

CERVICAL RIPENING BEFORE INDUCTION OF LABOR: A NEW METHOD WITH PROSTAGLANDIN-FILLED PORTIO ADAPTER *

W. GRÜNBERGER

1st Dept. of Obstetrics and Gynecology
University of Vienna (Austria)

SUMMARY

In 80 pregnant women who presented "immature" portio uteri a priming with prostaglandin was carried out.

A new procedure of local application using a portio-adapter was tried. This synthetic adapter was inserted over the uterine cervix by means of vacuum suction and filled with a mixture of 15 mg $\text{PGF}_{2\alpha}$ and methyl-cellulose or 1.25 mg PGE_2 and NaCl . The prostaglandin filled adapter was left in place for 6 hours and then removed.

The control examination after the removal showed a highly significant improvement of the cervical score in the nulliparae as well as in the multiparae group. None of the patients experienced any labor pains while the cap remained in place. No side effect were ever observed. Only three cases (3.7%) had to be considered therapeutic failures because of insufficient cervical maturation.

Our method should not be interpreted as birth induction but should be understood to be a preparation for the start of planned artificial birth. During ripening of the cervix uterine contractions were missed—the method described therefore can be used in patients with EPH gestosis and placental insufficiency. Advantages are: simplicity of procedure, possibility for exact dosage of the prostaglandin amount and the absence of side effects.

The preferred method of inducing labor at the 1st Department of Obstetrics and Gynecology in Vienna is with deep amniotomy⁽³⁾. The only exceptions so far have been made in pregnancies with retained portio uteri and closed cervical canal.

Recent publications reporting about good results with prostaglandin for priming and softening the cervix^(2, 6-8) have prompted us to use prostaglandin for local applications.

MATERIAL AND METHODS

40 Patients were treated with 15 mg $\text{PGF}_{2\alpha}$ * in methylcellulose gel, and 40 were treated with 1.25 mg PGE_2 * in a water soluble. Of the total of 80 women, 63 were overdue, 17 suffered from either EPH gestosis or diabetes mellitus (table 1).

We have developed a new form of applying the therapeutic agent to the cervical uterus by means of a portio-cap^(4,5) (fig. 1). After inserting the portio-adapter and obtaining a sufficiently large vacuum, the prostaglandin mixture was instilled with a plastic tube leading to the synthetic cap. Routine electrocardiography was carried out, and the PG mixture was generally extracted with a syringe after 6 hours. The adapter was removed. Before and after cap application, internal examination was carried out, evaluating the cervical ripening according to a somewhat modified Bishop score. If birth was not initiated after removal of the cap, the cervical score was again determined on the following day, and labor induced with deep amniotomy. A still immature portio uteri was again treated with PG-filled portio adapter.

RESULTS

There are two groups representing our results:

Group 1 consists of 33 pregnancies where labor starts after cap removal or already with the lying adapter, resulting in birth. Comparative scores of the cervix before and after treatment with $\text{PGF}_{2\alpha}$ and PGE_2 showed significant differences. An overdue multipara had to be treated

* Partly reported at the Prof. K. de Snoo Memorial Congress (11th Meeting of the Organ. Gestosis), Den Haag, September 1979.

* Upjohn, Limited Fleming Way, Crawley, Sussex.

Table 1. — *Material and indication for prostaglandin-treatment.*

Treated with	N	Age	Parity		Indication	
			Nulliparae	Multiparae	Postdatism	Gestosis and/or diab. mel.
PGF _{2α}	40	18-40 a (26.4)	25	15	34	6
PGE ₂	40	17-38 a (25.7)	18	22	29	11

with the PG adapter three times in three consecutive days. Therefore, only the score of the third treatment was evaluated (table 2).

Group 2 consisting of 44 patients underwent induced labor by means of deep amniotomy on the following day, when cervical ripening was established. Here, too, there was a significant improvement in the cervix scores. Without determinable labour pains, the portio continued to ripen during the night. In 8 patients the results seemed insufficient. Therefore they were treated repeatedly. Here, too, only the last applications were evaluated (table 3).

In multiparae the priming effect was somewhat more obvious and caused more

labour pains than in nulliparae. In 3 cases the therapy was unsuccessful. The entire birth procedure and fetal outcome fell within the norm and need not be discussed in detail. Patients treated with PGE₂ seemed to have a shorter birth phase.

Table 4 shows the results in detail. It is obvious, that patients treated with PGE₂ were much more apt to reach regular labor pains before amniotomy. In the 3 unsuccessful cases, 2 showed insufficient cervix ripening in spite of repeated PG-cap application. One had to be taken off the adapter immediately after application because of alteration in the fetal heart beat.

There were no symptoms of nausea, vomiting or diarrhea as noted side-effects.

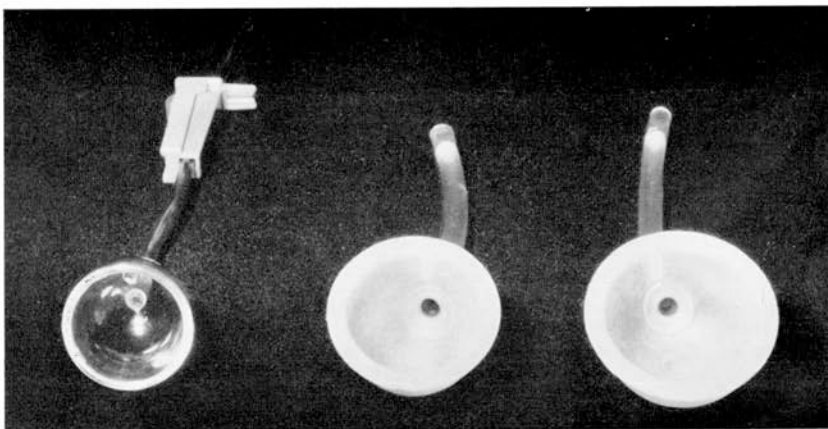


Fig. 1. — Used portio-adapters (WISAP®).

Table 2. — *Cervix scores in patients with induction of labour.*

	N	Cervix-score		More than one treatment schedule (N)
		Before "PG-adapter" \bar{x} (min-max)	After "PG-adapter" \bar{x} (min-max)	
PGF _{2a}	10	3.2 (3-5)	6.2 (5-8)	0
PGE ₂	23	3.0 (1-5)	7.5 (4-10)	1

Table 3. — *Cervix-scores in patients with portio-priming.*

	N	Cervix-score			More than one treatment schedule (N)
		Before "PG-adapter" \bar{x} (min-max)	After "PG-adapter" \bar{x} (min-max)	AT amniotomy \bar{x} (min-max)	
PGF _{2a}	28	2.4 (0-5)	5.6 (3-8)	7.9 (7-10)	5
PGE ₂	16	2.9 (1-4)	5.8 (4-8)	7.6 (6-10)	3

Table 4. — *Effect after local application of 15 mg PGF_{2a} or 1.25 mg PGE₂.*

	N	Induction of labour	Cervix-"priming"	Failures
15 mg PGF _{2a}	40	10	28	2
1.25 mg PGE ₂	40	23	16	1

DISCUSSION

The effects of locally-applied prostaglandin seem to be two-fold. First of all there is a local effect, the biochemical basis of which is not yet fully clear (¹). This effect can be utilized even in cases of EPH gestosis and placenta insufficiency, in order to be able to monitor fetal cardiac frequency internally after cervical ripening and amniotomy. An increased dose causes a rapid sequence of relatively painless contractions, causing further ripening of the cervix. Usually the next phase is regular, intense opening labor pains. The question whether or not PGF_{2a} or PGE₂ should be preferred, cannot be answered on the basis of our experience so far.

The form of application developed by us, using a portio-cap, is technically uncomplicated, causes no galenic problems

and facilitates an exact dose of the therapeutic agent. If complications do occur, a major part of the prostaglandin-mixture may be removed immediately.

BIBLIOGRAPHY

- 1) Cornely M., Hackbarth I.: *Arch. Gynecol.*, 227, 83, 1979.
- 2) Gordon-Wright A. P., Elder M. G.: *Brit. J. Obst. Gyn.*, 86, 32, 1979.
- 3) Günberger W., Mick R., Wagenbichler P.: *Z. Geburtsh. u. Perinat.*, 182, 434, 1978.
- 4) Grünberger W., Husslein P.: *Geburtsh. u. Frauenheilk.*, 39, 793, 1979.
- 5) Grünberger W., Husslein P.: *Arch. Gynecol.*, 229, 245, 1980.
- 6) Mackenzie I. Z., Embrey M. P.: *Brit. J. Obst. Gyn.*, 85, 352, 1978.
- 7) Thierry M.: *Z. Geburtsh. Perinat.*, 182, 352, 1978.
- 8) Wingerup L., Andersson K. E., Ulmstein U.: *Acta Obst. Gyn. Scand.*, 57, 403, 1978.