AUDIT ARTICLE

Present tendencies of elective caesarean delivery in Romania: Geographic, social and economic factors

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Abstract

The literature review was conducted to identify the causes of the rising incidence of caesarean section (CS) cases in Romania, and to create a database and a measurement plan to quantify the amount of CS on maternal request and the influence of geographical, social and economic factors. The review was conducted at the Department of Obstetrics and Gynaecology Clinical Emergency Hospital Sf Pantelimon, Bucharest, and comprised figures of clinical records of all patients who underwent CS between 2009 and 2014. The results showed an increase in the number of CS on maternal requests. In 2014 it reached a rate of 36.90 cases in every 100 newborn infants, which was 2.62% higher than 2013. Increasing rate of CS seemed to have resulted from a few factors, including the constant preoccupation to improve the obstetrical field in Romania; its services; the prophylactic measures in obstetrics; the trials to prevent the fear of the obstetrical malpraxis and its risks and consequences; and the fact that some obstetricians have done multiple CS deliveries on maternal requests.

Keywords: Caesarean section rates, Caesarean delivery on maternal request, APGAR score.

Introduction

The rising incidence of caesarean sections (CS) done in multiple regions and the urge to legalise elective CS delivery in both the developed and the developing countries, have given way to contradictory beliefs and ideas not only in Romania, but around the planet. On the other hand, the under-developed countries are struggling with famine, economic issues, illiteracy and lack of medical care. Recent data indicate that more than half of high-income industrialised countries in Europe have a CS delivery rate of >25%, which is higher than the appropriate level considered by most health professionals worldwide. The CS delivery rates varied substantially among the countries: from 15.6 to 50 per cent per 1,000 live births. The average CS rate in 24 Organisation for Economic Cooperation and Development (OECD) countries in 2011 was 26% and it was over 40% in Turkey, Mexico and Brazil. CS is now so safe that some affluent women are seeking elective CS without medical indication.

The current study analysed and elaborated a retrospective study and 2 prospective ones by interviewing anonymous people in order to find out details connected to the CS percentage in Romaina, and the benefits the people had felt after CS, had been legalised in the country.

Romania, a Soviet-aligned eastern block state with a dominant role for the Romanian Communist Party since the end of the World War II till December 1989, European Union (EU) member since 2007 and North Atlantic Treaty Organisaton (NATO) member since 2004, occupied second place in all of Europe in 2013, according to World Health Organisation (WHO) data, concerning the distinctly high score of CS (401.26 in 1000 newborn babies), after Turkey (503.62), and ahead of Italy (372.92).[1-3]

A year earlier, in 2012, Romania was on the third place (372.75), Italy was second (372.92), and Turkey was on the top (477.18).[1-3]

Methods

To quantify the exact percentage of CS done in Romania and the reasons for which the numbers have escalated so quickly during the last several years, the current review analysed in detail the official statistics published in The Statistics Directory of the Romanian Ministry of Health[1,2] and the database of 5 important maternity hospitals in our country. Records related to selective sections were analysed. Literature

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published online like, WHO data and Medscape was also used.[3] The review was conducted at the Department of Obstetrics and Gynaecology Clinical Emergency Hospital Sf Pantelimon, Bucharest, and comprised review of clinical records of all patients who underwent CS between 2009 and 2014.

In literature there is an inconsistency in the definition of a CS delivery.[4-7] Two definitions were considered for the study: a) CS delivery is surgical extraction of the foetus from the uterine cavity through laparatomy and hysterotomy when the foetus has the criteria to be declared a newborn; b) CS delivery on request or elective is the delivery by CS but without any maternal or foetal indications.

The main objective was to identify the exact causes of the ascending percentage of the CS in Romania. The study also planned to create a database and a measurement plan in order to quantify the amount of CS delivery on maternal request, and another database in order to help ourselves, the obstetricians, to put into practice what was learnt from scientific proofs and to treat female patients in a professional and correct way, offering the best service and reinforcement during birth.

Many contradictory beliefs and affirmations were found in literature related to the past few years. These included: "Worldwide, an explosion of caesarean deliveries (CDs) has occurred, running from below 20% in the northwestern European countries to about 50% in southeastern Europe and to over 60% in some Latin-American countries. This wide range suggests that the CD incidence has little to do with evidence-based medicine"; "Women are designed to deliver vaginally and not by Caesarean Section";[8] or "Caesarean section, but until when?";[9] or other such opinions, like "Higher Caesarean delivery rates may be OK".[10] It looks like experts from all over the world have very different opinions on this subject.

The setting for the retrospective study was four obstetrics gynaecology units in Bucharest and one unit in the west of the country. This way, the retrospective observational descriptive multicentric study tried also to identify and profoundly analyse the causes of this substantial difference between each of the counties in Romania. Another retrospective observational descriptive multicentric study investigated the obstetrical activity of 5 important maternities throughout the country in different geographical regions to evaluate the study precisely, not only locally, but also regionally.

The Appearance, Pulse, Grimace, Activity, and Respiration (APGAR) score had a significant meaning while studying its annual rate in different maternities and its oscillation based on CS rates. The annual APGAR score of the newborns was calculated by using the arithmetic progression of APGAR indicators obtained during a full calendar year in the maternity where the research was conducted. This way, the APGAR score was calculated of infants born through CS, of the ones born through vaginal delivery, and the difference between the two. The APGAR indicators were calculated in connection with the number of CS done in the maternity.

Also, the opinions of numerous obstetricians were analysed on what opportunities legalising CS on maternal request in Romania would have to offer, and also what they considered to be the safest delivery method for both the female and the infant. Also taken into consideration was people's opinion on the matter which was studied separately.

Besides, two prospective multicentric descriptive studies, using a questionnaire regarding elective CS, were also conducted. The first one was assigned for the obstetrics practitioners, while the other study was meant for the general population.

Both the questionnaires were distributed to individuals who filled it anonymously, and the answers were analysed. The opinion test for the obstetricians had 15 questions, and the one for the general population had 26. This led to two databases: the first one was based on the 108 anonymous obstetricians, and the other one was established from the answers of 1454 respondents from the general population. EpiInfo version 15.0 was used to edit the information.

For qualitative data, Chi-square test, Likelihood Ratio (LR) test and the Fisher exact test were used. For analysing the quantitative data, student t-test and the Mann-Whitney test were implemented.

For evaluating the correlation, Spearman's rank correlation coefficient was utilised. In the interest of measuring the power of association between the predictor variable and the result variable, statistical significance tests were used. For qualitative variables the Pearson's chi-square test or, depending on the case, the Fischer test, if the expected frequency was lower than 5, were utilized.

For quantitative variables, analysis of variance (ANOVA) was used, in case the variable groups had more than two available alternatives, and non-parametric tests (such as Kruskal Wallis) were used to determine if there were statistically significant differences between two or more groups of an independent variable on a continuous or ordinal dependent variable.

In order to find the statistical significance, chi-square test and Fischer test were used when the values were $p<0.05$ or the confidence intervals (CI) for the relative risk (RR) which did not include value 1.

Results

The principal component of the study was the ascending tendency of CD score during the past few years in Romania, in contrast with the constant descending number of births.

The annual rising indicator of CS done in 2014 was 7.6429% compared to 2013, which was a national record in Romania (Figure). Data showed that the ascending CS rate in Bucharest remained steady in 2014 (74.08 CS out of a 100 newborns), compared to 2013 (74.52). This indicated a 0.44% decline in the CS rate in Bucharest in 2014 over 2013, and also a decline in absolute value of 0.59%. Moreover, 9.83% of the babies born nationally were born in Bucharest. This is a logical aspect due to the fact that 10% of the country's population lives in Bucharest, according to the data published by the National Institute of Statistics.

In 2014, 20% of all the CS cases done in Romania were performed in Bucharest; 13,503 out of 68,384. Starting with these simple observations, concerning the rate differences between Bucharest and the rest of the country, an increasing and accelerated rate for

Table-1: The state of births in 5 different maternities throughout the country (2014 and 2015). Caesarean and natural delivery rates are measured in percentages.

Maternity	Indicator	2014	2015
The gynaecology and obstetrics	Total nr. of births	2480	2454
Hospital "Salvator Vuia"	Nr. Caesareans	1605	1605
from Arad (Arad county)	Caesarean percentage	64,71%	65,40% (+0,69%)
	Vaginal delivery nr.	875	849
	Vaginal delivery percentage	35,29%	34,60%
Clinical Emergency Hospital, department	Total nr. Of births	1119	1347
of Obstetrics and Gynaecology	Nr. Caesareans	712	1020
"Sf. Pantelimon" from Bucure-ti	Caesarean percentage	63,62%	75,72% (+12,1%)
	Vaginal delivery nr.	407	327
	Vaginal delivery percentage	36,38%	24,28%
Department of Obstetrics and Gynaecology from the	Total nr. Of births	1264	1251
Ilfov County Emergency Hospital "Sf. Împara-i	Nr. Caesareans	1052	1067
Constantin -i Elena" from Bucure-ti	Caesarean percentage	83,22%	85,29% (+2,07%)
	Vaginal delivery nr.	212	184
	Vaginal delivery percentage	16,78%	14,71%
Obstetrics-Gynaecology Hospital Buftea, Ilfov county	Total nr. Of births	457	520
	Nr. Caesareans	227	308
	Caesarean percentage	49,67%	59,23% (+9,56%)
	Vaginal delivery nr.	230	212
	Vaginal delivery percentage	50,33%	40,77%
Clinical Emergency hospital"Sf. Ioan" - Maternity "Bucur" from Bucure?ti	Total Nr. Of births	2224	1996
	Nr. Caesareans	1090	1129
	Caesarean percentage	49,01%	56,56% (+7,55%)
	Vaginal delivery Nr.	1134	867
	Vaginal delivery percentage	50,99%	43,44%
Total births among all 5 maternities included in our study	Total Nr. Of births	7544	7568
	Nr. Caesareans	4686	5129
	Caesarean percentage	62,11%	67,77% (+ 5,66%)
	Vaginal delivery nr.	2858	2439
	Vaginal delivery percentage	37,89%	32,23%

Table-2: The birth rate from the "Clinical Emergency Hospital Sf Pantelimon" in Bucharest (year 2005, 2006, 2014) and the annual APGAR score registered.

Year of reference	2005	2006	2014
Total births registered in the births archive	1812	1724	1139
Baby delivery at home / ambulance (no APGAR)	17	21	14
Total of foetal deaths (APGAR = 0)	22	15	7
Total births using APGAR test(1 -10) (vaginal + Caesarean)	1773	1687	1119
Total births using APGAR test	1263	1134	407
Total Caesarean births using APGAR	510	553	712
APGAR total average (vaginal + Caesarean)	8,741680767	8,714285714	9,130473637
APGAR average vaginal delivery	8,746634996	8,741394528	8,98034398
APGAR average cesarean delivery	8,729411765	8,674502712	9,216292135
Vaginal delivery(using APGAR) total births (using APGAR)	71,2351946%	67,219917%	36,3717605%
Caesarean average (using APGAR) Total births (using APGAR)	28,7648054%	32,780083%	63,6282395%

APGAR: Appearance, Pulse, Grimace, Activity, and Respiration.

the rest of the country was observed.

The activity of 5 different maternities throughout the country in 2014-15 were analysed. This showed that the C-section rate had ascended in each of the maternities (Table-1).

There were 7,544 births analysed for year 2014 from all the 5 maternities and they represented 4.07% of the total of births in Romania that year which stood at 185,322, and the 4,686 analysed CS cases for 2014 represented 6.85% of the total 68,384.[11]

In the annual APGAR score average was defined as being the arithmetic progression of all the APGAR scores added up together and obtained by the infants at birth during a full calendar year. This way, the annual APGAR average rate was calculated of the infants born through CS, the infants born naturally and their total (Table-2).

The results showed that the annual APGAR rate had ascended (CS, vaginal and their total rate; all three have risen.)

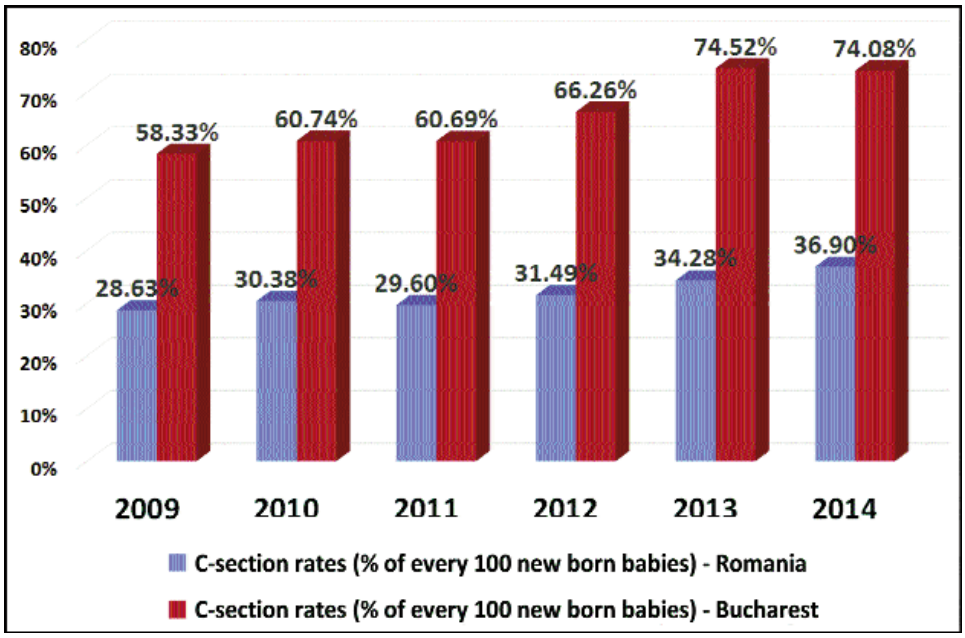

Figure-1: C-section rates in Romania and Bucharest: 2009 until 2014.

Discussion

These results and high CS rates are indeed the consequences of a prophylactic obstetrical policy which has its roots in various causes. One of them refers to the preoccupation of the obstetricians to improve their medical service quality (concerning the foetus, the quality of delivery and of life after birth). Another cause is the fear of malpraxis among obstetricians and the accusations which could be thrown against them. In case of a mistake done by the doctors, the patients are easily able to sue them, making obstetrics a highly

exposed field. A third but very important cause is the higher rate for Caesarian Delivery on maternal request.

The fact cannot be ignored that in Romania elective CS has not yet been legalised. It offers multiple rights, like abortion up to 14 weeks, human-assisted reproduction, including becoming an elderly mother at over 60 years of age using in vitro fertilisation, breast implantation or any other cosmetic surgical procedure, including sex reassignment surgery. Under the circumstances, when the mother refuses any medical procedure required for her or the foetus, which being the only way to survive, can lead to infanticide. Paradoxically, in Romania the mother does not possess the right to choose the way in which she would prefer to give birth.

Taking into consideration all these well-known facts in the field of obstetrics in Romania, the current study tried to determine the real causes of the ascending national CS rate.

The first questionnaire involving the obstetricians showed that 87% were in favour of legalising elective CD, but 29.6% of them considered that it should be free. Moreover, 78.25% of the respondents, revealed that they perform elective CS even though it has not yet been legalised in Romania, and 23.6% respondents quantified that over 50% of the CS carried out by them were actually on maternal request. Besides, 82.1% obstetricians confessed that for their own daughter, they would choose CD over vaginal delivery. The margin of error regarding the pro-CS responses given by the specialists was 7.37%.

The second questionnaire involving the general population showed that 80.3% respondents were in favour of legalising CD, and 63.7% considered that it should be free. Moreover, 89.55% volunteers considered that the method of giving birth should be the mother's choice completely, because, as a human being, she has rights. Among the people interviewed, 63.3% considered vaginal delivery to be at a higher risk than CD. The margin of error regarding the pro-CS responses given by the general population was 2.06%).

The high confidence rate that both people from the general population (63.3%) and the obstetricians (82.1%) have in choosing CD over vaginal delivery, prompted us to initiate a retrospective observational study to find out which is the best possible method of giving birth in Romania.

For this, a measurement tool was used with the purpose of calculating the 'quality' of births by analysing the annual average of the APGAR score for the vaginal and Caesarean deliveries, and their total regarding the births at the Clinical Emergency Hospital Sf. Pantelimon in Bucharest for 2005, 2006 and 2014.

The fact that annual APGAR score has ascended reflects the fact that prophylactic and professional services are offered, and that the patients have trust in decisions by the attending physicians when they advise them to choose CD over vaginal delivery. Preventing dystocia and labour pain is the key to successful modern obstetrics, being beneficial for both the foetus and the mother.

Notable is the fact that the APGAR test could become an efficient measurement tool, quantifying the overall obstetrical service quality as long as the APGAR test is used correctly. This way, multiple clinics and regions could be compared with each other and classified not just by quantity, but also by quality.

Conclusions

Romania reached in 2014 a historical record of CS cases. The accelerated CS rates seem to have resulted from a variety of factors. As a result, many specialists in Romaina perform elective CD even though it has not yet been legalised. The vast majority of obstetricians in the study declared that they would choose CD for their own daughter which underlined the point that CS is the safest method of giving birth for both the mother and the foetus.

Disclaimer: The study was presented through Power Point at a local conference.

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