

## Comparison of Frequency Vaginal and Cesarean Deliveries

\**K Karami*<sup>1</sup>, *M Najafian*<sup>2</sup>, *P Shahri*<sup>1</sup>, *S Faizi*<sup>3</sup>, *Z Noorifard*<sup>4</sup>

<sup>1</sup>*Dept. of Public Health, Health Faculty, Jondishapur University of Medical Sciences, Ahwaz, Iran*

<sup>2</sup>*Dept. of Obstetric and Gynecology, School of Medicine, Jondishapur University of Medical Sciences, Ahwaz, Iran*

<sup>3</sup>*East Health Center, Jondishapur University of Medical Sciences, Ahwaz, Iran*

<sup>4</sup>*Shooshtar Health Center, Shooshtar, Iran*

(Received 12 Apr 2009; accepted 9 Sep 2009)

### Abstract

**Background:** We investigated the rate of vaginal childbirth and Cesarean and its causes in maternity wards of Imam Khomeini Educational Hospital in Ahwaz the capital city of Khuzestan Province and Al- Hadi Hospital in Shoostar as a traditional city.

**Methods:** In this comparative descriptive study data were obtained from medical records of birth deliveries in six months (March to September) in year 2007. Data were analyzed using SPSS software.

**Results:** The results show a total rate of 29% Cesarean and 71% vaginal childbirth in hospitals. The rate of Cesarean in Imam and Al -Hadi Hospitals was 23% and 33%, respectively. The main cause of Cesarean in Imam and Al-Hadi Hospitals was failure of labor progression (35% and 33%, respectively). Most Cesarean s were occurred in an age range of 20-25 yr.

**Conclusion:** Comparing with international acceptable rate (20-22%), Cesarean rate in both hospitals was high. It seems special attention should be made by persons, committees or organizations in charge of community health to child birth practices in both hospitals.

**Keywords:** *Health, Vaginal, Parturition, Cesarean, Mothers, Children, Iran*

### Introduction

The health of mothers and children is an important criterion for developmental evaluation in a country. Their health is interwoven and not only influenced by biological inheritance and individual status, but also the clinical practices, political, socio-economic and cultural factors have an important role in their life (1). Attention to women's health has more commonly been focused on the reproductive process and child bearing. Time of child birth is an important stage of pregnancy which is affected by all these factors. Child birth is commonly natural, but in sake of mothers and children health, may some have Cesarean practice. Cesarean delivery has been performed since ancient cited from Greek and Persian mythology, where, the Cesar of Rome Empire and the Heroes of ancient Iran (Rostam) were born by abdominal incision (2, 3). During the first half of the 16th century, Cesarean delivery was performed only if the mother was dead or dying

(4). The first Cesarean section on alive women took place in 1800 (2)

Some Cesarean sections are elective and may not really be useful for the health of both mothers and children. It seems the Cesarean practice is becoming a modern convention. The worldwide increase in the Cesarean section rate has become a major public health concern. However, Cesarean delivery is a childbirth option to improve prenatal outcome in certain circumstances. Cesarean delivery rates in the United States increased from 4.5% of births in 1965 to 24.7% in 1988 (5). In 2002, more than one-fourth of all births (26.1%) in the United States were Cesarean deliveries (6) while the rates in 1993 and 1995 have been 22.8% and 21.8%, respectively (7). Studies in China show a 2- fold increase in Cesarean section rate in two decades (8). A national study in 19 provinces of Iran in 1994 showed that, the Cesarean rate was about 21% in governmental hospital while the rate was 42% for

non- governmental hospitals (9). Similar data in year 2000 showed an increase Cesarean rate from 27% to 58% for governmental and non-governmental respectively (10). Studies in north of Iran show that the Cesarean delivery section rates in private, educational and governmental hospital were 62.3, 47.1 and 49.7%, respectively (11). In Khuzestan Province, the total rate was 20 to 22% (10). According to reports published by Iran Ministry of Health and Medical Sciences in 2000 in the past 2 decades the rate of Cesarean birth in Iran has risen dramatically. Cesarean delivery procedure remains as a powerful tool of last resort for reducing maternal morbidity and mortality and improving neonatal outcomes in certain clinical circumstances, but reasons for the dramatic increase in the Cesarean delivery open to call into question. Cesarean delivery is associated with child birth complications included malpresentation, excessive fetal overgrowth, multiple gestation, fetal structural anomalies, cephalous pelvic disproportion, failure of labor progression, specific maternal infections include HIV and active HSV (4). Studies in some provinces of Iran show that the main causes of Cesarean sections were cephalo pelvic disproportion, previous Cesarean, fetus distress, and breech presentation respectively (12-14). Main reasons for Cesarean delivery in national studies were previous Cesarean, failure of labor progression, breech presentational and fetus distress (10). A 4-fold increased mortality rate associated with Cesarean delivery was detected in a population-based, case-control study from North Carolina for the 7-year period from 1992 to 1998 (15). A 2-fold increase in maternal mortality with Cesarean delivery also reported in United Kingdom from the late 1990s (16). The most frequent complications related to Cesarean delivery are infection, hemorrhage and blood loss greater than one liter (7.3%-9.2%). Uterine or uterocervical lacerations (4.8%-10.1%) injury to other organs and intra operative surgical complications (12% to 15%) (4, 17, 18). Trauma to the infant is another adverse outcome of Cesarean delivery (19) Cesarean delivery is associated with a 1.8-

fold increased risk of rehospitalization (20). Cesarean delivery clearly places a woman at greater risk of emergent peripartum hysterectomy when compared with vaginal delivery (21). A 2.4-fold increased risk of abruption in a subsequent pregnancy following Cesarean delivery was noted in a Finnish birth registry from 1987 to 1993 (22). The objective of this study was to observe the trend in Cesarean deliveries and determine the reasons for the Cesarean section.

## **Materials and Methods**

In this study, we considered the vaginal and Cesarean rate and its causes in Imam Hospital in Ahwaz and Al- Hadi Hospital in Shooshtar. Both hospitals are specialized governmental, but the Imam Hospital is an educational hospital in Ahwaz, the capital city of Khuzestan province, while Al-Hadi is in Shooshtar as a traditional city in north of Khoozestan. We compared the Cesarean section rates in hospitals with national and international acceptable rates and the most common reasons for Cesarean deliveries in both hospitals. In this comparative descriptive study, data was obtained from medical records of birth deliveries in six months (March to September) in year 2006. The data collected included age at the time of delivery, parity, type of childbirth and Cesarean indications and analyzed using SPSS software version 11.5.

## **Results**

In the duration of six months in year 2006, the total deliveries in both studied hospitals were 3318. The proportion for Imam Hospital was 1989 cases and for Al- Hadi were 1329 cases. The vaginal birth rate in the hospitals was 71% (2359 cases) and Cesarean rate was 29% (959 cases). In Imam hospital 1335 (67%) child births were vaginal and 654 cases (33%) were Cesarean section, while in Al -Hadi Hospital the rates were 1024 (77%) and 305 (23%) respectively. The study showed that most Cesarean sections occurred in their first delivery (Fig.1). A negative significant relationship was found between

gravida and the trend of Cesarean practices ( $P=0.0001$ ). The most common reasons for Cesarean in Imam Hospital were failure of labor progression, Cephalo Pelvic Disproportion (CPD) and Breech presentation. In Al- Hadi Hospital, also, the most common reason for Cesarean sec-

tion was failure of labor progression but in the next levels were previous Cesarean and breech presentation (Table 1). The results showed that most Cesarean s occurred in an age range between 20-25 yr and the least between 15-20 yr, while only one case was more than 45 (Table 2).

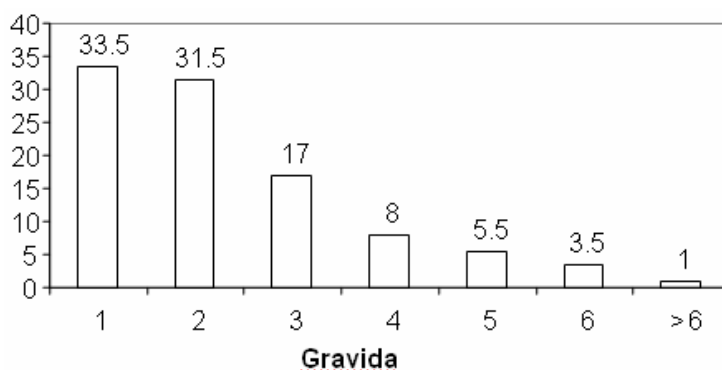


Fig. 1: Gravida and Cesarean Section in hospitals (%)

Table 1: The Cesarean section indications in Imam Khomeini and Al- Hadi Hospitals, Ahwaz, Iran

Reasons	Imam		Al-Hadi		Total	
	n	%	n	%	n	%
Unknown	22	3.4	50	16.4	72	7.5
Elective	32	4.9	11	3.6	43	4.5
Previous Cesarean	43	6.6	85	27.9	128	13.3
Preclampsia	6	0.9	12	3.9	18	1.9
Breech	76	11.6	24	7.9	100	10.4
Multiple	18	2.8	6	2	24	2.5
Diabetic	19	1.4	0	0	9	9
CPD	201	30.7	6	2	207	21.6
Failure Progression	227	34.7	101	33.1	328	34.2
Macrosomia	1	0.2	3	1	4	0.4
Meconium	19	2.9	7	2.3	26	2.7
Total	654	100	305	100	959	100

Table 2: The Cesarean age ranges in Imam Khomeini and Al- Hadi Hospitals, Ahwaz, Iran, March to September 2006

Age Range (yr)	Imam		Al- Hadi		Total	
	n	%	n	%	n	%
15-20	49	7.5	13	4.3	62	6.5
20-25	189	28.9	97	31.8	286	29.8
25-30	191	29.2	81	26.6	272	28.4
30-35	112	17.1	66	21.6	178	18.6
35-40	86	13.1	34	1.11	120	12.5
40-45	27	4.1	13	4.3	40	4.2
<45	0	0	1	3	1	1
Total	654	100	305	100	959	100

## **Discussion**

Delivery by Cesarean section is a potentially life saving procedure for mothers and children in pregnancies. The study showed that the Cesarean rate in both hospitals was high, but the pattern of Cesarean section was different. Prior Cesarean has been the most common indications during two last decades with a rate of 35% (23). Some expert authors believe that vaginal birth after Cesarean may lead to uterine ruptures and hypoxic injury for their babies (20), but others argue that women with one previous Cesarean delivery with a lower transverse uterine incision are appropriate candidate for a trial of labor (24). Some studies not only confirm the plausibility and safety of vaginal birth after delivery but avoid surgical morbidities such as infection, hemorrhage damage to visceral organs iatrogenic prematurity (23).

This study showed that the prior Cesarean rate in Imam Hospital was low, while in Al-Hadi Hospital was still high. It seems that the surgeon and obstetrics in Imam educational Hospital have accepted vaginal birth after Cesarean as a safe delivery. This study also showed a decreasing trend in elective Cesarean rate in both hospitals compared to other national studies (9, 10). Based on the expert authors recommendations related to risks of elective Cesarean delivery at term without specific maternal or fatal indication for both mother and infant (4), this considerable reduction in Imam and Al-Hadi Hospitals shows a widely accepted opinion among surgeons and gynecologists that they could avoid adverse outcome of elective Cesarean delivery. The studies have shown considerable medical and obstetric complications among women delivered by Cesarean (15-25), so the presence of these complications might be considered in national mothers and children health strategies. So we hope that the risk/benefit and indications of Cesarean are discussed carefully by the expert authors and obstetric and gynecologists. This will teach us to provide the best and safest care for mother and children in the time of child-

birth, pains relief, and even discussions related to the alternative practices like delivery by hypnosis. These discussions must be really "mother and child health-oriented" not economic or self-benefit direction. However delivery by Cesarean section is a potentially life saving procedure for fetuses in pregnancies complicated by breech presentation, excessive fetal overgrowth, multiple gestation, fetal structural anomalies, cephalous pelvic disproportion, failure of labor progression, specific maternal infections include HIV and active HSV (4), but some studies in Iran have shown that elective and previous Cesarean are still the most common indications for Cesarean section. In this study in both hospitals compared to other studies (9-11) the elective rate was low, but the previous Cesarean in Al-Hadi was high. Therefore, we have to concentrate on first deliveries as a significant relationship has found between the number of Cesareans and gravida. In year 2000 the previous Cesarean section rate in Imam Hospital was 31% and elective Cesarean rate was 20 % (26), but this study showed a great disparity by decreasing to 7% and 5% respectively. For all this decreasing the whole rate of Cesarean was higher than previous local (16), national (9-10), international studies (6) and even international acceptable rate. However a study in north of Iran has shown that the rate of Cesarean section was two-fold than this study (11). This question needs a documented answer. It seems that one of the factors, which also probably affect the Cesarean section rate in Iran, is that surgeons receive a higher payment for a Cesarean section than for vaginal birth. This could be considered as an important factor for mother and child health strategies in the Ministry of Health. Many women who request Cesarean section believe it is easier for the baby or even for itself and know it as a modern taste. Some also believe that babies delivered by Cesarean section are more intelligent (8).

The Ministry of Health should provide health education programs that inform families about the risks/benefits of elective and previous Cesarean,

specially the purely elective Cesarean or "Cesarean delivery on demand" which is stressed by authors (4, 27) and clearly is a blind observance of modern convention.

### **Acknowledgments**

We wish to express sincere thanks and appreciation to the Research Affair Department for scientific and financial support and the staffs of Imam and Al-Hadi Hospitals for their useful advice and cooperation. The authors declare that they have no conflicts of interest.

### **References**

1. Price P (1994). Maternal and child health care strategies. In: *Health and Development*. Eds, DR Philips, Y Verhasselt. Rutledge, London, pp.138- 155.
2. Aubard Y, Le- Meur Y, Garmdyea MH (1995). History of Cesarean. *Rev Fr Gynecol Obstet*, 90(1): 11.
3. Ferdousi A (1998). *Shahnameh*. The complete poetical work of Ferdousi, Iranian Poet. 4<sup>th</sup> ed. Behzad Publisher. Iran.
4. Doherty EG, Einchenwald EC (2004). Cesarean delivery: emphasis on the neonate. *Clin Obstet Gynecol*, 47(2):332-41.
5. Taffel SM, Placek PJ, Liss T (1987). Trends in the United States Cesarean section rate for the 1980-1985 rise. *Am J Public Health*, 77: 955-61.
6. Hamilton BE, Martin JA, Sutton PD (2003). Births: preliminary data for 2002. Centers for Disease Control and Prevention. *Natl Vital Stat Rep*, 51:1-20.
7. Cunningham F, Macdonald P, Leveno K, Gant N, Gilstrap I (1993). Cesarean section and Cesarean hysterectomy. In: *Williams obstetrics*. Poentice- Hail International, INC, 19<sup>th</sup> ed. Texas, USA, pp. 591-94.
8. Cai W, Marks JS, Chen CH, Zhuang Y, Morris L, Harris JR (1998). Increased Cesarean section rates and emerging patterns of health insurance in Shanghai, China. *Am J Public Health*, 88(5):777-80.
9. Iran Health Ministry, Deputy Treatment (1998). *Obstetric and Gynecologist reports*, 7: 1-36.
10. Badakhsh MH, Alizadeh KH (2000). The study of Cesarean frequencies. *J Med Council*, 18(3):171-4.
11. Borghei NS, Borghei A, Golapoor MJ, Kashani E (2005). A study of related factors on the mode of delivery. *Sci Med J S Uni*, 44: 51-60.
12. Jouafshani, MA (1998). The Cesarean rate in Ghazvin City. *J Med Sci Ghazvin Univ*, 2(6, 7): 27-36.
13. Gouharian V, Maghareh AL (1998). The survey of Cesarean rate section in Central Province. *J Raavard Danesh*, 5: 28-30.
14. Joudati, AR, Yavarikia P (2001). The survey of Cesarean rates in East Azarbiyjan, *Tabriz J Med Sci*, 34 (46):19-24.
15. Harper MA, Byington RP, Espeland MA, Naughton M, Meyer R, Lane K (2003). Pregnancy-related death and health care services. *Am J Obstet Gynecol*, 102: 273-78.
16. Scottish Executive Health Department, Department of Health, Social Service and Public Safety (2001). *Why Mothers Die 1997-1999*, RCOG Press, London.
17. Bergholt T, Stenderup JK, Vedsted-Jakobsen A (2003). Intraoperative surgical complication during Cesarean section: an observational study of the incidence and risk factors. *Alta Obstet Gynecol Scand*, 82:251-6.
18. Van Ham M, van Dongen P, Mulder J (1997). Maternal consequences of caesarean section: a retrospective study of intraoperative and postoperative maternal complications of caesarean section during a 10-year period. *Eur J Obstet Gynecol Reprod Biol*, 74: 1-6.
19. Smith JF, Hernandez C, Wax JR (1997). Fetal laceration injury at Cesarean delivery. *Obstet Gynecol*, 90: 344-46.
20. Lydon-Rochelle M, Holt VL, Martin DP, Easterling TR (2000). Association be-

- tween method of delivery and maternal rehospitalization. *JAMA*, 283:2411-16.
21. Kacmar J, Bhimani L, Boyed M, Shah-Hosseini R, Peipert J (2003). Route of delivery as a risk factor for emergent peripartum hysterectomy: A case-control study. *Obstet Gynecol*, 102(1): 141-45.
  22. Hemminki E, Merilainen J (1996). Long-term effects of Cesarean sections: ectopic pregnancies and placental problems. *Am J Obstet Gynecol*, 174: 1569-74.
  23. Macario A, El-Sayed YY, Druzin M (2004). Cost-Effectiveness of a Trial of Labor after Previous Cesarean Delivery Depends on the A Priori Chance of Success. *Clin Obstet Gynecol*, 47(2):378-85.
  24. Melnikow J, Romano P, Gilbert WM, Schembri M, Keyzer J (2001). Vaginal birth after Cesarean in California. *Obstet Gynecol*, 98:421-6.
  25. Hawkins JL, Koonin LM, Palmer SK, Gibbs CP (1997). Anesthesia-related deaths during obstetric delivery in the United States, 1979-1990. *Anesthesiology*, 86: 277-84.
  26. Karami K, Dashtbani F, Davaran Z (2000). Cesarean section rate in Imam Hospital. Department of Health Services, health report: 1-12.
  27. Zelop C, Heffener LJ (2004). The Downside of Cesarean Delivery: Short- and Long-Term Complications. *Clin Obstet and Gynecol*, 47(2): 386-93.