Article

Induction of labor with vaginal prostaglandin-E₂ in grand multiparous women with one previous cesarean section

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Abstract

Objective: To review the outcome of induction of labor with vaginal prostaglandin-E₂ in grand multiparous women with one previous cesarean section. Methods: Twenty-six grand multiparous women with one previous cesarean section were induced with vaginal prostaglandin-E₂. Results: Twenty (76.9%) women delivered vaginally and six (23.1%) women delivered by emergency cesarean section. The mean duration of labor was 6 ± 3.6 h. There was no uterine rupture or dehiscence. There was one neonatal death and two stillbirths. Conclusions: Our limited study suggests that induction of labor with vaginal prostaglandin-E₂ in selected grand multiparous women with one previous cesarean section may be a reasonable option. However, further studies are needed to document its safety.

Keywords: Induction; Prostaglandin-E₂; Grand multipara; Previous cesarean

1. Introduction

Induction of labor in grand multiparous women (para 6 or more) with one previous cesarean section is considered a contraindication. This is because of the combination of three risk factors for uterine rupture (grand multiparity, uterine scar, and the use of prostaglandin preparations). However, there is no real data in the literature to support such a recommendation. Induction of labor with vaginal prostaglandin-E₂ in grand multiparous women without previous uterine scar proved to be relatively safe [1,2]. Furthermore, there is insufficient evidence against the use of vaginal prostaglandin-E₂ in multiparous women with one previous cesarean section [3]. The aim of

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this study is to review the outcome of induction of labor with vaginal prostaglandin-E\(_2\) in grand multiparous women with one previous cesarean section.

2. Materials and method

Between 1 January 1991 and 31 July 1997, 26 grand multiparous women with one previous cesarean section were induced with vaginal prostaglandin-E\(_2\) at King Abdulaziz University Hospital, Jeddah, Saudi Arabia. Analysis of the hospital records showed that they all: (1) had medical or obstetrical indication for induction of labor; (2) requested vaginal birth after cesarean section (VBAC) after counseling regarding the potential risks; (3) completed 37 weeks of gestation or more; and (4) had cephalic presentation with unripe cervix (Bishop score < 4) at the time of induction.

The indications for induction of labor were: (1) post-date, 13 women (50%); (2) mild pregnancy-induced hypertension, six (23%); (3) gestational diabetes mellitus, four (15.3%); and (4) intruterine fetal death, two (7.7%); and fetal multiple congenital anomalies, one (4%). Nineteen (73%) women had had one or more successful VBAC before the index pregnancy and seven women (27%) did not have VBAC before the last delivery was by cesarean section.

The induction of labor and the intrapartum monitoring were as reported before [2]. In short, vaginal prostaglandin-E\(_2\); half a tablet (1.5 mg of Dinoprostone, Upjohn, London, UK) was inserted in the posterior vaginal fornix during vaginal examination. This was repeated every 6 h up to three doses provided that the cervix was still unripe and the fetal heart monitoring was reassuring. Intrapartum continuous fetal heart monitoring was carried out for all women. Pain relief in labor was provided by intramuscular administration of pethidine and phenergan. Statistical analysis was performed using SPSS-PC for windows, version 6.1. Results are expressed as mean \(\pm\) S.D. Statistical analysis was done with \(\chi^2\) test. A \(P\)-value < 0.05 was considered statistically significant.

3. Results

The maternal characteristics are shown in Table 1. The majority of our grand multiparous women were older than 30 years (84.6%). All women responded to a maximum of three doses of 1.5 mg of prostaglandin-E\(_2\) [18 women (69.2%) received 1.5 mg, five women (19.3%) received 3.0 mg, and three women (11.5%) received 4.5 mg]. Twenty (76.9%) multiparous women delivered vaginally while six women (23.1%) delivered by emergency cesarean section (three for fetal distress and three for failure to progress). Seventeen women out of 19 (89.5%) who had had successful VBAC before the index pregnancy delivered vaginally. In contrast, three women out of seven women (42.9%) who did not have VBAC before did not have VBAC before (the last delivery was by cesarean section).

The mean duration of labor was 6 \(\pm\) 3.6 h. There was no uterine rupture or dehiscence, however, two women (7.7%) developed postpartum hemorrhage due to uterine atony and were given blood transfusion. Four babies (15.4%) had Apgar score \(< 7\) at 1 min and one baby (3.8%) had Apgar score \(< 7\) at 5 min. The mean fetal weight was 3611.5 \(\pm\) 486.8 g. Twenty-four babies were delivered alive, but one died in the neonatal period due to multiple congenital anomalies which were diagnosed antenatally. There were two stillbirths (came with history of absent fetal move-

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean ± S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>34.6 ± 4.4</td>
</tr>
<tr>
<td>Gravidity</td>
<td>9.0 ± 2.1</td>
</tr>
<tr>
<td>Parity</td>
<td>7.7 ± 1.7</td>
</tr>
<tr>
<td>Gestational age</td>
<td>40.0 ± 2.0</td>
</tr>
<tr>
<td>Maternal height</td>
<td>154.9 ± 3.0</td>
</tr>
<tr>
<td>Maternal weight</td>
<td>77.0 ± 15.40</td>
</tr>
</tbody>
</table>

*Note.* Data are presented as mean \(\pm\) S.D.
ments for a few days and were diagnosed as intrauterine fetal death before induction).

4. Discussion

Induction of labor with vaginal prostaglandin-E₃ in multiparous women with one previous cesarean section is controversial. A recent review of the existing literature showed that there is no good analytic studies concerning the safety of vaginal prostaglandins with one previous cesarean section [3]. Eleven retrospective studies included 713 women with one previous cesarean section who were induced with vaginal and cervical prostaglandin-E₃. Only two women had dehiscence of the uterine scar and the success rate of VBAC was 72.6%. This led to the conclusion that there is ‘insufficient evidence’ of any increased risk of rupture or dehiscence.

Grand multiparity has been traditionally considered a high-risk situation [4–6]. However, current studies do not support such a statement [7–9]. In addition, one study based on the outcome of delivery of 1700 grand multiparous women concluded that ‘grand multiparity no longer needs to be considered a high-risk category’ [10]. This is due to appropriate antenatal care, contemporary obstetrics, and improved neonatal services. Two local reports showed that grand multiparity and even extreme grand multiparity (para 10 or more) do not impose ‘special obstetric or perinatal risk’ [11,12].

We [2] and Abu El-Lail et al. [1] have shown that induction of labor in grand multiparous women is relatively safe. Management of grand multiparous women with one previous cesarean section is a special situation. Awaiting spontaneous labor is the best strategy for successful VBAC. However, sometimes induction of labor for medical or obstetric indications may be necessary. This creates a management dilemma. Dyack et al. [13] suggested that induction of labor is not a contraindication, provided that it is performed by a senior member and emergency cesarean section is resorted to if labor does not progress smoothly. The success rate of VBAC in our study was 76.9% and we did not have any maternal mortality, or serious morbidity such as uterine rupture or dehiscence. However, these results should be considered with caution because of the small number of patients. Furthermore, 19 (73%) of the 26 women had had one or more successful VBAC before the index pregnancy.

In conclusion, our limited study suggests that induction of labor with vaginal prostaglandin-E₃ in selected grand multiparous women with one previous cesarean section may be a reasonable option. However, further studies are needed to document its safety.

References