STUDY OF FETAL SALVAGE FOLLOWING MCDONALD'S ENCKERCLAGE

Gynaecology

Dr. Krupa R. Mange Postgraduate student, Dept of Obstetrics and Gynaecology, Rural Medical College, Loni, Ahmednagar, Maharashtra, India.

Dr. Vidyadhar B. Bangal* Professor and Head, Dept of Obstetrics and Gynaecology, Rural Medical College, Loni, Ahmednagar, Maharashtra, India. *Corresponding Author

ABSTRACT

Introduction - Mc Donald's cervical encirclage is one of the surgical procedures, which has been proved beneficial in improving the fetal salvage in recurrent pregnancy loss in second trimester of pregnancy.

Material and Methods-A retrospective observational study was carried out at tertiary care teaching hospital for a period of five years. Forty cases of bad obstetrical history that include repeated abortions and preterm labour probably due to cervical incompetence were included. Procedure was performed at various weeks of gestation ranging from 14-32 weeks.

Results-Following Mc Donald's procedure, 1 woman had abortion, and 6 had preterm labour and 33 women reached beyond 37 weeks. In the present study, the average interval from Mc Donald's encirclage to delivery was 130 days. Infant salvage rate in this study was 41% before and 88% after Mc Donald's encirclage operation.

Conclusion-Mc Donald's cervical encirclage results in improving fetal outcome, when performed in properly selected cases.

KEYWORDS

Cervical incompetence, Mc Donald's cervical encirclage, Recurrent abortions, Repeated pregnancy loss

1. INTRODUCTION

Recurrent early pregnancy loss and preterm delivery, are two common obstetric problems. It is a cause for anxiety for the pregnant women and concern for the Obstetrician. Cervical incompetency is defined as the inability of the uterine cervix to retain a pregnancy in the absence of contractions or labor¹. It is characterized by a painless opening and shortening of the cervix uteri between 16 and 28 weeks of gestation resulting into pregnancy wastage². Palmer and Lacomme first described the operation for repair of the cervical internal os³. Lash and Lash published a paper on habitual abortions due to cervical incompetence⁴. Shirodkar, described new operative technique for managing cervical incompetence⁵. Incidence of cervical incompetence reported by various authors range in between 1:54 to 1:222 pregnancies^{6,7,8,9}. It contributes to 15 -20% abortions in the second trimester. Mc Donald's cervical encirclage is considered as a technically simple minor surgical procedure for reducing the fetal wastage and improving fetal salvage in proven cases of cervical incompetence.

2. MATERIAL AND METHODS

A retrospective observational study was carried out at tertiary care teaching hospital for a period of five years. Forty cases of bad obstetrical history (repeated abortions, preterm labour) with previous pregnancy losses probably due to cervical incompetence were included in the study. Cervical incompetence was diagnosed either on the basis of past reproductive history or clinical or ultra-sonography findings of the current pregnancy. These cases were subjected to Mc Donald's cervical encirclage operation at various gestational age. One number prolene was used for encirclage. These women given oral tocolytic therapy till 37 weeks of pregnancy, prophylactic glucocorticoids before 34 weeks of pregnancy. Cervical stitch was removed at 37 weeks of gestation. All cases were advised hospital delivery.

3. RESULTS

It was observed that majority of the cases (90%) were in the age group of 21-30 years. Most of the cases (86%) were un-booked at the time of admission. Eighty eight percent were multi-gravidas. In the present study of 40 cases, the average encirclage to delivery interval was 130 days. Previous preterm deliveries (35.00%), Repeated spontaneous abortions in second trimester (25.00%), Repeated second trimester medical termination of pregnancy (20.00%), multifetal gestation in present pregnancy (12.50%) and previous history of delivery of a large size baby (7.50%) were reasons for encirclage operation. (Table.1)

Fifty percent cases underwent encirclage operation in between 14-20 weeks of pregnancy and remaining 50% cases underwent encirclage in between 20 weeks and 33 weeks. Cervical encirclage was performed in forty five percent cases during 14-18 weeks of pregnancy. Out of 40 women who underwent McDonald's procedure, 1 woman had

spontaneous abortion, 6 had preterm labour and 21 women reached to term and delivered spontaneously, 2 women delivered by ventouse application, whereas, 10 women needed caesarean section for obstetric indications. (CPD in 3, breech presentation in 2, cervical dystocia in 3 and foetal distress in 2 cases.) (Table 2) All except the baby of foetal distress were normal. Out of all preterm deliveries, 1 baby died due to prematurity and respiratory distress syndrome.

Complications were noticed in 4 cases following encirclage. There was loosening of the encirclage in two cases due to suture material cut through the cervical tissue. In 2 cases, uterine irritability was increased following encirclage, which was managed by intravenous tocolytic drugs; one case had PROM for which stitch was removed after 48 hours. Fetal salvage rate was 41% before and 88% after encirclage operation.

DISCUSSION

Gream in 1865 used the term "cervical incompetence" for the first time¹⁰. Romero and others suggested the term "cervical insufficiency" in order "to avoid the negative connotation that the term 'incompetence' implies to patients"¹¹. Cervical encirclage was introduced in 1955 by Shirodkar and was first performed on women who had had at least 4 abortions or was confined to women in whom he could prove the existence of weakness of the internal os by "repeated internal examinations"¹². McDonald suggested a simplification, and there now exist a variety of modifications¹². Incompetent cervical os is the recognised cause of repeated mid trimester abortions or early preterm labour. Incidence of cervical incompetence in the present study was 1.25% of the antenatal admissions, which was more than observed by the other authors (Stromme and Haywa in 1963 reported the incidence varying from 0.05 to 1%)¹³. The higher incidence in the rural area could be because of increased incidence of cervical trauma during unattended home deliveries. Congenital defects of cervix are rare according to McDonald and are responsible for no more than 2% of all cases of cervical incompetence¹². In the present study, 12% women were nulliparous.

Surgical treatment has been accepted as the mainstay of treatment. Variety of techniques of encirclage operations have been tried in the past. In the present study, overall success rate was 88% Golan (1989) reported improvement following encirclage in foetal survival rate from 69% to 92%¹⁴. Even though, cervical incompetence has been an accepted entity now, its relationship to open cervical os is still debatable. Authors like Floyd (1961), Anderson and Turnbull (1969) and various others have not found any significant change in outcome of labour in patients having open cervical os.^{15,16} Wood *et al.* (1965) and many others have shown increase in preterm labour in patients having an open os.

Value of internal examination to detect weak os is immense¹⁷. The last decade in particular has seen a decrease in the usage of cerclage³. In contrast to “the early days”, a cerclage is performed today either prophylactically and electively, according to the history of the patient or due to findings within the present pregnancy, *orthotapeutically*, in cases with significant opening or shortening of the cervix. Although encirclage has been performed quite frequently, it has increasingly become a subject of controversy. Harger and the ACOG practice bulletin have given a good overview^{18,19}. Randomized studies with encirclage have not proven to be of benefit for women with low risk of preterm delivery (by history)²⁰. The effectiveness in women with high risk pregnancies is uncertain. For example, Rush could not find any significant difference²¹. The MRC/RCOG final report on encirclage did find a significant difference only in one of 6 subgroups, namely with regard to births under 33 weeks gestation in the subgroup of women with 3 or more second trimester miscarriages or preterm births in the history²².

More current research tried to identify women who might benefit from encirclage by monitoring the cervical length and performing an encirclage only when the cervix is short. Although initial studies had been promising^{23,24} more recent studies do not support this^{25,26}. Hassan *et al.* could even show in a retrospective cohort study, that, in patients with a shortened cervix (≤ 15 mm), cervical encirclage did not only not reduce the rate of preterm delivery but it did increase the risk of preterm rupture of membranes²⁷. Obido *et al.* compared Shirodkar versus McDonald encirclage in women with a short cervix and found no significant difference in the prevention of preterm delivery²⁸.

Romero *et al.* conclude in their review: “The role of prophylactic encirclage in high-risk patients without a sonographic short cervix for the prevention of preterm delivery/mid-trimester abortion (by history) is unclear¹. Even though we are likely to overdo cervical encirclage, especially in multiparous patients with open os, it is better on the safer side by doing encirclage in the borderline cases rather than waiting till the onset of preterm labour. This is because even though diagnosis of incompetent os is still debatable, value of cervical encirclage by McDonalds or other procedure have been firmly established without any debate because of consistently improved infant salvage rates as reported by various workers^{6,9}”.

CONCLUSION

Cervical encirclage in appropriately selected cases, in early midtrimester of pregnancy can improve the fetal salvage rate up to 85%. Proper history taking aided with good clinical and sonographic evaluation of cervix, can guide in the selection of patients for prophylactic cerclage, thereby increasing the carry home baby rate. Today, encirclage operations offer a ray of hope to women previously denied children because of incompetent cervix.

Tables Table 1-Predisposing factors for previous fetal wastage before encirclage

Sr. No	Predisposing factors	No (%)
1	Previous preterm delivery	14 (35.00%)
2	Previous repeated spontaneous abortions	10 (25.00%)
3	Previous repeated (more than two times) second trimester MTPs	08 (20.00%)
4	Multi-fetal gestation / Polyhydramnios	05 (12.50%)
5	Previous history of delivery of large size baby (more than 4 kg)	03 (07.50%)

Table 2- Pregnancy outcome following Mc Donald's encirclage in relation to weeks of gestation at encirclage

Pregnancy outcome (40 cases of Mc Donald's encirclage)						
Weeks of gestation at encirclage	Number of cases (%)	Abortion	Pre term vaginal delivery	Full term vaginal delivery	Instrumental delivery	Caesarean section
14-18	18 (45.00%)	01	01	11	01	04
19-23	09 (23.50%)	-	02	04	01	02
24-28	12 (30.00%)	-	02	06	-	04
29-33	01 (02.50)	-	01	-	-	-

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