



Rising cesarean section rate

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Introduction

Worldwide rise in cesarean section (CS) rate during the last three decades, has been the cause of alarm and needs an in depth study. CS is one of the most common major surgical procedure in private sector health care services. The CS epidemic is a reason for immediate concern and deserves serious international attention. The procedure is not benign and needs to be performed only when circumstances distinctly require it.

Incidence

The consensus recommendation for optimal CS rate of 10-15% was made by WHO in 1985¹. This recommendation was anything but arbitrary. The limitation issue is being debated by professionals and women's groups in most parts of developed world based on risks and benefits². This may compromise interests of mother and fetus exposing them to more risks from childbirth. Many are questioning the recommended optimal CS rate by suggesting that lowering the rate may be dangerous³. Efforts to bring down the rate have failed and it is on a steady rise.

In 2001 an estimated 21.4% of all deliveries in England and Wales were by CS, a five fold increase since 1971⁴. In 2002, more than one-fourth of all births (26.1%) in United States were CS deliveries a highest ever reported rate⁵. In 2004, rate of CS births for first pregnancies increased to 29.1% of all births, continuing a rising trend. Since 1996, CS deliveries have increased by more than 40%⁶. While the hospital CS rate is 22% in Egypt⁷, CS epidemic observed in Latin American countries is not yet evident in most of the Arab countries where CS rate ranges between 5-15%⁸. The rising trend in CS is definitely not limited to USA and UK. In

Brazil, there are hospitals with 100% CS rate, health districts with 85% CS rate, and an entire state with a CS rate of 47.7%⁹. The Brazilian Ministry of Health has imposed upper limit of CS rate at 35% in public hospitals while private sector rates of 70% and more are common in the country¹⁰. In Delhi, CS rate in teaching hospitals currently ranges between 19-35%. In Sweden, Denmark and Netherlands, the CS rate is still close to 10% with some of the world's lowest maternal and perinatal mortality rates¹¹.

Why this upward trend ?

The reasons for the dramatic increase in CS rates though not obvious are somewhat complex. The indications for performing CS have changed a lot in recent years and keep on changing for varied circumstances. Most CS are currently performed to benefit the fetus, not the mother. Some common and important indications for CS include fetal distress, prolonged labor, breech presentation, multiple gestations, previous section, and CS on demand.

It is sad that CS are frequently and arbitrarily performed for fetal distress and prolonged labor without due respect to correct diagnosis and unbiased decision. During 1976-96, CS for singleton breech increased from 30% to 86% and for twin pregnancies from 13% to 47%¹². In 2001, 16.7% of all CS performed in UK, were on women previously delivered by CS¹³. Recurrent sections for three or four or more times are now frequently performed for various reasons. A trial for vaginal birth after a previous CS (VBAC) is considered safer than a routine repeat CS. But, it is unfortunate that there is currently less enthusiasm for VBAC by trial of scar or of labor. It is evident that whereas CS is doctor friendly, VBAC is not. The rate of VBAC in USA is down from 17% in 1996 to 11% in 1999¹⁰. RCOG recommended that all women previously delivered by one lower segment CS should be offered an opportunity to labor during their next pregnancy by promoting a trial of scar or of labor¹³.

The rates for CS on demand in absence of any specific indication are increasing. Mackenzie et al¹² observed that maternal request was one of the main indication for CS (23%) in 1996. The introduction of this concept raises several

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questions. There are too many unknowns about the true risks and benefits of the procedure. The issue is being debated by professional and women's groups in most parts of the developed world². Inadequately informed women choose CS to avoid painful natural childbirth. Most of them like to maintain the vaginal tone of teenagers. But, this is more likely a benefit to the sexual partner than the woman herself. In India, the family sometimes demands that the baby be born on a auspicious date and time, obviously by CS, as dictated by horoscopic/astrological calculations. This happens to be a popular indication of CS in China. The right to choose CS involves many other important issues which are considered to be outside the domain of this review. The relative safety of an elective CS in developed world has given rise to another controversy. However, CS on demand threatens national resources, and is an expensive and dangerous luxury. Moreover, FIGO¹⁴ states that performing CS for nonmedical reasons is ethically not justified.

Defensive obstetrics is another common reason for high rates of CS. It has been observed that 82% of physicians performed CS to avoid negligence claims¹⁵. Defensive obstetrics violates the fundamental principle of medical practice. In any case it does not work. During the years that defensive obstetrics has grown in numbers, there has been no slowdown in litigation¹². This is closely related to daylight obstetrics for the obstetrician's convenience. Elective CS is set in favor of weekdays and daylight. It takes usually 20-30 minutes to perform a CS while conducting a vaginal birth may need 12 hours or more heavily taxing on the obstetrician's time and patience. In private health care services, CS is one of the most common major surgical procedures. Doctors and hospitals earn much more money from a CS than from a vaginal delivery. High CS rates financially benefit doctors, hospitals, and industries.

Is CS as safe as we think ?

It is unfortunate that the option to choose or perform a CS is not so simple. Even elective CS carries serious risks for mother and child. The proponents of CS claim that CS is an extremely safe operation with a negligible mortality and morbidity. This could be open to question and there must be many potentially fatal problems which might occur unpredictably that are often not counted in any national audit. A fourfold increase in maternal mortality rate associated with CS was observed even after controlling for medical and obstetric complications, maternal age, and preterm delivery¹⁷. Even elective CS had a 2.84 fold greater chance of maternal death as compared to vaginal birth. In UK, a twofold increase in mortality with CS was detected¹⁸.

As regards immediate risks, all women undergoing CS are exposed to potential complications of anesthesia. Hawkins

et al¹⁹ found that 82% of anesthesia related maternal deaths occurred in women undergoing CS and general anesthesia was most prevalent among them (52% of 129 deaths). Overall intraoperative complications like uterocervical and bladder lacerations, blood loss greater than 1L and need for hysterectomy occur in 12-15% of cesarean deliveries²⁰. Major complications were almost double in emergency CS compared to those in elective CS. Overall postoperative complications – major (pelvic infection, sepsis, deep vein thrombosis etc.) and minor (fever, urinary infection, wound sepsis etc.) – occurred in 35.7% of cases²¹. Abdominal delivery is also a significant risk factor for emergent postpartum hysterectomy, mainly for adherent placenta, uterine atony, uterine rupture, fibroids, sepsis, and extension of uterine scar²².

Babies are also vulnerable to unnecessary risks from rising CS rates. The first danger to the baby is the 1% to 9% chance that the surgeon's knife will accidentally lacerate the fetus (6% in nonvertex presentation)²³. A much more serious risk is respiratory distress syndrome (RDS). CS per se is a potential risk factor for RDS in preterm infants and for other forms of respiratory distress in mature infants¹⁶. Another distinct hazard is iatrogenic prematurity. Even with repeated ultrasound scans, there may be errors in judging when to do an elective CS. As CS rates rise, so do premature births. While in USA more infants were born in 2004 by CS, more were born prematurely and more were born with a low birth weight in 2004 than in 2003⁶. Both RDS and prematurity are major causes of neonatal mortality and morbidity.

Late consequences of CS

Recurrent CS, scar rupture, hysterectomy, and maternal and fetal deaths are some of the future important risks. Previous CS increases the risk of multiple placental abnormalities like placental abruption, placenta previa, and adherent placentation in subsequent pregnancies⁵. First birth CS had a 30% increased risk for placental abruption in subsequent pregnancy²⁴. Numerous studies have confirmed the increased risk of placenta previa following CS. Women who had four or more deliveries with a single CS had a 1.7 fold increased risk of placenta previa whereas women with parity greater than four and four or more prior CS had almost a ninefold increased risk of placenta previa²⁵. Among women with placenta previa, the incidence of placenta accreta is almost 10%²⁶. Zaki et al²⁷ reported a 60% rate of placenta accreta with three or more cesarean deliveries. The leading indication for cesarean hysterectomy in USA is placenta accreta²⁸. As the incidence of CS continues to rise worldwide, the problem of placenta previa and placenta accreta is likely to become more common. Obstetricians should be ready to face these future consequences of today's decision of performing CS²⁹.

Reduction of future fertility

Women delivered by CS were less likely to have a subsequent pregnancy (66.9%) compared with those having spontaneous vaginal delivery (73.9%) and instrumental vaginal delivery (71.6%). Women delivered by CS were also found more likely to have an ectopic pregnancy in their next pregnancy³⁰. Maymon et al³¹ reported eight cases of ectopic pregnancies which developed in CS scars. The women at risk appear to be those with a history of placental pathology, ectopic pregnancy, multiple CS, and breech delivery by CS. Wang et al³² reported 14 cases of pregnancy on the cicatrix of previous CS at the uterine isthmus in the 1st trimester. Six cases of abdominal wall scar endometrioma after CS have been recorded by Wasfie et al³⁴. One case of spontaneous rupture of uterus following intercourse in a CS scarred uterus was reported by Nassar et al³⁴ and the other by Toh-lick et al³⁵.

Conclusion

Obstetricians should abide by ethics in clinical practice and carefully evaluate the indication in every CS and take an unbiased decision before performing CS on demand/request. Although the debate will continue regarding the appropriateness of CS on demand, any discussion of risks and benefits must include the potential for long term risks of repeated CS, including hysterectomy and maternal and fetal death.

It is expected that obstetricians should always provide prompt, competent, skilled, and evidence based services to women. Carefully supervised vaginal delivery after CS needs to be enthusiastically encouraged by promoting trial of scar or trial of labor. Routine practice of external cephalic version is recommended during antenatal period in selected cases of breech presentation. The question of seeking a second opinion from a senior and experienced obstetrician before performing a CS for a controversial indication, is ticklish, but may be seriously considered or debated in the best interest of the profession and of the women as well. It is possible to maintain CS rate close to 10-15% and still have very low maternal and perinatal mortality.

References

- World Health Organization. Appropriate technology for birth. *Lancet* 1985;ii:436-7.
- Anderson GM. Making sense of rising cesarean section rates – Time to change our goals. *BMJ* 2004;329:696-7.
- Sachs BP, Kobelin C, Castro MA et al. The risks of lowering the cesarean delivery rate. *N Engl J Med* 1999;340:54-7.
- Sur S, Mackenzie IZ. Does discussion of possible scar influence preferred mode of delivery after cesarean section? *J Obstet Gynecol* 2005;25:338-41.
- Zelop C, Heffner LJ. The downside of cesarean delivery: short and long term complications. *Clin Obstet Gynecol* 2004;47:386-93.
- Center for Disease Control and Prevention. C-sections rise, so do premature births. *Hindustan Times. New Delhi.* 2005;23 Nov.
- Khawaja M, Kabakian. Khasholian T, Jurdi R. Determinants of cesarean section in Egypt. Evidence from demographic and health survey. *Health Policy* 2004;69:273-81.
- Jurdi R, Khawaja M. Cesarean section rates in Arab region: a cross national study. *Health Policy Plan* 2004;19:101-10.
- Ratner D. Sobre a hipotese de estabilizacao das taxas de cesarean do Estado de Sao Paulo, Brasil. *Rev Saude Publ* 1996;30:19-33.
- Editorial. Cesarean section on the rise. *Lancet* 2000;356:1697.
- Wagner M. Choosing cesarean section. *Lancet* 2000;356:1677-80.
- Mackenzie IZ, Cooke I, Annan B. Indications for cesarean section in a consultant unit over the decades. *J Obstet Gynecol* 2003;23:233-8.
- Thomas J, Parenajothy S. Royal College of Obstetricians and Gynecologists Clinical Effectiveness Support Unit. *The National Sentinel Cesarean Section Audit Report. London. RCOG Press.* 2001.
- FIGO Committee for the Ethical Aspects of Human Reproduction and women's Health. Ethical aspects regarding cesarean delivery for non-medical reasons. *Int J Obstet Gynecol* 1999;64:217-21.
- Birchard K. Defence Union suggests new approach to handling litigation costs in Ireland. *Lancet* 1999;354:1710.
- Wagner M. Pursuing the birth machine: the search for appropriate birth technology. *Sydney. ACE Graphics.* 1994.
- Harper MA, Byington RP, Espeland MA et al. Pregnancy related death and health care services. *Am J Obstet Gynecol* 2003; 102:273-8.
- Confidential Enquiries into Maternal Deaths in UK. London. *RCOG Press.* 2001.
- Hawkins H, Koonin IM, Palmer SK et al. Anesthesia-related deaths during obstetric delivery in the United States 1979-90. *Anesthesiology* 1997;86:277-84.
- Bergholt T, Stenderup JK, Vedsted-Jacobsen A et al. Intraoperative surgical complication during cesarean section: an observational study of the incidence and risk factors. *Acta Obstet Gynecol Scand* 2003;82:251-6.
- van Ham M, van Dongen P, Mulder J. Maternal consequences of cesarean section: a retrospective study of intraoperative and postoperative maternal complications of cesarean section during a 10 year period. *Eur J Obstet Gynecol Reprod Biol* 1997;74:1-6.
- Kaemar J, Bhimani L, Boyd M et al. Route of delivery as a risk factor for emergent peripartum hysterectomy: a case-control study. *Obstet Gynecol* 2003;102:141-5.
- Smith JF, Hernandez C, Wax JR. Fetal laceration injury at cesarean delivery. *Obstet Gynecol* 1997;90:344-6.
- Lydon-Rochelle M, Holt VL, Easterling TR et al. First-birth cesarean and placental abruption or previa at second birth. *Obstet Gynecol* 2001;97:765-9.
- Gilliam M, Rosenberg D, Davis F. The likelihood of placenta previa with greater number of cesarean deliveries and higher parity. *Obstet Gynecol* 2002;99:976-80.
- Miller DA, Choller JA, Goodwin TM. Clinical risk factors for placenta previa accreta. *Am J Obstet Gynecol* 1997;177:210-4.
- Zaki Z, Bahar AM, Ali ME et al. Risk factors and morbidity in patients with placenta previa accreta compared to placenta previa non-accreta. *Acta Obstet Gynecol Scand* 1998;77:391-4.
- Catanzarite VA, Lorrain MS, Schrimmer DR et al. Managing placenta previa accreta. *Contemp Obstet Gynecol* 1996;41:66-95.
- Chung CL, Cheng PJ, Liang CC et al. Obstetrical hysterectomy and placenta previa / accreta. Three bladder injury case reports. *Change Gung Med J* 1997;20:44-51.
- Mollison J, Porter M, Campbell D et al. Primary mode of delivery and subsequent pregnancy. *Br J Obstet Gynecol* 2005;112:1061-5.
- Maymon R, Halperin R, Mendlovic S et al. Ectopic pregnancies in cesarean section scars: the 8 year experience of one medical center. *Human Reprod* 2004;19:278-84.
- Wang W, Long W, Yu Q. Complication of cesarean section: pregnancy on the cicatrix of a previous cesarean section. *Chin Med J* 2002;115:242-6.
- Wasfie T, Gomez E, Seon S et al. Abdominal wall endometrioma after cesarean section: a preventable complication. *Int Surg.* 2002;87:175-7.
- Nassar A, Usta I, Finianos A. Spontaneous uterine rupture following intercourse. *Acta Obstet Gynecol Scand* 2004;83:114-5.
- Toh-lick T, Shilpa K, Amina S. Spontaneous uterine rupture following intercourse in a scarred uterus. *J Obstet Gynecol* 2005;25:392.