Survey: Category 1 Emergency Caesarean Section under General Anaesthesia: do we need a standardised approach?

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Abstract

Introduction

Category 1 Emergency Caesarean Birth under General Anaesthesia is a time-sensitive, life-threatening scenario which requires a multi-disciplinary team of varying experience to reliably perform an essential series of tasks. In this sense it is like a cardiac arrest or a major trauma call. However, unlike these scenarios, no formally agreed standardised process exists.

Methods

We surveyed members of the OAA to see how MDT training for the management of Category 1 Caesarean Birth is undertaken in different centres, to identify how frequently problems with the process occur, and to assess the appetite for a standardised approach to aid both management and MDT training.

Results

411 members responded to the survey. 37% reported that no form of MDT training is undertaken at their hospital/trust for Category 1 Caesarean Births; most of the rest undertake some form of simulation training. 17% of respondents reported problems with the process occurring either 'frequently' or 'very frequently', whilst 47% encountered them 'rarely' or 'very rarely'. 61% said that a standardised approach would be useful; in the subgroup that frequently encounter problems this proportion increased to 84%.

Those in favour of a standardised approach emphasised its potential utility in reducing variation, human error, cognitive burden and stress, whilst facilitating a shared mental model across the multi-disciplinary team. Those not in favour of a standardised approach mostly stated concerns about stipulations over anaesthetic technique, and whether a 'one-size-fits-all' approach is inappropriate.

Conclusion

Despite Category 1 Caesarean Birth under General Anaesthetic being a common, life-threatening and stressful emergency, a large proportion of hospitals do not undertake any MDT simulation training to address it, which is particularly surprising in a post-Ockenden NHS. A significant proportion encounter problems with a time-critical process, and most respondents would be in favour a standardised approach being developed to facilitate clinical management and training.

Introduction:

We were motivated to undertake this survey after a series of local incidents highlighted a gap in the conceptual model shared between obstetricians, midwives and anaesthetists about how to manage Category 1 Caesarean Births under General Anaesthesia. The common issue related to a lack of familiarity with those steps needing to be undertaken prior to the induction, particularly the insertion of a urinary catheter and the need for the operative team to be scrubbed with the abdomen prepped. Delay in these tasks being performed, to the point of requiring prompting from the anaesthetic team in several instances, was felt to add to the mental load in an already stressful and chaotic environment.

Whilst it is commonly accepted as part of anaesthetic teaching that these tasks should be performed prior to induction, we were surprised to be unable to find any formal guidance detailing this from either NICE, the RCOA or the AAGBI, with the only description in any publications being a single article from BJA Education[1], and a passing mention in the PROMPT manual[2] under the section addressing 'Failed Intubation' as part of Anaesthetic Emergencies. When we spoke to senior colleagues from obstetrics and midwifery they had the same ideas as the anaesthetists about the expected process, but were unaware of any formal guidance or any teaching materials used for their own trainees. In fact, when we surveyed our local midwifery team, over 80% reported never having received any specific training on Category 1 Caesareans under General Anaesthesia.

Category 1 Caesarean Birth under General Anaesthesia is, by definition, a time-sensitive, life-threatening event which requires a multi-disciplinary team of varying levels of experience, who may never have met before, to reliably perform a series of essential tasks. In this sense it is analogous to a cardiac arrest or a major trauma call. However, unlike these clinical scenarios, no formally agreed standardised approach exists for Cat 1 GA Caesareans. We undertook this survey to assess how other hospitals go about training the MDT for these emergencies, whether or not other units also encounter similar process problems, and to see if there is wider appetite for the development of a standardised approach, ideally agreed between professional bodies for anaesthesia, obstetrics and midwifery, to facilitate clinical management and training.

Survey Questions

Audience: all active OAA members.

All questions mandatory; respondents able to give multiple responses to Q6.

1) **In which geographical region do you work?**
   - England
   - Scotland
   - Wales
   - Northern Ireland
   - Outside of the UK (details in free text)

2) **Which of the following most closely describes your current role?**
   - Consultant
   - Specialty Doctor
   - Clinical Fellow/Staff grade
   - Stage 3 trainee (ST6/7)
   - Stage 2 trainee (ST4/5)
   - Stage 1 trainee (CT1-3)

3) **Which most accurately describes the hospital in which you work?**
   - District General Hospital
   - Tertiary Specialist Centre

4) **When were you last involved in the management of a Category 1 Emergency Caesarean Section under General Anaesthesia?**
   - Within the last week
   - Between 1 week and 1 month ago
   - Between 1 month and 6 months ago
   - Between 6 months and 1 year ago
   - More than 1 year ago

5) **Does your hospital have a written Standard Operating Procedure for the conduct of Category 1 Emergency Caesarean Section under General Anaesthesia?**
   - Yes
   - No
   - I don't know

6) **What sort of MDT simulation training for Cat 1 Caesarean Sections do you do in your hospital/trust? Please select all that apply**
   - In-theatre drills/simulation sessions
   - Simulation sessions in locations other than theatre (e.g. Simulation Suite)
   - Low fidelity simulation (e.g. tabletop exercises)
   - Other (please state in free text)
   - None: we do not do MDT simulation training for Category 1 Caesarean Section under GA

7) **How frequently do you encounter problems in these scenarios with members of the MDT not knowing the necessary steps? E.g. prepping the abdomen prior to induction**
   - Very frequently
   - Frequently
   - Sometimes
   - Rarely
   - Very rarely

8) **How often do simulation sessions involving the whole MDT (i.e. anaesthetists, midwives and obstetricians) covering Cat 1 CS under GA occur in your hospital/trust?**
   - Monthly or more frequently
   - Every 1-2 months
   - Every 2-4 months
   - Every 4-6 months
   - Every 6-12 months
   - Less than annually
   - Never

9) **Do you think it would be useful to have a standardised approach for Cat 1 GA CS, both for management of these emergencies and for MDT training purposes?**
   - Yes
   - No
   - Unsure

10) Could you please give your reasons for your answer to question 9? (answers in free text)

11) Are you aware of any national/international guidance on conducting a Category 1 Emergency Caesarean Section under General Anaesthesia? If yes, please give details (answers in free text)

Results

411 responses.

330 responses from the UK.

For ease of interpretation, data representing only those responses from within the UK are shown in separate columns in italics.

List of geographical locations for respondents from outside of the UK shown in the appendix.

Q1: In which geographical region do you work?	Frequency	%
England	267	65
Scotland	33	8
Wales	17	4
Norther Ireland	13	3
Outside of UK	81	20

Q2: Which of the following most closely describes your role?	Frequency	%	*Frequency (UK)*	*% (UK)*
Consultant	346	84	*274*	*83*
Specialty Doctor	21	5	*16*	*5*
Clinical Fellow/Staff Grade	5	1	*4*	*1*
Stage 3 trainee	23	6	*22*	*7*
Stage 2 trainee	13	3	*11*	*3*
Stage 1 trainee	3	1	*3*	*1*

Q3: Which most accurately describes the hospital in which you work?	Frequency	%	*Frequency (UK)*	*% (UK)*
Tertiary Specialist Centre	176	43	*120*	*36*
District General Hospital	235	57	*210*	*64*

Q4: When were you last involved in the management of a Cat 1 Caesarean Section under GA?	Frequency	%	*Frequency (UK)*	*% (UK)*
Within the last week	53	13	*37*	*11*
1 week – 1 month ago	183	45	*150*	*45*
1 month – 6 months ago	122	30	*101*	*31*
6 months – 1 year ago	31	8	*25*	*8*
>1 year ago	22	5	*17*	*5*

Q5: Does your hospital have a written SOP for Cat 1 Caesarean Section under GA?	Frequency	%	*Frequency (UK)*	*% (UK)*
Yes	120	29	*93*	*28*
No	246	60	*196*	*59*
Don't know	45	11	*41*	*12*

Q6: What sort of MDT training for Cat 1 CS do you do in your hospital/trust?	Frequency	%	*Frequency (UK)*	*% (UK)*
In-theatre simulation/drills	142	35	*116*	*35*
Simulation outside theatre (e.g. Sim Suite)	155	38	*133*	*40*
Low-fidelity simulation (e.g. tabletop exercises)	61	15	*55*	*17*
Other	12	3	*33*	*10*
None	153	37	*115*	*35*

Q7: How frequently do you encounter problems with members of the MDT not knowing the necessary steps? E.g. prepping the abdomen	Frequency	%	*Frequency (UK)*	*% (UK)*
Very frequently	20	5	*14*	*4*
Frequently	48	12	*41*	*12*
Sometimes	150	36	*118*	*36*
Rarely	125	30	*101*	*31*
Very rarely	68	17	*56*	*17*

Q8: How often do simulation sessions involving the whole MDT covering Cat 1 CS under GA occur in your hospital/trust?	Frequency	%	*Frequency (UK)*	*% (UK)*
Monthly/more frequent	16	4	*11*	*3*
Every 1-2 months	21	5	*18*	*5*
Every 2-4 months	26	6	*19*	*6*
Every 4-6 months	34	8	*27*	*8*
Every 6-12 months	89	22	*78*	*24*
Less than annually	82	20	*63*	*19*
Never	143	35	*114*	*35*

Q9: Do you think it would be useful to have a standardised approach for Cat 1 CS under GA?	Frequency	%	*Frequency (UK)*	*% (UK)*
Yes	249	61	*187*	*57*
No	66	16	*58*	*18*
Unsure	96	23	*85*	*26*

Themes from comments in response to Q10 given in Table 2 below.

Q11 data not tabulated as universally answered as 'No'. However some respondents went on to mention guidelines pertaining to aspects such as airway management (e.g. DAS/OAA) or analgesia (PROSPECT), but none relating to the overall process in theatre. One notable exception was a link to the Norwegian 'Method Book'[3] which recommends 'starting only when the surgical team is ready and the patient is prepared for surgery.'

Table 1 – Subgroup of respondents reporting 'very frequent' or 'frequent' process issues

	Frequency (Total=68)	%
Geographic Region		
England	43	63
Scotland	6	9
Wales	3	4
Northern Ireland	3	4
Other	13	19
Type of hospital		
District General Hospital	44	65
Tertiary Specialist Centre	24	35
In favour of standardised approach?		
Yes	57	84
No	3	4
Unsure	8	12

Table 2 – Common themes in reasons given for answer to Q9

Theme	Frequency
Standardisation leads to better outcomes, reduced variation and reduced errors	91
Improved teamwork/facilitate a shared mental model for the whole MDT	87
Standardisation is inappropriate/would over-complicate the process	53
Improved efficiency of the process	40
Reduce stress, panic, cognitive load/increase confidence	40
Concerns about restrictions on anaesthetic technique	38
Standardised approach would be useful for less experienced staff or smaller units where this is an infrequent event	30
It would help rotating staff	29
It would help facilitate training	29
It's unnecessary as issues are rare/enough guidance already exists	29
Any standardised approach would need to be flexible/not too prescriptive	28
A national approach wouldn't be feasible	17
'Guidance' acceptable but not 'SOP'	13

Key to Table 2: green = in favour of standardised approach; red = against standardised approach; yellow = neutral/conditional

Responses to Q10

The following are a series of direct quotes from responses to Question 10 from participants who were in favour of a standardised approach. They are included here as the authors feel they are particularly useful in highlighting the problems which are being encountered in UK practice relating to Category 1 Emergency Caesareans under General Anaesthesia:

"High turnover of junior midwives with resulting low confidence in managing operative delivery may mean it's useful for them to become familiar with steps in non-time critical fashion. As junior medical team members rotate, would allow them to train together."
Consultant in a Tertiary Specialist Centre in England

"An informal understanding exists about the process in theatre (i.e. prepping and scrubbing prior to induction) but this is not formalised anywhere. Given the relatively junior skill mix in midwifery and their lack of opportunities to spend time in theatre, a formalised SOP would be useful for both management and training."
Stage 2 trainee in a District General Hospital in Scotland

"As stated, it is a life threatening, time critical emergency. Too often the response is chaotic and sub optimal. Standardising people's roles and expectations would help. Having a cat 1 checklist as standard would also help (I am trying to introduce such a checklist in my department)."
Consultant in a District General Hospital in England

"Challenging and time critical. Like cardiac arrest, or more like a trauma team due to MDT. A protocolised process would significantly enhance communication and slick team working. We are looking to develop such a process in our Trust."
Consultant in a District General Hospital in England

"The current default approach is chaotic and relies heavily on the leadership of a single individual, who may not always possess the necessary clinical or non-technical skills. Human factors also plays a significant role. Implementing a standard operating procedure that all MDT members are familiar with could therefore have a positive impact."
Consultant in a District General Hospital in England

"It would reduce the stress and streamline approach – the rest of the MDT seem to become very stressed at Cat 1 LSCS, and often then don't conduct necessary steps without prompting, e.g. prepping of abdomen prior to induction. A standardised approach would help, I feel."
Stage 3 Trainee in a Tertiary Specialist Centre in England

Discussion:

Our survey received 411 responses, 330 from anaesthetists within the UK. The majority were from consultants (84%), and from anaesthetists with recent experience of Category 1 Caesarean under GA (58% had been involved in one within the preceding month, 88% in the preceding 6 months). Responses were obtained from all parts of the UK, with the majority being from anaesthetists working in England (65%). The DGH vs. Tertiary Centre divide was relatively equal (57% vs. 43% respectively).

Most respondents work in centres which don't have their own local Standard Operating Procedure for Category 1 Caesarean under GA (60%). The majority of UK respondents stated that their hospitals rarely undertake MDT simulation training for these scenarios, with 43% doing so less than once every 6 months, and an additional 35% never doing MDT simulation training for these events. Those that did work in departments which manage to do MDT simulation training reported mostly doing so either in theatre (35%) or in separate simulation centres (38%). 15% reported the use of low-fidelity simulation such as tabletop exercises, whilst 3% reported using other forms of simulation training (mostly PROMPT courses).

17% of respondents reported encountering problems with process of managing Category 1 Caesarean under GA either 'frequently' or 'very frequently'. Less than half (47%) described encountering such problems as either 'rarely' or 'very rarely'. These proportions were almost exactly the same for UK responses as for the international responses. Overall, 61% of respondents were in favour of a standardised approach, with 16% being against it and 23% remaining unsure. Notably, of the subgroup of respondents who reported encountering problems 'frequently' or 'very frequently', 84% were in favour of a standardised approach.

The most common reasons stated for being against a standardised approach were resistance to being told to use a particular anaesthetic technique and a related concern that attempts to standardise technical aspects such as drug doses would be inappropriate. Those in favour of formalising a standard approach mentioned the hope that it would lead to better outcomes by reducing errors, and (echoing our own experience) improve teamwork by facilitating a shared mental model amongst the MDT. Additional reasons given for being in favour included hopes that it would improve efficiency in clinical management and reduce the psychological stress/panic/cognitive load of these scenarios.

Conclusion:

The results of this survey demonstrate the existence of a clinical problem. It has been assumed that an agreed approach exists to the management of a common, time-critical, life-threatening medical emergency in the form of Category 1 Caesarean under General Anaesthesia. However, as this has not been formalised, clinicians throughout the UK, in both DGHs and Tertiary Centres, are encountering problems with members of the MDT not knowing the basic process.

We are not suggesting that there is a need to reinvent the wheel, and we are certainly not advocating a particular anaesthetic technique. Instead, we would like to suggest the development of an algorithm, similar to those utilised in cardiac arrest, major trauma etc, to elucidate the process *which we already think we are doing* for the purposes of training the

wider MDT. This could be agreed by professional bodies representing the relevant healthcare professionals (e.g. RCoA/OAA, RCOG, RCM) and incorporated into an existing multi-disciplinary training scheme such as PROMPT. We have started such a process locally and have incorporated a relevant simulation scenario into our monthly obstetric emergencies course, which has been met positively by members of anaesthetic, obstetric and midwifery staff. It would appear from the survey responses that several of our colleagues throughout the UK are engaged in similar endeavours, adding weight to the argument that this issue could be usefully addressed by national bodies such as the OAA.

References:

1) *General Anaesthesia for Caesarean Section*. McGlennan, Alan; Mustafa, Adnan et al. Continuing Education in Anaesthesia, Critical Care and Pain, September 2009, Volume 9, Issue 5, 148-151
2) *PROMPT: Practical Obstetric Multi-Professional Training Course Manual (2nd Edition)*. Winter, C et al. 2012. Cambridge University Press
3) https://metodebok.no/emne/R887siPy/keisersnitt-i-narkose/anestesi, *translation into English by Google Chrome browser when accessed on 10/02/2026*

Appendix 1: Locations of responses listed as 'Outside of the UK'

Country	Frequency	Country	Frequency	Country	Frequency
Australia	17	**Austria**	1	**India**	1
Ireland	8	**Brazil**	1	**Isle of Man**	1
New Zealand	8	**Chile**	1	**Kenya**	1
Switzerland	5	**Croatia**	1	**Malta**	1
Qatar	4	**Denmark**	1	**Nigeria**	1
Belgium	3	**Finland**	1	**Norway**	1
USA	3	**France**	1	**Oman**	1
Canada	2	**Germany**	1	**Singapore**	1
Netherlands	2	**Greece**	1	**Sweden**	1
Slovenia	2	**Guernsey**	1	**Missing data**	5
Italy	2	**Iceland**	1		