

Association between Births by Caesarean Section and Uterine Rupture

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Abstract

Continued increase in births by caesarean section has influenced the increased occurrence of uterine rupture in many countries of the world. The aim of this study is to determine the association between of the births by caesarean section and uterine rupture. It was a cross-sectional study. The research data was collected and recorded in writing (as per birth protocol) in clinic of Obstetrics and Gynaecology, University Clinical Centre of Kosovo. Data for uterine rupture was collected over the study period of five years (from 2010 to 2014), only in women who gave birth by caesarean section. The cases with uterine rupture were recorded over these years, followed by statistical calculations. Of total 15526 women who underwent caesarean section over the study period of five years (from 2010 to 2014), there were 22 cases of uterine rupture thus, with an incidence of 14 per 10,000 deliveries with Caesarean Section and significance level for observed proportion was $P < 0.0001$ (95% confidence interval CI; 21.35 to 22.66). Continuous increase in uterine rupture was noticed from 2010 to 2014. Percentage of uterine rupture of 2010 was 0.07%, when compared with that of 2014 i.e., 0.17 %, which is a significant difference (in favor of the increase), odds ratio $OR = 0.82$ (95%CI; 0.016 to 41.70).

Keywords

Caesarean Section; Uterine rupture

I. Introduction

Uterine rupture is separation of uterine muscle, requiring urgent operative intervention. Separation involves all layers of the uterus. Uterine rupture is most often seen in women who have a scarred uterus (usually with previous history of caesarean section). Uterine rupture causes fetal distress and maternal shock. The risk for women, who labor with a scarred uterus, is 35 per 10,000 deliveries. The risk is further increased by trial of labour for vaginal delivery, use of oxytocin and prostaglandins for induction.

Continued increase of births by caesarean section, in many countries of the world, has influenced the increased occurrence of uterine rupture. To measure this correlation between births by cesarean section and uterine rupture, we conducted a research study over the period of five years (from 2010 to 2014), in clinic of Obstetrics and Gynaecology, University Clinical Centre of Kosovo. The aim of this study was to determine of the incidence of uterine rupture in the Kosovo and then an association between births by caesarean section and uterine rupture

II. Patients and Methods

This one year prospective study was conducted

2.1. Design:

It was a Cross-sectional study. The research data was collected and recorded as written data (as per birth protocol) in the clinic of Obstetrics and Gynaecology, University Clinical Centre of Kosovo. The data for uterine rupture was collected over the period

of five years (from 2010 to 2014), and included women who were hospitalized in our center and delivered by caesarean section. Data was calculated by using MedCalc software. Statistical methods that were used to issue final results are; Percentages (report; $22/15526 \times 100$); Incidence rate (based on total number of new cases of specific diseases and total population at risk 'xn⁵'); Correlation Coefficient: Pearson Correlation Coefficient Calculator, while P-value from Pearson (R) Calculator. Odds Ratio (OR); the (OR), its standard error and 95% confidence interval (CI) were calculated according to Altman, 1991.

2.2. Case determination

The study population included all the cases from Kosovo who underwent cesarean delivery in the clinic of Obstetrics and Gynaecology during five years study period (2010 to 2014). Uterine rupture that was diagnosed in study population was defined as; a separation of the three layers of the uterine wall of the pregnant women's, with or without rupture of amniotic membranes; with or without extrusion of fetus into the abdominal cavity.

2.3. Statement for approval

The Ethics Committee of Obstetricians and Gynaecologists of Kosovo approved this research in accordance with the ethical criteria concerning experiments involving human beings.

III. Results

Out of total 15526 women who underwent Caesarean Section, there were 22 cases of uterine rupture during five years in clinic of Obstetrics and Gynaecology, University Clinical Centre of Kosovo, (Table 1.). Thus the incidence of uterine rupture was 14 per 10,000 deliveries with Caesarean Section and significance level for observed proportion was $P < 0.0001$ (95% confidence interval CI; 21.35 to 22.66).

From 2010 to 2014, there was noticed a continuous rise in cases of uterine rupture (Table 1.). The percentage of uterine rupture of 2010 was 0.07%, when compared with that of 2014 i.e., 0.17 %, which is a significant

difference (in favor of the increase); odds ratio $OR = 0.82$ (95% CI; 0.016 to 41.70). Therefore, birth by caesarean section may play a major role in determining the risk for uterine rupture.

The average age of women with a uterine rupture was 26.59 years. (Standard deviation (SD) = 6.02) By place of residence (town or village), 63.63 percent (n=14), women were from village and 36.37 percent (n=8), women were from town. (OR) = 1.7 (95% CI; 0.61 to 5.00). This suggests, the women from the village has 1.7 times more possibility to have a uterine rupture, than that of women from town. (Table 2)

Table 1 Number of cases with a uterine rupture and number of births with Caesarean Section during five years (from 2010 to 2014) and their percentages.

Years	2010	2011	2012	2013	2014	Total
Number of cases with a uterine rupture	2	4	5	5	6	22
Number of births with Caesarean Section	2856	2942	3100	3181	3447	15526
Percentages	0.07 %	0.13 %	0.16%	0.16 %	0.17%	0.14 %

Table 2 Number of cases with a uterine rupture by place of residence

Place of residence	Number of cases	Percentages
Town	8	36.37%
Village	14	63.63%
Total	22	100%

IV. Discussion

The incidence rate of the uterine rupture in Kosovo is 14 per 10,000 deliveries with caesarean section (as estimated by this study fivefold increase; from 2010 to 2014). This incidence estimate shows that the uterine rupture rate in Kosovo is approximately the same as in many other countries of the world.

Previous caesarean section is an important risk factor for uterine rupture in developed countries¹. An edition 2005 by World Health Organization (WHO) shows a median incidence of the uterine rupture of 5.3 per 10,000 births.¹ While at the Netherlands, a study shows an incidence of the uterine rupture of 5.9 per 10,000 births ($P < 0.0001$).² A study in Australia conducted by retrospective database, shows that the incidence of the uterine rupture to women with previous one caesarean section was 17 per 10,000 deliveries³.

A National Case Control Study in UK reported the incidence of twenty-one per 10,000 deliveries, of the uterine rupture, in women planning vaginal delivery with history of previous caesarean delivery⁴. Even a retrospective study in Norway showed an

incidence of 50 per 10,000 deliveries of uterine rupture in women with previous caesarean section, 5. The incidence rate was 90 per 10,000 deliveries for women with previous one caesarean section who attempted vaginal birth, as reported by study in Sweden.⁶ Our study, that included cases delivered by caesarean section, estimated the incidence rate of the uterine rupture in Kosovo of 14 per 10,000 deliveries. This study found a strong correlation ($r = 0.8983$) between number of cases of uterine rupture and number of the births with caesarean delivery. We conclude that an increase in number of the births with caesarean section leads to increase in the number of cases of uterine rupture. This study result can help the obstetrician to be aware of uterine rupture as one of the possible consequence of previous caesarean delivery in clinical practice.

V. Conclusion

We conclude, a strong correlation was found between number of cases of uterine rupture and number of the births by caesarean section. The incidence rate of the uterine rupture in Kosovo was estimated to be 14 per 10,000 deliveries with caesarean section. Implementing steps to avoid unnecessary cesarean sections may also help in reducing the rising incidence of uterine rupture associated with previous cesarean deliveries.

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