



Retrospective evaluation of Anaesthetic method used in Caesarean sections: Changing trends.

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ABSTRACT

Objective: The current study was performed to evaluate the changing anaesthetic trends and techniques for elective and emergency caesarean section

Methods: In this retrospective study the 4 years anaesthetic records of patients who undergone caesarean section were evaluated in terms of demographic data, anaesthetic technique used and complication if any.

Statistical analysis was done using statistical package of social sciences 16.0 (SPSS,USA) Student T test was used for numerical data. Chi square test was used for comparison both groups.

Results: Out of 4701 caesarean section performed during a period of four years 3760 (79.98%) were performed in emergency 341 (20.02%) were elective cases. However use of regional Anaesthesia for caesarean section has increased from 73.78% to 82.84% during emergency cases from 79.06% to 90.64% in elective cases. APGAR Score during 1st and 5th minutes were higher in regional anaesthetic as compared to GA. Hypotension and bradycardia was observed mostly in RA cases while Hypertension and tachycardia were mostly observed in GA cases.

Conclusion: Regional Anaesthesia use for caesarean section has gradually increased over years in our hospital in both elective and emergency caesarean section cases.

KEYWORDS : Caesarean section, Regional Anaesthesia, General anaesthesia, Retrospective study.

Introduction

Caesarean section is one of the most important and frequently performed surgeries in obstetrics. Anaesthetic techniques has changed a lot in obstetrics surgery and determined according to urgency, preference of patient, presence of coexisting disease and experience of anaesthesiologist.

Either General or Regional anaesthesia is used for caesarean section (1,2,3). Both techniques have its advantage and disadvantages. GA is fast to induce and protects airway from aspiration but often difficult airway is encountered. Post operatively patients suffer pain, nausea, vomiting and risk of aspiration. In regional anaesthesia complications mostly arises due to difficulty in positioning for induction, high neural block and local anaesthetic toxicity though incidences are low (1, 4, 5-8).

Methods

This retrospective study was conducted to know the changing trends in anaesthetic techniques used for Caesarean Section.

Data collected were tabulated under GA for General Anaesthesia RA for Regional Anaesthesia

After receiving permission from hospital authority of Government Medical College Haldwani anaesthesia records of patient who undergone Caesarean section were evaluated between January 2008 to December 2011.

Complications related to General and Regional Anaesthesia were noted as intubation difficulty and hemodynamic complications i.e. Hypotension, hypertension, bradycardia, tachycardia, arrhythmic and drug related toxicity

Statistical Analysis was done using statistical package of social science 16.0 (SPSS Inc. 16.0 USA). Student's t test was used for the numerical data and demonstrated as mean \pm SD. Chi square test (χ^2) was used for comparison between both groups.

The P value of <0.05 was accepted as statistically significant.

Results

A total of 4701 Caesarean section were performed during a period of 4 years.

During 4 years period 941 (20.02%) elective and 3760 (79.98%) urgent Caesarean Section were performed. Out of 941 (20.02%) elective cases 140 (14.88%) were performed under general anaesthesia and 801 (85.12%) were performed under regional anaesthesia. Out of 3760 (79.98%) emergency cases 800 (21.27%) were conducted under general anaesthesia and 2960 (78.31%) were done under regional anaesthesia.

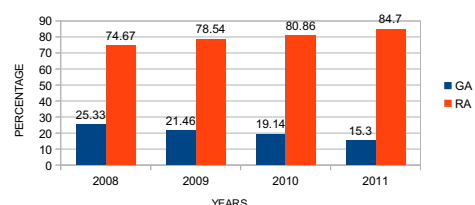
The Demographic datas were compared in Table 1 between groups G.A. and R.A and found insignificant.

Table 1. Demographic data between of GA and RA groups

	GA	RA	P value
Age (yrs)	27.23 \pm 6.54	28.35 \pm 5.43	Not Significant
Height(cm)	158.12 \pm 5.45	160.02 \pm 3.67	Not Significant
Weight(Kg)	58.43 \pm 9.97	59.34 \pm 10.12	Not Significant

General Anaesthesia in emergency cases has decreased over years. When both elective and emergency caesarean sections were considered, in 2008 general anaesthesia was used in 25.33% cases which decreased to 15.3% in 2011. Simultaneously Regional anaesthesia use has increased from 74.67% in 2008 to 84.7% in 2011. (Graph 1)

Table 2 Distribution of anaesthetic technique used according to years



Regional Anaesthesia use was significantly higher in both elective and emergency caesarean sections.

(Table 2 and Table 3)

Table2. Distribution of anaesthetic techniques used in elective caesarean section

Years	GA	RA	Total
2008	36(20.93%)	136(79.06%)	172(20.93%)
2009	38(18.44%)	168(81.55%)	206(18.4%)
2010	37(14.57%)	217(84.43%)	254(20.17%)
2011	29(9.38%)	280(90.61%)	309(23.88%)

Table3. Distribution of anaesthetic techniques used in emergency caesarean section

Years	GA	RA	Total
2008	226(26.21%)	636(73.78%)	862(83.37%)
2009	201(22.3%)	707(77.8%)	908(81.5%)
2010	204(20.30%)	801(79.70%)	1005(79.82%)
2011	169(17.15%)	816(82.84%)	985(76.12%)

The duration of anaesthesia was significantly higher in RA group. Duration of surgery was comparable in both groups. Time between anaesthesia and surgery was significantly higher in R.A group. (Table 4)

Table 4: Duration of anaesthesia, duration of surgery and time between anaesthesia and surgery

Duration	GA	RA	P value
Duration of Anaesthesia (mins)	66.56±17.85	78.65±16.43	Significant
Duration of surgery (mins)	58.66±16.76	56.78±15.56	Not Significant
Time between Anaesthesia and Surgery (mins)	3.5±2.26	14.67±7.34	Significant

The APGAR score of newborn at 1st and 5 minutes were obtained and found to be significantly higher in R.A as compared to G.A.

Hemodynamic complications in GA and RA groups. (Table 5) .11.6% person suffered hypertension in GA group while 34.68% persons suffered hypotension in RA group. Tachycardia was mostly seen in GA group (19.23%) while bradycardia was mostly related to RA group (7.6%)

Table 5: Hemodynamic complications in GA and RA groups.

	GA (%)	RA (%)
Hypertension	11.6	2.1
Hypotension	3.2	34.68
Tachycardia	19.23	7.43
Braycardia	2.4	7.6

Discussion

With changing years the anaesthesia choice for caesarean section has changed from General anaesthesia to region anaesthesia. At present regional anaesthesia is preferred instead of general anaesthesia though less than that in developed countries.

In our study the rate of caesarean section increased from 53.2% in 2008 to 56.8% which is significantly higher than that of developed countries.

In a study conducted in England rate of caesarean Section was 12.7% in 1988 which increased to 24.2% in 2002 (9) while in USA it ranges from 23.6% to 31.5% (10) In Singapore the rate of caesarean section was 25.1% (11)

The anaesthetic technique used for caesarean section depends on presentation of patient at the time of caesarean section. Various factors determining anaesthetic technique during caesarean section includes patient's existent systemic diseases, urgency of caesarean section, patient preference and experience and preference of anaesthesiologist and surgeon (1,2,3)

In our study R.A is preferred technique over G A because of its safety for both mother and child and decrease maternal mortality rate as compared to G.A (3,4)

Over the year use of R.A in caesarean section has increased due to increased knowledge of anatomy, availability of better tools, increased experience skill of anaesthesiologist and conscious patient (4)

In our study R.A for C-Section was performed in 80% cases over a period of 4 years whereas it was 75.2 % in a study from Aksoy Sari et al. (14)

Toker et al (3) found that R A was used for caesarean section in 77% cases in between 1996 and 2000 which was higher than the rates of western European Countries.

In our study the use of regional anaesthesia for caesarean section in 2008 was 74.67%, 78.54% in 2009, 80.86% in 2010 and 84.70% in 2011. The use of regional anaesthesia shows increasing trends which is consistent with study from Aksoy Sari et al where regional anaesthesia for caesarean section also followed increasing trend i.e. in 2005 it was 63.88% while in 2010 it increased to 84.6%. (12)

In our study only 20.20% (n=941) were elective and rest 79.98% (n=3760) were emergency caesarean section which is much higher than the study from Aksoy sari et.al study where 59.2% of cases were elective while 40.8% were emergency caesarean section. When general anaesthesia and regional anaesthesia was compared for caesarean section in elective and emergency situation it was found that administration rate of regional anaesthesia was higher in both elective emergency cases i.e. 85.12% and 78.31% respectively. In 2008 regional anaesthesia in elective caesarean section cases was (79.06%) which increased to (90.61%) in 2011 and use of general anaesthesia for caesarean section in elective cases decreased from 20.93% in 2008 to 9.38% in 2011.

In emergency caesarean section cases rate of GA administration decreased from 26.21% in 2008 to 17.15% in 2011 and rate of RA increased from 73.78% in 2008 to 82.84% in 2011. In a study use of RA in emergency cases in developed countries was 49.3% in 1992 which increased to 86.6% in 2002 (9)

In our study the APGAR score was significantly higher in RA than in GA both in 1st and 5th minutes which is consistent with studies of Yildirim et al (13) and Bowring et al (14). In a study by Kajacan et al (15) it was found that only 1st minute APGAR score were significantly lower in GA group but 5th minute APGAR score were similar in both GA and RA group

Hemodynamic complication in our study were mostly associated with RA

Hypotension was found in 34.68% and Bradycardia in 7.6 % cases of RA while Hypertension was mainly associated in GA patient 11.6% pt suffered Hypertension and 19.23% patient had tachycardia. Incidence of Hypertension was observed to be higher in GA which is consistent with study of Aksoy sari et al (12)

There was no maternal mortality in pre operative period in either elective or emergency caesarean section whereas in a study by Kan et al (11) reported one maternal mortality in caesarean section performed under GA due to Amniotic fluid embolism. Okafor et al (16) encountered maternal mortality in patient having undergone caesarean section under GA due to intubation failure.

Conclusion

In conclusion in our hospital RA is preferred method of anaesthetic techniques for caesarean section where the case is elective emergency with increasing experience the duration in induction of regional anaesthetic GA can be decreased with time. RA may be considered superior to GA for caesarean section for both mother and baby and RA can be preferred even for more urgent cases (17).

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