ORIGINAL RESEARCH PAPER

Anesthesiology

KEY WORDS: General anaesthesia, Caesarean section, Difficult airway, Postgraduates.

"GENERAL ANAESTHESIA FOR LOWER SEGMENT CAESAREAN SECTION - WILL THE POST GRADUATES BITE THE BULLET OR DODGE IT?"

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ABSTRACT

BACKGROUND AND AIMS: Providing general anaesthesia in high-risk parturient is challenging and requires specialized training. Maternal and foetal risks are significantly higher in general anaesthesia compared to regional techniques and hence neuraxial techniques have become the preferred method for caesarean deliveries. The aim of this study was to determine the level of exposure to obstetric general anaesthesia among postgraduates and indications and airway challenges encountered.

MATERIAL AND METHODS: Questionnaire survey conducted among 80 postgraduates in second and third year of anaesthesia training in medical colleges of Mangalore. Statistical analysis was done using software SPSS version 22 and data was expressed in numbers and percentages.

RESULTS: It was observed that mean number of intubation done by a postgraduate was 5.74(SD=4.45).Frequency of difficult airway cases encountered was 16(20%) and 11(13.8%) were not satisfied with training and exposure in giving general anaesthesia for caesarean section.

CONCLUSION: Postgraduates had overall limited exposure and training in administering general anaesthesia to caesarean section and which can be overcome by simulation based training for airway management and skill lab workshops.

INTRODUCTION

The use of general anaesthesia for caesarean deliveries has decreased significantly and neuraxial techniques have become the preferred method. Maternal and foetal risks are significantly higher in general anaesthesia compared to regional techniques. Difficulty in airway management and the associated risk of aspiration, maternal and foetal hypoxia are major causes of general anaesthesia associated morbidity and mortality in patients undergoing caesarean delivery. The incidence of failed tracheal intubation in pregnant women has been estimated to be seven-fold higher as compared to the non-pregnant parturient.

As a result, postgraduates in training may not gain adequate experience which is required in emergency caesarean sections. This could lead to an increased incidence of failed intubation and associated maternal and foetal morbidity or mortality. Importantly, this may impact on the anaesthetic management in healthcare settings. This study evaluated the level of exposure of anaesthesiology post graduates in medical colleges of Mangalore to deliver general anaesthesia in caesarean deliveries.

MATERIALS AND METHODS

This is a prospective, interview based questionnaire study. After obtaining ethical committee clearance, a questionnaire survey form was distributed among second and third year Anaesthesiology postgraduates training in medical colleges around Mangalore. A validated questionnaire comprised of 10 questions related to the past exposure, experience and preparedness of postgraduates to give general anaesthesia for caesarean delivery. The inclusion criteria were 80 postgraduates in second and third year of anaesthesia training in medical colleges of Mangalore. Medical colleges in Mangalore included in the study were Yenepoya Medical College, K. S. Medical Academy, Father Mullers Medical College, Kasturba Medical College, AJ Institute of medical sciences. A census sampling method was used. Data was expressed in terms of numbers, percentages and visualized using appropriate charts. Analysis was done using software SPSS version 22.

RESULTS:

The observations are based on the questionnaire study conducted among 80 anaesthesia postgraduates. Equal number of postgraduates with a frequency of 40 (50%) each in second and third year of training was present in the study. Mean number of caesarean deliveries for which anaesthesia including regional and general anaesthesia given by postgraduates was 117 (SD= 93.73). Mean number of intubations performed for caesarean section individually by each postgraduate under the supervision of a staff member was 5.7(SD=4.45). While average number intubations witnessed was 9.7(SD= 6.69). We studied the indications for general anaesthesia for caesarean delivery in our survey.

We found that as per our survey, major indication was failed spinal among majority of postgraduates with 43(53.8%). Second main indication was giving general anaesthesia as first choice for a given caesarean delivery being 24(30%). It was observed that 14(17.5%) postgraduates gave general anaesthesia both as first choice and for failed spinal anaesthesia.

While 6(7.5%) of postgraduates gave general anaesthesia as per patients request. About 5(6.3%) of postgraduates did intubation midway during surgery. And 2(2.5%) postgraduates gave general anaesthesia for other indications like HELLP syndrome, eclampsia, pregnancy induced hypertension, fetal distress and uncooperative patient.

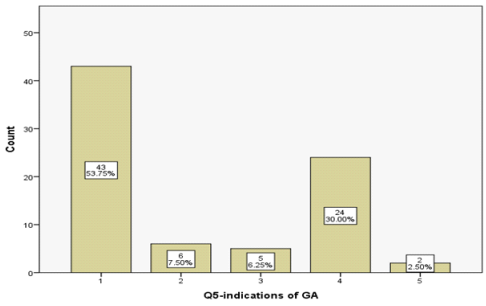
TABLE 1

	Minimum	Maximum	Mean	Standard Deviation
Total number of caesarean deliveries to which anaesthesia was given(regional and general anaesthesia included)	40	500	117.74	93.73
Total number of intubations performed individually for caesarean delivery	0	25	5.74	4.45
Number of intubations witnessed	1	30	9.71	6.69

TABLE 2 AND GRAPH 1 - Indications for general anaesthesia for caesarean delivery

		Frequency	Percentage
1	Failed spinal	43	53.8
2	Patient's request	6	7.5
3	Intubated midway during surgery	5	6.3
4	General anaesthesia as first choice	24	30
5	Other reasons	2	2.5
	Total	80	100

GRAPH 1- Depicting the indications for general anaesthesia



We studied the number of difficult airways and critical events witnessed among the postgraduates while administering general anaesthesia for caesarean delivery. It was studied that majority 64(80%) of postgraduates had not encountered difficult airway during their postgraduate training. We studied that 16(20%) of postgraduates witnessed a difficult airway Out of which 12(75%) faced difficult mask ventilation cases. 4(25%) had difficulty with intubation in pregnant patients and it was managed with laryngeal mask airway devices. Critical events like desaturation, aspiration and trauma to airway while giving general anaesthesia was also surveyed. Among the postgraduates 61 (76.3%) had no critical event and 19(23.8%) had faced critical events. Out of which desaturation was 9(50%), aspiration in 7(38.9%) and trauma to airway was 2(11%) of postgraduates.

GRAPH 2- Difficult airway

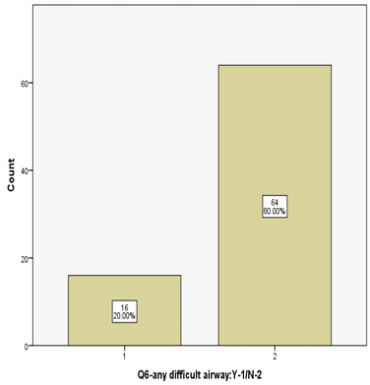


TABLE 3- Airway challenges

Difficult airway	Frequency	Percentage
Difficult ventilation cases	12	75
Difficult intubation cases	4	25
Total	16	100

TABLE 4- Preparedness to give general anaesthesia for caesarean delivery

	Frequency	Percentage
Very well prepared	50	62.5
Skeptical,but would go ahead with caution	11	13.8
Would attempt GA only if help available	19	23.8
Happy with training and exposure to give GA for caesarean section	69	86.3
Not happy with training and exposure	11	13.8
Total	80	100

Results of our survey found that majority of the postgraduates, 50(62.5%) were very well prepared to give general anaesthesia for a caesarean delivery if the situation arises. 19(23.8%) responded that they would attempt general anaesthesia only if help was available. We found that 11(13.8%) of postgraduates were sceptical in giving general anaesthesia for caesarean delivery, but would go ahead with caution. In our postgraduate survey we found that majority

69(86.3%) were happy with the training and exposure in giving general anaesthesia for caesarean section. And about 11(13.8%) of postgraduates conveyed that they needed more exposure and training in this regard.

DISCUSSION:

Caesarean sections are increasing in epidemic proportions all over the world. On average, 15% of births worldwide occur through caesarean sections. The choice of anaesthesia for caesarean sections has shifted from GA to regional over the past few decades and hence the mortality rate has declined by 80% due to the use of regional anaesthesia techniques. The absolute risk of maternal mortality associated with GA for caesarean delivery is about 32 per 1,000,000 general anaesthetics, a 17-fold rise in the risk of anaesthetic-related maternal mortality as compared with patients receiving regional anaesthesia for caesarean delivery by Shroff et al). GA is more often chosen for emergency caesarean delivery and anaesthetic-related deaths occur because of unsuccessful airway management (failure to ventilate, failed intubation, aspiration etc). The incidence of failed tracheal intubation in the obstetric population is 1 out of 250. Supraglottic airway devices are rescue devices that can be used to maintain oxygenation in women with difficult mask ventilation as well as in those with difficult intubation by Munnur et al. The LMA Proseal holds great potential in the management of the obstetric airway.

Conduct of GA for lower-segment caesarean section requires expertise and experience. The most intriguing reason that has been proposed is the lack of resident experience in providing GA for caesarean delivery in anaesthesiology training programs. From our questionnaire study we assessed that less number of intubations were performed by postgraduates compared to total of regional anaesthesia given to caesarean deliveries. Minority of postgraduates encountered difficult airway cases during their training. We found that only about 50 % of the postgraduates were very well prepared to give GA in emergency and while others needed more exposure and training to give GA for caesarean section.

CONCLUSION:

Providing GA in high-risk parturient is much more challenging and requires specialized training. The risk to the mother and the foetus increases when GA is undertaken on emergency basis. The percentage of caesarean sections performed under GA in India is similar to that in Western countries, hence training can be imparted as number of deliveries is almost 3 times higher and there exists a large spectrum of complicated obstetric cases.

As per our questionnaire survey we found that the current postgraduates in training had overall limited exposure and training in giving general anaesthesia to caesarean sections. Lack of training to deal with such situations can become a major contributing factor in maternal and foetal morbidity and mortality. The possible solutions to overcome this problem are simulation based training for airway management and skill lab workshops. A more viable solution can be training through exchange programs and postings in special obstetric centres and peripheral hospitals with a good variety of cases. Anaesthesia training programs should conduct more elective caesarean deliveries under general anaesthesia for better exposure among the postgraduates.

QUESTIONNAIRE

Questionnaire was intended to evaluate the past one year exposure, experience and preparedness to give general anaesthesia for a case of caesarean section among postgraduates.

1) Post graduate year-
a) Second year
b) Third year

2) Total number of caesarean deliveries you have given anaesthesia to (general and regional included):

3) Number of intubations performed individually under the supervision of duty staff for caesarean delivery.

4) Number of intubations for caesarean delivery witnessed.

5) Indications for general anaesthesia for caesarean delivery in numbers

a) Failed spinal
b) Patient's request
c) Intubated midway during surgery
d) general anaesthesia as first choice
e) any other reason (please mention)

6) Any difficult airway encountered? Y/N
If yes; then mention any
a) difficult ventilation encountered
b) difficult intubation cases
c) management of difficult airway

7) Critical events encountered while administering General anaesthesia in LSCS-

a) Desaturation
b) Aspiration
c) Trauma to airway
d) Miscellaneous

8) Your preparedness to give general anaesthesia if situation arises:

a). Very well prepared.
b). Skeptical but would go ahead with caution.
c). Would attempt general anaesthesia only if help available.

9) Are you happy with your training and exposure in giving general anaesthesia for caesarean section? Y/N

10) Could you suggest methods to improve training and exposure of anaesthesia post graduates to general anaesthesia for caesarean section?

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