Comparison of indications and complications of primary caesarean sections in primigravida and multigravida: A record based case series study

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Abstract

Background: The steadily increasing global rates of caesarean section (CS) have become one of the most debated topics in maternity care, as its prevalence has increased alarmingly in recent years. The aim was to assess and compare the indications and complications of primary caesarean section in primigravida and multigravida.

Methods: A record based case series was done from 1st January 2018 to 31st may 2018 at S.N. Medical College and HSK Hospital and Research Center Bagalkot, including 400 women (primigravida and multigravida), who underwent primary caesarean section. Indications and complications in both groups were noted and compared. Statistical analysis was done by chi square test. The P- values less than or equal to 0.05 (P≤0.05) were treated as statistically significant.

Results: The most common indication of primary caesarean section in primigravida was fetal distress 29.3% followed by cephalo-pelvic disproprtion 14.8%, oligohydromnios 14.1%, where as in multigravida undergoing primary CS, most common indication was fetal distress 31.5% followed by breech 9%, oligohydromnios 7.9%.
Conclusion: The proportion of primigravida undergoing primary Caesarean delivery was much more than multigravida. However, complications related to primary CS was much higher in multigravida

Keywords: caesarean section; primigravida; multigravida; indications

Introduction

The Caesarean section (CS) is one of the most commonly performed surgical procedures in the world and can be life-saving for the child, the mother, or both, in certain cases.

The steadily increasing global rates of caesarean sections have become one of the most debated topics in maternity care, as its prevalence has increased alarmingly in recent years.[1, 2]

The incidence of caesarean section has doubled or tripled all over the world in the last 15 years.[3] According to WHO, which reviewed 110,000 births from nine countries in Asia during 2007-2008, 27% births were delivered by caesarean section.

Primary caesarean delivery defined as caesarean deliveries out of all births in women who have not had a previous caesarean delivery.

The WHO's recommendation is that primary caesarean sections to be kept at less than 15%. According the National Family Health Survey (2015-16), India had 18% incidence of caesarean-section rate.

Barber et al found that 50% of the increase in caesarean delivery in their institution was due to increase of primary caesarean deliveries.[4]

Though modern technology and facilities have made this operation remarkably safe, which is mainly due to availability of antibiotics, safe anesthesia, blood transfusion facilities and recent improvement in surgical techniques but still caesarean section is associated with increased risk of maternal morbidity and mortality as compared to vaginal delivery. Caesarean delivery also increases the future obstetric complications like scar rupture, placenta accreta, caesarean hysterectomy, maternal morbidity and mortality.[5]

Many factors like maternal obesity, maternal request,

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unhealthy life style factors, maternal complications like pre-eclampsia, heart diseases, renal diseases and other medical disorders fear of litigation have led to increase in the caesarean delivery rate.

It is still more higher in a tertiary care hospital with a lot of referral and handled cases from periphery and rural health centers.

Primary caesarean section performed on a woman is of much obstetric significance and needs an in depth study. Hence this study was taken up to study and understand the trends and profiling of primary CS in our tertiary care centre, which in turn helps us to identify strategies for reducing primary caesarean deliveries.

Objectives: To assess and compare the indications and complications of primary caesarean section in primigravida and multigravida.

Materials and methods

A record based case series was done from 1st January 2018 to 31st may 2018 at S.N. Medical College and HSK Hospital and Research Center Bagalkot, including 400 women (primigravida and multigravida), who underwent primary caesarean section. Indications and complications in both groups were noted and compared. All necessary details were collected from the records after obtaining permission from MRD.

Inclusion criteria:

- All primigravida with pregnancy of >28 weeks of gestation, who have undergone caesarean section.
- Multigravida with pregnancy of >28 weeks of gestation (gravida 2 and above), each of whom has had a previous vaginal delivery of viable foetus and who have undergone primary caesarean section in the present pregnancy.

Exclusion criteria:

- Multiple pregnancies in the present pregnancy among both groups
- Woman with non-viable pregnancies
- Women with previous history of caesarean section
- Women with rupture uterus
- Women with ectopic pregnancy

Data analysis and interpretations: Statistical analysis was done by chi square test. The P- values less than or equal to 0.05 (P≤0.05) were treated as statistically significant.

Results

Among 1817 deliveries during study period, 781 (42.98%) were primigravida and 1036 (57.01%) were multigravida. Women who underwent primary caesarean section, 311 (77.75%) were primigravida and 89 (22.25%) were multigravida. 426 multigravida were delivered by repeat caesarean section. The incidence of primary caesarean section is found to be much higher in primigravida than multigravida.

Majority of the women 267 (66.8%) belong to the age group of 20-25 years followed by 93(23.2%) in age 26-30 years in both group.

Women who underwent primary caesarean section at pre term, term and post term were 46 (11.5%), 339 (84.75%) and 15(3.75%) respectively.

In our study (Table1), fetal distress 29.8% was the most common indication of primary caesarean section followed by cephalo-pelvic disproportion 13%. These 2 indications constitute 42.8% of all causes of primary caesarean section.

Most common indication of primary caesarean section in primigravida was fetal distress 29.3% followed by cephalo-pelvic disproprtion 14.8%, oligohydromnios 14.1% (Figure 1), where as in multigravida undergoing primary CS, most common indication was fetal distress 31.5% followed by breech 9%, oligohydromnios 7.9% (Figure 2).

The incidence of complications was higher in multigravida as compared to primigravida. (Figure 3) 10.1% multigravida undergoing primary CS required blood transfusion, comparatively 2.25% cases needed blood transfusion in primigravida (Figure 3).

Only 6% of neonates needed NICU admission in mothers who underwent primary caesarean section. Remaining 94% of neonates were born with good APGAR score.

Discussion

In our study, over all caesarean section rate was 45.45%. Incidence of caesarean section in primigravida was 39.82% and in multigravida was 8.59%, 41.11% accounts for repeat caesarean section.

The overall incidence of CS in other studies like Erika desai et al[6] (45.6%) 2013, Himabindhu et al[7] (40.55%) 2015, which was comparable to present study, however Sharmila et al[8] (29.3%) 2016, 21.3% in a study by Annelee boyle et al[9] 2013 showed much lesser incidence of CS.

Out of 1817 deliveries during study period, 400 women underwent primary CS. It was found that the incidence of primigravida 311 (77.75%) undergoing primary CS was much higher than the multigravida 89 (22.25%). A study conducted by Dr. Shrutee Birla et al[10] shows that the incidence of primary CS was (21.8%) in primigravida and (9.81%) in multigravida.

Table 1: Comparison of indications of primary Caesarean section in primigravida and multigravida

Indication	Number of cases in primigravida(%)	Number of cases in multigravida (%)	Total number of cases (%)	P-values
Fetal distress	91(29.3%)	28(31.5%)	119(29.8%)	0.6889
CPD	46(14.8%)	06(6.7%)	52(13%)	0.046
Breech	15(4.8%)	08(9%)	23(5.8%)	0.1367
Failed progress	24(6.4%)	04(4.5%)	28(7.0%)	0.2950
Sever PIH	02(0.6%)	-	02(0.5%)	-
Obstructed labour	08(2.6%)	05(5.6%)	13(3.2%)	0.1532
Oligohydromnios	44(14.1%)	07(7.9%)	51(12.8%)	0.0861
IUGR	07(2.3%)	02(2.2%)	09(2.2%)	0.9984
Failed induction	18(5.8%)	03(3.4%)	21(5.2%)	0.3673
Antepartum eclampsia	06(1.9%)	01(1.1%)	07(1.8%)	0.6093
PROM	15(4.8%)	05(5.6%)	20(5.0%)	0.7616
Abruptio placenta	01(0.3%)	03(3.4%)	04(1.0%)	0.01
Precious pregnancy	12(3.9%)	-	12(3.0%)	-
Maternal request	12(3.9%)	02(2.2%)	14(3.5%)	0.4658
DTA	01(0.3%)	01(1.1%)	02(0.5%)	0.3442
Transverse lie	02(0.6%)	02(2.2%)	04(1.0%)	0.1801
Brow presentation	-	01(1.1%)	01(0.2%)	-
Cord prolapse	01(0.3%)	02(2.2%)	03(0.8%)	0.063
Impending eclampsia	04(1.3%)	05(5.6%)	09(2.2%)	0.015
Placenta previa	01(0.3%)	04(4.5%)	05(1.2%)	0.0017
Cord presentation	01(0.3%)	-	01(0.2%)	-

Figure 1: Most common 10 indications of Caesarean section in primigravida

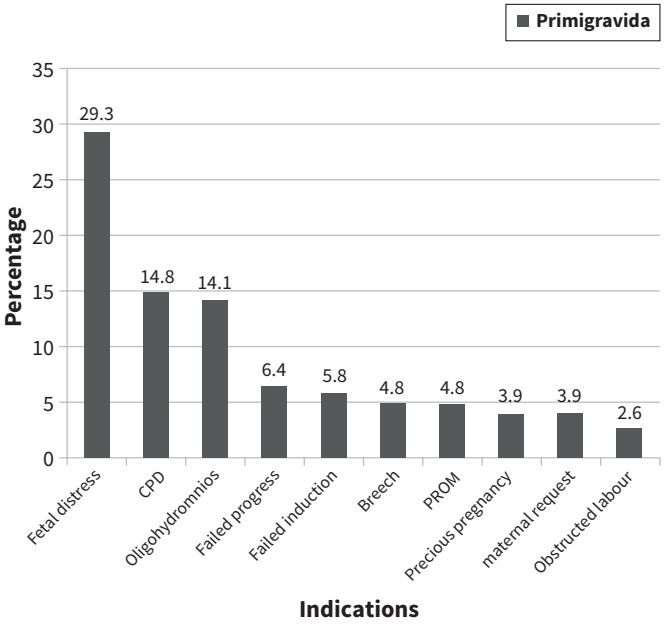


Figure 2: Most common 10 indications of primary Caesarean section in multigravida

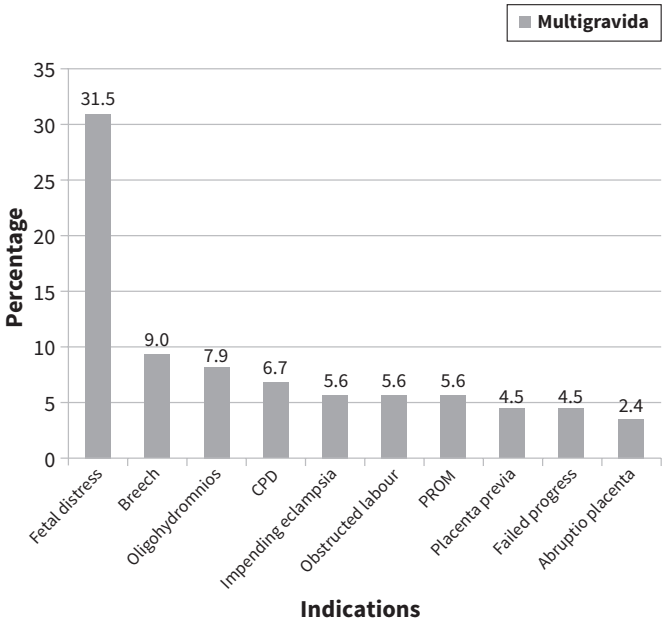
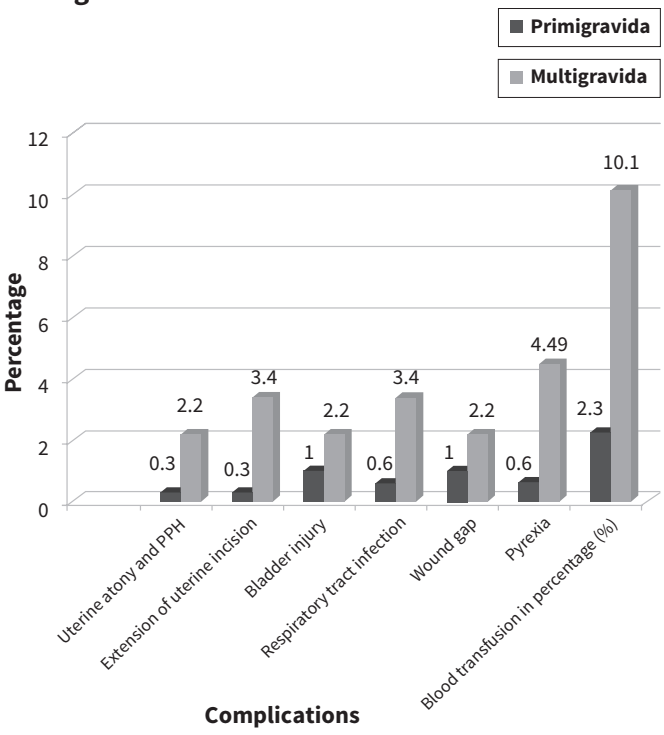


Figure 3: Comparison of Complications of primary Caesarean section in primigravida and multigravida



A study conducted by Annelee boyle et al[9] shows that the primary caesarean delivery rate was 30.8% for primigravida and 11.5% for multigravida. In studies mentioned above the incidence of primary CS in both groups were much less than the present study.

In present study, CS rate was high because ours is tertiary facility; high risk patients from peripheral areas, those in established labor, who need specialist and immediate care, ICU and those babies who need NICU care, were referred to us that's why women landed in emergency CS.

In our study majority of women undergoing primary caesarean section belonged to the age group of 20-25 years (66.8%). A study conducted by Sethi P et al[11] also reported that maximum number of women who undergoing primary caesarean section were from the age group of 25-29 years (41%). Unnikrishnan B et al[12] also reported the similar results.

In the present study, fetal distress (29.8%) and CPD (13%) were the most common indications of primary caesarean section in both the groups. This correlates with the study done by Erika desai et al[6] revealed fetal distress as the most common indication (25.58%) followed by APH (22.09%).

A similar study conducted on primary caesarean section by Saha L and Chowdhury SB[13] concluded that the main indications were fetal distress (35%), pre-eclampsia (14%) and cervical dystocia (12%).

In present study, in primigravida most common causes of primary CS were fetal distress 29.3% followed by cephalopelvic disproprtion 14.8%, oligohydromnios 14.1%, which was comparable with a study conducted by Dr. Shrutee Birla et al[10] shows that fetal distress (32.21%), cephalopelvic disproprtion (13.4%) and breech (12.63%), were the most common indications for caesarean section in primigravida.

However, Annelee boyle et al[9] study showed that the failure to progress (53.2%) followed by non-reassuring FHR tracing (27.5%) were the most common indication for primary CS in primigravida.

In our study, in multigravida most common indications of primary CS were fetal distress 28 (31.5%) followed by breech 8 (9%), oligohydromnios 7 (7.9%), which was comparable with study conducted by Himabindhu et al[7] shows that fetal distress (24.7%), abnormal presentation (19.3%), antepartum haemorrhage (11.2%) were the important causes of primary CS in multigravida. Another study by Rupal S et al[14] shows that the primary caesarean section in multigravida was 6%. Fetal distress was the commonest cause of caesarean section in multigravida in the above study.

However, study by Sharmila et al[8] the shows that malpresenation (23.4%), antepartum haemorrhage (16.8%), fetal indications (15.3%), medical disorders (16.5%) and CPD (15.8%) were the common causes of primary CS in multigravida.

In our study, incidence of maternal complications (Uterine atony and PPH, extension of uterine incision, bladder injury, respiratory tract infection, wound gape, pyrexia) were higher in multigravida as compared to primigravida. Similar observations were noted in study conducted by Dr. Shrutee Birla et al[10] shows that the higher maternal complications (Uterine atony and PPH, respiratory tract infection, UTI, wound gape) in multigravida as compared to primigravida.

In present study, incidence of blood transfusion was much more higher in multigravida (10.1%) as compared to primigravida (2.25%). Similar results were noted in study conducted by Dr. Shrutee Birla et al[10] shows incidence of blood transfusion was 15.27% in multigravida as compared to 2.94% primigravida.

In the present study, there was no maternal mortality observed. This may be because of availability of better antibiotics, blood and blood products, transfusion facilities, safe methods of anaesthesia, timely intervention, better surgical techniques and operative

skill of obstetrician.

Continuous Electronic Fetal Monitoring (EFM) was introduced to detect fetal distress. It was hoped that this would reduce deaths during birth and the frequency of cerebral palsy. However, while the use of EFM has been directly associated with an increase in caesarean delivery, it has not led to better health outcomes.[15] When fetal distress is suspected, this should be confirmed by fetal blood sampling before proceeding with caesarean section. In the study by Irvine et al[16] it was found that there was a 32% reduction in the caesarean section rate for fetal distress after the introduction of fetal blood sampling, unfortunately, this technique is not available in our unit.

A study conducted by American College of Obstetricians and Gynecologists concluded that the incidence of caesarean delivery on maternal request and its contribution to the overall increase in the caesarean delivery rate are not well known, but it is estimated that 2.5% of all births in the United States are caesarean delivery on maternal request.[17] In our study 3.5% of primary caesarean delivery on maternal request.

Raising trends in caesarean section may be due -

- Referral hospital gets larger number of complicated pregnancies
- LSCS performed for slightest indications of FHR abnormalities
- Decreasing trends in instrumental delivery, vaginal birth after CS.

Two important strategies for reducing caesarean deliveries are to increase the number of vaginal deliveries among women who have had caesarean deliveries and to increase the number of operative vaginal deliveries. The efficient way to lower the repeat caesarean rate is trial of labor and the way to reduce the number of primary caesareans is in practicing of the guidelines for various indications.

Conclusion: The proportion of primigravida undergoing primary Caesarean delivery was much more than multigravida. However, complications related to primary CS was much higher in multigravida. The incidence of primary CS is higher in a tertiary care hospital with a lot of referral and handled cases from periphery and rural health centres. However, every effort should be made to provide cesarean section to women in need, rather than to achieve a specific rate.

References

1. *Zhang J, Troendle J, Reddy UM, et al. Contemporary cesarean delivery in the United States. Am J Obstet Gynecol 2010; 203(4): 326.*
2. *Stavrou EP, Ford JB, Shand AW, et al. Ebidemiology and trends for Cesarean section births in New South Wales, Australia: a population-based study. BMC Pregnancy Childbirth 2011; 20; 11(1): 8.*
3. *Shukla Ashok Kumar and Dalal Asha R Changing Trends in Indications of caesarean section. Available: www.bhj.org.in/journal/2006_4801_jan/html/org _Changing 105-110.html (as on 27- 02-15).*
4. *Barber EL, Lundsberg L, Belanger K, Pettker CM, Funai EF, Illuzzi JL. Contributing indications to the rising cesarean delivery rate. Obstetr Gynecol. 2011;118(1):29.*
5. *Silver RM, Landon MB, Rouse DJ, Leveno KJ, Spong CY, Thom EA, et al. Maternal morbidityassociated with multiple repeat cesarean deliveries. Obstetr Gynecol. 2006;107(6):1226-32.*
6. *Desai E, Leuva H, Leuva B, Kanani M. A study of primary caesarean section in multipara. Internat J Reproduct Contracept Obstetr Gynecol. 2016;2(3):320-4.*
7. *Himabindu P, Sundari MT, Sireesha KV, Sairam MV. Primary caesarian section in multipara. IOSR JDMS. 2015;14(5):22-5.*
8. *Sharmila G. Study of primary caesarean section in multigravida, Asian pacific journal of health sciences. 2016;3(4):89-94.*
9. *Annelee B, Uma MR, Helain JL, Chun-CH, Rita WD, Laughon SK. Primary Cesarean Delivery in the United States. Obstet Gynecol. 2013;122(1):33-40.*
10. *Shrutee Birla, Manisha Gupta et al. Comparison of incidence, indication and complication of primary cesarean section in primigravida and multigravida.International Journal of Medical Science and Education. July-Sept 2016-3(3): 311-317*
11. *Sethi P, Vijaylaxmi S, Shailaja G, Bodhare T, Devi S. A study of primary caesarean section in multigravidae Perspectives in Medical Research May-Aug 2014;2 (2): 3-7.*
12. *Unnikrishnan B, Rakshith P, Aishwarya A, Nithin K, Rekha T, Prasanna P et al. Trends and Indications for Caesarean Section in a tertiary care Obstetric Hospital in Coastal South India. AMJ. 2010;3(12):821-5.*
13. *Saha L, Chwdhury SB. Study on primary caesarean section. Mymensingh Med J. 2011 Apr; 20(2):292-7.*
14. *Samal R, Palai P, Ghose S. Clinical study of primary caesarean section in multiparous women in a tertiary care hospital. Internat J Reproduct Contracept Obstetr Gynecol. 2017;5(5):1506-9.*
15. *Ernest MG, Peterson SM, Chisto DK, et al. Intrapartum electronic fetal heart rate monitoring and prevention of perinatal brain injury. Obstet Gynecol 2006; 108(3): 656-666.*
16. *Irvine LM et al. Fetal blood sampling and cesarean section rate for fetal distress; results of a pilot study. Journal of obstetrics and Gynecology 1999; 10(1): 32-34.*
17. *Caesarean Delivery on maternal request. Committee opinion. No.599. American College of Obstetricians and Gynaecologists. Obstet. Gynecol 2013:121; 904-7*

Conflict of interest: Nil

Source of funding: Nil

Date received: November 12th 2019

Date accepted: January 7th 2019