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Cervical diameter after suction termination of pregnancy

F D JOHNSTONE, R J BEARD, I E BOYD, T G MCCARTHY

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Summary

The diameter of the internal cervical os was measured in several groups of patients in an attempt to assess any damage caused by suction termination of pregnancy. Pregnant women who had had a previous abortion by vacuum aspiration had significantly greater cervical diameters than those who had not, and there was a statistically significant correlation between dilatation of the cervix at operation and cervical diameter at six weeks' follow-up. Cervical dilatation to 10 mm or less was subsequently associated with a normal cervical diameter, but the diameter was often large when the extent of dilatation was greater than 12 mm or not known. Cervical dilatation at termination of pregnancy should, if possible, not exceed 10 mm.

Introduction

Cervical damage has long been recognised as a hazard of dilatation of the cervix for induced abortion. Reports from several countries have suggested an association between induced abortion and subsequent second trimester abortion or premature delivery. In none of these studies, however, was there a carefully matched control group. Furthermore, techniques of first trimester abortion have changed, and these figures do not necessarily apply to current methods.

Patients with cervical incompetence may be identified by an abnormally wide internal os diameter. The introduction of a simple method of measuring this diameter led to an attempt to assess this after abortion.

Institute of Obstetrics and Gynaecology, Chelsea Hospital for Women, London SW3

F D JOHNSTONE, MB, MRCOG, resident surgical officer (now lecturer, University Department of Obstetrics and Gynaecology, Aberdeen AB9 2ZD)

R J BEARD, FRCS, MRCOG, senior registrar (now consultant gynaecologist, Brighton General Hospital, Brighton 7)

I E BOYD, FRCS, MRCOG, senior registrar (now consultant gynaecologist, Southampton General Hospital, Southampton SO9 4XY)

T G MCCARTHY, FRCS, MRCOG, resident surgical officer (now senior registrar, St Thomas's Hospital, London SE 1)

Patients and methods

There were four groups of patients. Group 1 consisted of eight non-pregnant women with a history of at least two spontaneous mid-trimester abortions and a presumptive diagnosis of cervical incompetence. Group 2 consisted of 16 pregnant women whose cervix was measured at repeat suction termination of pregnancy. Group 3 consisted of 51 women who had their cervix measured six weeks after their only suction termination of pregnancy. Group 4 consisted of 17 non-pregnant women who had had a previous suction termination of pregnancy but who had not been pregnant in the past year.

The measurements were carried out as described.¹ The French catheter gauge system was used (1 gauge French = 0.33 mm). The results were compared with published normal values obtained from 99 pregnant and 41 non-pregnant women.¹ This study gave the following standard (mean $\pm$ SD) values: (a) a non-pregnant mean cervical diameter of 24.3 ± 3.1 French, (b) a nulliparous pregnant mean cervical diameter of 25.8 ± 3.1 French, and (c) a parous pregnant mean cervical diameter of 27.3 ± 3.3 French.

TABLE 1—Cervical measurements in patients who had had previous mid-trimester abortions (group 1)

Case No	Gravidity	Parity	History	Day of cycle	Cervical diameter (French gauge)
1	3	0	D and C for dysmenorrhoea (twice), 3 painless second trimester abortions	6	37
2	5	0	Suction termination of pregnancy (twice), 3 painless second trimester abortions (16, 19, and 22 weeks), cervical incompetence diagnosed on hystero-gram	26	40
3	4	0	Suction termination of pregnancy, 1 1st trimester abortion, 2 2nd trimester abortions, no details	9	30
4	3	0	16 Weeks abortion (pain and bleeding), 16 weeks abortion (spontaneous rupture of membranes, fairly painless labour), 13 weeks abortion	12	31
5	8	0	4 1st trimester, 4 2nd trimester miscarriages, several Shirodker sutures		24
6	5	3	D and C for dysmenorrhoea, 3 full-term pregnancies uneventfully, 16 weeks painless abortion, 20 weeks painless abortion	Not stated	32
7	4	2	2 Full-term uneventful pregnancies, 18 weeks abortion, 22 weeks abortion	Not stated	34
8	11	9	Suction termination of pregnancy, 28 weeks delivery, 36 weeks delivery, 8 miscarriages, the last at 22 weeks, several Shirodker sutures	Not stated	29

D and C = Dilatation and curettage.

Results

Group 1—In two patients (cases 1 and 2) the history was of classical cervical incompetence (table I). In some others the history was much less typical. Five of the eight patients (including the two patients with classical histories) had cervical measurements more than 2 standard deviations above the normal mean. Of the three others two had had several previous cervical sutures which might have reduced the cervical diameter.

Group 2—In only one case was information about the previous cervical dilatation available. Three of the eight primigravidae had measurements more than 2 standard deviations above the mean. The mean cervical measurement for the eight primigravidae was 31.6 ± 2.0 French, which was significantly greater than for the normal primigravid pregnant group ($P < 0.001$). The parous women showed much less abnormality but one had a measurement over 2 standard deviations above the mean, and the mean measurement of 30.3 ± 4.1 French was probably significantly greater than that in the normal parous pregnant group ($P < 0.05$).

Group 3—There was a highly significant correlation between the maximum dilatation of the cervix at operation and the cervical diameter six weeks later ($r = 0.49$; $P < 0.001$) (table II). The mean cervical diameter of the 38 women whose cervix was dilated to 10 mm or less was not significantly greater than the non-pregnant value, and only one patient had a measurement more than 2 standard deviations above the normal mean. In the 13 patients whose cervix was dilated above 10 mm the mean was greater than the non-pregnant mean value ($P < 0.001$).

Group 4—In six of the 17 cases the cervix had been dilated to 10 mm (table II). The mean for these cases was not significantly different from the standard non-pregnant value. In the remaining 11 patients previous cervical dilatation had been to 12 mm (3 cases) or to 14 mm or more (3 cases), or was not known (5 cases). The mean cervical measurement for this group (26.7 ± 4.3) was higher than the standard non-pregnant value ($P < 0.05$) and one patient had a measurement more than 2 standard deviations above the mean.

TABLE II—Cervical measurements in patients six weeks after suction termination of pregnancy (group 3) and 17 patients more than a year after suction termination (group 4)

Dilatation of cervix at termination of pregnancy (mm)	No of patients	Mean ($\pm$ SD) cervical measurement (French gauge)	No of patients with values over 2SD above non-pregnant mean
Group 3			
≤ 8	18	24.8 ± 2.5	0
10	20	25.5 ± 2.8	1
12	7	25.9 ± 3.6	1
≥ 14	6	31.7 ± 6.1	4
Group 4			
10	6	25.2 ± 2.1	
12	3	26.0 ± 3.0	
14	3	27.7 ± 2.3	
Not known	5	26.6 ± 6.1	

Discussion

The results in group 1 confirm what is well recognised, that patients with a history of cervical incompetence tend to have abnormally large cervical diameters. Also some patients have high cervical measurements after suction termination of pregnancy (groups 2, 3, and 4). Obviously these women will not

necessarily have cervical incompetence, which is uncommon. What is likely, however, is that the higher the cervical diameter the greater will be the risk of this. In the 45 patients in whom previous cervical dilatation had been 10 mm or less the subsequent cervical diameters were normal. Many of the 29 patients who had undergone dilatation to more than 12 mm or to unknown amounts had high cervical measurements.

There are two criticisms of the obvious explanation that the higher cervical measurements resulted from higher initial cervical dilatation. The first concerns the patients in group 3. The cervix may not have returned completely to its interval state by six weeks after termination of pregnancy and hence possibly the cervical diameter of these patients might have decreased further if measured later. The second criticism is that, although no information about previous cervical dilatation was available for the patients in group 2, by including them with others whose cervixes are known to have been dilated to 12 mm and more we imply that they also underwent higher cervical dilatation. This inclusion, however, is probably justified, since most of the abortions were done before 1970, when suction termination was done later in pregnancy, with larger suction cannulae, and the dangers of over-zealous cervical dilatation were not generally appreciated. Thus Stallworthy *et al.*,² reviewing the complications of abortion in Oxford, reported that in cases of vacuum aspiration "Hegar dilators larger than No 12 were required in the majority of cases and larger than No 14 in a fair number." He also reported that demonstrable cervical laceration occurred in 4.9% of the 768 patients aborted by this method.

Hulka *et al.*³ reported that maximum resistance to dilatation of the internal os in first trimester pregnancies occurs consistently at 9 mm. They thought that the internal os dilates with ease to 8 mm but that the more difficult dilatation to 11 mm or 12 mm "may represent tearing of the internal os rather than true dilatation." With present abortion techniques, however, terminations are performed at an earlier gestation and cervical dilatation is accomplished more gently with tapered dilators and local instead of general anaesthesia. Thus pregnancies up to 10 weeks can be evacuated easily with plastic cannulae of up to 10 mm, although pregnancies of 12 weeks are evacuated more rapidly and with less blood loss with suction cannulae of 12 mm.

In conclusion, while the limitations of this small study must be kept in mind, our data suggest that dilatation of the cervix to 14 mm or above (and possibly even to 12 mm) at suction termination of pregnancy may result in abnormally high cervical measurements in some patients, and hence may increase the small possibility of second trimester abortion or premature labour from cervical incompetence. No such association is found when the cervix is dilated to 10 mm or less.

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