

EMERGENCY CERVICAL CERCLAGE: A REVIEW OF 15 CASES

Abdullah M.B. Al-Takroni, Facharzt; Anisa Aslam, MBBS; C.K. Parvathi, MRCOG;
Moataz Shamdeen, DGO; Maher Hanbali, MO&G, Magdi S. Ahmed, MSc (O&G);
Abida Khatun, DGO; Amal M. Ali, DGO; K.B.L. Mendis, FRCOG

Background: This report describes our experience with 15 consecutive emergency cervical cerclages performed at Al Yamamah Hospital.

Patients and Methods: Between February 1994 and February 1997, 15 women with singleton pregnancies between 18 and 26 weeks' gestation, with a cervical dilatation between 3 and 10 cm and with membrane prolapse, underwent emergency cerclage after excluding labor, placental abruption and intrauterine infection. The membranes were replaced using the technique of overfilling the urinary bladder and then performing McDonald's cerclage. All the patients received prophylactic antibiotics and tocolytics.

Results: Of the 15 pregnancies, two aborted and 13 ended in live births. Nine of the live births survived, giving a survival rate of 60%. The mean extension of pregnancy in the survivors was 11.5 weeks (range 7.6-15.2 weeks), and the gestational age at delivery ranged from 30-38+ weeks. In six of the patients, suture failed to prolong the pregnancy long enough to produce a "take-home baby." All the failures were due to subclinical intrauterine infection. There was no maternal morbidity.

Conclusion: Emergency cerclage should be considered as a management option in women with painless cervical dilatation and membrane prolapse in the midtrimester.

Ann Saudi Med 1999;19(1):23-26.

Key Words: Cervical cerclage.

Presentation in the midtrimester of pregnancy with painless cervical dilatation and membrane prolapse was previously associated with dismal prognosis,¹⁻³ until it was demonstrated that with emergency cervical cerclage, such situations are not always unsalvageable. McDonald,⁴ Kuhn and Pepperell,⁵ and Hargar⁶ reported success rates of 43%, 59% and 60%, respectively, with emergency cerclage. Forster⁷ achieved fetal survival of 80% with cerclage at a cervical dilatation of less than 5 cm, and 24% when cervical dilatation was 5 cm or more. Although these authors showed that emergency cerclage can prolong the pregnancy to viability, they also reported difficulties, such as intraoperative membrane rupture or infection resulting in pregnancy loss. It is probably such difficulties which kept the procedure from gaining wide acceptance. Later, however, easy but effective methods of membrane reduction were described.⁸⁻¹⁰ Several workers have suggested that by using these methods as well as prophylactic antibiotics, and by proper patient selection, efficacy of emergency cerclage may be improved.^{8,10,11} Although there is much scepticism about the value of

emergency cerclage, this technique has been used for several years at the Al Yamamah Hospital as the primary method of therapy for cases of cervical incompetence in which the membranes are already protruding through the cervix. This report describes our experience since 1994 with emergency cerclage.

Patients and Methods

Fifteen patients with singleton pregnancies underwent emergency cerclage at Al Yamamah Hospital, Riyadh, Saudi Arabia, between February 1994 and February 1997. Their details are shown in Table 1. Six of the patients had had previous midtrimester losses. The mean gestation age at the time of cerclage was 23.05 weeks (ranged from 18.2 to 26.5 weeks) and the cervical dilatation was between 3 and 10 cm. The cervix was effaced in all patients. Infection was excluded clinically (by the absence of pyrexia and uterine tenderness). High vaginal swabs were obtained from all the patients and examined microscopically for *Trichomonas vaginalis*, and then cultured for bacteria and *Candida* spp. All patients were observed for 8-12 hours before insertion of the suture to ensure that cervical dilatation was not due to preterm labor. Those patients in preterm labor and those who had infection, premature rupture of membranes and vaginal bleeding suggestive of placental separation were excluded. During the period of

From the Department of Obstetrics and Gynecology, Al Yamamah Hospital, Riyadh, Saudi Arabia.

Address reprint requests and correspondence to Dr. K.B.L. Mendis: Department of Obstetrics and Gynecology, Al Yamamah Hospital, P.O. Box 17185, Riyadh 11484, Saudi Arabia.

Accepted for publication 8 September 1998. Received 19 May 1998.

tape,
was placed.

Tocolysis was continued for 24 hours postoperatively, and the patients were observed in the ward. All were given cephadrine and metronidazole intravenously during the procedure and continued for 48 hours. If the procedure was successful and no complications ensued, patients were usually discharged a week after cerclage, with advice to take plenty of rest, avoid coitus and attend the antenatal clinic for assessment at two-week intervals.

Results

The operative procedure was successful in all patients, in that the membranes were reduced intact and the cerclage was performed. The prolapsed membranes started to recede after 400 cc of bladder infusion, and no case required more than 900 cc of infusion for complete reduction of membranes. With the recession of the membranes into the uterine cavity, reformation of the cervix occurred. The lengths of the reformed cervices ranged from 2-2.5 cm and dilatations from 1-3 cm. A McDonald's cerclage was placed just below the bladder base in all cases. There were no anesthetic complications. None of the procedures had more than 10 cc of blood loss.

Of the 15 pregnancies, two aborted and 13 ended in live births. Only 9 of the 13 live births survived, giving a survival rate of 60%. The mean extension of pregnancy in the survivors, from cerclage until delivery, was 11.5 weeks (range, 7.6-15.2 weeks) and the gestational age at delivery ranged from 30-38+ weeks. If the suture did not prolong the pregnancy to result in a "take-home baby," it was

TABLE 1. *Emergency cervical cerclage results.*

| GA at cerclage | Cervical dilatation (cm) | Extension of pregnancy | GA at delivery | Weight at birth (g) | Outcome | Histology of placenta and membrane |
|----------------|--------------------------|------------------------|----------------|---------------------|----------|------------------------------------|
| 20W2D | 3 | 15W2D | 35W | 2508 | Survived | No infection |
| 24W4D | 9 | 1W3D | 26W | 610 | NND | CA |
| 18W3D | 9 | 5D | 19W | 378 | Abortion | CA |
| 23W1D | 6 | 10W5D | 34W | 2215 | Survived | No infection |
| 21W | 3 | 15W2D | 36W | 2560 | Survived | No infection |
| 26W1D | 3 | 12W | 38W | 3050 | Survived | No infection |
| 24W | 6 | 11W | 35W | 2408 | Survived | No infection |
| 18W2D | 10 | 5D | 19W | 398 | Abortion | CA |
| 26W5D | 3 | 12W | 38W | 2970 | Survived | No infection |
| 23W | 8 | 2W5D | 25W | 595 | NND | CA |
| 22W1D | 9 | 7W6D | 30W | 1050 | Survived | No infection |
| 24W | 8 | 1W5D | 25W | 605 | NND | CA |
| 23W5D | 8 | 9W2D | 33W | 2015 | Survived | No infection |
| 25W4D | 9 | 2D | 26W | 605 | NND | CA |
| 26 | 4 | 11W2D | 37W | 2875 | Survived | No infection |

GA=gestational age; CA=chorioamnionitis; NND=neonatal death.

considered a failure. The failure was due to early removal of suture because of chorioamnionitis, prelabor rupture of membranes, or strong persistent contractions. In this series, the sutures were removed in three patients in the first week, in two in the second week and in one in the third week. The mean extension of pregnancy in this group (n=6) was 1.1 weeks, and the gestational age at delivery ranged from 19-26 weeks. The failure thus occurred relatively soon after insertion of the suture. In three of the patients, the sutures were removed because of persistent contractions and in another three because of prelabor rupture of membranes. Although none of the failures had clinical evidence of chorioamnionitis, all had histological evidence of placental and chorioamniotic infection. In patients who have undergone emergency cerclage, the presence of contractions, despite tocolysis and prelabor rupture of membranes, has been considered to indicate subclinical intrauterine infection.¹¹ In successful outcomes, no evidence of infection was found. In general, the removal of the suture was uncomplicated. None of our patients had complications as a result of suture placement.

Discussion

We undertook this review for two reasons. First, we expect the interest in emergency cerclage to increase in the future. In order to avoid unnecessary elective cerclage, there is a growing tendency to delay it until evidence of cervical changes at ultrasound scan appears.¹² This policy may increase the presentation with painless cervical dilatation and membrane prolapse in the midtrimester. Second, there is much scepticism about the value of emergency cerclage, although several authors^{4,7,10,11} have reported that it can prolong pregnancy and influence the

outcome favorably. Our results also suggest that an active approach to cervical dilatation in the midtrimester can lead to delivery of a viable infant. In our series, successful cerclage prolonged the pregnancies to 33 weeks or more (except in one case), and as a result the majority of babies did not require special care, and if they did, it was only for a short time. One baby spent two months in the special care baby unit.

The alternative to cerclage is strict bed rest, sometimes in the Trendelenburg position. However, it is our experience that when women with midtrimester membrane prolapse are managed expectantly, preterm prelabor rupture of membranes occur in a great majority of cases. These women rarely maintain the pregnancy for an appreciable length of time. Furthermore, bed rest is a difficult option for many. All our patients with cerclage were managed at home, and a majority were able to return to an almost normal life after varied periods of bed rest in hospital. However, our data cannot indicate whether bed rest or cerclage is superior for women with dilated cervixes. Controlled studies are needed to accurately compare the two treatment options. In two women with cervical dilatations of 9 cm and 8 cm at 22 weeks and 23 weeks, respectively, the pregnancies could not have continued without treatment. Hence, we doubt whether it would be ethical to investigate two treatments by a randomized controlled trial.

Important procedures that will ultimately determine the successful outcomes for women with cervical dilatation in middle trimester are: 1) the exclusion of placental abruption; 2) exclusion and prevention of labor; 3) successful reduction of membranes; and 4) exclusion and prevention of infection. Placental abruption and labor were excluded by observing the patients for a period of time before considering emergency cerclage. By the technique of overfilling the urinary bladder, we were able to replace the membranes successfully in all cases. This compares favorably with a 30% rate of intraoperative rupture of membranes reported by Hargar.⁶ The main advantage of this technique is its ability to replace the membranes without ever touching them, even when a large part of the membranes had prolapsed into the vagina in hourglass formation.¹⁰ The uterine-relaxing effect of halothane, Trendelenburg position of the patient, and traction on the cervix, helped the herniated membranes to fall back. We did not find exclusion of labor, placental abruption and replacement of membranes to be difficult.

The main difficulty, as reported by previous authors,^{13,14} is the exclusion of infection before insertion of suture and prevention of it thereafter. The diagnosis of clinical infection (in the presence of pyrexia, uterine tenderness and purulent vaginal discharge) should not pose a problem. All the unsuccessful cases in this series had histological evidence of placental and chorioamniotic infection, although they did not have pre- or postoperation signs of infection. These probably represent cases of

subclinical ascending intrauterine infection which we had failed to detect preoperatively, and were unsuccessful in eradicating with prophylactic antibiotic regimen. We admit that our microbiological assessment (only with high vaginal swab) was not optimal. However, attempts at detecting infection by amniotic fluid culture and by estimating C-reactive protein levels had also been disappointing.¹¹ Because of the difficulty in detecting subclinical infection, we feel it may be more useful to give a combination of antibiotics to cover a broad range of aerobic and anaerobic organisms for a longer period. At present, we are studying the effect of a combination of antibiotics, gentamycin, erythromycin and metronidazole given in high dosage for three days.

Some observations from our data deserve further comment. The mean extension of pregnancy in women with a cervical dilatation of 6 cm or less was 12.44 weeks. The survival rate in this subgroup was 100%. In almost all of these patients, the membranes were only bulging into the vaginal vault at the time of the procedure. In comparison, with a cervical dilatation of more than 6 cm, the mean extension of pregnancy was three weeks, and survival rate was 25%. In all of these patients, the membranes were protruding down the vagina in an hourglass formation. A good prognosis when cervical dilatation is around 5 cm has been observed before.⁷ We postulate that the poor prognosis of women with a cervical dilatation of more than 6 cm is due to intrauterine infection which results when a large area of contaminated membranes are reduced. Our data show that women in whom the suture was successful remained at high risk for preterm delivery. Preterm delivery was often subsequent to prelabor rupture of the membranes. However, the most important observation we made was that emergency cerclage was not associated with serious complications. Since emergency cerclage is associated with minimal morbidity and a greater than 50% chance of survival for the infant, we urge that this procedure be considered for the patient with cervical dilatation in the midtrimester who is not in labor, and is without evidence of infection and placental abruption.

Acknowledgements

The authors wish to thank Dr. M.S. Al-Ghreimil, Senior Consultant in the Department of Obstetrics and Gynecology and Director of our hospital, for his continuous support and helpful suggestions during the preparation of this manuscript, and Ms. Adela B. Ramirez for secretarial assistance.

References

1. Olatunbosun OA, Dyck F. Cervical cerclage operation for a dilated cervix. *Obstet Gynecol* 1981;57:166-70.
2. Stromme WB, Wagner RM, Reed SC. Surgical management of the incompetent cervix. *Obstet Gynecol* 1960;15:635-40.

3. Barter RH, Dusbabek JA, Riva HL, Parks J. Surgical closure of the incompetent cervix during pregnancy. *Am J Obstet Gynecol* 1958;75:11-4.
4. McDonald IA. Suture of the cervix for inevitable miscarriage. *J Obstet Gynaecol Br Empire* 1957;64:346-50
5. Kuhn RPJ, Pepperell RJ. Cervical ligation: a review of 242 pregnancies. *Aust N Z J Obstet Gynaecol* 1977;17:79-83.
6. Hargar JH. Comparison of success and morbidity in cervical cerclage procedures. *Obstet Gynecol* 1980;56:543-8.
7. Forster FMC. Abortion and the incompetent cervix. *Med J Aust* 1967;2:807-9.
8. Goodlin RC. Cervical incompetence, hourglass membranes and amniocentesis. *Obstet Gynecol* 1979;54:748-50.
9. Sher G. Congenital incompetence of the cervical os. *J Reprod Med* 1979;22:165-7.
10. Scheerer LJ, Lam F, Bartolucci L, Katz M. A new technique for reduction of prolapsed fetal membranes for emergency cervical cerclage. *Obstet Gynecol* 1989;74:408-10.
11. MacDougall J, Siddle N. Emergency cervical cerclage. *Br J Obstet Gynaecol* 1991;98:1234-8.
12. Fox R, James M, Tuohy J, Wardle P. Transvaginal ultrasound in the management of women with suspected cervical incompetence. *Br J Obstet Gynaecol* 1996;103:921-4.
13. Schulman H, Farmakides G. Surgical approach to failed cerclage. *J Reprod Med* 1985;30:626-8.
14. Charles D, Edwards WR. Infectious complications of cervical cerclage. *Am J Obstet Gynecol* 1981;141:1065-71.