

EVALUATION OF CERVICAL ENCIRCLAGE IN REPEATED PREGNANCY LOSS

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ABSTRACT:

The concept of defective cervix resulting in habitual pregnancy loss was described as early as 17th Century. The recent concept of incompetent cervix in certain women with recurrent pregnancy loss was introduced only 35-years ago. Since then little progress has been made in clearly understanding the pathophysiology of cervical incompetence or in clearly defining its diagnosis. At present there are various surgical procedures involving cervical encirclage. Over the year's various workers have done randomised prospective trials with the emphasis on various techniques and the advantages and disadvantages of each procedure. Most of these procedures involved a circlage around the cervix in some fashion.

INDICATION OF CERVICAL ENCIRCLAGE:

Most of the obstetricians believe the cervical encirclage can prolong pregnancy in a patient with classical cervical incompetence. Most of the trials carried out have shown improved fetal loss with this procedure (about 50%) but the outcome of cervical encirclage in patients who have premature labour in patients who have abnormal cervixes are not very clear. The common factors leading to cervical problems are previous trauma, insult to the cervix, poor nutrition, low socioeconomic factors, multiparity, intrauterine growth retardation, fetal anomalies, infections during pregnancy and congenital weakness of cervix.

METHOD AND COLLECTION OF CASES:

68-cases were taken in trial over a period of 4 years from following Hospitals: -

1. Maternity and Children Hospital (Teaching) Dammam, (Saudi Arabia).
2. Services Hospital (Teaching) Lahore, Pakistan.
3. Bahawal Victoria Hospital (Teaching) Bahawalpur (Pakistan).

All these patients have had more than 2 pregnancy losses before entering this study. These patients were divided into three main groups: -

GROUP I: Patients who had typical cervical incompetence with history of spontaneous rupture of membranes followed by uterine contractions and pregnancy loss, in second trimester. Total number of cases were 38 in this group.

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GROUP II: - Patients who had repeated loss of pregnancy in 1st & 2nd trimester but do not fit in the criteria of typical cervical incompetence, so encirclage was done as prophylactic procedure in these cases. Total number of cases in this group were 10.

GROUP III: - Patients who had premature labour without any obvious cause. Total number of cases in this group were 20.

PHYSICAL CHARACTERISTICS:

All three groups discussed had slightly different physical characteristics. Group I: - had typical 2nd trimester pregnancy loss with SRM, followed by uterine contractions and complete loss of conception. Group II-had slightly different clinical entity, they had pregnancy loss in 1st and 2nd Trimester and had bleeding per vagina associated with uterine contractions. Most of these patients needed evacuation of uterus under General Anaesthesia later on.

Group-III: - Most of these patients had very poor nutritional status, from low socio economic class. They had repeated pregnancy loss due to premature labour.

INVESTIGATION AND DIAGNOSIS:

A meticulous history taking is very important to diagnose cervical incompetence, typically 2nd trimester miscarriage with SRM followed by few painless uterine contractions. In some cases physician can observe bulging membranes through the cervix, which is not always possible to see in all the cases. A torn unhealthy looking open cervix also leads to a definite diagnosis on examination.

DILATOR TEST: - is not practiced these days because it increases the incidence of ascending infection, premature rupture of membranes, stimulating the uterine activity and causing premature labour. It has been reported in cases of placenta praevia causing antepartum haemorrhage by damaging the lower lying placenta.

INVESTIGATIONS

1. GENERAL INVESTIGATION

- | | |
|------------------------|--|
| a) Hb Estimation | Range from 9.5 g to 13.0 g |
| b) Blood Grouping | Only 2 patients had Rh -ve, rest all had Rh +ve blood groups with various ABO grouping. |
| c) VDRL | All patients had negative results |
| d) Fasting Blood Sugar | 4 patients found to be diabetic. They were treated by the physician with insulin throughout their pregnancy. |

- e) High Vaginal Swabs: Only two patients showed presence of beta-haemolytic streptococci, treated with penicillin parenterally. Rest all the patients showed normal vaginal flora. *Candida albicans* was present in six cases which were treated with nystatin vaginal pessaries.
- f) Most of the patients had normal urine examination, only 5 cases had *E.Coli* infection which was treated successfully after culture and sensitivity with Ampicillin 500 mg qds for 7 days.

SPECIFIC INVESTIGATIONS:

1. HYSTERO-SALPINGO-GRAPHY (HSG)

In HSG, showing of width of 1 cm or more at isthmus confirmed the diagnosis. This was only performed in few cases where some doubt about the diagnosis was made. One should always keep in mind the dangers of HSG e.g. hypersensitivity reaction, introducing infection, pain and discomfort and air-embolism.

2. ULTRASONOGRAPHY TO MEASURE THE CERVICAL WIDTH:

This has been practiced by some obstetrician in Scandinavian countries but has no extra advantage over other methods.

MANAGEMENT:

All these patients in this study were booked very early in first trimester. Routine ante-natal screening and examination were carried out.

In particular ultrasonography was performed with special interest because of following reasons at 12 to 14 weeks of gestational age: -

1. To assess actual gestational age of the fetus.
2. To exclude any major fetal anomalies, (which is a contra-indication to cervical encirclage).
3. To check fetal viability, because fetal cardiac pulsations are clearly seen at this time, again any doubt about viability is contra-indication for encirclage.

PROCEDURE:

Cervix is grasped with atraumatic clamps for control of cervix, a purse string suture of Braided No. 2 silk, or nylon or mersilene on a small No. 3 Mayo's tapered needle, is inserted around the ectocervix as high as possible to approximate the level of the internal os. The suture is started anteriorly so that it is tied in the same position on the anterior cervical lip. Five or six bites are taken, all deep enough to include cervical connective tissue. The bites on the posterior cervical lip are more difficult so special care should be taken that they are as deep as the rest of them. The knot is tied on the anterior cervical lip, tight enough to close the cervix, the suture tag is left long enough to allow removal at 38 weeks or in labour, whichever is earlier.

All the patients were given tocolytic therapy by using solbutamol and Ritodrine for 1st 24 hours used in IV infusion and later on changed over to oral therapy, dose depended on the individual response of the patient. A close monitoring of the blood pressure and heart rate were carried out; any evidence of respiratory disease were excluded prior to starting tocolytic therapy.

A single shot of injection Clafaron 500 mg stat was given as prophylactic therapy to prevent any infection. Analgesics e.g. injection Sosegan one ampule (60 mg intramuscularly as required by the patient. Strict bed rest for 24 hours were observed. A gentle speculum examination was carried out to check any bleeding before discharging these patients on 3rd day. A prophylactic maintenance therapy of solbutamol 4 mg TDS or Yutopar (ritodrine) 10 mg TDS till about 34 weeks of gestation was given provided patients had no serious side effect.

All these patients had regular antenatal visit throughout their pregnancies. Fetal growth was monitored by checking BPD at variable intervals depending upon individual patient. Macdonald cervical suture was removed at 38 weeks of gestational age and whole of the suture was sent for culture and sensitivity to exclude the presence of beta- haemolytic streptococci, and if it was found to be present than the new born was treated accordingly with appropriate antibiotics.

RESULTS

Results were monitored according to their respected groups:

	No. of Cases	Mode of Delivery		Successful Pregnancies	Pregnancy Wastage
		Vaginal	Abdominal		
	I	II	III	IV	V
Group-I	38	28	04	32	06
Group-II	10	07	01	08	02
Group-III	20	10	04	14	06

All these patients had singleton pregnancy, overall fetal survival achieved was 79.14 percent. Abdominal route preferred for various reasons in some cases.

DISCUSSION

Within last few years' various studies have been carried out (shown on the table), showing the outcome of cervical encirclage. Recently three randomized prospective studies have been published. The first study tested the use of prophylactic cervical encirclage for prevention of pre-term delivery in normal twin pregnancy. A total of fifty patients were taken in the study who received either standard obstetric care or cervical encirclage at 13 weeks (Macdonald) gestation. The study showed no difference between two groups in terms of the gestational age at delivery, incidence of pre-term labour, incidence of pre-mature rupture of membranes or early neonatal death, so it seems in that study, prophylactic cervical encirclage does not appear to prolong pregnancy or prevent pre-term labour.

Unfortunately, small size of the number of patients leave the study open for criticism.

The other randomised, prospective trial was designed to assess the efficiency of cervical encirclage in women with singleton pregnancies at risk for abortion or pre-term delivery. A total of 194 patients were randomised to receive cervical encirclage (Macdonald) or standard obstetric care, again it showed no great difference between the two groups in preventing pre-term labour and improving the gestational age. The criticism for this study was again too small number of cases.¹²

The 3rd prospective trial involved the randomization of five hundred women from four centres, to receive either circlage (Macdonald) or no circlage,¹³. Patients with classical history of cervical incompetence, were excluded from the trial for ethical reasons. The results showed no difference in the rate of pre-term delivery or neonatal deaths between two groups, thus cervical encirclage does not prevent pre-term birth or prolong pregnancy in women at moderate risk of pre-term delivery.

These studies do not specifically address the efficacy of cervical encirclage in patients with classical cervical incompetence. They do indicate that encirclage is of some benefit in the prolongation of pregnancy in patients with previous abortions or pre-term delivery who do not have a classic history of cervical incompetence. Furthermore, cervical encirclage is not benign, it carries a significant risk of anaesthesia and pre-operative morbidity and an estimated 2 per cent pregnancy loss. For these reasons a very clear assessment is vital before proceeding with this procedure.

We have intentionally not done a comparative study, because as mentioned in the beginning all our patients already had more than two pregnancy losses, so in a way it was a comparative study as well.

We have included other studies as shown in the Table- 1

CERVICAL INCOMPETENCE

Table 1: Fetal Survival before and after postconceptional Macdonal Circlage

Authors	Patients	Fetal Survival/Total Pregnancies	
		Before circlage	After circlage
Gans, 1966	210	106/843(13%)	205/250(82%)
Smith, 1967	45	138/112(34%)	35/45(78%)
Hofmeister, 1968	44	36/174(21%)	45/72(63%)
Jennings, 1972	48	50/100(50%)	53/61(87%)
Lipshitz, 1975	71	63/220(29%)	60/71(84%)
Toaff, 1977	311	542/726(7%)	348/391(89%)
Harger, 1980	169	NA	124/169(73%)
McDonald, 1980	224	NA	164/224(73%)

which also compare more or less same results, which we have produced in our study.

At present cervical encirclage is definitely indicated in those patients with a classic history of cervical incompetence, but with some benefits to other two groups as well. For most of these patients a post conceptional circlage procedure is better suited because it is done after the fetus has been evaluated ultra-sonographically for obvious fetal abnormalities and after the risk of spontaneous abortion is passed. The greatest experience has been achieved with the Shirodkar and Macdonald procedures, but most people prefer Macdonald suture because of its simplicity.

Some Obstetricians have various other procedures e.g. modified MacDonald procedure, transabdominal cervico-isthmic circlage; then among pre conceptional procedures are, Lash procedure, isthmic circlage through vaginal route like Shirodkar procedure.

The transabdominal cervical isthmic circlage may be useful post-conceptional procedure in the selected patients, whose cervix is markedly shortened, deeply lacerated or infected.

Pre conceptional encirclage are best reserved for those rare patients in whom a markedly shortened incompetent cervix is associated with early second trimester pregnancy losses, or in those patients in whom the cervix has a single identifiable scar or deep laceration extending through the internal os. Lash procedure is preferred in such case.

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