%

Anaesthetic technique

Anaesthetics are performed exclusively by anaesthetic technicians. There are no medically qualified anaesthetists in JTH. Table 5 shows that the most frequent form of anaesthetic used was ketamine. Smaller numbers of spinal and general anaesthetics were used. Depending on the particular anaesthetist recording the technique in the theatre log-book, the term 'general anaesthetic' (GA) may at times refer to anaesthesia under ketamine or thiopental. (There are no records archived in the hospital of the specific drugs used.)

Table 5. Recorded anaesthetic techniques for elective and emergency CS Oct 08 – Sept 09.

	Spinal	Ketamine	GA	Unknown	Total
Elective	11	9	9	0	29
Emergency	81	248	65	2	396
Unknown	1	4	0	0	5
Total	**93**	**261**	**74**	**2**	**430**

Tables 6 and 7 summarise the anaesthetic techniques used for elective and emergency CS. Figure 4 compares these rates with the proposed standards from the Royal College of Anaesthetists (UK)[2].

Table 6. Elective CS: Regional and General anaesthetic technique

	RA	GA	Unknown	Total
Frequency	11	18	0	396
Percentage	37.9%	62.1%	0.0%	100.0%

Table 7. Emergency CS: Regional and General anaesthetic technique

	RA	GA	Unknown	Total
Frequency	81	313	2	396
Percentage	20.5%	79.0%	0.5%	100.0%

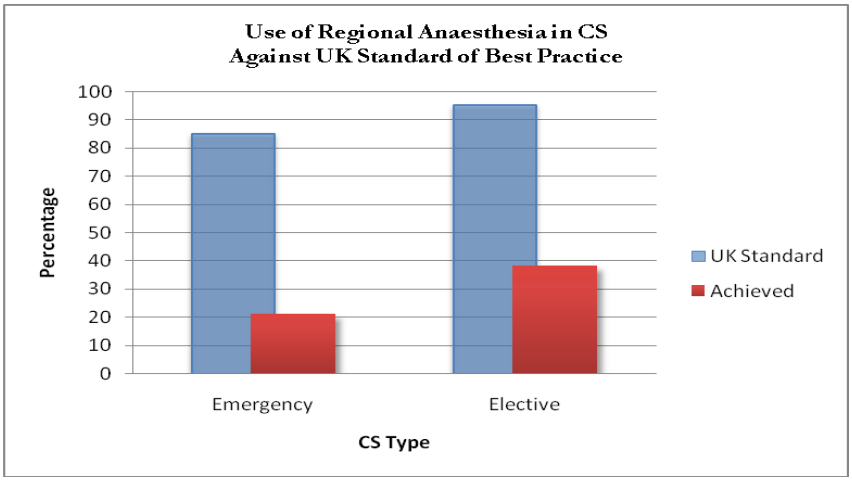


Figure 4.

Conclusions

Anaesthetic risk

In the period studied, the majority of caesarean sections were performed using a general anaesthetic or ketamine. We compared the data in this study to a standard of best practice from a Royal College of Anaesthetists guideline (2006)[2] which clearly highlights the deficit between published guidance of best practice and anaesthetic techniques practised at

JTH. There is a large body of evidence showing the risks of GA in caesarean section. The UK National Institute for Clinical Excellence (NICE)[3] guidelines suggest that women who are having CS should be offered regional anaesthesia because it is safer and results in less maternal and neonatal mortality than general anaesthesia[2]. However it should be noted that these guidelines are specific to the UK hospital context, with a service lead by medically qualified anaesthetists. Nonetheless there is likely to be some degree of applicability to Southern Sudan.

CS as a proportion of all deliveries

The WHO guidelines[3] suggest an optimal proportion of 5-15% of all deliveries should be by caesarean section. During the year studied the monthly and overall proportion was consistently within this suggested limit.

Limitations of study

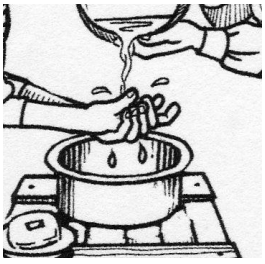
There are several useful research questions that cannot be answered with the data so far collected. Some of the logbook data is incomplete and these missing data have a direct effect on the reliability and usefulness of the analysis above. Patient notes are not available for review – most if not all notes (including records of drugs prescribed and given) are taken home by the patient at discharge. Thus intra-operative and postoperative data are incomplete. Specifics of patient care such as the use of prophylactic antibiotics or other peri-operative drugs are not recorded as a matter of course. Time of day and duration of surgery are not recorded, so it is impossible to calculate what proportion of the emergency work is being conducted out-of-hours and what implications this has on required emergency staffing levels.

References

1. WHO/UNFPA/UNICEF/AMDD 2009 Monitoring emergency obstetric care: a handbook. WHO, Geneva http://whqlibdoc.who.int/publications/2009/9789241547734_eng.pdf
2. Royal College of Anaesthetists UK: Raising the Standard: A compendium of audit recipes for the continuous quality improvement in anaesthesia. (2nd ed.) 2006: p166-7: Technique of anaesthesia for Caesarean section.
3. Royal College of Anaesthetics and Gynaecology and National Institute for Clinical Excellence (UK). Caesarean Section Clinical Guidance. April 2004 p60 Procedural Aspects of CS.

What do you know about handwashing?

1. Handwashing at critical times – including after using the toilet and before eating or preparing food – can reduce **diarrhoea** rates by almost 44 percent among children under 5.
2. More than 5,000 children every day – 1.7 million children every year – under the age of 5 die from diarrheal diseases. Diarrhoea is the **second most common cause of death in children**, accounting for 18 percent of all under-5 deaths.
3. Handwashing with soap is one of the **most cost-effective interventions** to prevent deaths and disease resulting from diarrhoea.
4. Handwashing with soap can reduce **acute respiratory infections** by around 23 percent. Pneumonia kills an estimated 1.8 million children per year and is the **number one cause of mortality** among children under five years old.
5. A recent study shows that when birth attendants and mothers washed their hands with soap, it significantly **increased newborn survival** rates by up to 44 percent.
6. Observed rates of handwashing with soap at critical moments – i.e. before handling food and after using the toilet – are very low, ranging from 0 to 34 percent.
7. Hands should be scrubbed with soap for at least 20 seconds. The key is to make handwashing with soap an automatic behaviour in homes, schools, and communities.



Watch the USAID's handwashing video at http://www.globalhandwashingday.org/GHD_Video.asp

Compiled from http://www.usaid.gov/our_work/global_health/eh/news/ghwd09.html