Review Article

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Odd hours auspicious caesarean sections

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ABSTRACT

In clinical practice, various obstetrical indications lead to the need to perform caesarean section deliveries in order to ensure maternal safety and favourable neonatal out comes. World Health Organization (WHO), in accordance with scientific evidence has stated that maximum safe limit of caesarean sections in any region throughout the globe is 10-15%. However, many countries including India have shown much higher rates during researches. Socio cultural factors like auspicious dates and time of deliveries also have a hidden role to play in these rising caesarean trends, in which the babies are delivered at the desired day and time for bright future as predicted by astrologers. This practice may be full of hazards and complications for mother, baby, as well as the medical and paramedical personnel. In addition, the resource crunch created in society by unnecessary surgeries may also hamper treatment of deserving patients.

Keywords: Pregnancy, Parturition, Caesarean section, Obstetrics

INTRODUCTION

Caesarean section (CS) is a vital lifesaving procedure in obstetrical practice. Improvement in surgical and anaesthetic techniques in the current era has brought down the mortality and morbidity associated with caesarean sections considerably. Medical indications for performing caesarean surgery given by American College of Obstetricians and Gynecologists (ACOG) in 2005 include non-progress of labour, placental problems, cephalopelvic disproportion, multiple pregnancy, active herpes simplex, fetal malpresentation, abnormal fetal heart rate and other co morbidities requiring emergency treatment. ¹

World Health Organization (WHO) in a recent systematic review states that rise in caesarean section rates up to 10-15% are associated with decrease in neonatal, maternal,

and infant mortality rates and rates more than these do not reduce mortality. $^{\!2}\,$

THE INDIAN SCENARIO

The rising trend of caesarean sections on international front is also reflecting in the Indian scenario. A study conducted by Indian council of medical research (ICMR) in 1980s stated that 13.8% rate of caesareans has been observed in teaching hospitals.³

Another author studied these rates in years 1993-1994 to be 21.8% and in 1998-99 to be 25.4% in 30 medical colleges of India. 42.4% of these were primigravidas and 31% belonged to rural areas.⁴

In a research based in Chennai, published in 2003, the caesarean rates in private sector were 47% as compared to 20% and 38% in public and charitable sectors

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respectively.⁵ Similarly, Andhra Pradesh, Bihar, Gujarat, Karnataka, Punjab, and Uttar Pradesh also have four times higher rates of caesarean in private institutes as compared to government institutes.⁶

RISING TRENDS OF CAESAREAN DELIVERIES-CAESAREAN ON DEMAND/REQUEST

Authors have defined maternal request caesarean sections as caesareans performed due to request of mother and in absence of any obstetrical or medical indications.⁷ Review of literature suggests that incidence of non-medically indicated caesareans or cesarean on demand lies between 0.3% to 14%.⁸

Several authors have analyzed reasons for maternal request CS. These include refusal of vaginal deliveries after previous CS, fear of pain during vaginal births, avoiding perineal injuries, simultaneous tubectomy, prolonged infertility, neonatal outcome concerns, want of painless delivery and astrological concerns.⁹

In some cultures great emphasis is laid down on auspicious day deliveries. ¹⁰ In India, auspicious days and times are selected by many based on astrological calendar and obstetricians are pressurized to make the baby deliver at an auspicious time as predicted by astrologer. ¹¹

In a recent study conducted in a South Indian teaching hospital, authors found that out of 1762 caesarean deliveries 44 (2.5%) had maternal request as indication. Out of the patients who requested caesarean sections, 30% wanted painless deliveries, 40% were scared of neonatal outcomes, 10% belonged to elder age group, and 20% had astrological concerns. Incidentally ACOG also has given an incidence of 2.5% for caesarean on request in the United States.

Still another study analyzed the cause of caesareans on request. They concluded that socio cultural and psychological factor have a role to play. First reason could be the female medical professionals themselves who see patients in labor frequently, are career oriented, have marriages at late ages, and are not ready to take risk of vaginal births for their own offspring. Secondly, high socioeconomic class women with one or two planned pregnancies do not wish to undergo vaginal deliveries as they think that this could be risky and uncomfortable. In addition, women with previous history of instrumental vaginal deliveries or stillbirths after vaginal deliveries or emergency caesarean after prolonged in vitro fertilization techniques usually request for elective caesarean sections, also many mothers consult astrologers or priest for date and time of delivery. 10

Sixty nine percentage of obstetricians have been found to accede to request by patients for elective caesarean sections. 12

AUSPICIOUS DAY AND TIME OF BIRTH-CULTURAL INFLUENCES

Department of economics, California University, conducted a recent study on repeat caesarean section trends in Chinese in California. It showed that there are 6% higher rate of CS on auspicious dates which are 8th, 18th and 28th of the month especially for male babies and much lesser (5%) on Chinese unlucky dates 4th, 14th and 24th. ¹³ Also studies have been done reporting that birth frequency varies according to seasons. ¹⁴ In Australia and United States (US) there are 7.7% lesser births on Friday the 13th and 11% lesser on Halloweens respectively showing effects of these superstitions on western culture too. ¹⁵

Another thing, which highlighted is that educational background of mother does not play significant role in choice of auspicious days. Even educated mothers and families choose dates and take advantage of their good rapport with obstetricians and ability to make request.¹³

HAZARDS OF CESAREAN SECTIONS

Maternal

Various risks of elective caesarean sections to the mother are enumerated as fever and sepsis, blood loss, wound infection, trauma during surgery, predisposition to placenta previa and uterine rupture in next pregnancy. Anaesthesia related complications might also occur. Hysterectomy due to massive hemorrhage has been reported to be ten times greater in cesarean than vaginal deliveries. ¹⁶

Another research quoted that cesarean deliveries have three to five times higher chances of maternal deaths, four times more risk of hysterectomy, two times more chances of intensive care admission and hospital stay of more than seven days as compared to vaginal deliveries.¹⁷

Pulmonary embolism is another potential serious complication and leading cause of maternal death, which is seen more after caesarean deliveries. 10

Advantages of vaginal deliveries include shorter hospital stay, lesser infections, no anaesthesia related problems, early initiation of breast-feeding.¹⁸

ACOG does not recommend caesarean deliveries on maternal request for women desiring multiple children due to risk of placenta previa, placenta accereta, and possible need of gravid hysterectomy.¹⁹

Fetal or neonatal

Most bothering impact of caesarean deliveries on request is neonatal respiratory morbidity. Iatrogenic prematurity leading to severe respiratory distress, transient tachypnea of new born and pulmonary hypertension are increased with elective caesarean sections.²⁰ In contrast, vaginal deliveries offer a benefit of low risk of respiratory problems, less iatrogenic prematurity and shorter hospital stay.

A recent study (2016) concluded that complications of newborn in caesarean are halved at each week of gestation from 34 to 38 weeks. This study analyzed 1135 neonatal subjects for respiratory distress syndrome, transient tachypnea, and continuous airway pressure use and stated that gestational age was the only independent variable associated with adverse neonatal outcomes.²¹

ACOG has also advised that caesarean section if performed on maternal request, should not be done before 39 weeks gestational age unless there is documentation of lung maturity.¹⁹

Another recent meta-analysis of 26 studies shows that children delivered by elective or emergency caesarean section have higher risk of asthma by 20%. Authors have given a possibility that concomitant rise in asthma may correlate with rising trends of caesarean deliveries throughout the globe. ²²

Risk of neonatal stillbirths can be lessened by deliveries at 39 weeks.²³ Planned vaginal deliveries are shown to lessen neonatal intensive care unit (NICU) admissions, resuscitation with oxygen and jaundice.²⁴

In a study in Brazil, authors found that preterm births increased from 6.3% (1982) to 16.2% (2004) due to increasing prevalence of caesarean rates from 28% in 1982 to 43% in 1993 to 82% in 2004 in the private centers of Brazil.²⁵

HAZARDS OF ODD TIMING OF BIRTHS (SELECTED BY ASTROLOGERS)

Various researches have studied the impact of odd operating timings on the surgical outcomes. In a recent American study, the authors analyzed total 115 cases operated during daytime and nighttime. They concluded that surgical care at night was a potent predictor of mortality but had lesser impact of morbidity.²⁶

Studies have elaborated that anaesthesia related accidents and fatigue related errors were reported by 86% of respondents. 27

Aya et al identified that risk of unintentional dural punctures in obstetric patients during performing of epidural blocks increased during nighttime as compared to daytime.²⁸

In a recent Turkish study (2018), comparison between laparoscopic cholecystctomies performed at day and night was done. It was found that more anaesthesia related complications occurred at night.²⁹

In addition, risk of hypotension is found to be more in after-hours surgeries commonly during induction and maintenance phases.²⁷

Researchers have stated that human performance is adversely affected by sleep deficit and circadian rhythm disturbances due to long working hours leading to impaired cognitive and psychomotor functions and more chance of accidents.³⁰

According to a study, period of circadian variation (3-5 am and 3-5 pm) as well as handing over of patient from one anaesthesia team to next are times of maximum anesthesia related adverse events. There is more probability of these events in cases conducted in late afternoons and evenings as compared to morning and early afternoon. Probability of complications is three times more for cases starting at 3 pm (1%) than those at 8 am (0.3%) especially post-operative nausea vomiting and pain.³¹

A recent Canadian study revealed that risk of mortality is significantly increased for after-hours surgeries as compared to regular hours surgeries (odd ratio 1.43 for surgeries starting between 15.30-23.29 and 2.17 for surgeries starting between 23.30-07.29).³²

Neurosurgical procedures have also shown a strong co relation with surgical start times. It has been found by authors that severe complications were more than 50% if surgery started between 21.01 and 07.00 (odd ratio 1.53). 33

Authors have reviewed patients undergoing elective cardiac surgeries and showed that mortality was significantly higher for patients with late hours surgeries as compared to those with early surgeries. (5.2% v/s 3.5% p=0.046) despite similar pre-operative risk factors. Cost was also 8% higher with late start cases (after 3 pm) due to more ICU stay, diagnostic tests, and imaging. Morbidity due to wound infection and poor hemostasis was also found to be greater. It has been shown overnight care (7 pm to 7 am) is associated with poor outcomes in internal medicine, obstetrics, intensive care, laparoscopy, colorectal surgery, interventional cardiology, renal transplants and orthopedic surgery.³⁴

Also, neonatal mortality rates were shown to be higher on weekends. (3.25/1000) as compared to weekdays (2.87/1000) along with caesarean sections having more risk of neonatal deaths by magnitude of 31.5 than vaginal deliveries.³⁵

Other studies have proved the negative effects of higher morbidity and mortality due to complications on weekdays after hours as well as on weekends on variety of surgical patients. ^{36,37}

HEALTH HAZARDS ON MEDICAL PERSONNEL WORKING DURING NIGHT SHIFTS

Need for night shifts and extended working hours in various professions is because society requires emergency services, continuous technical help, and economic needs. Authors have described ill effects on health of medical personnel due to working in odd hour shifts. It has been shown to have deleterious effects on training as well.³⁷

Cardiovascular diseases like hypertension and coronary artery disease, metabolic problems including dyslipidemia and diabetes, cancers, gastrointestinal disorders, reduced quality and quantity of sleep, fatigue, psychosomatic problems like anxiety, depression as well as obstetrical complications in females which includes spontaneous abortions, low birth weight babies and prematurity.³⁹

Incidence of breast cancer is also reported to be high in women working more in night shifts. Diurnal secretion of melatonin by pineal gland has its peak during night, which is shown to be disrupted or suppressed by working in strong intensity light during night hours.⁴⁰

Morris et al conducted series of studies related to circadian rhythm and found that circadian disruption or misalignment leads to low glucose tolerance by decreasing insulin sensitivity as well as alteration in blood pressure, heart rate, and inflammatory markers. 41

Also loss of sleep in a one-day night shift disturbs the circadian rhythm to the extent that SBP elevates by 6 mm of Hg lasting for at least 3 days.⁴¹

A meta-analysis was conducted in 2015 on 600,000 patients. It revealed that 10 mm Hg drop of SBP decreases the risk of major cardiovascular events by 20%, coronary artery diseases by 17%, heart failure by 28% and stroke by 27%. Increase in SBP at night due to circadian misalignment is usually due to lesser sleep duration leading to night adrenaline secretion. 41

At molecular level, inflammatory factors like c reactive protein, interleukin 6 and tumor necrosis factor x increase with circadian disruption especially leading to cardiovascular events. At genetic level, a very recent study examined some key processes, which could contribute to health problems related to circadian disturbances. They found that natural killer cells mediated immune responses are most affected. 39

ETHICAL ISSUES

Dealing with maternal request caesarean sections is a serious ethical issue in light of ever-increasing trends of caesarean deliveries. FIGO committee experts (committee formulated for ethical issues in human reproduction) have stated that performing caesarean

sections without medical indications is unethical since supporting scientific evidence of their benefits is insufficient. ⁴⁴ Patients do have right to refuse treatment but not to demand a particular treatment which according to physician could be risky. ¹⁰ FIGO further elaborates that rights of an individual are never larger than rights of the society.

In developing countries, the resources are limited and performing caesarean sections not indicated medically may lead to resource crunch for the deserving patients with obstetric indications.⁴⁴ Elective caesarean sections on request may be justified only in cases where they are genuinely safer and more beneficial than vaginal delivery.⁶

CONCLUSION

Various cultural, social, and psychological factors play a role in rising incidence of caesarean sections world over. Mortality and morbidity has been proved greater with elective caesarean as compared to vaginal births till date. Mothers requesting for caesarean sections for nonmedical indications should be counseled efficiently to prevent adverse effects on their own health as well as to prevent resource constraints in our society.

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