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Trends in Modes of Delivery in Siriraj Hospital

Vitaya Titapant, M.D., Nisarat Phithakwatchara, M.D.

Department of Obstetrics and Gynecology, Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok 10700, Thailand.

ABSTRACT

Objective : To determine the changing of trend in methods of delivery in a university hospital, the correlation among each method of delivery as well as the correlation of the cesarean section rates and the perinatal mortality rates.

Methods : The medical records of birth in Siriraj Hospital during 1979-2006 were collected and analyzed. The methods of delivery from these data were grouped and categorizes as following : vaginal delivery, cesarean section, forceps extraction, vacuum extraction, vaginal breech delivery and others. Each method of delivery was studied separately in detail for time and accordingly trend and comparatively to the others to find interaction among them. The changing of trend of perinatal mortality rates were also demonstrated to identify the correlation with the cesarean section rate.

Results : There were totally 442,635 births for this study. It was found that the percentage of vaginal delivery was decreased from 82.35 % in 1979 to 58.44 % in 2006 while the cesarean section rates was increased steadily from 7.06% in 1979 to 37.77 % in 2006. The other methods of delivery such as forceps extraction, vacuum extraction and vaginal breech delivery do not play significant roles in this changing trend since they have only small proportions ranging from about 2-5% of all deliveries. In the view of perinatal mortality rate , it continuously declined and has been less than 10% in the last 10 years.

Conclusion : Regarding to 28-year review, it is clearly established that methods of delivery are now changing. Cesarean section rate rises steadily with unpromising sign of stabilization and is now far beyond the rate suggested by WHO. It directly effects the downward trend of vaginal delivery and also may be to the other methods of delivery such as vaginal breech delivery, forceps extraction and vacuum extraction, approaching the extinction. This study found no significant correlation between the increasing cesarean rates and the perinatal mortality rates.

Keywords: Breech assisting; cesarean delivery; forceps extraction; modes of delivery; normal vaginal delivery; perinatal mortality rate; vacuum extraction

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Delivery of the fetus is the normal physiological process of human beings. In the past, this process had the high morbidity and mortality rate, causing enormous losses to human prosperity. Nowadays, as the medical technology has rapidly improved, several techniques have been developed to reduce the complications of delivery. Cesarean delivery was once considered as a major operation for the high risk pregnancy only, but now it is the safe operation with few complications.[1,2] This may lead to the increased cesarean delivery rate in many countries including Thailand.

For more than one hundred years, Siriraj Hospital, one of the excellent medical centers in Thailand, has provided medical care for people without discrimination and nearly half of them are obstetric patients. If the proportion of modes of delivery is changed, there will be a great impact to the medical care given to the patients especially in the aspect of the cost-benefit.

This study was designed to demonstrate the trend in modes of delivery in Siriraj Hospital during the past 28 years and to find out the reasons and the problems of this trend for the rationale and excellence in obstetric care in the future.

MATERIALS AND METHODS

Data of the pregnant women, delivering in Siriraj Hospital from the year 1979 to 2006, were collected. From these, modes of delivery were stratified to six categories as normal vaginal delivery, cesarean delivery, forceps extraction, vacuum extraction, breech assisting, and others. Each mode was analyzed for the time trend in details and comparatively to others for the relation changed among them. The changing of trend of perinatal mortality rates were also demonstrated to identify the evrrelation with the eesarean sectionrater

Correspondence to: Vitaya Titapant
E-mail: sivtt@mahidol.ac.th

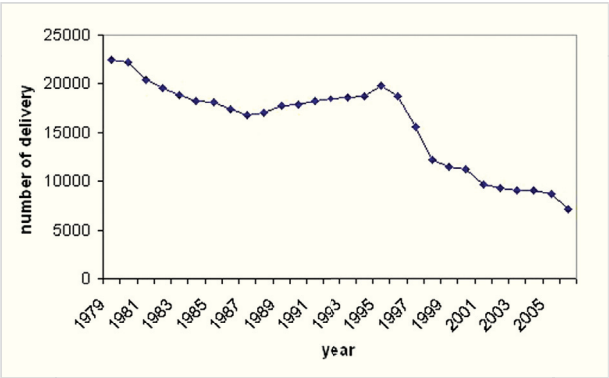


Fig 1. The total number of pregnant women delivering in Siriraj Hospital in the year 1979-2006

RESULTS

From the year 1979 to 2006, there had been totally 442,635 births in Siriraj Hospital. The total number of deliveries in each year has been decreasing, as shown in Fig 1. In all modes of delivery, the two major modes were normal vaginal and cesarean delivery. The forceps extraction, vacuum extraction and breech assisting were just a minor proportion of deliveries in Siriraj Hospital as shown in Fig 2. The percentage of normal vaginal delivery steadily declined from 82.35% to 58.44% in this 28-year period. The cesarean delivery rate evidently propagated more than three times during 28 years from 7.06% to 37.7%. As shown in Fig 2, in the year 1987-1991, there was a plateau in the rate of cesarean delivery about 15% for each year. Subsequently, it apparently increased to a higher rate of 37.7%.

On average, the forceps extraction had a role in delivery only 2%. Since the year 1981, the rate of forceps extraction had been rising and reached the peak in the year 1988. Then it swiftly decreased to 0.16% in the year 2006 as shown in Fig 3.

Like the forceps extraction rate, the trend of the vacuum extraction was downward from 5.26% to 3.29% and also that of breech assisting, which decreased from 3.45% to 0.34%. For other modes of delivery, such as destructive operations for delivery, they have not been performed anymore in the last 10 years.

During this 28-year interval, the perinatal mortality rate gradually declined and has recently been no more than 10% as shown in Fig 4.

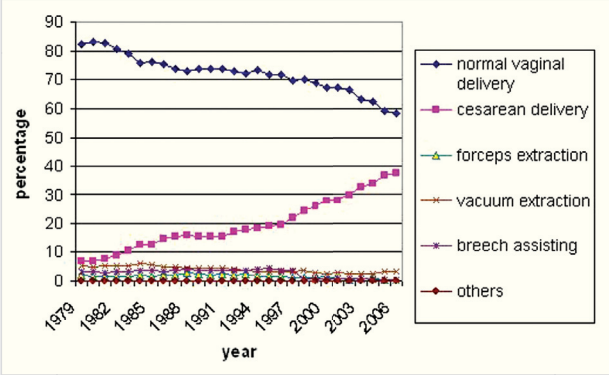


Fig 2. The percentage of each mode of delivery in the year 1979-2006

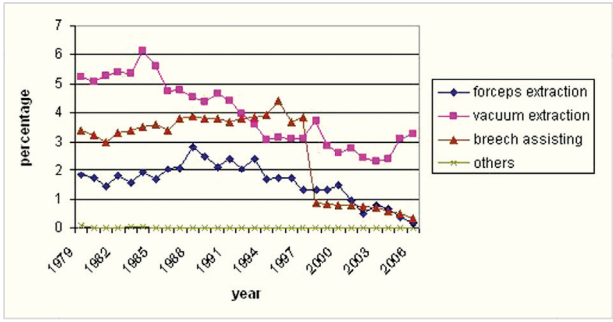


Fig 3. The percentage of each mode of operative vaginal delivery in the year 1979-2006

DISCUSSION

From this review, it has been clearly established that the proportion of each mode of delivery has been altered. In Siriraj Hospital, there was a 30% increase in cesarean delivery over 28 years, which mirrored to the downward trend of normal vaginal delivery. Other modes of delivery did not play a significant role in decreasing the rate of normal vaginal delivery since they were only a small proportion as compared to the cesarean delivery rate.

The increasing cesarean delivery is a trend observed worldwide.[3] The World Health Organization (WHO) has published recommendations on birth care. One of those has mentioned that there is no justification in any specific geographic region to have more than 10-15% of cesarean birth.[4] The rate above this seems to do more harm. As previously described, the cesarean delivery rate in Siriraj Hospital has increased and now it is far beyond the rate suggested by the WHO. It is so interesting that this increasing rate is quite close to the rate in other general hospitals in Thailand.[5]

Comparing to normal vaginal delivery, cesarean delivery has more morbidity and mortality in both maternal and neonatal aspects. The length of hospital stay and the cost of cesarean delivery are also much more than those of normal vaginal delivery.[6] Therefore, this rapidly increasing cesarean delivery has concerned both obstetricians and the general public. Several studies have tried to explain the reasons for this changing rate.

The four most common indications for cesarean delivery are previous cesarean delivery, dystocia, fetal distress and breech presentation.[7] The American College of Obstetrics and Gynecology (ACOG) 1999 has recommended not to discourage a woman, who has two or more previous cesarean deliveries with low transverse uterine incisions and wished to plan a vaginal birth after cesarean (VBAC),

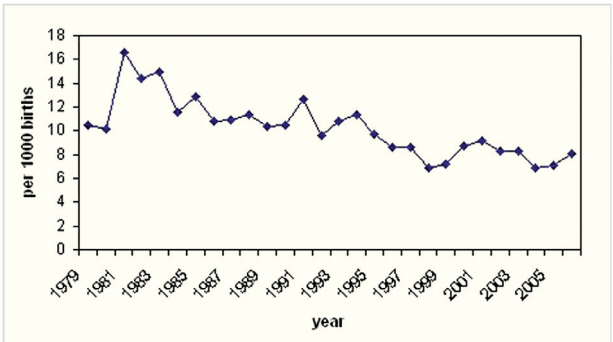


Fig 4. The perinatal mortality rate in the year 1979-2006

from doing so in the absence of any contraindications.[8] A previous survey found that many women with previous cesarean did not have VBAC although they would like it. That was because health care providers did not offer this choice of vaginal delivery. For the same reason, only a few women, whose fetus had breech presentation, had been offered the option to plan a vaginal delivery. That may be why the rate of breech assisting has declined.[9] Some studies suggested that the more careful diagnosis and management of dystocia, the less increase in cesarean delivery. Some interventions during labor, such as labor induction and continuous fetal heart rate monitoring, may have an influence on the rising cesarean delivery rate.[10,11]

Some non-medical factors may affect the cesarean delivery rate including casual attitudes about cesarean delivery, convenience of the patient or provider, or a provider's fear of legal claims.[12,13] However, the definite reasons have not been discovered yet.

The increasing cesarean delivery has also affected others modes of delivery, such as forceps extraction, vacuum extraction, and breech assisting. The operative vaginal delivery has obviously declined. Siriraj Hospital, one of the residency training centers in Thailand, has a declined rate in forceps use, reflecting the reduction in training in the use of forceps for vaginal delivery. There are many causative factors contributing to the decrease in the use of forceps. Several studies recommended vacuum extractors to be the instrument of choice.[14] The forceps extraction has limitations in some situations. The forceps should not be used in rotational delivery more than 45 degrees and many obstetricians prefer to use vacuum extractors or cesarean section.[15] Forceps extraction may be harmful when performed by the untrained or inexperienced obstetrician. In the hands of the experienced obstetricians, forceps delivery may have advantages over cesarean delivery in short and long term health benefits.[14-17]

As the new technology and standard medical care have developed, nowadays the destructive operation assisting for vaginal delivery has not been reported.

While the cesarean rate was rising, the overall perinatal mortality rate in each year did not tend to increase accordingly, as mentioned by the WHO.[4] That was probably not only due to the direct relationship between the cesarean section rate and the perinatal mortality rate, but may be also due to the improvement in obstetric and neonatal care, as well as the decrease in operative vaginal delivery.

At present, there is insufficient evidence to conclude which mode of delivery is better and safer for both the pregnant woman and the neonate. Nevertheless, the preference of cesarean delivery has increased worldwide and more than that recommended by the WHO. Further studies are required to survey the associated factors and find out the preventive approach to reduce the cesarean delivery.

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