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Efficacy of Emergency Cervical Cerclage

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Abstract Preterm birth is the primary cause of perinatal morbidity and mortality. Infants who are born at an early gestational age are at high risk of illness, injury, and handicap. To prevent preterm birth, cervical cerclage is recommended for women diagnosed with cervical insufficiency.Cervical incompetence is the inability of the cervix to retain a pregnancy until term or until the fetus is viable. Emergency cerclage is performed in patients with cervical enlargement ≥ 3cm and prolapsed membranes. We evaluated maternal and neonatal outcomefollowing emergency cerclage between 21and 26 weeksusing Foley catheter insertion.

Keywords Premature Birth, Uterine Cervical Incompetence, Emergency

1. Introduction

Cervical insufficiency or incompetence is the inability of the uterine cervix to retain a pregnacy in the absence of labor or contractions.[1]Cervical insufficiency occurs during the second trimester and is characterized by premature, painless cervical dilatation during gestation in the absence of uterine contractions followed by expulsion of the immature fetus. The pathophysiology of the condition is not known; however, the incompetent cervix has a less elastic component both morphologically and biochemically than the normal cervix.[2]Traumato the cervix, forceful dilatation, and obstetric lacerations increase the risk of insufficiency.[3] Thus,several investigations of surgical treatment for cervical insufficiency have been conducted. The simplest and most common cervical cerclageprocedure is the purse-string suture developed by McDonald (1957) in which the upperpart of the cervix is stitched using a band of suture when the lower part has shown significant effacement.[4] Cervicalcerclage should be performed after 14 weeks' gestation to avoid overlap with a spontaneous first-trimester abortion. However, elective cerclage performed before 20 weeks' gestation to avoid cervical dilatation or effacement provides the best results. The procedure itself can cause membrane rupture, premature contraction, or cervical dystocia (inability of the cervix to dilate normally during the course of labor), discomfort or mild cramping, vaginal spotting or bleeding, and infection of the cervix.We evaluated the maternal and neonatal results of emergency cerclageusing Foley catheter insertion between week 21and 26.

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2. Case Series

The present report describes eight consecutive emergency cervical cerclage cases performed on patients 28–38 years old (median, 32 years) with a cervical dilatation between 3 and 10 cm and prolapsed membranes as diagnosed by pelvic examination at our university hospitalbetween March 2003 and March 2007 (Fig. 1).The pelvic examination revealed bulging membranes more than 3cm from the cervix.The patients underwent emergency cerclage afterwe excludedof labor, placental abruption, andintrauterine infection.

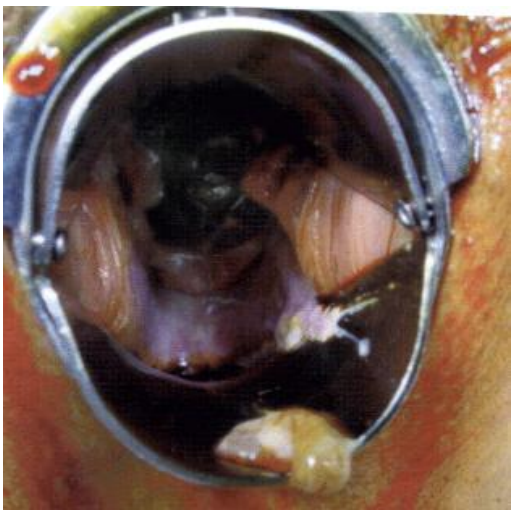

Figure 1. Pelvic examination revealed membrane bulging before emergency operation

The membranes were retracted by introducing a Foley catheter into the cervix and inflating it with3.0 cc normal saline. We then sutured the cervix twice using Mersilence® tapes [USA. Ethicon].Ultrasonography revealed a cervical length of less than 1 cm after surgery (Fig. 2).

Figure 2. Ultrasonography revealed a cervical length of less than 1 cm after surgery

Of the eight pregnancies, premature membrane rupture occurred in four cases over 48 h and were aborted. Four of the live births survived, resulting in a 50% survival rate.The mean extension of pregnancy in the survivors was 11.3 weeks (range, 6.5–13.6 weeks), and the gestational age at delivery ranged from 30–38+ weeks.

All the failures were the result of subclinical intrauterine infection, and no maternal morbidity occurred. On the success cases, the Apgar scores at delivery were 8 and 9 at 1 min and 5 min, respectively. The neonates showed no further sequelae or developmental retardation.

3. Discussion

Cervical incompetence is characterized by premature, painless cervical dilatation during gestation in the absence of uterine contractions, followed by expulsion of the immature fetus. Cervical incompetence in our cases was diagnosed by digital examination and confirmed using transvaginal ultrasonogaphy. Digital examination of the cervix is the oldest method of assessing the risk of preterm pregnancy loss.Studies comparing digital assessment with ultrasonography have reported inconsistent results. The Research Group in Obstetrics and Gynecology (GROG) study found that transvaginal ultrasound predicted spontaneous delivery before 34 weeks of gestation better than digital examination at the 27-week but not the 22-week examination.[5]

Several studies have investigated transvaginal ultrasonography for the measurement of cervix length,[6-10] and found it to provide an accurate and valid measurement of the cervix[10]and to be a useful method for predicting women at risk for preterm delivery.[8]Cervix lengthhas been reported to be inversely proportional to the risk of preterm birth.[7]The earliest changes at the internal uterine cervix are generally asymptomatic and can only be detected using transvaginal ultrasonography.

Several factors are associated with a high risk of preterm birth. Cervix length is a good predictor of preterm birth in women at high risk, such as those who have had a prior preterm birth,[11] prior cone biopsy,[12] prior multiple dilatation and curettage (D&C)[13]or Mullerianan omalies.[14] Three of our cases had risk factors for cervical incompetence. Previous preterm birth and loop electrosurgical excision procedure(LEEP) conization are important risk factors for cervical incompetence. Moreover, twin pregnancy has a high risk for preterm labor, and has been documented to be as high as 68.4% in Austria and 42.2% in the Republic of Ireland.[15] Women with uterine anomalies and a short cervix, as indicated by transvaginal ultrasound, have a 13-fold increase in spontaneous preterm birth, and women with a unicornate uterus have the highest rate of preterm birth.[16]

The effect of cerclage in women with no previous preterm birth and a short cervix length is not known; however, it is not expected to be as great as that for women who have experienced a previous preterm birth. Cervical cerclage is associated with a 30–40% reduction in preterm birth in women who have had a previous preterm birth, whereas the reduction is predicted to be 10–30%, at most, in women with no previous preterm birth.[17]

The benefit of prophylactic cerclage in women with a history of conization is not clear.[12]Leimanet al.[18] concluded that all pregnancies after a cone biopsy should be regarded as high risk, and recommende dcerclage for pregnancies following extensive cone biopsy. In contrast, Kullander and Sjoberg[18->19]were unable to show that cerclage reduced the incidence of preterm delivery in women after conization and concluded that the procedure should be avoided. Myllynen and Karjalainen[20] and Zeisleret al.[21]proposed that prophylactic cerclage should be used sparingly because it does not prevent preterm delivery and tends to induce preterm uterine contractions. However, we found that emergency cerclage prevented preterm labor in women who had had a previous preterm birth or LEEP conization. On the other side of the benefit-versus-risk equation, most series in the literature indicate a low major complication rate. Postcerclagechorioamnionitis occurred in 0.8–3.5 % of the patients in a major series.[22-25]

Transvaginalcerclage can be performed prophylactically during the first trimester. Two studies have shown that a prophylactic cerclage prevents the shortening of cervical length in about 90% of at-risk women.[26]Atransabdominal approach to repair cervical incompetence during pregnancyintroduced by Benson and Durffee[27] has attracted significant interest within the obstetric community. Several series that included several hundred women have reported that TCC is a viable alternative for women with recurrent second trimester loss or early preterm delivery for whom transvaginal cervical cerclage was ineffective or who had short or scarred cervices. The optimal treatment for cervical insufficiency is controversial, and the preventive role of cerclageis highly debatable.Emergency cerclage should be considered as a management option in women with painless cervical dilatation and prolapsed membrane in the mid-trimester.

Competing Interests

The authors declare that they have no competing interests.

Authors' Contributions

All authors conceived the study concept and design, collected clinical data, reviewed the literature on the topic, and drafted the manuscript. All authors have read and approved the final manuscript.

REFERENCES

[1] American collage of Obstetrician and Gynacologist. ACOG Practice Bulleton. 48. Cervical insufficiency ObstetGynecol 1991; 2+6:1111-5.

[2] Leppert PC, Yu. SK, Keller S, et al. Decreased elastic fibers and desmosine content in the incompetent cervix. Am J ObstetGynecol 1987; 157:1134-9.

[3] Peterson LK, Uldbjerg N. Cervical collagen in-pregnant women with previous cervical incompetence. Eur J ObstetGynecol, ReporoBiol 1996; 67:41-5.

[4] Mcdonald LA. Incompetent cervix as a cause of recurrent abortion. BJOG 1963; 70;105-9.

[5] Vayssiere C, Favre R, Audibent F, Gaucherand P, Novoa A, Descamps P, et al.Cervical assessment at 22 and 27 week for the prediction of spontaneous birth before 34 weeks in twin pregnancy is transvaginalsonography more acurate then digital assessment. Ultrasound ObstetGynecol 2005; 26:707-12.

[6] Berghella V. Novel developments on cervical length screening and progesterone for preventing preterm birth. BJOG 2009; 116: 182-7.

[7] Iams JD, Goldenberg RL, Meis PJ, Mercer BM, Moawad A, Das A, et al. The length of the cervix and the risk of spontaneous premature delivery: Mational Institute of Child HEALTH and Human Development Maternal Fetal Medicine Unit Metwork. N Engl J Med 1996; 334: 567-72.

[8] Berghella V, Pereira L, Gariepy A, Simonazzi G. Prior cone biopsy: prediction of preterm birth by cervical ultrasound. *Am J Obstet Gynecol.* 2004;191:1393–7.

[9] Grimes-Dennis J, Berghella V. Cervical length and prediction of preterm delivery. *CurrOpinObstet Gynecol.* 2007;19:191–5.

[10] Jackson GM, Ludmir J, Bader TJ. The accuracy of digital examination and ultrasound in the evaluation of cervical length. *Obstet Gynecol.* 1992;79:214–8.

[11] Own J, Yost N, Berghella V, et al. Mid-trimester endovaginalsonography inwomen at high risk for spontaneous preterm birth. JAMA 2001; 286:1340-8.

[12] Larsson G, Grundsell J, Gullberg B, Svennerud S. Outcome of pregnancy after conization. ActaObstetGynecolScand 1982; 61: 461-6.

[13] Visintine J, Berghella V, Henning D, Baxter J. Cervical length for prediction of preterm birth in women withmultiple prior induced abortions. Ultrasound ObstetGynecol (in press).

[14] Airoldi J, Berghella V. Transvaginal ultrasound of the cervix to predict preterm birth in women with uterin anomalies. ObstetGynecol 2005;106:553-6.

[15] Blondel B, Macfarlane A, Gissler M, Breart G, Zeitlin J, PERISTATStudy Group. Preterm birth and multiple pregnancy in Europeancountries participating in the PERISTAT project. BJOG May2006;113(5):528–35.

[16] Berghella V, Obido AO, To MS, et al. Cerclage for short cervix on ultrasound: meta-analysis of trials using individual patient-level data. ObstetGynecol 2005; 106:181-9

[17] Berghella V, Keeler SM, To MS, Althuisius SM, Rust OA. Effectiveness of cerclage according to severity of cervical length shortening: a meta-analysis. Ultrasound in Obstetrics and Gynecology 2010;35:468-73.

[18] Leiman G, Jarrison NA, Rubin A.Pregnancy following conization of the cervix: complications related to cone size. Am J ObstetGynecol 1980; 135: 14-8.

[19] Kullander S, Sjoberg NO. Treatment of carcinoma in situ of the cervix uteri by conization. ActaObstetGynecolScand 1984; 50: 153-7.

[20] Myllynen L, Karjalainen O. Pregnancy outcome after combined amputation and conization of the uterine cervix. Ann ChirGynaecol 1984;345-9.

[21] Zeister H, Joura EA, BANCHER-Todesca D, Hanzal E, Gitsch G. Prophylactic cerclage in pregnancy: effect in women with a history of conization. J Reprod Med 1997; 42:390-2.

[22] Toaff R, Toaff ME, Ballas S, et al: Cervical incompetence: Diagnostic and therapeutic aspects. Isr J Med Sci 13:39, 1977.

[23] Kuhn FJP, Pepperell RJ: Cervical ligation: A review of 242Pregnancies. Aust NZ J ObstetGynaecol 17:79, 1977.

[24] Smith SG, Scragg WH: Premature cervical dilatation and the McDonald cerclage. ObstetGynecol 33:535, 1969.

[25] Lipshitz J: Cerclage in the treatment of incompetent cervix. S Afr Med J 49:2013, 1975.

[26] Althuisius SM, Dekker GA, van Geijn HP, Bekedam DJ, Hummel P.Cervical Incompetence Prevention Randomized Cerclage Trial(CIPRACT): study design and preliminary results. Am J ObstetGynecol 2000;183:823–9.

[27] Benson RC, Durfee RB. Transabdominalcervico uterine cerclageduring pregnancy for the treatment of cervicalincompetency.*ObstetGynecol*1965; 25: 145–55.