

# Survey of Obstetric Anesthesia Practices in Georgia

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**Introduction:** Georgia is a country of 4.5 million people bordered by Russia and the Black Sea. Georgia regained its independence from the Soviet Union in 1991 and has since struggled with economic rebuilding and healthcare management. Between 1994-2004 the maternal mortality ratio increased by 14.3% despite a plateau in the birthrate.<sup>1</sup> However, the World Health Organization has shown a steady decline in Georgia's maternal mortality ratio from 73 deaths/100,000 live births in 2000 to 66 deaths/100,000 live births in 2005.<sup>2</sup>

The healthcare system is financed through a social insurance model, however, current levels of state financing are below those required to provide basic care.<sup>1</sup> Both private and municipal hospitals are emerging with improved access to modern medications as Georgia's stability and economy improves. Currently, there is no published data on the use of regional anesthesia for labor and cesarean delivery in Georgia. Since 2006, there has been an ongoing international educational program aimed at improving obstetric medicine. Our goal was to survey the private and municipal hospitals in the major cities to evaluate improvements in obstetric care and facilitate ongoing education.

**Methods:** Short questionnaires regarding analgesia and anesthesia practices for childbirth during 2005-2007 were distributed to nine private and municipal hospitals in Tbilisi, Batumi and Kutaisi. The information sought included number of deliveries, cesarean section (C/S) rate, anesthesia for vaginal and cesarean delivery and maternal mortality. Statistical analysis was performed with  $\chi^2$  test to compare the types of anesthesia used within each city over 2 years.

**Results:** Nine hospitals responded to the survey. Five of the respondents are private hospitals and six of the respondent hospitals are located in Tbilisi. In 2007, the responding hospitals accounted for 15,316 deliveries and approximately 32% of the Georgian births. For 2007, the average cesarean section rate was 21% (range 9-28%) and was consistent over the three years surveyed. Maternal mortality reported by surveyed hospitals was 5/12,873 for 2005, 1/13,291 for 2006, and 0/15,316 for 2007, which is well below the WHO maternal mortality ratio. For 2005-2007, general anesthesia (GA) was more common for C/S, particularly in hospitals outside of Tbilisi (Tables 1 and 2). Over the past two years, the use of regional anesthesia (RA) for C/S has had a statistically significant increase from 6% to 26% (p<0.001) (Table 1). Additionally, there has been a statistically significant increase in the use of RA in all the cities surveyed (Table 2). For standard vaginal delivery (SVD), use of intravenous analgesia or lumbar epidural analgesia (LEA) is infrequent. However, there has been a statistically significant increase (p<0.001) in the use of LEA for SVD from 2005 to 2007 (Table 1).

**Table 1: Obstetric Anesthesia & Analgesia**

YEAR	Number of C/S	Anesthesia C/S (%)		Number of SVD	Analgesia for SVD (%)		
		GA	RA		None	IV	LEA
2005	3,032	94	6	9,841	83	10	7
2006	3,049	86	14*	10,242	82	9	9*
2007	3,275	74	26*	12,041	82	7	11*

\*= Statistically Significant (p<0.001)

C/S=Cesarean Section

GA=General Anesthesia

RA=Regional Anesthesia

SVD= Standard Vaginal Delivery

IV=Intravenous Analgesia

LEA= Lumbar Epidural Analgesia

**Table 2: Anesthesia For Cesarean Section By City (%)**

YEAR	Tbilisi: 4 private & 2 municipal Hospitals		Batumi: 1 Private Hospital		Kutaisi: 2 Municipal Hospitals	
	GA	RA	GA	RA	GA	RA
2005	90	10	100	0	100	0
2006	82	18*	96	4	89	11*
2007	76	24*	92	8*	90	10*

\*= Statistically Significant (p<0.001)      GA=General Anesthesia      RA=Regional Anesthesia

**Conclusion:** Over the past two years, a statistically significant increase in regional anesthesia use has occurred for cesarean section and vaginal delivery in the urban areas of Tbilisi, Batumi and Kutaisi. These results are encouraging and appear to be a result of focused educational efforts and improved access to medication. Further obstetric anesthesia training in urban and rural areas may increase the use of regional anesthesia both for C/S and vaginal deliveries. Continuing educational efforts are currently underway to promote obstetric anesthesia safety throughout Georgia.

**References:**

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2. Maternal mortality in 2005: Estimates developed by WHO, UNICEF and UNFPA. Geneva, World Health Organization 2007: 1-48.

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# REGIONAL ANESTHESIA IN GEORGIAN OBSTETRICS AFTER KYBELE EDUCATIONAL PROGRAM

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**Introduction:** In 1998, the use of regional anesthesia (RA) for obstetrics was introduced in the country of Georgia by two small private hospitals, Orioni and Bibida, located in the capital city Tbilisi. Since then, the utilization of RA for obstetrics has been limited due to economic restraints, poor availability of medications and insufficient educational and training resources.

In September 2006, Kybele, a non-profit charitable organization, began an educational program (EP) to access and teach obstetric RA techniques in hospitals across the country. The primary goal of Kybele is dissemination of information to improve women's safety during childbirth. Of the visited hospitals, only 3 had limited RA use for obstetrics. These were two private hospitals, Orioni and Bibida, and one municipal hospital, Maternity Hospital #1. Practitioners within these hospitals sought Kybele's partnership to improve obstetric healthcare and hosted Kybele on 2 subsequent visits in February and November 2007.

During the past two years, Kybele has continued to foster relationships within the host hospitals to implement improvements in maternal healthcare. In February 2007, Kybele lobbied the health ministry and bupivacaine was approved for national use. Prior to this, 5% lidocaine was the only legally available local anesthetic. This report examines the effect of Kybele's EP on the use of RA in 3 Georgian target hospitals.

**Methods:** The hospitals Orioni, Bibida, and Maternity House #1 (MH#1) were analyzed retrospectively, pre-, interim- and post- the Kybele EP. The pre-Kybele period is 2005, the year prior to Kybele's visit. The interim-Kybele period is 2006. The post-Kybele period is 2007. Total number of deliveries, types of analgesia for standard vaginal delivery (SVD), the frequency of cesarean sections (C/S), and types of anesthesia for C/S were analyzed. Statistical analysis was performed with  $\chi^2$  test.

**Results:** The number of deliveries in the pre-Kybele period for all three institutions was 3604, the interim-Kybele period was 4550, and the post-Kybele period was 4988. The C/S rate in each hospital was constant over the three-year period, Orioni's C/S rate ranged from 21-25%, Bibida's between 22-24% and Maternity Hospital #1 from 9-10%. The use of RA for C/S increased significantly in each hospital following the EP ( $p < 0.001$ ) (Table 1). In addition, epidural analgesia significantly increased in 2 of the 3 hospitals ( $p < 0.001$ ) (Table 2).

**Table 1: Regional Anesthesia for Cesarean Section (%)**

	Orioni	Bibida	MH#1	Combined
Pre-Kybele (2005)	7.5	24	27	16
Interim-Kybele (2006)	9.3	29	76*	37*
Post-Kybele (2007)	72*	79*	90*	80*

\*= Statistically Significant ( $p < 0.001$ ) MH#1= Maternity House #1

**Table 2: Analgesia for Standard Vaginal Delivery (%)**

	Orioni			Bibida			Maternity Hospital #1		
	None	IV	LEA	None	IV	LEA	None	IV	LEA
Pre-Kybele (2005)	71	0	29	54	25	21	65	32	3
Interim-Kybele (2006)	64	0	36*	45	27	28	85	12	3
Post-Kybele (2007)	40	0	60*	45	10	45*	92	5	3

\*= Statistically Significant (p<0.001)

IV=Intravenous Analgesia

LEA=Lumbar Epidural Analgesia

**Conclusion:** RA for C/S has significantly increased in each target hospital following the 3 Kybele EPs since September 2006. Additionally, both Orioni and Bibida significantly increased the use of epidural analgesia for SVD. Maternity House #1 did not increase epidural analgesia use, possibly due to limited municipal funding and lack of affordability by patients. The increased use of RA for obstetrics is thought to be secondary to Kybele's training and the governmental approval of bupivacaine. Our experience in Georgia reinforces the concept that continuing education in developing countries leads to ongoing changes in clinical practice. Further study is necessary to determine if these changes in maternal care will lead to improved outcomes and increased patient satisfaction in Georgia.

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