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Comparison of Pregnancy Outcome between Elective and Emergency McDonald Cervical Cerclage in Cervical Insufficiency: 3-Year Experience (2006-2008) in Siriraj Hospital

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ABSTRACT

Objective: To compare the pregnancy outcome between elective and emergency McDonald cervical cerclage in pregnant women with history or evidence of recurrent pregnancy loss by serial transvaginal ultrasound.

Materials and Methods: During January 2006 and December 2008 (3 years), 14 pregnant women were included in the present study. All pregnant women were diagnosed of cervical insufficiency with history of recurrent pregnancy loss during 20-24 weeks of gestation. The first group included 6 pregnant women whom had been performed cervical cerclage during 14-16 weeks of gestation. The second group, included 8 pregnant women whom had been performed cervical cerclage after 16 weeks of gestation with the reasons of late visit and cervical length from serial transvaginal ultrasound lesser than 30 mm. Gestational age of delivery, complication and neonatal Apgar score were recorded.

Results: All were performed McDonald cerclage. There was no statistical significance in maternal age, numbers of gravida, parity and abortion. There were significant differences in gestational age of delivery, mean Apgar score and mean neonatal birth weight between both groups. The complication of delivery in both groups was PPROM while placental abruption, PIH and preterm labour were founded in emergency cerclage group.

Conclusion: The elective cervical cerclage performed during 14-16 weeks of gestation can prolong pregnancy longer and had better neonatal outcome compared with emergency cerclage performed after 16 weeks of gestation.

Keywords: cervical insufficiency (cervical incompetence), cervical cerclage, McDonald operation

Introduction

Cervical insufficiency (formerly termed cervical incompetence) referred to painless cervical changes occurred in the second trimester and resulted in recurrent pregnancy loss. Cervical insufficiency had many causes, both congenital and acquired.[1] Multiple

factors including structural, histological, hormonal and inflammatory causes act together and lead to pregnancy loss or preterm delivery. Women suspected of cervical insufficiency are generally treated with elective cerclage or closely monitored, with placement of an emergency cerclage if indicated. The objective of the present study was to determine the pregnancy outcome between elective and emergency cervical cerclage.

Material and method

The study was approved by the Ethics Committee at Faculty of Medicine Siriraj Hospital, Mahidol University.

The present study was designed as a cross-sectional retrospective study. Fourteen pregnant women were included. All pregnant women were diagnosed of cervical insufficiency with history of recurrent pregnancy loss during 20-24 weeks of gestation between January 2006 and December 2008 were recruited. The elective cervical cerclage group included 6 pregnant women who underwent cervical cerclage during 14-16 weeks of gestation. The emergency cervical cerclage group included 8 pregnant women who underwent cervical cerclage after 16 weeks of gestation with the reasons of late visit after 16 weeks of gestation or cervical length from serial transvaginal ultrasound lesser than 30 mm. Gestational age of delivery, neonatal Apgar score and complications were recorded.

Statistical analysis

Statistical analysis was undertaken using SPSS for Windows version 13.0. Data was analyzed by using descriptive statistics and mean and standard deviation. Using independent unpaired T-test compare between January 2006 and December 2008 were recruited the elective cervical cerclage group and emergency cervical cerclage group for statistic significance ($p<0.05$).

Results

A total of 14 pregnant women were enrolled in the present study. Elective cervical cerclage was performed in 6 pregnant women while emergency cervical cerclage was performed in 8 pregnant women. All were performed by McDonald cerclage. Maternal age, numbers of gravida, parity and abortion and gestational age to performed cervical cerclage were calculated for the estimated means and standard deviations (SDs). The gestational age of delivery, mean Apgar score and mean neonatal birth weight were also calculated for statistical significance. The complication of delivery were also recorded.

For 6 pregnant women in elective cervical cerclage group, the mean maternal age was 32.5±4.2 (range 29-39) years old. The average number of maternal gravida, parity and abortion were about 4.0±1.5 (range 2-6), 0.2±0.4 (range 0-1) and 2.8±1.5 (range 1-5), respectively (Table 1). Elective cervical cerclage was performed at the mean gestational age of 14.8±1.0 weeks of gestation ranging from 14 for to 16. Range of gestational age at delivery was 26 to 38 weeks (35.2±4.6) and mean Apgar score at 1 and 5 minutes of 8.2±1.8 (5-10) and 9.2±1.6 (6-10), respectively (Table 2).

For 8 pregnant women in emergency cervical cerclage group, the mean maternal age was 34.0±1.1 (range 28-38) years old. The average number of maternal gravida, parity and abortion were about 3.8±1.3 (range 2-6), 0.4±0.5 (range 0-1) and 2.3±1.2 (range 1-5), respectively (Table 1). Emergency cervical cerclage was performed in the mean gestational age of 23.0±2.2 weeks of gestation ranging from 19 from 26). Mean gestational age of delivery was 28.7±3.4 weeks (range 25-33) and mean Apgar score at 1 and 5 minutes of 5.1±2.0 (3-7) and 6.9±1.8 (5-10), respectively. The mean neonatal birth weight in elective and emergency cerclage were 2,583±968 and 1,016±372 grams, respectively (Table 2).

In elective cervical cerclage group, there was one patient delivered at 26 weeks of gestation due to preterm premature rupture of membrane (PPROM) while in emergency cervical cerclage group, all pregnant women had preterm delivery after PPROM, placental abruption, pregnancy-induced hypertension with breech presentation and failed inhibition of uterine contraction. Both group had mostly normal delivery while cesarean section due to breech presentation was found in 2 and 1 cases in elective and emergency cervical cerclage group, respectively (Table 3).

Table 1. Demographic data of patient in elective and emergency cerclage groups.

Demographic Data	Elective cervical cerclage at GA ≤ 16 weeks (n=6)	Emergency cervical cerclage at GA > 16 weeks (n=8)	p-value
Number of patients	6	8	p > 0.05
Material age (years)	32.5 ± 4.2 (29 -39)	34.0 ± 1.1 (28 -38)	p > 0.05
Maternal			
Gravida	4.0 ± 1.5 (2-6)	3.8 ± 1.3 (2-6)	p > 0.05
Parity	0.2 ± 0.4 (0-1)	0.4 ± 0.5 (0-1)	p > 0.05
Abortion	2.8 ± 1.5 (1-5)	2.3 ± 1.2 (1-5)	p > 0.05

Table 2. Gestational age, mean neonatal birth weight and APGAR score between elective and emergency cerclage groups.

Studied Data	Elective cervical cerclage at GA ≤ 16 weeks (n=6)	Emergency cervical cerclage at GA > 16 weeks (n=8)	p-value
Gestational age of delivery (weeks)	35.2 ± 4.6 (26 -38)	28.7 ± 3.4 (25-33)	p < 0.05
Mean neonatal birth weight (grams)	2,583 ± 968	1,016 ± 372	p < 0.05
Mean Apgar score			
- at 1 min	8.2 ± 1.8	5.1 ± 2.0	p < 0.05
- at 5 min	9.2 ± 1.6	6.9 ± 1.8	p < 0.05

Table 3. Mode of delivery and complications between elective and emergency cerclage groups.

Studied Data	Elective cervical cerclage at GA ≤ 16 weeks (n=6)	Emergency cervical cerclage at GA > 16 weeks (n=8)	p-value
Mode of delivery			
- normal labor	4	7	p > 0.05
- cesarean section (indication of breech presentation)	2	1	p > 0.05
Complications of pregnancy	PPROM* (1)	PPROM* (4) Placental abruption (2) PIH* (1) Preterm labour (1)	

*PPROM = preterm premature rupture of membrane
*PIH = pregnancy induced hypertension

Discussion

Cervical insufficiency is a medical condition in which a pregnant woman's cervix begins to dilate and efface prior to the pregnancy has reached term[2]. Cervical insufficiency may cause recurrent pregnancy loss[3] or preterm birth during the second and third trimesters. In a woman with cervical insufficiency, dilatation and effacement of the cervix occur without pain or uterine contraction. Cervical insufficiency occurs because of weakness of the cervix, which is resulted from increasing pressure in the uterus as pregnancy progresses. The cervical changes in preparation for delivery begin as early as the second trimester[4].

Cervical cerclage is used as the treatment for cervical insufficiency, which performed for a woman who with history of one or more recurrent pregnancy loss in during in the second trimester[5]. The treatment consists of a strong suture being inserted into and around the cervix early in the pregnancy, usually between 14 to 16 weeks, and then removed towards the end of the pregnancy when the highest risk of recurrent pregnancy loss has passed. There are three types of cerclage including McDonald cerclage,[6] Shirodkar cerclage[7] and abdominal cerclage[8]. The most common techniques for cerclage were first described by McDonald and Shirodkar. In the present study, only McDonald cerclage was performed because of it simplicity.

An elective cerclage increases the viable birth rate from 10-30% before the procedure to 70-90% after the procedure[9]. An elective (prophylactic or history-indicated) cerclage is usually performed at the end of the first trimester (14 to 16 weeks of gestation) to prevent recurrence of early preterm delivery[10]. An emergency cerclage at 24 to 28 weeks of gestation, a time of high neonatal morbidity and mortality, is still discussed. Cerclage after the fetal viability has been reached (generally regarded as 24-28 weeks of gestation) should be avoided because the procedure may lead to accidental rupture of the fetal membranes causing preterm delivery. This results in high neonatal morbidity and mortality. Each case must be individualized, weighing the risks of the procedure against the likely outcome with expectant management.

In the present study, elective cerclage results in good neonatal outcome with gestational age of delivery between 26 and 38 weeks which confirmed the previous study[6,7,9,10].. No evidence of neonatal asphyxia was detected. While emergency cerclage results in poor neonatal outcome with gestational age of delivery about 25-33 weeks. The mean fetal birth weight in emergency cerclage was also lower than those in the elective cerclage group with statistical significance. The results in the present study showed that elective cerclage had better outcome than the emergency cerclage. If the history of recurrent pregnancy loss during second trimester was confirmed, elective cerclage shoulde be considered instead of awaiting for serial ultrasound until the cervix was shortened.

A retrospective cohort study also presented that an elective cerclage because of a history of cervical insufficiency or sonographic cervical shortening found no improvement in outcome with placement of two stitches (mean two rows of suture placement) instead of one[11].

From the often present study, the most common complication of pregnancy was PPROM which was found in emergency cerclage more often than elective cerclage. This result confirmed the previous studies which can be described from the advanced cervical dilatation or prolapsed fetal membranes. This complication has been reported in up to 65% of emergency cerclage[10,12].

Conclusion

This retrospective study reassured that the elective cerclage has better outcome than emergency cerclage, therefore elective cerclage should be performed in the indicated cases. The limitation of its usefulness is the difficulty in diagnosis of cervical insufficiency and late antenatal care. Future large studies will be needed to assess the efficacy of both types of cerclage.

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เปรียบเทียบผลลัพธ์ของการตั้งครรภ์ระหว่างการเย็บผูกปากมดลูกด้วยวิธี McDonald แบบเตรียมไว้ล่วงหน้าและแบบฉุกเฉินในสตรีตั้งครรภ์ที่มีภาวะปากมดลูกไม่แข็งแรง : การศึกษา 3 ปี (พ.ศ. 2549-2551) ในโรงพยาบาลศิริราช

สายฝน ชวาลไพบูลย์, อนุวัฒน์ สุตัณฑวิบูลย์

วัตถุประสงค์ : เพื่อเปรียบเทียบผลลัพธ์ของการตั้งครรภ์ระหว่างการเย็บผูกปากมดลูกด้วยวิธี McDonald แบบเตรียมไว้ล่วงหน้าและแบบฉุกเฉินในสตรีตั้งครรภ์ที่มีประวัติหรือความเสี่ยงของการแท้งบุตรโดยการตรวจอัลตร้าซาวด์เพื่อดูปากมดลูกเป็นระยะ

วัสดุและวิธีการ : ทำการศึกษาสตรีตั้งครรภ์จำนวน 14 รายในช่วงเดือน มกราคม พ.ศ. 2549-ธันวาคม พ.ศ. 2551 สตรีตั้งครรภ์ทุกรายได้รับการวินิจฉัยว่ามีภาวะปากมดลูกไม่แข็งแรง ด้วยประวัติการแท้งบุตรเป็นอาจิณในช่วงอายุครรภ์ 20-24 สัปดาห์ กลุ่มแรกมีสตรีตั้งครรภ์จำนวน 6 ราย ได้รับการเย็บผูกปากมดลูกในช่วงอายุครรภ์ 14-16 สัปดาห์ กลุ่มที่ 2 มีสตรีตั้งครรภ์จำนวน 8 ราย ได้รับการเย็บผูกปากมดลูกหลังจากอายุครรภ์ 16 สัปดาห์ เนื่องจากมาฝากครรภ์ช้าหรือการตรวจวัดปากมดลูกด้วยอัลตร้าซาวด์ทางช่องคลอดมีขนาดน้อยกว่า 3 เซนติเมตร ทำการบันทึกอายุครรภ์ที่คลอด ภาวะแทรกซ้อนและคะแนนแอพการ์ของทารกแรกคลอด

ผลการวิจัย : ได้เย็บผูกปากมดลูกด้วยวิธี McDonald แบบเตรียมไว้ล่วงหน้าในสตรีตั้งครรภ์จำนวน 6 ราย และแบบฉุกเฉินในสตรีตั้งครรภ์จำนวน 8 ราย พบว่าไม่มีความแตกต่างกันอย่างมีนัยสำคัญในอายุมารดา จำนวนครั้งของการตั้งครรภ์ การคลอดและการแท้ง ส่วนอายุครรภ์ที่คลอด น้ำหนักตัวของทารกแรกคลอดและ APGAR score ของทารกแรกคลอดมีความแตกต่างกันในกลุ่มมารดาทั้ง 2 กลุ่ม โดยทั้ง 2 กลุ่มมีภาวะแทรกซ้อนคือ PPROM แต่ในกลุ่มเย็บผูกปากมดลูกแบบฉุกเฉินมีภาวะแทรกซ้อนอย่างอื่น ได้แก่ ภาวะครรภ์เป็นพิษ รกลอกตัวก่อนกำหนด และ การคลอดก่อนกำหนด

สรุป : การเย็บผูกปากมดลูกแบบเตรียมไว้ล่วงหน้าในช่วงอายุครรภ์ 14-16 สัปดาห์ สามารถยืดระยะเวลาในการตั้งครรภ์ได้ยาวนานกว่าและทำให้ทารกแรกคลอดมีภาวะแทรกซ้อนน้อยกว่าการเย็บผูกปากมดลูกแบบฉุกเฉินหลังอายุครรภ์ 16 สัปดาห์