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Trend in cesarean delivery rate among twin pregnancies over a 20 years epoch and the accompanied maternal and perinatal outcomes

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ABSTRACT

Objective: To examine the trend of cesarean delivery (CD) rate among twin pregnancies and the trend in maternal and neonatal morbidities within two decades.
Study design: Population-based cohort study, conducted at a single teaching hospital in Israel on data between January 1995 and December 2015. All pregnant women with twin gestation who delivered at a gestational age of 24 weeks or more were included. Data on mode of deliveries, Apgar score <7 at 5 min, cord artery pH < 7.1, early postpartum hemorrhage, blood transfusion, and intrapartum fever for each year were extracted and plotted, and trends were analyzed. CDs performed for one or both twins were divided to laboring, i.e., after a trial of labor, and non-laboring CDs. Data was obtained from the hospital discharge register with ICD-9 codes and crosschecked with the labor medical records. The Cochran-Armitage Trend Test was used to identify trends and correlations.
Results: Of all 88,145 deliveries that took place during this period, 1955 (2.2%) were twins. Of these 53 were ineligible and were excluded. There was a statistically significant trend (increase) in twins birth over time (p = 0.004). CD rate increased significantly from 43.4% in 1995 to 66.0% in 2015 (p = 0.001). This increase was observed only among non-laboring cesareans (p = 0.001). Multivariate logistic regression analysis revealed that maternal and early neonatal morbidities examined did not differ significantly during the study period.
Conclusion: Non-laboring CD rate increased significantly over the past two decades among twin pregnancies. Despite this increase, maternal and early neonatal morbidities did not change.

Introduction

Cesarean delivery (CD) is an obstetrical surgical procedure that is used to save lives of mothers and fetuses [1]. During the last decades, a global dramatic increase in the incidence of both primary and repeated CDs was recorded [2]. Nevertheless, the impact of this rise on maternal health or on neonatal morbidity and mortality still needs to be proved [3].

Twin pregnancies account for 2–3% of all births and the rate of CDs for twin pregnancy increased as well in the United States, from 53.4% to 75.3% during 1995 and 2009, respectively. This increase was seen for both vertex and breech presenting twins [4–7]. Several factors contributed to the increase in CD rate among twin pregnancies: advanced maternal age seen in these women, the high rate of accompanied comorbidities, increase in proportion of women who conceived as a result of assisted reproduction techniques, and women's demand. Each factor represents an independent reason for the CD rate increase in twin pregnancies [8,9]. Additionally, the optimal mode of delivery is a point of debate, particularly in regard to its effect on neonatal outcomes. Large population-based retrospective cohort studies suggested that planned CD may improve perinatal outcome of the second twin [10,11]. Nevertheless, prospective studies suggest otherwise [12–14]. Although most health care providers support planned vaginal delivery in cases of vertex–vertex twins, fewer are comfortable with breech vaginal delivery of the second twin [4]. Despite this rise in CD rate in twin pregnancies, the impact on maternal health or on neonatal outcome still needs to be proved. The objective of the current study was to determine the trend of overall CD rate among twin pregnancies at a single university teaching hospital during the last two decades, and to explore the parallel trend in maternal and early neonatal morbidities during this period.

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Materials and methods

A population-based cohort study was conducted at a single university medical center in Israel using data from January 1995 to December 2015. The study was approved in June, 2016 (IRB no: 0073-16-EMC) by the local institutional review board, Emek Medical Center, Afula, Israel. For this type of study signed consent was not required.

All pregnant women with twin gestation who delivered at a gestational age beyond 24 weeks were included. Mono-amniotic twins and twins with major fetal malformations or death of one or both twins were excluded. Women were detected through International Classification of Diseases-9 codes, electronic labor charts and medical records at admission and discharge. All medical files that were detected were then checked manually for confirmation.

The policy of twin delivery in our institution, throughout the study period, was to support a woman's choice for a trial of vaginal delivery in cases of cephalic presenting first twin. CD was recommended for non-cephalic first twins and for other obstetrical reasons as in the case of placenta previa. Trial of labor after one low transverse CD was not an indication for repeat CD. When induction of labor was required it was accomplished by a balloon catheter for cervical ripening and amniotomy with or without intravenous oxytocin infusion. Continuous fetal heart rate monitoring was employed in all twin deliveries. Labor was supervised by midwives and a senior obstetrician. Women were encouraged to receive epidural analgesia throughout labor, but it was not mandatory and was performed upon request. In cases of second twin presented in vertex or breech presentation, expectant management was employed after delivery of the first twin, as long as the fetal heart rate monitoring was reassuring. Interventions such as oxytocin infusion and amniotomy were employed as a decision of the senior physician during labor. In these cases, spontaneous vaginal delivery was intended given that maternal pushing efforts were preserved and continuous fetal descent was noticed. Vacuum extraction was the only instrumental delivery used and was employed in cases of prolonged second stage, maternal exhaustion, or a non-reassuring fetal monitoring. Internal podalic version followed by breech extraction or cesarean delivery were performed if the obstetrician presumed that the fetal status required an immediate delivery and the fetal head station did not permit a safe vacuum delivery. Assisted breech delivery was the preferred method for delivering the breech second twin. Total breech extraction was done in cases of non-reassuring fetal status or in incomplete breech presentation. For a transverse or oblique lie of the second fetus with reassuring fetal tracing, external cephalic version or internal podalic versions were attempted, according to the obstetrician's judgment. Delivery of a second twin in a non-cephalic presentation was carried out in the operating theatre.

Data collected and examined for each year included demographic and obstetric parameters, mode of deliveries, Apgar score < 7 at 5 min and cord artery pH < 7.1 of each twin, neonatal death not attributed to major malformations, early postpartum hemorrhage (PPH), blood transfusion, and intrapartum fever, were extracted, plotted, and trends analyzed. Besides hypertension and diabetes, other maternal diseases that included thrombophilia, thyroid disorders, asthma, cardiac disease, and epilepsy were also recorded.

The primary outcome was delivery mode, which was categorized as either vaginal or cesarean. The main predictor variable of interest was birth year. CD was categorized as laboring, i.e., performed after a trial of labor, for one or both twins, and non-laboring, i.e., performed without a trial of labor. Women admitted in labor but who were delivered by an indicated cesarean, as in the case of non-vertex first twin, were categorized as having a non-laboring cesarean.

Statistical analysis

The Cochran-Armitage Trend Test was used to identify trends in the categorical data and linear regression was used to test linear trend in the continuous variables of maternal age and BMI. Logistic regression was used to adjust the incidence of cesarean sections and significant outcome variables (such as blood transfusion) for significant demographic and obstetric variables. Significance was considered when p-value < 0.05. The statistical analysis was performed using XLSTAT (MS Excel, Addinsoft) and SPSS version 21 (IBM Corp, 2012).

Results

Of all 88,145 deliveries that took place during this period, 1955 (2.2%) were twin gestations. Of these, 53 were ineligible and were excluded from the final analysis. Demographic and obstetric characteristics are presented in Table 1. During the study period there was a statistically significant trend (increase) in twin deliveries over time ($\chi^2 = 8.45$, $p < 0.004$) from 1.9% in 1996 to a maximum of 2.6% in 2013 and 2014. Linear regression analysis revealed a statistically significant increase in maternal age over time (b=0.085, se=0.021, $p = 0.001$) from a minimum average of 29.1 years in 2001 to a maximum average of 32.2 years in 2015. There was no linear trend for body mass index (b=-0.0308, se=0.023, $p = 0.10$).

There was a significant trend for increased Jewish ethnicity over time ($\chi^2 = 8.45$, $p = 0.01$). In addition, there was a significant increasing trend for use of fertility treatments ($\chi^2 = 13.60$, $p = 0.03$) from 18.3% in 1995 to 56.5% in 2015, an increase in the use of labor induction ($\chi^2 = 24.14$, $p = 0.001$) from a minimum of 1.2% in 1995 to a maximum of 14.4% in 2015.

While there was no change in incidences of diabetes or hypertension over time there was an increase in other maternal diseases ($\chi^2 = 7.69$, $p = 0.006$). The presentations of the first and second twins at the start of delivery did not vary over time (Table 1).

As can be seen in Table 2, CD rate increased significantly from 43.4% in 1995 to 66.0% in 2015 ($\chi^2 = 31.32$, $p = 0.001$). This increase was observed only among non-laboring cesareans ($\chi^2 = 63.92$, $p = 0.001$) (Fig. 1). There was a significant decrease in the incidence of laboring cesareans ($\chi^2 = 24.06$, $p = 0.001$). During this period significant decreases in the incidences of neonatal death ($\chi^2 = 13.05$, $p = 0.001$) and blood transfusions ($\chi^2 = 7.38$, $p = 0.007$), and an increase in the incidence of cord artery pH < 7.1 ($\chi^2 = 4.11$, $p = 0.04$) of any twin were observed. There was no significant change in the rates of Apgar score < 7 at 5 min and/or early postpartum hemorrhage or in intrapartum fever. There was no linear trend for birth weight (twin 1: b=1.742, se=2.161, $p = 0.42$; twin 2: b=2.384, se=2.182, $p = 0.28$).

Multivariate logistic regression analysis was used to estimate the odds for CD during the study period, adjusting for maternal age, ethnicity, maternal diseases, use of fertility treatments, and labor induction. For every additional year from 1995 to 2015, the odds of CD rate increased by 5.1% (OR: 1.051, 95% CI: 1.034–1.069). Among preterm births (<37 weeks) the odds of CD rate increased by 4.1% (OR: 1.044, 95% CI: 1.020–1.068) and among term births (>37 weeks) the odds of CD rate increased by 6.2% for every additional year from 1995 to 2015 (OR: 1.062, 95% CI: 1.037–1.088).

Repetition of the analysis for non-laboring and laboring CDs revealed that for every additional year from 1995 to 2015, a mean increase of 7.8% in the incidence of non-laboring CDs was observed (OR: 1.078, 95% CI: 1.061–1.096). The increase was statistically significant for both term (OR: 1.094, 95% CI: 1.068–1.121) and preterm (OR: 1.064, 95% CI: 1.040–1.088) births. On the other hand, the incidence of laboring CDs declined during this period by 7.5%

Table 1
Demographic and Obstetric Characteristics.

Year	All deliveries	Twin deliveries	Maternal age	Body mass index, kg/m^2	Dichorionic diamniotic	Fertility treatment	Any Diabetes	Any Hypertension	Other maternal diseases*	Induction of labor	Vertex first twin	First vertex, second non-vertex
1995	3854	82 (2.13)	30.02	23.78	68 (89.5)	15 (18.3)	1 (1.2)	6 (7.3)	0 (0.0)	1 (1.2)	59 (72.0)	29 (50.0)
1996	3861	74 (1.92)	30.34	25.22	59 (90.0)	23 (31.1)	3 (4.1)	9 (12.2)	2 (2.7)	5 (6.8)	53 (71.6)	28 (53.8)
1997	4023	90 (2.24)	29.89	26.49	66 (81.5)	46 (51.1)	5 (5.6)	15 (16.7)	2 (2.2)	1 (1.1)	60 (66.7)	27 (45.0)
1998	4131	92 (2.23)	29.83	24.72	64 (85.3)	38 (41.3)	11(12.0)	7 (7.6)	0 (0.0)	3(3.3)	68 (73.9)	24 (35.3)
1999	4246	85 (2.00)	30.95	24.64	62 (92.5)	32 (37.6)	5 (5.9)	19 (22.4)	2 (2.4)	0 (0.0)	60 (70.6)	20 (33.3)
2000	4301	78 (1.81)	31.13	27.13	66 (90.4)	35 (44.9)	7 (9.0)	12 (15.4)	2 (2.6)	2 (2.6)	54 (69.6)	28 (51.9)
2001	4418	102 (2.31)	29.11	25.58	71(75.5)	40 (39.2)	5 (4.9)	12 (11.8)	0 (0.0)	6(5.9)	73 (72.6)	37 (50.7)
2002	4477	92 (2.05)	29.76	25.84	74 (87.1)	36 (39.1)	7 (7.6)	7 (7.6)	2 (2.2)	6 (6.5)	64 (69.2)	27 (42.2)
2003	4457	73 (1.64)	29.58	24.96	55 (80.9)	29 (39.7)	2 (2.7)	8 (11.0)	5 (6.8)	1 (1.4)	53 (62.4)	23 (43.4)
2004	4273	78 (1.83)	31.41	25.20	67 (87.0)	34 (43.6)	4 (5.1)	6 (7.7)	1 (1.3)	2 (2.6)	54 (77.1)	21 (38.9)
2005	4232	93 (2.20)	29.58	24.39	78 (86.7)	36 (38.7)	4 (4.3)	16 (17.2)	0 (0.0)	2 (2.2)	58 (70.7)	29 (50.0)
2006	4215	96 (2.28)	30.74	24.92	78 (84.0)	41 (42.7)	10(10.4)	18 (18.8)	3 (3.1)	7 (7.3)	74 (73.0)	36 (49.3)
2007	4135	82 (1.98)	30.17	25.54	66 (81.5)	29 (35.4)	8 (9.8)	9 (11.0)	2 (2.4)	0 (0.0)	58 (71.4)	18 (31.0)
2008	4222	74 (1.75)	31.99	25.33	68 (93.2)	37 (50.0)	6 (8.1)	12 (16.2)	2 (2.7)	1 (1.4)	54 (73.0)	17 (31.5)
2009	4171	91 (2.18)	30.51	24.66	70 (78.7)	34(37.4)	2 (2.2)	14(15.4)	2 (2.2)	9 (9.9)	65 (71.4)	24 (36.9)
2010	4285	97 (2.26)	30.86	25.31	84 (86.6)	44 (45.4)	6 (6.2)	16 (16.5)	4 (4.1)	4 (4.1)	61 (62.9)	26 (42.6)
2011	4289	112 (2.61)	31.07	25.08	92 (82.9)	46 (41.1)	11 (9.8)	16 (14.3)	7 (6.3)	2 (1.8)	84 (75.0)	32 (38.1)
2012	4228	99 (2.34)	31.17	25.14	91 (91.9)	49 (49.5)	5 (5.1)	13 (13.1)	6 (6.1)	4 (4.0)	58 (58.6)	19 (32.8)
2013	4057	107 (2.64)	30.87	23.77	90 (85.7)	55 (51.4)	6 (5.6)	10 (9.3)	7 (6.5)	11 (10.3)	77 (72.0)	26 (33.8)
2014	4103	108 (2.63)	31.60	24.48	98 (90.7)	61 (56.5)	6 (5.6)	14 (13.0)	3 (2.8)	15 (13.9)	73 (67.6)	33 (45.2)
2015	4167	97 (2.33)	32.18	25.15	82 (86.3)	38 (39.2)	6 (6.2)	10 (10.3)	1 (1.0)	14 (14.4)	71 (73.2)	34 (47.9)
χ2	–	8.45	–	–	0.11	13.60	0.14	0.04	7.69	24.14	0.35	2.86
p	–	<0.01	<0.01	0.10	0.74	0.03	0.71	0.86	<0.01	<0.01	0.56	0.10

Data are mean or N (%).
* Include Thrombophilia, Thyroid disorders, Asthma, Cardiac disease, and Epilepsy.

(OR: 0.925, 95% CI: 0.899-0.951). This decline was evident for both term (OR: 0.901, 95% CI: 0.862-0.942) and preterm (OR: 0.944, 95% CI: 0.910-0.980) births.

Multivariate logistic regression analysis was then used to estimate the odds for blood transfusions and pH less < 7.1 during the study period adjusting for maternal age, ethnicity, maternal diseases, use of fertility treatment, and labor induction. After adjustment there was no difference in the incidences of blood transfusions (OR: 0.965, 95% CI: 0.909–1.024, $p = 0.16$) or pH < 7.1 (OR: 1.045, 95% CI: 0.997–1.095, $p = 0.07$) over time. During the study period there were 12 cases of neonatal death, of them 10 were born < 28 weeks, one at 30.5 weeks and one at term (37.5 weeks). Due to the small number of cases (n=12), the multivariate model could not be adjusted for induction or other maternal diseases.

Table 2
Annual twin births, cesarean deliveries, and unadjusted neonatal outcomes.

Year	All Cesareans	Non-laboring Cesarean	Laboring Cesarean	Male first twin	Male second twin	First twin weight, gr	Second twin weight, gr	pH <7.1	Apgar <7 at 5 minutes	Neonatal death
1995	36 (43.4)	26 (31.7)	10 (12.2)	42 (51.2)	39 (47.6)	2348 ± 618	2297 ± 614	2 (2.44)	2 (2.44)	2 (2.44)
1996	37 (50.0)	26 (35.1)	11 (14.9)	40 (54.1)	32 (43.2)	2272 ± 631	2232 ± 580	2 (2.70)	3 (4.05)	3 (4.05)
1997	55 (61.1)	40 (44.4)	15 (16.7)	47 (52.2)	50 (55.6)	2415 ± 607	2332 ± 627	1 (1.11)	0 (0.00)	0 (0.00)
1998	48 (51.6)	37 (40.0)	11 (12.0)	46 (50.0)	42 (45.7)	2335 ± 561	2223 ± 552	3 (3.26)	1 (1.09)	2 (2.17)
1999	41 (47.7)	28 (32.9)	13 (15.3)	41 (48.2)	44 (51.8)	2469 ± 495	2462 ± 497	5 (5.88)	1 (1.18)	0 (0.00)
2000	50 (63.3)	41 (52.6)	9 (11.5)	38 (48.7)	41 (52.6)	2392 ± 518	2362 ± 497	2 (2.56)	0 (0.00)	0 (0.00)
2001	68 (66.0)	59 (57.8)	9 (8.8)	46 (45.1)	47 (46.1)	2241 ± 618	2232 ± 629	3 (2.94)	4 (3.92)	0 (0.00)
2002	56 (60.2)	48 (52.2)	8 (8.7)	49 (52.7)	42 (45.7)	2326 ± 598	2238 ± 578	2 (2.17)	2 (2.17)	2 (2.17)
2003	43 (57.3)	38 (52.1)	5 (6.8)	44 (53.1)	39 (53.4)	2294 ± 630	2355 ± 611	1 (1.37)	1 (1.37)	1 (1.37)
2004	57 (73.1)	50 (64.1)	7 (9.0)	39 (50.0)	40 (51.3)	2415 ± 760	2305 ± 654	1 (1.28)	1 (1.28)	2 (2.56)
2005	70 (74.5)	65 (69.9)	5 (5.4)	49 (52.7)	53 (57.0)	2392 ± 517	2323 ± 505	0 (0.00)	0 (0.00)	0 (0.00)
2006	71 (73.2)	59 (61.5)	12 (12.5)	51 (53.1)	47 (49.0)	2357 ± 590	2294 ± 540	0 (0.00)	0 (0.00)	0 (0.00)
2007	58 (70.7)	52 (63.4)	6 (7.3)	39 (47.6)	36 (43.9)	2287 ± 532	2256 ± 555	0 (0.00)	1 (1.22)	0 (0.00)
2008	51 (68.9)	45 (60.8)	6 (8.1)	42 (56.8)	39 (52.7)	2301 ± 544	2300 ± 560	1 (1.35)	1 (1.35)	0 (0.00)
2009	66 (71.7)	58 (63.7)	8 (8.8)	48 (52.7)	46 (50.0)	2389 ± 541	2325 ± 600	1 (1.10)	1 (1.10)	0 (0.00)
2010	70 (72.2)	67 (69.1)	3 (3.1)	47 (48.5)	49 (50.0)	2368 ± 560	2304 ± 545	2 (2.06)	0 (0.00)	0 (0.00)
2011	84 (75.0)	77 (68.8)	7 (6.3)	51 (45.5)	53 (47.3)	2360 ± 498	2279 ± 535	3 (2.68)	0 (0.00)	0 (0.00)
2012	70 (70.7)	69 (69.7)	1 (1.0)	46 (46.5)	49 (49.5)	2337 ± 541	2324 ± 588	5 (5.05)	1 (1.01)	0 (0.00)
2013	67 (62.6)	60 (56.1)	7 (6.5)	47 (43.9)	52 (48.6)	2335 ± 638	2297 ± 645	3 (2.80)	1 (0.93)	0 (0.00)
2014	73 (67.6)	70(64.8)	3 (2.8)	60 (55.6)	58 (53.7)	2404 ± 603	2369 ± 658	5 (4.63)	5 (4.63)	0 (0.00)
2015	64 (66.0)	56 (57.7)	8 (8.2)	49 (50.0)	58 (59.8)	2451 ± 470	2406 ± 529	10 (10.31)	1 (1.03)	0 (0.00)
χ2	31.32	63.92	24.06	0.35	1.28	–	–	4.11	0.32	13.05
p	<0.01	<0.01	<0.01	0.57	0.26	0.42	0.28	0.04*	0.57	<0.01**

Data are mean ± standard deviation or N (%).
* p = 0.07 after adjustment for maternal age, ethnicity, maternal diseases, use of fertility treatment, and labor induction.
** Adjustment could not be performed due to the small number of cases.

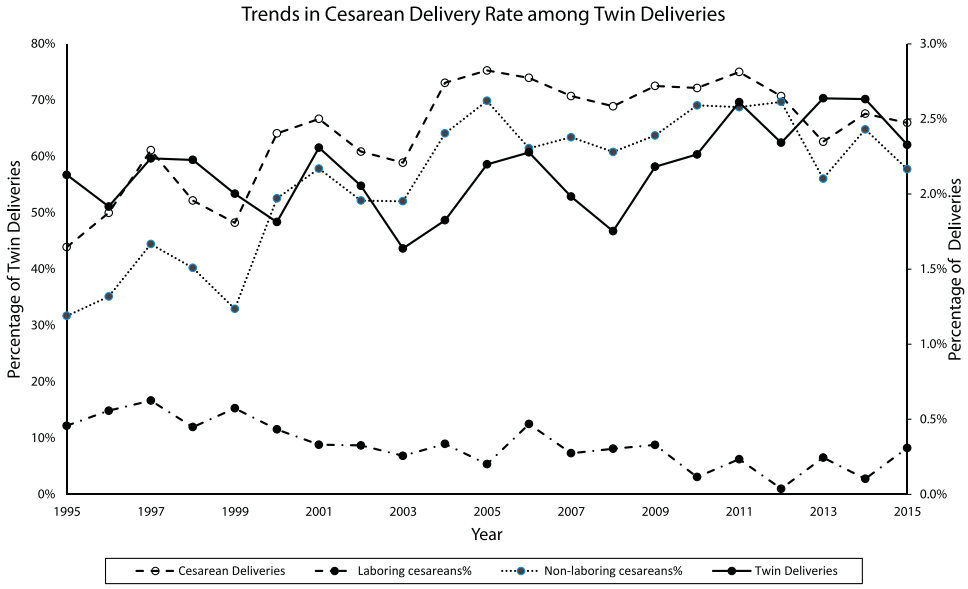

Fig. 1. Trends in cesarean delivery rate among twin pregnancies (1995–2015).

Comment

In the current study we observed a statistically significant increase in the rate of CD for twin pregnancies from 43.4% in 1995 to 66.0% in 2015. The increase was simply due to increase in the rate of non-laboring CD while the rate of laboring CD decreased. Overall, for every additional year from 1995 to 2015, a mean increase of 5.1% in the incidence of CD was noticed, similar to the annual increase in the United States reported by Lee et al., [4]. The trend in maternal morbidity and short-term neonatal outcomes in terms of Apgar score and cord pH did not change over the study period despite the increase in non-laboring CD. The increase in preterm CD rate was associated with decrease in the incidence of neonatal deaths among preterm deliveries. Nevertheless, the number of cases was small and adjustment could not be performed. For that reason, the results regarding the effect of the increase in CD rate on neonatal deaths should be interpreted with caution.

Several factors may have influenced the change in CD rate during the study period. The increase in maternal age and rate of twin pregnancies conceived following fertility treatments found during the study period may explain this increase to some extent. Twin pregnancies conceived following fertility treatment, particularly among women of advanced age, are at higher risk of obstetric complications and adverse neonatal outcome in comparison with naturally conceived twin gestations [15–17]. Both advanced maternal age and fertility treatments in general are predictable reasons for increase in planned CD but not in laboring CD [17]. Other main factors may have contributed to the increase in CD rate in twins but were not examined in the current study. These are the increase in the less-skilled providers that manage vaginal delivery of twin pregnancies and the prejudice of the involved infertility providers that may affect women's decisions regarding mode of delivery [18,19]. Additionally, the change that occurred in medico-legal milieu during the last two decades is probably a concern [20–22]. Both factors are possibly related as well.

As compared to the study of Lee et al., [4] who examined trend in CD rate in the United States, we were able to determine presentations at delivery. Presentation combinations of both fetuses during the study period did not change significantly. Additionally, it is not possible in the current study (strength of single institution study) that some of the increase in twin CD rate was attributed to change in policy regarding managing non-vertex first twin since during the whole study period same policy was considered, i.e., delivering by CD. For these reasons the increase in CD rate was attributed only to change in mode of delivery of vertex-first twin pregnancies.

In the current study, we observed a trend of increase in induction of labor during the study period similar to the trend found by Lee et al., [4] In contrast to singleton gestations where recent randomized trials showed that induction of labor was not associated with increase in CD rate [23,24], data regarding induction in twin gestation is limited. Previous studies reported an increase in CD rate with induction of labor in twin gestation [4,25]. Nevertheless this change does not explain the increase noticed in the last decades since induced women are designated to have a planned vaginal delivery while the increase was found only in non-laboring CDs.

CD is an invasive intervention used to avoid or treat life-threatening maternal or fetal complications [26]. Nevertheless, CD may increase both short-term and long-term maternal morbidity, and for that reason justifications for the increased use in terms of potential maternal and perinatal benefit are warranted [26]. In this study we were unable to demonstrate significant change in short neonatal outcomes, similar to the results of Schmitz et al., [27]. Additionally, it has been suggested that planned CD could potentially reduce maternal morbidity by decreasing the need for unplanned cesarean deliveries [27]. Nevertheless, maternal morbidities including fever and bleeding were also not affected during the study period.

The current study has limitations including a possibility of bias due to the use of a retrospective database. Furthermore, the study lacks information regarding long-term maternal and neonatal outcomes that were not explored in this study and for that reason the impact of the increase in CD rate cannot be explored entirely. In addition, the fact that the study was conducted at a single hospital may limit its generalizability. Nevertheless, a distinctive advantage related to a single center study is the use of similar protocol in managing twin pregnancies. Differences, even minor, in intra-partum management that may occasionally be found between institutions may affect results of multicenter studies.

In conclusion, the results of the current study combined with results of other retrospective and randomized trials [4,13,28] are unable to justify the increase in CD rate among twin pregnancies.

Training young physicians in delivering twin pregnancies before total "disappearance" of the skilled obstetricians is essential to block or at least to slow the increase in CD rate among twins before it's too late.

Conflict of interest

The authors report no conflict of interest.

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