

# The effect of the absence of an accompanying person at birth on the basic perinatal outcomes — a randomized study during the lockdown in the COVID epidemic

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## ABSTRACT

**Objectives:** To investigate the impact of an accompanying person on the basic parameters of perinatal outcome [e.g. length of stages of labour, proportion of Caesarean sections (CS), vaginal surgical delivery, perineal injury, Apgar score, epidural analgesia] were analysed.

**Material and methods:** A retrospective single-institution study analysed data from 872 deliveries during three periods: March, 2020 (COVID-19 government restriction on accompanying person), February, 2020 (control 1) and March, 2019 (control 2).

**Results:** In all, 872 deliveries were evaluated. There was no delivery with accompanying person in group 1 and 181 and 254 in groups 2 and 3. Groups were balanced in caesarean section rate. There were more acute CS in the group 1 than in the group 3 (36% vs 25%,  $p = 0.028$ ), however there were no difference when compared with the group 2 (36% vs 33%,  $p = 0.602$ ). No difference was found in the length of the labour between the groups. There was no difference in Apgar score in 5th or 10th minute either and also in the incidence of perineal tear IIIrd grade.

**Conclusions:** The absence of accompanying person or father at the delivery does not affect the the basic parameters of perinatal outcome. This finding provides more freedom in the mother's decision about the presence of an accompanying person at the birth. And also may be an argument for reducing the remorse (bad feelings) of fathers who cannot or do not want to be present at birth.

**Key words:** accompanying person; father; delivery; perinatal outcome

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## INTRODUCTION

During the pandemic, prenatal training courses most often asked what would happen if the father could not be present at the birth for epidemiological reasons. Our staff was able to answer the psychological and supportive part of the issue but could not comment on the perinatal outcome. Most mothers were interested in the length of childbirth, peripartum analgesia and the risk of giving birth by caesarean section. Due to cultural and social differences and the lack of recent data, we analyzed our peripartum outcome.

The presence of an accompanying person at birth, especially the father, does not have as long a history in the Czech Republic as in Western countries. It was made possible only after the fall of the socialist establishment in 1989, and gradually its popularity grew. Under socialism, childbirth was a purely medical matter taking place in the isolation of the maternity hospital. The man's presence at the birth was forbidden due to fears of introducing the infection into the delivery room. The man had the role of only a passive recipient of the news of the birth of a child. Not only mothers

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but also newborns were isolated in separate wards and contact with the mother was allowed only during breastfeeding.

The liberalization of the political system was followed by the liberalization in health care, and hospitals, including maternity hospitals, were also opened to family members. The period of initial waiting was followed by a period of practically socially obligatory presence of the father at the birth. Since 2000, the approach has been rational. Most women are accompanied during the birth by a partner, some by a close person (mothers, sisters, friends) and recently some women hire a professional doula (an expert on active support and help during childbirth).

The perinatology center of the clinic is one of the largest in the Czech Republic, it is part of the university clinic, where undergraduate and postgraduate teaching takes place not only for doctors, but also for midwives. In 2019, 4602 births took place there. Births are led by midwives, students and doctors. The presence of the of an accompanying person at the birth is very desirable and, in our mothers, has long been around 70-80% on long-term average. The proportion of fathers in childbirth in our maternity hospital is 99 percent of all accompanying persons, so we related the results mainly to them. All accompanying persons who want to be in childbirth take a short prenatal course with their pregnant partners, where they are introduced within three hours how to be a physical and psychosocial support during childbirth.

At the beginning of the coronavirus epidemic in March 2020, the Ministry of Health banned the presence of the accompanying person at childbirth in the first wave of restrictive measures [1]. This ban has caused an unexpectedly large wave of criticism and started a huge discussion not only on social networks but also in the public media. Exchanges of views between opponents and supporters of this prohibition lasted exactly 30 days and ended with the official repeal of this regulation. These restrictions enabled to retrospectively assess a cohort of patients, who were not allowed to have a close person at the delivery.

There are many publications in the literature that examine the presence of the father at birth from various psychosocial aspects [2–8]. Only a minimal number of works examines the effect of the presence of the accompanying person or father at birth on measurable perinatal parameters. Therefore, a restriction of the presence of accompanying person at birth was a unique opportunity to see how this absence at birth would affect perinatal outcomes. The connection between the presence of an accompanying person (father) during childbirth and these parameters was assessed: length of stages of labour, proportion of Caesarean sections and vaginal surgical delivery, perineal injury, Apgar score and use of epidural analgesia.

## MATERIAL AND METHODS

We conducted a retrospective single-institution study that analysed data from deliveries performed in our institution in the following time periods: March 18–April 16, 2020 (Group 1 — COVID-19 government restriction on accompanying person), February 17–March 17, 2020 (Group 2 — control) and March 18–April 16, 2019 (Group 3 — control). All three time periods were 30 days long. The data were obtained from the electronic hospital information system Medea and from the book of birth records.

Analysed were all consecutive deliveries at 37 weeks of gestation or later. Caesarean sections were excluded from the assessment of the stages of labour length.

Data were retrospectively retrieved from the patients' files. First stage of labour was defined as a time from the onset of regular contractions until cervix full dilatation. Second stage as a time from fully dilated cervix to the delivery. Time from rupture of membranes (either natural or artificial) until the delivery was also recorded.

Perineal tear IIIrd grade was defined as injury involving perineal tissues including anal sphincter. Acute Caesarean sections were those which were preceded by the trial of labour.

Standard measures of summary statistics were used to describe the primary data: relative and absolute frequencies and arithmetic mean supplied with the standard deviation of mean. All values in the Group 1 were compared independently with both control groups (Tab. 1).

Chi square test was used to compare the groups in the parametric categories and the Kruskal-Wallis test to compare the groups in the categories where the continual variables were provided. A value of  $p = 0.05$  was used as the limit of statistical significance in all the analyses performed.

All 95% confidence intervals (CI) for proportions were estimated using the exact binomial distribution.

The study protocol was approved by the local ethics committee of the General University Hospital under No: 1578/20 S-IV and is in accordance with the tenets of the Helsinki.

## RESULTS

In all, 872 deliveries were retrospectively evaluated in this study — 238, 279 and 355 in groups 1, 2 and 3 respectively. There was no delivery with accompanying person in Group 1 and 181 and 254 in Groups 2 and 3 ( $p = 0.000$ ). There was no significant difference in the length of gravidity ( $p = 0.983$  and  $p = 0.759$ ) or number of previous births ( $p = 0.272$  and  $p = 0.706$ ) between the groups. Groups were balanced in caesarean section rate ( $p = 0.405$  and  $p = 0.118$ ). The number of instrumental deliveries (vacuum extraction

Table 1. Group characteristics and statistical results

	Whole cohort	Group 1	Group 2	Group3	Group 1 vs Group 2	Group 1 vs Group 3
					p**	p**
Period		18.3.–16.4.2020	17.2.–17.3.2020	18.3.–16.4.2019		
Length [days]	90	30	30	30		
n	872	238	279	355		
Deliveries with accompanying person	435 (50%)	0	181 (64%)	254 (72%)	< 0.001	< 0.001
Length of gravidity	39.6 ± 1.1	39.6 ± 1.1	39.6 ± 1.1	39.5 ± 1.1	0.983	0.759
Number of previous births	0.6 ± 0.7	0.6 ± 0.7	0.6 ± 0.8	0.5 ± 0.7	0.272	0.706
Caesarean sections	319 (37 %)	74 (31 %)	101 (36 %)	144 (41 %)	0.405	0.118
Acute caesarean sections	96 (30 %)	27 (36 %)	33 (33 %)	36 (25 %)	0.602	0.028
VEX + Forceps	12 (1 %)	6 (3 %)	4 (1 %)	2 (1 %)	0.046	0.046
Female sex	425 (49 %)	103 (43 %)	133 (48 %)	189 (53 %)	0.470	0.170
Induction of labor	119 (14 %)	40 (17 %)	35 (13 %)	44 (12 %)	0.267	0.149
Neuroaxial analgesia	489 (56 %)	138 (58 %)	143 (51 %)	208 (59 %)	0.327	0.896
Perineal tear III <sup>rd</sup> grade	5 (1%)	3 (1%)	2 (1%)	0 (0%)	0.478	—
1 <sup>st</sup> stage of labor* [min]	293.9 ± 176.9	304.4 ± 194.3	275.4 ± 165.5	301.5 ± 171.4	0.244	0.704
2 <sup>nd</sup> stage of labor* [min]	23.0 ± 20.3	22.8 ± 18.0	22.7 ± 20.7	23.5 ± 21.7	0.432	0.554
Length of ruptured membranes* [min]	348.8 ± 539.9	327.8 ± 545.8	327.6 ± 482.3	382.8 ± 580.4	0.917	0.272
Newborn weight [g]	3400.8 ± 408.3	3399.2 ± 397.6	3347.6 ± 415.8	3446.9 ± 406.4	0.291	0.942
Apgar score 5 <sup>th</sup> minute	9.8 ± 0.5	9.8 ± 0.6	9.8 ± 0.5	9.8 ± 0.5	0.989	0.997
Apgar score 10 <sup>th</sup> minute	9.9 ± 0.3	9.9 ± 0.4	9.9 ± 0.2	9.9 ± 0.3	1.000	1.000

\*excluding caesarean sections; \*\*X<sup>2</sup> and Kruskal-Wallis test

or forceps) was small; however, we noticed a trend towards higher rate of these deliveries in the Group 1 (3% vs 1%,  $p = 0.046$ ). There were more acute Caesarean sections in Group 1 than in Group 3 (36% vs 25%,  $p = 0.028$ ), however we observed no such trend when compared with Group 2 (36% vs 33%,  $p = 0.602$ ). We found no difference in the length of the first stage of labour, second stage of labour or a time from the rupture of membranes to the delivery between the groups (Tab. 1). There was also no difference in Apgar score in 5th or 10th minute either ( $p = 0.989$ ,  $p = 0.997$ ,  $p = 1.000$  and  $p = 1.000$ ). The incidence of perineal tear II-III<sup>rd</sup> grade did not differ between the groups ( $p = 0.478$ , chi square for Group 3 could not be calculated since no patient had such perineal injury). The use of epidural analgesia also did not differ between groups ( $p = 0.327$ ,  $p = 0.896$ ).

## DISCUSSION

In this retrospective single-institution cohort study we found that the absence of accompanying person at the delivery has no effect on the variables associated with the labor. The current trial was designed to have two control

groups of patients to perform an internal validation. Despite the significantly higher proportion of acute Caesarean section in Group 1 when compared with Group 3 ( $p = 0.028$ ), this result was not validated by the same evaluation with Group 2 ( $p = 0.602$ ). The trend in the number of instrumental deliveries ( $p = 0.046$ ) was influenced by the small numbers of vacuum extraction a forceps deliveries ( $n = 12.1\%$ ).

Because in our maternity hospital in 99% of cases the accompanying person at the birth is the father, we will focus on the role of his presence / absence at the birth from various aspects.

In the last century, the role of the father has changed dramatically during pregnancy and childbirth. Until the 1940s, childbirth and presence were only a woman's business. Changing cultural and professional attitudes around the emotional bond between a man and a woman, the structure of the family, the definition of the male role and the more active involvement of men in the family have encouraged the more frequent presence of fathers in childbirth. This shift, as it took place in Britain, was very clearly described by King in an article accurately entitled "Hiding

in the pub to cutting cord?” [12]. Its course was identical for almost the entire Western culture.

Many studies have described that the emergence of a close father-child relationship occurs during childbirth and therefore, in the eyes of the public, “good” fathers are present at childbirth [13]. Fathers who choose not to be present are often condemned by their surroundings [14]. The role of fathers is also perceived as supporting the mother during childbirth, but the results of studies do not clearly show that it is always the right decision for all involved [6]. Cultural, religious, ethnic and geographical differences in the origin of published works probably play a major role here [2].

There are many psychosocial and behavioral theories on the topic of the father’s presence at birth, but few have been verified by studies [2]. All studies are questionnaires and usually do not have a control group. Randomizing the presence of the father at birth in studies is unrealistic in Western cultural countries. The issue of the father’s presence at childbirth can be divided into two categories. The first deals with various psychosocial aspects, the second with the direct effect of its presence on peripartum outcomes.

Much has been done about the psychosocial effects of the father’s presence at birth. The effect of diverse family constellations, attitudes, socio-economic statuses, mutual relations of father with future mother, with born child, information of fathers, etc. is examined [5, 7, 15]. Their basic goal is to find out what seals and harmonizes the family as much as possible. A very clear analysis was performed by Xue [2], which divided these studies into two main categories: 1) fathers’ own involvement during pregnancy and childbirth, and 2) factors influencing fathers’ involvement during pregnancy and childbirth. Although it analyzes the results of 143 studies very honestly, the results are unclear and in some cases contradictory. Some works even describe that for some fathers, their presence at birth can have a devastating effect on the family.

The well-known French obstetrician Michel Odent wrote negatively about the presence of a partner at childbirth, who even pointed out that the presence of fathers at childbirth is related to the higher frequency of caesarean sections. He justified this by claiming that a male partner in childbirth can cause female anxiety, which by its effect on oxytocin production weakens uterine contractions and hinders the progression of labor [16]. The impact of the presence of fathers in childbirth may be much more complicated than previously thought. Also interesting is Odent’s description of couples after home births, after which a woman happily and actively cares for a newborn while a man rests in bed because he is not feeling well. The author is convinced that postpartum depression is more common in men than in

women [10]. Most studies show that fathers’ support in birth helped mothers to have more positive experiences in all aspects of childbirth [14].

Not many papers have been published on the influence of the father’s presence at birth on objective perinatal outcomes [3, 9–11]. Probably due to ethically problematic randomization, no recently published work was found (in Pubmed) on the influence of the presence of a third person at birth on measurable perinatal parameters, and therefore there are not many studies to compare our results. In a study of 100 births, Herman states that a partner-accompanied birth is associated with a lower incidence of intrauterine fetal distress and caesarean sections [17]. Our results did not confirm these conclusions.

In large Cochrane Database of Systematic Reviews Bohren et al found, in the parameters evaluated by us, only low-quality evidence of the benefit of the presence of an accompanying person at birth. They found in the primary comparison, women who were allocated to continuous one-to-one support were more likely to have a spontaneous vaginal birth (low-quality evidence) and less likely to have any intrapartum analgesia. In addition, these women had shorter labours (low-quality evidence), were less likely to have a caesarean birth (low-quality evidence) or instrumental vaginal birth, regional analgesia, or a baby with a low five-minute Apgar score [18]. This is probably due to the high heterogeneity of the evaluated papers and the non-systematic inclusion of probands in individual groups that were not randomized. Our study is unique in that the births of women who were completely banned from the presence of an accompanying person, even though they counted on or relied on it, were also evaluated.

According to the obtained results, the overall effect of pandemic stress on peripartum results was not demonstrated. This is in line with the finding that the effect of chronic stress (for example in natural disasters) has only been demonstrated on long-term perinatal parameters such as the number of miscarriages, the number of premature births) [19].

Given that the mothers were stressed not only by the pandemic itself, but also by the fact that in the end there will be no partner in their birth, whose support they expected and who was prepared for this task throughout pregnancy, the results of this study may seem surprising, as this burden did not affect the duration of labor or basic perinatal parameters. There are many possible explanations for this finding, from the natural ability of mental mobilization during stress to excellent support from staff. Of course, the question arises as to what, in addition to the psychosocial benefit, is the health perinatal benefit of the presence of an accompanying person at childbirth.

## CONCLUSIONS

Based on the results of this study, it can be concluded that the absence of the father or accompanying person at birth does not affect the main perinatal outcomes. The decision on the presence of the father at the birth is entirely up to the couple.

This finding provides more freedom in the mother's decision about the presence of an accompanying person at the birth. Also, it may be an argument for reducing the remorse (bad feelings) of fathers who cannot or do not want to be present at birth.

Further studies are desirable, either in terms of confirming the results of this study or in terms of assessing various cultural and civilizational phenomena for the monitored parameters.

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### Conflict of interest

Author declare no conflict of interest.

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