

Cesarean sections for maternal indications in Kasongo (Zaire)

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Abstract

Cesarean section rates in a rural area in Eastern Zaire are described. Indications are stringent and section is essentially performed on maternal indications. In the urban area cesarean section was performed for 1.1% of the expected births over a 9-year period, but only for 0.3% of expected births in the rural area, indicating a major problem in access to the district hospital. Section rates are compared with those reported for other settings.

Keywords: Cesarean sections; Maternal mortality; Developing countries.

Introduction

Before the 1960s cesarean section rates in industrialized countries were relatively stable, ranging between 2 and 5% of births. Since the 1970s incidences are increasing up to over 15%. This caused great concern and was considered to be the result of such factors as: the increased use of fetal monitoring [4,12,18]; decreased acceptability of a traumatic vaginal delivery and use of the forceps [5,7]; extension of the indications to breech-presentation, especially in primipara [1,3]; and the overall decreasing risk associated with the intervention itself, which now ranges between 20 and 70 per 100,000 operations [2].

In contrast, few reliable and recent data concerning the incidence of, and the indications for cesarean sections are available for developing countries. This is especially true for populations in rural areas. In many of these places access to services where such interventions can be performed is difficult, trained personnel and resources are scarce, and the risks of what remains a major surgical intervention are still very high. Nevertheless, cesarean section remains one of the most necessary and frequently performed interventions in these circumstances [17]: obstructed labor and antepartum hemorrhage are important obstetrical problems and among the main causes of maternal mortality [2,3,22].

This paper describes the incidence of cesarean sections in the rural district of Kasongo, in eastern Zaire. This is a situation where conditions are such that a very conservative approach must be taken: in practice sections are done essentially when the mothers' life is considered to be in danger. The section-rates of the urban and rural areas are compared with each other and with section-rates for maternal indications in other settings. This is then used as a basis for assessing the requirement in this population.

Patients and methods

Section rates in Kasongo

Kasongo, a rural area of approximately

17,000 km² with a total of over 200,000 inhabitants in the east of Zaire (Fig. 1). Bordering on forest and savannah, it has a tropical climate and a predominantly agricultural economy. The annual income per head is approximately US\$200. The district capital of the same name is an urban center with a population of approximately 30,000.

The district health care system consists of a network of health centers and a hospital. This 280-bed hospital is situated in Kasongo-town and is the only functioning hospital in the district. It is run by a team of four to five general practitioners, who are also responsible for the management and supervision of the health center network. It is equipped with a small surgical theater, pediatric and maternity wards and simple laboratory and radiological services; it is a fairly typical rural African hospital. Sections are performed by the gen-

eral practitioners and by two of the hospital nurses. There are no other doctors or hospitals in the district.

Between 1 January 1976 and 31 December 1984, 416 cesarean sections were performed for women living in the district. It is highly unlikely that women went elsewhere for surgical help. Sections done on women from other districts (which make up approximately 15% of all sections done in Kasongo) are not analyzed here. The data for this study were obtained from combined hospital records (maternity ward, operating theater and hospital administration). Section rates are calculated separately for the urban and rural area. Patients living within 10 km from the town center were considered to belong to the urban population with good access to the hospital. Twenty-two sections were excluded from the analysis because data on their geographical origin were incomplete.

The number of expected births per year, used as denominator for the section rates, is calculated using an estimated birthrate of 0.045 and the population census data from the Kasongo public health project; this is updated on an ongoing basis [8]. Section rates are expressed as per 100 births.

Cesarean section rates in other settings

An estimate of the range of frequency of maternal indications for section was made by analyzing reports on section rates from the literature. This analysis is not straightforward. The number of sections performed has to be related to the number of deliveries in a defined community. Often section rates are presented only in relation to the deliveries that took place in the hospital that is analyzed. Rates obtained in such a way are of course subject to selection bias. This is all the more so in Africa where a large number of deliveries take place at home. Only those reports from the literature where the rates were calculated with population based denominators are analyzed here.

A second problem is that of the definition of the indication for section. Most of the

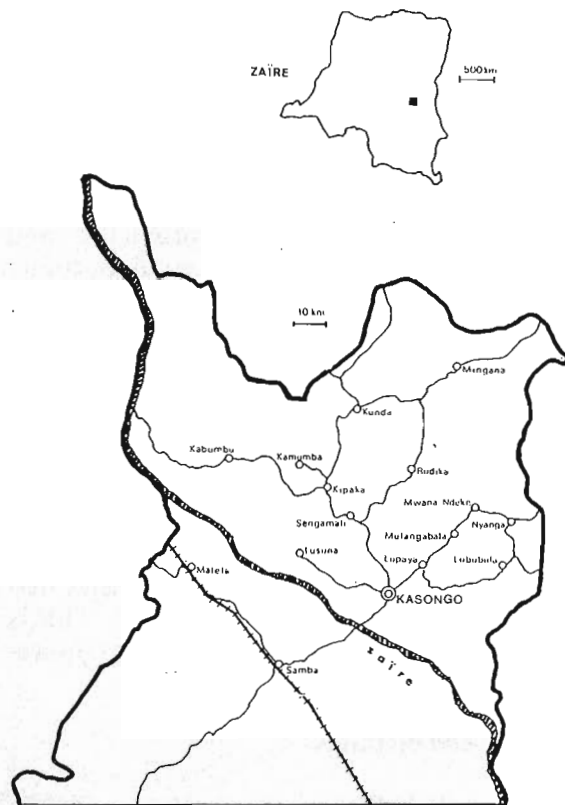


Fig. 1. Map of the Kasongo district.

available reports concern industrialized countries where the concept of "maternal indication" is not clearly defined. The most frequently mentioned indications are:

- dystocia, usually defined as cephalo-pelvic-disproportion (CPD) and failure to progress;
- malpresentation other than breech presentation;
- breech presentation;
- fetal distress;
- other reasons, including antepartum hemorrhages, placenta previa or unspecified reasons.

Joint rates for dystocia, placenta previa and antepartum hemorrhages were taken to be the best proxy for the concept of maternal indication for section. They correspond to the main indications for section in Kasongo.

Results

Table I gives the overall cesarean section rates, those for dystocia and, where available, the combined rates for dystocia, hemorrhages and placenta previa for various countries. In Fig. 2 these rates are expressed as boxplots. The lowest rate of section on indication of dystocia alone, 0.7%, is reported from Dublin. There is quite some variation from one setting to the other, and 95% of the rates for dystocia alone range between 0.97 and 6.9%. The combined dystocia, hemorrhage and placenta previa rates range between 1.35 and 6.9 sections per 100 deliveries.

Figure 3 shows the section rates in Kasongo over the years 1976—1984. Of the 394 sections 156 were performed for women living in the town and 238 for women from rural areas. In Kasongo-town the rates fluctuate

Table I. Cesarean section rates reported in the literature.

Country	Period studied	Overall section rate (%)	Section rate for dystocia (%)	Definition dystocia	Section rate for dystocia + haemorrh. (%)	Reference and year of publication
Sudan	1959—1962	12 (prim. + sec.)	3.2	Abnormal uterine action + CPD	6.9	Vesrin 1964
Ghana	1971	3.4	2.0	CPD + contracted pelvis + cervical dystocia	2.3	Klufio et al. 1973
California	1948—1953	2.7—6.0 (prim.)	0.97	CPD + uterine dysfunction + failure to progress + failed forceps/vacuum	1.35	Hibbard 1976
	1965—1966		1.47		1.97	
	1970		3.39		3.92	
	1974		2.58		2.06	
Massachusetts	1937—1949	2.8—8.3 (prim.)	1.75	CPD + labor abnormalities	2.05	Haddad et al. 1978
	1950—1959		1.47		2.17	
	1972—1975		3.97		4.67	
	1975		4.9			
Nigeria		8.8 (prim. + sec.)				Harisson 1979
Vermont	1969	4.4—11.1	1.8	Failure to progress, CPD, other dystocia problems	2.3	Mann and Gallant 1979
	1973—1974		3.97		4.6	
	1976—1977		4.1		5.3	
	1977—1978		4.7		5.6	

Table I (continued)

Country	Period studied	Overall section rate (%)	Section rate for dystocia (%)	Definition dystocia	Section rate for dystocia + haemorrh. (%)	Reference and year of publication
Rhode Island	1977	13.4 (prim.)	4.8	CPD + uterine dysfunction + failure to progress	5.6	Evrard et al. 1980
New York	1961—1977	9.2 (prim.)	1.4 (2.5)	Contracted pelvis + uterine dysfunction		Minkoff et al. 1980
Scotland	1971 1976 1981	4.4—13.0 (sec. + prim.)	1.6 3.6 6.8	CPD + failure to progress		Rosenberg et al. 1982
Texas	1970—1973 1974—1977 1978—1981	5.6—12.8 (prim.)	3.2 5.5 3.7	CPD + failure to progress		Gilstrap et al. 1984
Ontario	1979 1982	16.5—18.7 (sec. + prim.)	10.0 10.4	No further definition		Anderson et al. 1984
Dublin	1986	4.8 (prim. + sec.)	0.7	CPD + inefficient uterine action persistent posterior position	1.4	O'Driscoll et al. 1984
Oxford	1973—1983	10	1.7	Failure to progress, CPD, and failed induction		Yudkin et al. 1986

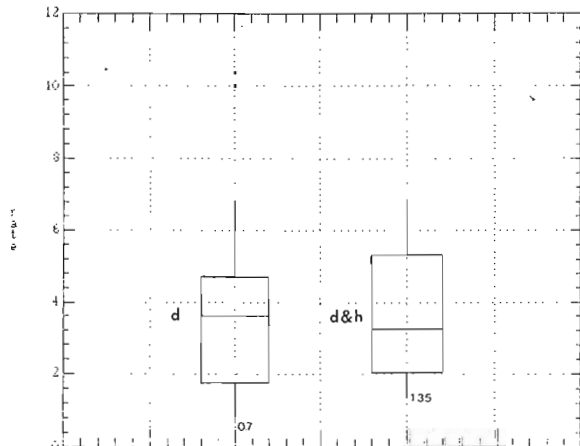


Fig. 2. Boxplot of the section rates (%) reported for dystocia alone (d) or dystocia and haemorrhage (d&h).

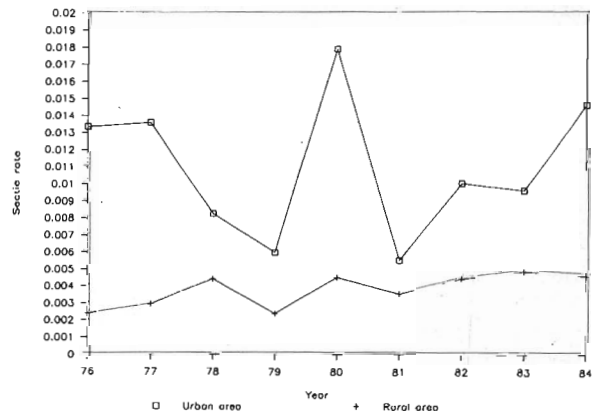


Fig. 3. Section rates in the urban and rural areas of the Kasongo district, 1976—1984.

Table II. Cesarean sections performed and expected in Kasongo between 1976 and 1984.

	Performed	Expected from urban rates (1.1%)	Expected from the literature (0.7—1.35%)
Urban population	156		99—198
Rural population	238	681	433—836

over the years, with a low of 0.9 sections per 100 deliveries in 1979 and a high of 1.8% in 1980. Rural rates are found to be very much lower.

Over the 9 study years sections were performed for 1.1% of the 14,161 expected deliveries in the town population. This is within the range of section rates for maternal indications reported in the literature for areas with adequate and accessible health facilities. In absolute figures, a section rate of 0.7—1.4%, the lower fringe of the rates reported from the literature, would correspond to 99—198 sections during the study period (Table II).

For the rural areas there are marked discrepancies. With such 0.7—1.4% rates one would have expected 433—836 sections instead of 238. Had the rate been the same for urban and rural areas, there would have been 443 sections more for women from the rural areas than have actually been performed during these 9 years.

Discussion

The ideal section rate in a given situation cannot be determined unequivocally. In developing countries the issue is further complicated by the fact that the risk of the intervention is often much larger, and has to be balanced against the expected health benefits for mother and child. This is partly due to the fact that patients often arrive late, after prolonged labor, in state of exhaustion or in shock. Personnel may not be trained as well as one might wish, facilities may be inad-

equate and supplies lacking. All these factors may influence the decision to perform a section. It is generally agreed that in such circumstances a fairly conservative approach is warranted [11].

Very few data are available on section rates under such circumstances. They could nevertheless be relevant to the planning and evaluation of health services.

Comparison with other similar situations is difficult for lack of data. However, indications such as dystocia, placenta previa and antepartum hemorrhages of other origin probably correspond well with the notion of “maternal indications” as used in the Kasongo situation. If one is willing to restrict the indications for a cesarean section to maternal ones, the rates in Kasongo-town may be considered marginally adequate, inasmuch as they are similar to the rates of sections for those indications in much more favorable conditions.

The rates reported from developing countries are often higher than those presented here from Kasongo but the available data are from larger hospitals or referral centers with selected groups of patients and with technical possibilities that a small rural hospital does not have.

The rather low rates in 1979 and 1981 can perhaps be attributed to the fact that in these years there were severe supply problems. Also, with an overall postoperative mortality rate of 5% for the cesareans in these years, it is possible that indications were too stringent, although this fatality rate is certainly also the result of the marked patient delay. In 1980 the relatively high section rate may correspond with a change of surgeon in that year and possibly a less conservative approach.

In the town dying at home during childbirth is exceptional, if it occurs at all, and apparently the indications for section are not too liberal. They can therefore be used to estimate the minimal amount of unmet need in the rural area.

Major urban-rural differences in section rates have been found in similar situations.

Studies in Morocco show urban section rates of 2.5—3.5% in sharp contrast with rural rates of 0.3—0.9% (VanLerberghe, pers. commun.). The marked difference between rural and urban cesarean section rates in Kasongo indicates that there is a major problem of access to the hospital, no doubt resulting in a number of obstetrical disasters.

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