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Research Article

Trend of Caesarean Section in a Tertiary Care Hospital: A Prospective Observational Study from Andaman and Nicobar Islands, India

Abhishek Malakar[1], Shiv Shankar Singh[2], Shreya Barik[3], Dhanisha S Awaradi[4]

[1]Assistant Professor, [3]Senior Resident, [4]Internee, Department of Obstetrics and Gynaecology, ANIIMS, Port Blair, India.
[2]Associate Professor, Department of General Medicine, ANIIMS, Port Blair, India.
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Corresponding Author:
Shiv Shankar Singh, Department of General Medicine, ANIIMS, Port Blair, India.
E-mail Id:
diraniims@gmail.com
Orcid Id:
https://orcid.org/0000-0001-8544-6260
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A B S T R A C T

Background: Caesarean Section (CS) is one of the most commonly performed operations in obstetrics. The rate of caesarean section is increasing throughout the world and not surprisingly also in India. Caesarean sections are done due to various reasons, and often used liberally. We conducted this study to assess the rate of Caesarean deliveries and its indications in a tertiary care hospital in Andaman and Nicobar Islands, India.

Methods: This was a prospective observational study where data was collected for all Caesarean sections performed from January 2018 to December 2018 and the data was statistically analysed by MS Excel and frequency distribution tables.

Result: There were total 2646 deliveries over the study period of one year with caesarean rate of 38.51%. 73.61% were emergency CS. Most common indications of CS were post caesarean pregnancy (24.73%) and fetal distress (15.11%) and more than 75% were primary caesarean section.

Conclusion: A high CS rate with a high percentage of primary caesarean section was observed in this study. Indications included mainly post caesarean pregnancies, fetal distress and non-reassuring cardiotocography, portraying the low threshold for CS. Standard national protocols and practice of evidence-based obstetrics along with maintenance of institutional audits are needed to decrease the escalating CS rate.

Keywords: Andaman and Nicobar, CS Rate, Indications of CS, Primary Caesarean Section, Trend

Introduction

Caesarean delivery is one of the most common operations in present day obstetrics. Although according to WHO, ideal Caesarean Section (CS) rate should not be more than 10-15%, there has been steady rise in rate of caesarean section rates both in developed as well as developing countries over the past few years.[1] The 2012 US caesarean delivery rate was 32.8% whereas in United Kingdom, it was 24.1% in 2014.[2,3] The reasons for this increase are multifaceted. Foetal

distress, especially its detection by continuous electronic foetal monitoring, more liberal use of caesarean section for breech presentation, preference of abdominal delivery in a growth-restricted foetus, delayed childbearing and growing cases of infertility, increasing maternal body mass, multiple gestation especially with advances in *in-vitro* fertilization, better survival of premature new-born, and improved safety of caesarean section are the commonly cited reasons.[4]

Although there have been studies from different parts of India regarding trends of caesarean section, there have been no similar studies from Andaman and Nicobar Islands. Our institute, Andaman and Nicobar Islands Institute of Medical Sciences (ANIIMS) is the only tertiary care hospital here and hence, we conducted this study to reflect the scenario in this part of India. Our aim was to determine the caesarean section rate and its most common indications in this institute, as data from this part of the country is sparse. The objective was to note the trends of CS in this area, which shall go a long way in identifying the factors which may help reducing primary caesarean section rate and its complications.

Materials and Methods

This was a prospective observational study conducted in Andaman and Nicobar Islands Institute of Medical Sciences, a tertiary care hospital in Andaman and Nicobar Islands. We collected data of all the caesarean sections done over one year, from January 2018 to December 2018. The total number of deliveries over the study period of one year was collected and caesarean section rate was determined by total number of caesarean deliveries out of total deliveries. We noted the demographic parameters like age, parity, religion and obstetrical parameters like gestational age at CS, types and indications of CS. We also collected retrospective data from our medical record section regarding number of CS and total deliveries over past few years. We presented the data in table formats and analysed using MS Excel and frequency distribution tables. Informed consent was obtained from individual participants included in the study. The study was approved by the institutional ethical committee.

Result

There were total 2646 deliveries over one year of study period, out of which 1019 were caesarean delivery, which makes the rate of caesarean section as 38.51%, with incidence of primary caesarean section 75.27%. Approximately three fourth of the total cases (73.6%) were emergency CS done due to various indications (Table 1).

Table 2 shows the demographic parameters of the women undergoing CS. Age wise, majority (645 out of 1019 women) were in the age group of 21-30 years with approximately one out of twenty women being of age over thirty-five years. Only 15.01% women underwent CS before 37 completed weeks mostly due to maternal indications like severe preeclampsia or ante partum haemorrhage. More than half of them were of Hindu community. 53.37% of all women were primigravida.

Table 1.Rate of caesarean section

Parameters		No. of deliveries (n=2646)	Percentage (%)
Mode of deliveries (n=2646)	Caesarean delivery	1019	38.51%
	Vaginal delivery	1627	61.49%
	Total	2646	100%
Type of CS (n=1019)	Elective	269	26.4%
	Emergency	750	73.6%
	Total	1019	100%
Primary/ repeat CS	Primary CS	767	75.27%
	Repeat CS	252	24.73%

Table 2.Demographic parameters

Parameter		Number (n=1019)	Percentage (%)
Age	≤20 years	112	11%
	21-25 years	340	33.37%
	26-30 years	305	29.93%
	31-35 years	204	20.02%
	More than 35 years	58	5.68%
Gestational age	<37 weeks	153	15.01%
	≥37 weeks	866	84.99%
Parity	Nulliparous	544	53.37%
	Multiparous	475	46.63%
Religion	Hindu	577	56.62%
	Muslim	204	20.02%
	Christian	169	16.58%
	Others	69	6.78%

We analysed the different indications of caesarean section and it was found that Post Caesarean section pregnancy was the commonest indication (24.73%) followed by foetal distress (15.11%). Malpresentation, non-progress of labour, severe preeclampsia and failure of induction were the next common indications. Other foetal indications were IUGR, oligohydramnios and cord prolapse. Maternal request for CS was also an indication in twelve cases in our study (Table 3).

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Table 3.Various indications for caesarean section

Indication	No. of cases (n=1019)	Percentage (%)
Post Caesarean section pregnancy (with scar tenderness/ not fit for VBAC)	252	24.73%
Meconium stained liquor in first stage of labour with fetal distress	154	15.11%
Malpresentation	130	12.76%
Obstructed labour/ Second stage caesarean section	90	8.83%
Severe preeclampsia	90	8.83%
Non progress in first stage of labour	88	8.64%
Failure of induction	82	8.05%
Severe oligohydramnios with fetal distress	53	5.2%
Intra Uterine growth Restriction (IUGR) with fetal distress	30	2.94%
Ante partum haemorrhage	16	1.57%
Placenta praevia	12	
Abruptio placentae	04	
Contracted pelvis	14	1.37%
Maternal request	12	1.18%
Precious Pregnancy in case of infertility	06	0.59%
Cord prolapse	02	0.2%

Discussion

The rapid increase in caesarean birth rates over the past few years all over the world without clear evidence of concomitant decreases in maternal or neonatal morbidity or mortality raises significant concern that caesarean delivery is overused.[5]

There is a wide variation of caesarean section rates all over India as seen from various studies shown in Table 4. The reason behind this wide variation is that the indications of caesarean sections vary among institutions as there is no standard classification system and the definitions are also not standardized.[6,7]

In our study, we found the rate of CS was 38.51% which was on the higher side and more than double of the accepted upper value of 15%.[1] The reason behind this was our institute being the only referral centre of the whole Andaman and Nicobar Islands, many high risk cases and also cases in late stages of labour were referred here due to inter island transportation delay. Our study result was similar to a study from east India, where the CS rate was 35.45% in 2017-2018.[8]

Table 4.Caesarean section rates from different studies of India

Zone	Place of Study	Period of Study	Rate of CS
Eastern India	Bhubaneswar, Odisha [8]	May 2017-April 2018	35.45
	Sonitpur, Assam[9]	Jan 2015-Dec 2015	27.60
Northern India	Dehradun, Uttarakhand[10]	Jan 2015-Dec 2015	31.40
	Vallah, Amritsar, Punjab[11]	May 2015-Apr 2016	33.20
Western India	Jaipur, Rajasthan[12]	Jan 2016-Dec 2016	32.46
	Vadodara, Gujarat[13]	Jan 2013-Dec 2013	28.87
Southern India	Visakhapatnam, Andhra Pradesh[14]	Jan 2014-Dec 2014	25.66
	Maduranthagam, Tamil Nadu[15]	Jan 2011-Dec 2014	12.5

Other than total CS rate, another trend of CS is the rise in the rate of primary caesarean section. In our study, we found 767 out of 1019 (75.27%) women underwent primary caesarean section. This rate was similar to a study on primary caesarean section rates by Erika Desai et al (74.66%) but more than the result by Jain M, Patel A (55.8%) and Das RK et al. (63.41%).[8,16,17] This high percentage of primary caesarean section was obstetrically significant as this paves way for more repeat caesarean deliveries in future. Demographically, most women undergoing CS were in the age group of 21-30 years and were primigravida as found by other studies.[16,17]

Most of the CS were emergency CS with post caesarean pregnancy being the most common indication overall. This might be due to the fact that vaginal birth after caesarean was not widely practised in our institute. This finding was exactly similar to some of the prior studies, where post CS pregnancies constitute about 23-40% of all the CS done.[8,9,12,18] Foetal distress was the second most common indication (15.11%) as also found by Jawa A et al. and Bade P et al. in their studies.[12,19] As we had no provision for foetal scalp blood sampling, hence maximum non-reactive NST findings in early labour were taken for CS. Altogether 178 cases (including both first stage and second stage arrest) out

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of 1019 i.e. 17.47% were taken for CS for arrest of labour, which was exactly similar to the finding of a study from western India (17.6%).[19] There was a substantial amount (8.83%) of CS done in view of obstructed labour or second stage caesarean section. This is attributed to the difficulty to access tertiary health care from distant islands in this area. Almost all of obstructed labour cases were referred cases from periphery.

Table 5.Rising trend of CS all over India

Zone	Place of Study	Time Period	Change in Rate of CS
Northern India	Agroha, Haryana[20]	2007-2012	31.0% to 51.1%
Southern India	Visakhapatnam, Andhra pradesh[14]	2004-2014	16.14% to 25.66%
Western India	Mumbai, Maharashtra[21]	2001-2011	17.15% to 29.93%
Eastern India	Kolkata West Bengal[22]	1973-2012	9.50% to 40.10%
Western India	Vadodara, Gujarat[13]	2004-2013	23.48% to 28.87%

There is a rising trend of CS reported from all over India over the last decade from 16% to 40% (approximately) (Table 5). We had collected retrospective data regarding CS rate in our institute from medical record section, which clearly revealed a similar trend of increasing of CS rate over past few years from 34.46% in 2014 to 38.51% in 2018.

Conclusion

In an era where medical science has significantly advanced with more institutional deliveries being conducted in developing countries like India, more efforts should be made to provide a safer vaginal delivery to mothers that promises a better obstetric future. Contrary to this, we have seen a rising rate of caesarean sections, with obstetricians taking a no risk policy, sometimes abandoning trial of labour. This study found the CS rate as 38.51% whereas the rate of primary CS was 75.27%. It looked to scrutinize possible areas which contributed to this high CS rate. With several studies identifying the main contributory factors from nearly all over the country, it is the need of the hour for a common national guideline and protocols especially for amendable indications like non-reactive non-stress test, which can help to bring down the alarming increase in CS without compromising on maternal and foetal wellbeing.

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Conflict of Interest: None

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