
OBSTETRICS

Umbilical Cord Prolapse and Perinatal Outcomes

Jongrak Thepsuwan MD,
Apichart Chittacharoen MD.

Department of Obstetrics and Gynaecology, Faculty of Medicine, Ramathibodi Hospital, Mahidol University, Bangkok 10400, Thailand

ABSTRACT

Objective: To study the prevalence and perinatal outcomes of pregnancy with umbilical cord prolapse.

Study design: Retrospective descriptive study

Subjects: The equal or more than 24 weeks gestational age pregnant women with umbilical cord prolapse who delivered at Ramathibodi Hospital from 1 January 1998 to 31 December 2007.

Materials and methods: Maternal and fetal data from medical records of umbilical cord prolapse cases were reviewed for parity, age, gestational age, fetal presentation, status of membranes, interval from diagnosis to delivery, modes of delivery, fetal weight and Apgar scores, then the data were analyzed.

Main outcomes: Prevalence of umbilical cord prolapse, severe birth asphyxia (Apgar scores at 1 minute ≤ 3) and perinatal mortality.

Results: There were 42 cases of umbilical cord prolapse from 25,707 deliveries (prevalence 0.16%). Nine fetuses (21.4%) were severe birth asphyxia and six fetuses (14.2%) die. The perinatal mortality was 0.2 per 1,000 live births. The mean interval from diagnosis to delivery was 25.1 ± 8.5 minutes.

Conclusion: The prevalence of umbilical cord prolapse was 0.16%, the perinatal outcomes demonstrated by the severe birth asphyxia was 21.4% and the perinatal mortality was 0.2 per 1,000 live births.

Keywords: umbilical cord prolapse, severe birth asphyxia, perinatal mortality

Introduction

Umbilical cord prolapse was the rare obstetric emergency but high perinatal morbidity and mortality. The reported prevalence varies between 0.1 and 0.6%. The perinatal mortality ranged between 32 and 47%.⁽¹⁻⁵⁾

The last study in Thailand was in the year 1987 by Israngura et al. The prevalence of umbilical cord prolapse was 0.08% or 1 in 1,194 births, eleven cases

(39%) were delivered with birth asphyxia and the perinatal mortality was 7.1%.⁽⁶⁾

For the effective preventional strategy, the knowledge about current status was important.

The purposes of this study were to determine the prevalence and perinatal outcomes of pregnancy with umbilical cord prolapse. The institute can use them as the basic data for the further study to improve the perinatal outcomes of pregnancy with umbilical cord

prolapse.

Materials and Methods

This was a retrospective descriptive study of equal or more than 24 weeks gestational age pregnant women with evidence of umbilical cord prolapse who delivered at Ramathibodi Hospital from 1 January 1998 to 31 December 2007. There were 25,707 deliveries. The pregnant women with major fetal anomaly (the anomaly which by themselves effected to severe birth asphyxia and early neonatal death) e.g. heart, lung or brain diseases were excluded from this study. After the research was approved by the Ethics Committee on Human Rights Related to Researches Involving Human Subjects, Faculty of Medicine Ramathibodi Hospital, Mahidol University, the maternal and fetal medical records of umbilical cord prolapse cases were reviewed for parity, age, gestational age, fetal presentation, interval from diagnosis to delivery, status of membranes, mode of delivery, baby weight and Apgar scores. Then the data was analyzed for prevalence and perinatal outcomes. Because of the limitation of the retrospective data, only some available perinatal outcomes could be studied in this research such as rates of severe birth asphyxia (Apgar scores at 1 minute \leq 3) and perinatal mortality.

Results

Prevalence

There were 42 cases of umbilical cord prolapse with the prevalence of 0.16% or 1.6 in 1,000 births. Four cases occurred before admission and thirty-eight cases occurred after admission.

Table 1. Clinical demographic data (n=42)

Characteristics	Data
Age (y) (mean \pm SD, yr)	34.2 \pm 5.4
Multiparous	23(54.8%)
Gestational age (mean \pm SD, wk)	37 \pm 2.4
ARM	22(52.4%)
Vertex presentation	34(80.9%)
Birth weight (mean \pm SD, g)	2,850 \pm 150

ARM: Artificial ruptured of membranes

Clinical demographic data

The mean maternal age was 34 \pm 5.4 years. The multiparity was 55% of all umbilical cord prolapse cases. The mean gestational age was 37 \pm 2.1 weeks. Almost cases were vertex presentation(81%) and artificial ruptured of membranes(52%) were done. The mean birth weight was 2,850 \pm 150 grams (Table 1)

Perinatal outcomes

The overall perinatal outcomes of pregnancy complicated with umbilical cord prolapse, were severe birth asphyxia in 21.4% fetal death in 14.3%. The perinatal mortality was 0.2 per 1,000 live births.

Three babies complicated with umbilical cord prolapse died before admission, 2 died during labour and one at early neonatal periods. 64.3% of cases had no severe birth asphyxia.

Table 2 showed the perinatal outcomes in relation to interval from diagnosis to delivery. The mean interval from diagnosis to delivery was 25.1 \pm 8.5 minutes. The umbilical cord prolapse cases with interval from diagnosis to delivery of more than 45 minutes, all babies died. The group of interval of 31 to 45 minutes was related with severe birth asphyxia (Apgar scores at 1 minute \leq 3). The shorter interval of less than 15 minutes, 64.3% of babies born without severe birth asphyxia.

Table 3 showed the perinatal outcomes in relation to mode of delivery. About seventy six percent of the cases were delivered by emergency cesarean section and 78.1% had no severe birth asphyxia comparing with 4.8% in vaginal operative delivery.

Table 2. Perinatal outcomes of pregnancy with umbilical cord prolapse in relation to interval from diagnosis to delivery (n=42)

Fetal status	Interval from diagnosis to delivery (min)			
	< 15	15-30	31-45	> 45
Death before admission	-	-	-	3
Death during labor	-	1	-	1
Early neonatal death	-	-	1	-
Severe birth asphyxia	2	1	6	-
No severe birth asphyxia	27	-	-	-
Total (%)	29(69.0)	2(4.8)	7(16.7)	4(9.5)

Table 3. Perinatal outcomes of pregnancy with umbilical cord prolapse in relation to modes of delivery (n=42)

Fetal status	Mode of delivery			
	NL	C/S	F/E,V/E	BE
Death before admission	3	-	-	-
Death during labor	1	1	-	-
Early neonatal death	-	1	-	-
Severe birth asphyxia	-	5	2	2
No severe birth asphyxia	-	25	2	-
Total (%)	4(9.5)	32(76.2)	4(9.5)	2(4.8)

NL=spontaneous vertex delivery, C/S=emergency cesarean delivery, F/E,V/E =forceps/vacuum extraction, BE=breech extraction

Discussion

Umbilical cord prolapse is an infrequent obstetric complication that usually needs emergent delivery and associated with high perinatal mortality (32-47%).⁽⁷⁻⁹⁾

In the present study the prevalence of this condition was 0.16 percent of total delivery. The severe birth asphyxia cases were 21 percent and the perinatal mortality was 0.2 per 1,000 live births. The result was similar to the previous study of Israngura et al. at Ramathibodi Hospital in 1987.⁽⁶⁾ Although the prevalence of umbilical cord prolapse was still low but the rates of severe birth asphyxia and perinatal mortality were high. It was possible that in Ramathibodi hospital the management process of umbilical cord prolapse was not changed in the many year ago, almost of umbilical cord

prolapse cases were non breech presentation (81 %) and occurred in hospital, some cases delayed in detection which all of these reflected the perinatal outcomes may be related with the process of intrapartum management. So the prevalence and severity of the cases was still similar to the previous study.

The mean interval from diagnosis to delivery was 25.1±8.5 minutes, almost of this time was used for the preparation process for delivery and delayed in detection of umbilical cord prolapse. Concerning the interval from diagnosis to delivery, this length was associated with perinatal outcomes: severe birth asphyxia and fetal death. The interval of less than 15 minutes predicted good neonatal outcomes

Some cesarean section fetuses were dead during

surgery (Table 2,3), from the detail of the maternal and fetal medical records of umbilical cord prolapse cases, it was because the umbilical cord prolapse had been occurred for a long time before admission and also the preterm effect. Concerning the mode of delivery, cesarean section was still benefit for the fetus if it could be performed quickly.

Comparison to the previous study, the strength of this research was the larger sample size and longer study period. The limitation of this study were that we did not explor other risk factors of umbilical cord prolapse because of the incomplete medical records such as in many cases, the detail about cervical dilatation and station usually were not recorded while the umbilical cord was detected, which are always the weak point of the retrospective study.⁽¹⁰⁾

From the results of this study, the institute could be known about the current status of umbilical cord prolapse and used them for the further study. Future research should determine whether this length was statistical significant related to the perinatal outcomes and should study about the other risk factors in case control study design.

Conclusion

The prevalence of umbilical cord prolapse was 0.16%, the perinatal outcomes demonstrated by the severe birth asphyxia was 21.4% and the perinatal mortality was 0.2 per 1,000 live births.

Acknowledgements

The authors would like to thank all of the faculty members of the Department of Obstetrics and Gynaecology, Faculty of Medicine Ramathibodi Hospital for their active cooperation in this study.

References

1. Enakpene CA, Omigbodun AO, Arowojolu AO. Perinatal mortality following umbilical cord prolapse. *Int J Gynecol Obstet* 2006; 95: 44-5.
2. Lin MG. Umbilical cord prolapse. *Obstet Gynecol Surv* 2006; 61: 269-77.
3. Nizard J, Cromi A, Molendijk H, Arabin B. Neonatal outcome following prolonged umbilical cord prolapse in preterm premature rupture of membranes. *BJOG* 2005; 112: 833-6.
4. Kahana B, Sheiner E, Levy A, Lazer S, Mazor M. Umbilical cord prolapse and perinatal outcomes. *Int J Gynecol Obstet* 2004; 84: 127-32.
5. Qureshi NS, Taylor DJ, Tomlinson AJ. Umbilical cord prolapse. *Int J Gynecol Obstet* 2004; 86: 29-30.
6. Israngura Na Ayudhya N. Prolapse of umbilical cord: a 5 year review in Ramathibodi Hospital. *J Med Assoc Thai* 1987; 45: 21-5.
7. Dilbaz B, Ozturkoglu E, Dilbaz S, Ozturk N, Sivaslioglu AA, Haberal A. Risk factors and perinatal outcomes associated with umbilical cord prolapse. *Arch Gynecol Obstet* 2006; 274: 104-7.
8. Faiz SA, Habib FA, Sporrang BG, Khalil NA. Results of delivery in umbilical cord prolapse. *Saudi Med J* 2003; 24: 754-7.
9. Uygur D, Kis S, Tuncer R, Ozcan FS, Erkaya S. Risk factors and infant outcomes associated with umbilical cord prolapse. *Int J Gynecol Obstet* 2002; 78: 127-30.
10. Woo JSK, Ngan YS, Ma H. Prolapse and presentation of the umbilical cord. *Aust NZ J Obstet Gynecol* 1983; 23: 142-5.

ภาวะสายสะดือย้อย และผลการคลอดของทารก

จรงค์ เทพสุวรรณ, อภิชาติ จิตต์เจริญ

วัตถุประสงค์ : เพื่อศึกษาความชุกของการเกิดภาวะสายสะดือย้อย และผลการคลอดของทารก ที่มีภาวะสายสะดือย้อย

รูปแบบการศึกษา : การศึกษาย้อนหลังเชิงพรรณนา

กลุ่มตัวอย่าง : มารดาอายุครรภ์มากกว่าหรือเท่ากับ 24 สัปดาห์ที่คลอดทารกมีภาวะสายสะดือย้อยในโรงพยาบาลรามธิบดีตั้งแต่วันที่ 1 มกราคม 2541 ถึง วันที่ 31 ธันวาคม 2550

วัสดุและวิธีการ : ศึกษาข้อมูลของมารดาและทารกที่มีภาวะสายสะดือย้อยจากเวชระเบียน ได้แก่ จำนวนครั้งของการตั้งครรภ์, อายุ, อายุครรภ์, ส่วนน้ำของทารก, สถานะของถุงน้ำคร่ำ, ระยะเวลาระหว่างการวินิจฉัยภาวะสายสะดือย้อยและการคลอด, วิธีการคลอด, น้ำหนักแรกคลอดของทารก และคะแนนแอปการ์ และบันทึกข้อมูลลงในแบบบันทึกข้อมูล นำข้อมูลมาวิเคราะห์ ประมวลผล

ตัววัดที่สำคัญ : ความชุกของการเกิดภาวะสายสะดือย้อย อัตราการเกิดภาวะขาดออกซิเจนชนิดรุนแรง และอัตราการตายปริกำเนิดของทารกที่มีภาวะสายสะดือย้อย

ผลการศึกษา : พบภาวะสายสะดือย้อย จำนวน 42 ราย จำนวนการคลอดทั้งหมด 25,707 ราย ความชุกของการเกิดภาวะสายสะดือย้อยร้อยละ 0.16 ทารกมีภาวะขาดออกซิเจนชนิดรุนแรงร้อยละ 21.4 ของทารกที่มีภาวะสายสะดือย้อยทั้งหมด ทารกมีอัตราการตายปริกำเนิดร้อยละ 0.02 และพบระยะเวลาระหว่างการวินิจฉัยภาวะสายสะดือย้อยและการคลอดเฉลี่ย 25.1 ± 8.5 นาที

สรุป : ความชุกของการเกิดภาวะสายสะดือย้อยมีค่าร้อยละ 0.16 อัตราการเกิดภาวะขาดออกซิเจนชนิดรุนแรงร้อยละ 21.4 ของทารกที่มีภาวะสายสะดือย้อยทั้งหมด และอัตราการตายปริกำเนิดมีค่าร้อยละ 0.02

คำสำคัญ : ภาวะสายสะดือย้อย, ภาวะขาดออกซิเจนชนิดรุนแรงของทารก, อัตราการตายปริกำเนิด
