Uterine malformations and pregnancy losses: is cervical cerclage effective?

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Summary

For many years, we and others have reported the efficacy of cervical cerclage in the prevention of miscarriage in patients with uterine malformations.

In this paper the experience of 275 cases collected between 1978 and 1998 is reported.

Our data indicate that cervical cerclage is effective in preventing miscarriages, prevalently in those pregnancies bearing uterine malformations with simultaneous cervical incompetence.

Key words: Cervical Cerclage; Pregnancy; Uterine Malformation; Cervical Incompetence.

Introduction

Cervical incompetence represents a frequent cause of repeated miscarriage [1]. It is successfully treated with cervical cerclage, a surgical correction technique introduced first by Shirodkar, in 1954 [2]. This procedure has been successively improved, becoming simpler, faster, and less traumatic and thus rendering this intervention popular and widely used. In 1965 in Italy, our School introduced cervical cerclage to treat women with uterine malformations, obtaining a reduction of pregnancy losses and preterm deliveries [3, 4].

This technique was introduced in our clinical practice to improve the outcome of pregnancies with uterine malformations after the first therapeutic success that we obtained in a seven-week pregnant woman at her fifth abortion. Admitted to our Institute with pelvic pain, she showed the initial signs and symptoms of miscarriage. Empirically, based on clinical evidence of mild cervical incontinence, a cervical cerclage was performed. The pregnancy progressed without problems until the 40th week when the cerclage was removed and the woman underwent a vaginal delivery.

Hysterosalpingography showed successively that the woman had a mislaid bicornis unicollis uterus.

For several years, we and others have reported the efficacy of cervical cerclage in the prevention of miscarriage in patients with uterine malformations.

Some recent reports have contributed to elucidate the role of this straightforward technique in the prevention of pregnancy loss in patients with uterine malformations [5, 6]. These studies suggested that outcome was not influenced by cerclage when the indication was malformation itself, but only when it was performed to correct cervical incompetence frequently associated with such malformations [7].

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These reports prompted us to revise our experience of 275 cases, and to re-analyze the data on the basis of the presence of cervical incompetence. Thus we assumed the main clinical indication for cerclage as the main statistical parameter for the analysis of data. Our results strengthen the effectiveness of cervical cerclage as the approach of choice in the prophylaxis of miscarriages in pregnancies with uterine malformations when accompanied by cervical incompetence.

Materials and Methods

Recently some reports have focused on the efficacy of cervical cerclage in the prevention of miscarriages associated with uterine malformations, suggesting an indication for this treatment only when uterine malformations are associated to cervical incompetence. These reports prompted us to verify this hypothesis by analyzing our case-series.

Two hundred and seventy-five women, who came under our observation between 1978 and 1998, were considered in the study. Aged between 20 and 38, they showed uterine malformations documented by hysterosalpingography and were either nulliparae or had a history of miscarriages.

They were homogeneous for factors known to affect the outcome of pregnancy, such as alcohol consumption, cigarette smoking or body mass index, and did not have any major genital infectious disease or endocrine dysfunction such as diabetes or thyroid disease.

The uterine malformations, classified following the criteria of Buttram and Reiter [8] in 1985, were mainly bicollis complete uterus, bicornis partial uterus, bicornis arcuated uterus, septus complete uterus and didelphys uterus (Table 1).

The cerclage was randomly performed between the 8th and 10th week of pregnancy in 125 patients, hereafter referred to as the treated group. One hundred and fifty patients received conventional tocolithic therapy and hereafter are referred to as the control group. In case of didelphys uterus the vaginal septum was removed before pregnancy to create the condition of a complete bicornis uterus (bicollis). Shirodkar or McDonald techniques [13] were randomly used.

An isolated uterine malformation was diagnosed in 72/125 patients (58%) of the treatment group and 100/150 (67%)

patients in the control group. Simultaneous malformation and cervical incompetence was found in 53/125 patients (42%) in the treated group and 50/150 (33%) patients in the control group as summarized in Table 2.

Results

Our survey considered 275 cases of pregnancy associated with uterine malformations. The malformations consisted of 21 cases of septate uterus, 31 cases of bicornis arcuate uterus, 53 cases of complete uterus bicornis, 127 cases of bicornis partial uterus, 43 cases of didelphys uterus (Table 3) (Buttram and Gibbons's classification 1979) [8].

Our criteria of recruitment was uterine malformation itself, disregarding the kind of malformation or the presence of cervical incompetence. Out of the 275 patients, 125 underwent cerclage and 150 were treated with tocolysis.

The therapeutic success rate was analyzed comparing successful pregnancies and losses obtained in these two groups stratified for the presence (103 patients) or absence (172 patients) of simultaneous cervical incompetence.

Results showed that there was a higher rate of abortion in the untreated group as compared to that observed in the treated subjects. Notwithstanding, if we stratify for the presence of cervical incompetence, an improvement in outcome can be observed in the treated subjects bearing incompetence rather than in patients with isolated uterine malformations. This seems to confirm the efficacy of cerclage in preventing miscarriages only in those pregnancies bearing uterine malformations with simultaneous cervical incompetence.

In the control group we registered 102 deliveries: 63 at term (43%) and 39 premature (26%); 48 pregnancies ended in miscarriages (32%) before the 14th week.

In the treatment group we observed 115 deliveries: 79 at term (69%) and 26 premature (23%). Only ten miscarriages (8%) before the 14th week were observed. Successful pregnancies in the treatment group were represented by eight vaginal deliveries during the 36th week, 18 cesarian sections carried out during the 37th week, 54 cesarian sections carried out during the 38th week and 25 at the 39th week. The conditions of the newborn babies were satisfactory in all cases including the premature infants, with an APGAR score always higher than 7. Weight at birth ranged from 2,500 to 3,800 g.

Discussion

In Italy, Ferraris first suggested the use of cervical cerclage as a valid treatment in preventing the high percentage of miscarriages associated with uterine malformations and cervical incompetence. Many authors have reported similar findings [9-11]. Moreover, obstetric complications such as premature birth, early miscarriage, ectopic pregnancy, abnormal fetal presentation and a high rate of cesarean section are more frequent among women with uterine malformations if compared with the general population.

Even if further studies are needed, our results seem to confirm the therapeutic efficacy of this treatment supported by the statistically significant difference in the pregnancy outcome shown by treatment and control groups.

In 1992 Golan *et al.* [12] reported on 98 women with congenital uterine malformations who were diagnosed with hysterosalpingography. He diagnosed cervical incompetence in 30% of his series of 98 cases; 80% of the malformations were constituted by symmetrical uterine malformations (bicornuate uterus, uterus didelphys and septate uterus) and the bicornuate uterus

Table 1. — *Classification of uterine malformations* – (Buttram and Gibbons) [8].

Type I	*Agenesis or uterine hypoplasia*
	a) Vaginal
	b) Cervical
	c) Uterine
	d) Tubal
	e) Uterus-Vaginal
Type II	*Unicorn uterus*
	a) With Comunication
	b) No Communication
	c) Without Cauty
	d) Without Forn
Type III	*Didelphys uterus*
Type IV	*Bicornis uterus*
	a) Complete
	b) Partial
	c) Arcuated
Type V	*Septus uterus*
	a) Complete
	b) Partial
Type VI	*Anomalies for exposure to DES*

Table 2.

PATIENTS			
125 cerclage		150 thocolyhic therapy	
72 malformation alone	53 malformation + incompetence	100 malformation alone	50 malformation + incompetence
OUTCOME			
Term 34% Preterm 12% Miscar 3%	Term 35% Preterm 11% Miscar 5%	Term 30% Preterm 12% Miscar 11%	Term 12% Preterm 14% Miscar 21%

Table 3. — *Uterine malformations observed in case series.*

Uterine malformation	Case no.
Septus uterus	21
Arcuatus uterus	31
Bicornis bicollis uterus	53
Bicornis unicollis uterus	127
Didelphys uterus	43
Total	275

represented 5% of them. Based on the statistical analysis of these cases, he showed that in the group of patients sharing uterine malformations and cervical incompetence, cerclage significantly improved the outcome. Conversely, no improvement was observed in patients with uterine malformations alone.

Thus, extreme importance was attributed to the high frequency of cervical incompetence in women with uterine congenital malformations.

Our data, in accordance with Golan's findings, suggest a key role of cervical cerclage in the treatment of cervical malformations associated with cervical incompetence.

Many hypotheses have been proposed to explain the mechanisms by which cervical cerclage improves the obstetric outcome in women with uterine malformations. Our model suggests that cerclage could inhibit the reflex stimuli originating from the cervix toward the hypophysis thus triggering contractions through the release of oxytocin. The inhibition of these stimuli might enable the uterine corpus to expand further, almost passively, in order to be able to host the embryo, which would otherwise be ejected for lack of space. On the basis of this proposed etiopathogenetic hypothesis we suggest the exploitation and elective cesarean section between the 36th to 38th week of pregnancy. This view is also supported by the observation that even though we can artificially force one hemiuterus to host the pregnancy it is unlikely that an inadequate myometrial structure could undergo the stress of a vaginal birth.

However, only the accurate surveillance of these pregnancies, considering clinical and biological parameters, would suggest a better timing for delivery.

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