



The timing of elective caesarean delivery at term in Lombardy: a comparison of 2010 and 2014

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ABSTRACT

Elective caesarean section (CS) before 39 completed weeks of gestation increases likelihood of respiratory morbidity in newborns and admissions in neonatal intensive care. Thus, guidelines have recommended that planned caesarean section should not be routinely carried out before 39 completed weeks of gestation. In this paper, we have analyzed the timing of elective CS after 37th completed weeks of gestation in 2010 and 2014 in Lombardy, a region of the North of Italy, in order to evaluate whether there was a measurable change in clinical practice during the last years in the timing of the elective CS. We analyzed data of all deliveries Lombardy, in period of time between 1st January-31th December 2010 and 1st January-31th December 2014. From all deliveries, we identified all elective CS deliveries at term. The frequency of elective CS in 37th and 38th week of gestation decreased respectively from 14,2% and 46,7% in 2010 to 13,7% and 44,6% in 2014 (chi square test 37-38 vs 39 or more $p < 0,05$). Likewise the proportion of elective CS in 39th week of gestation increased from 28,4% in 2010 to 33,3% in 2014. This finding was statistically significant. Similar findings emerged when the analysis was performed separately in strata of women who had a pregnancy with a breech presentation and those who had a previous caesarean section/uterine scar. In conclusion, the results of this analysis suggest that obstetricians in Lombardy have responded to the increasing evidence on the benefits of delaying elective CS, but still a large number of elective Cs at term are performed before the 39th week of gestation.

Keywords: Elective cesarian section; week of gestation

SOMMARIO

Il taglio cesareo elettivo eseguito prima della fine della 39 settimana compiuta di gestazione aumenta la probabilità di morbosità respiratoria dei neonati ed i ricoveri in terapia intensiva neonatale. Le linee guida, pertanto hanno raccomandato che un taglio cesareo elettivo non dovrebbe essere effettuato prima di 39 settimane compiute di gestazione. In questo articolo abbiamo analizzato il timing del taglio cesareo elettivo dopo la 37 settimana compiuta di gestazione nel periodo compreso tra il 2010 e 2014 in Lombardia per valutare se vi era stato un cambiamento quantificabile nella pratica clinica dell'epoca di esecuzione del cesareo elettivo durante gli ultimi anni. Sono stati analizzati i dati relativi a tutti i parti in Lombardia nel periodo compreso tra il 1° Gennaio 2010 e il 31 Dicembre 2010 ed il 1° Gennaio 2014 e il 31 Dicembre 2014. Fra tutti i parti, sono stati identificati i tagli cesarei elettivi a termine. La frequenza dei tagli cesarei a 37 e 38 settimane è diminuita rispettivamente dal 14,2 % e 46,7% nel 2010 al 13,7% e 44,6% nel 2014 (chi square test 37-38 vs 39 + settimane $p < 0,05$). Allo stesso modo la proporzione di tagli cesarei elettivi a 39 settimane è aumentata dal 28,4% nel 2010 al 33,3% nel 2014. Questi dati sono risultati essere statisticamente significativi. Simili risultati sono emersi quando l'analisi è stata eseguita separatamente tra il gruppo di donne con feto in presentazione podalica e gruppo di donne con pregresso taglio cesareo/cicatrici uterine. In conclusione I risultati di questa analisi dimostrano che gli ostetrici in Lombardia hanno risposto all'evidenza crescente dei benefici del ritardo del taglio cesareo elettivo ma ancora un grande numero di tagli cesarei a termine sono eseguiti prima della 39 settimana di gestazione.

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INTRODUCTION

In the last fifteen years several studies have suggested that elective caesarean section (CS) before 39 completed weeks of gestation increases likelihood of respiratory morbidity in newborns and admissions in neonatal intensive care⁽¹⁻⁷⁾. Following these results, since the mid 2000, guidelines have recommended that planned caesarean section should not be routinely carried out before 39 completed weeks of gestation^(8,9). Along this line, recently the proportion of elective CS after the 39th week of gestation has been proposed as indicator of quality of obstetric care⁽¹⁰⁾.

At our knowledge the impact in the routine clinical practice of these guidelines in Italy have not been investigated.

In this paper, we have analyzed the timing of elective CS after 37th completed weeks of gestation in 2010 and 2014 in Lombardy, a region of the North of Italy, in order to evaluate whether there was a measurable change in clinical practice during the last years in the timing of the elective CS. In conclusion, the results of this analysis suggest that obstetricians in Lombardy have responded to the increasing evidence on the benefits of delaying elective CS, but still a large number of elective Cs at term are performed before 39 week of gestation.

MATERIALS AND METHODS

This is a population-based study using data from a regional data-base. In Lombardy, a standard form is used to register all births and neonatal discharges from public or private hospitals.

All admissions and discharges are codified according to the International Classification of Diseases 9th edition - Clinical Modification (ICD-9-CM), Italian version. For all deliveries, information is available for maternal age, maternal country of birth and reason for admission. Further at delivery, a specific form is filled by midwives including information on pregnancy on maternal characteristics type of conception (spontaneous/non spontaneous (i.e., after ART or medically induced ovulation only), course of pregnancy, delivery and maternal outcome at birth (CedAP data base). Data from this data base have been linked with the hospital discharge data base in order to obtain detailed information on delivery, pregnancies and maternal and paternal characteristics. We analyzed data of all deliveries Lombardy, in period of time between 1st January-31st December 2010 and 1st January-31st December 2014.

From all deliveries, we identified all elective CS deliveries. Further, we computed the distribution of elective CS at term in the considered calendar period according to week of gestation at surgery. Gestational age was considered as completed week of gestation. Further, we repeated the analysis for each of these two groups: women who had a pregnancy with a breech presentation and those who had a previous caesarean section/uterine scar.

According to the Italian law, this study constituted service evaluation and did not require ethics approval because it considered the analysis of anonymous data collected in routine data base.

RESULTS

During the period 1st January-31st December 2010 a total of 97.407 deliveries were registered in the CEDAP data base. The corresponding figures for the period 1st January-31st December 2014 was 87.548.

After exclusion of records with missing information about gestational age at birth, a total of 17.894 elective CS were identified in 2010 and 15.299 (85,5%) of those were performed at term (≥ 37 weeks of gestation). The corresponding figures for 2014 were 15.007 and 12.634 (84,2%).

The distribution of elective CS at term according to selected factors and calendar period are considered in **Table 1**. In 2014 mothers who underwent elective CS at term were, in comparison with those who underwent it in 2010, older, more frequently nulliparous and reported more frequently a previous CS.

Table 2 considers the distribution of elective CS at term according to the week of gestation in 2010 and 2014.

The frequency of elective CS in 37th and 38th week of gestation decreased respectively from 14,2% and 46,7% in 2010 to 13,7% and 44,6% in 2014 (chi square test 37-38 vs 39 or more $p < 0,05$). Likewise the proportion of elective CS in 39th week of gestation increases from 28,4% in 2010 to 33,3% in 2014. This finding was statistically significant. Similar findings emerged when the analysis was performed separately in strata of women who had a pregnancy with a breech presentation and those who had a previous caesarean section/uterine scar.

Table 1.
Distribution of elective CS at term according to selected factors and calendar period.

	Calendar year			
	2010		2014	
	No.°	%	No.°	%
Maternal age at delivery (years)				
<=19	103	0,7	38	0,3
20-29	3278	21,4	2530	20,0
30-39	10139	66,3	8162	64,6
40+	1610	10,5	1898	15,0
Parity				
No	7131	46,6	6201	49,1
Yes	8168	53,4	6433	50,9
Previous CS				
No	8479	55,4	6380	50,5
Yes	6820	44,6	6254	49,5
Spontaneousconception				
No	464	3,0	702	5,6
Yes	14490	94,7	11929	94,4
Type of pregnancy				
Single				
Multiple	879	5,7	809	6,4
Presentation at delivery				
Vertex	12314	80,5	10346	81,9
Breech	2809	18,4	2221	17,6
Other	107	0,7	67	0,4

°In some cases the sum does not add up the total due to missing values

Table 2.
Distribution of elective CS at term according to week of gestation, neonatal presentation and previous CS in 2010 and 2014.

Year	Week of gestation									
	37 th		38 th		39 th		40 th		≥41 th	
	No.°	%*	No.°	%*	No.°	%*	No.°	%*	No.°	%*
Total										
2010	2168	14,2	7142	46,7	4347	28,4	1050	6,9	592	3,9
2014	1730	13,7	5629	44,6	4213	33,3	730	5,8	332	2,6
Breech presentation										
2010	475	16,9	1349	48,0	852	30,3	113	4,0	20	0,7
2014	374	16,8	946	42,6	819	36,9	69	3,1	13	0,6
Previous cesarean section or uterine scar										
2010	728	10,7	3539	51,9	1990	29,2	390	5,7	173	2,5
2014	621	9,9	3078	49,2	2117	33,9	297	4,7	141	2,3

°In some cases the sum does not add up the total due to missing values

*Row percent

DISCUSSION

The general results of this analysis show that during the period 2010-2014 a shift from 38th to 39th week of gestation occurred in the timing of elective CS in Lombardy.

Before of discussing these results potential limitations should be considered. In general analysis based on large data set may suffer some limitations on accuracy. In particular, we have no information on the quality of definition of gestational age. However, in Italy less than 4% of pregnant women undergo the first examination after the 12 week of gestation⁽¹¹⁾. Further any miss classification should tend to reduce the differences among calendar periods. We have considered all deliveries, thus at least in part our results may be affected by the inclusion in the analysis of elective CS due to conditions that might necessitate intervention before 39 weeks gestation. It is unlikely however that the proportion of these conditions markedly changed from 2010 to 2014.

The trend observed in our analysis is consistent with the findings of previous large population based studies conducted in different populations.

For example in the UK the proportion of

elective CS done between 39 and 40 weeks increased from 39% to 63% from 2000 to 2009⁽¹²⁾.

In the USA, organizations have begun using indicators to monitor the proportion of elective CS performed after 39 completed weeks on women with an uncomplicated pregnancy⁽¹⁰⁾. A recent paper has suggested that a 95% rate of elective delivery after 39 weeks would be a reasonable national quality benchmark in the USA⁽¹³⁾. In the previous quoted UK analysis the current rate was about 80%⁽¹²⁾.

In conclusion, the results of this analysis suggest that obstetricians in Lombardy have responded to the increasing evidence on the benefits of delaying elective CS. This analysis gives some favorable support to the role of guideline in improving obstetric routine practice, but still a large number of elective Cs at term are performed before the 39th week of gestation in Lombardy.

COMPETING INTERESTS

The authors declare that they have no competing interests.

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