

## Obstetric and neonatal outcomes of women with FGM I and II in San Camillo Hospital, Burkina Faso

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Received: 10 November 2012 / Accepted: 21 February 2013 / Published online: 8 March 2013  
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### Abstract

**Purpose** Female genital mutilation (FGM) is still performed in the world. Women who underwent FGM have marked psychological, gynecological and obstetric consequences. This article contributes to the spread of knowledge about obstetric and neonatal outcomes in women with FGM I and II.

**Methods** Our observational study compared the obstetric outcomes of 85 women with FGM I and II (case group) and 95 women without it (control group). We evaluated age, need of oxytocin during labor, duration of the expulsion phase, need of episiotomy, weight of the newborn, Apgar score at birth, resuscitation of the newborn, stillbirth. We observed the rate of cesarean sections and their main indications. We compared the rate of cesarean sections among the cases and the controls.

**Results** Controls were younger than women who underwent FGM. Intravenous oxytocin injection was higher in cases. The expulsion phase was longer in women with FGM than in the controls. FGM is related to a higher risk of episiotomy. Apgar score 9/10 was more frequently assigned to babies from mothers without FGM. There were more resuscitated babies and more stillbirth in the group of cases. Ten percent of all women underwent cesarean section. FGM is related to a higher incidence of cesarean section.

**Conclusion** FGM is associated with a higher risk of gynecological and obstetrical consequences, acting on women's health and also on the economy of resource limited countries. Because of migration, health professionals could interface with women who underwent FGM and have to know their related complications.

**Keywords** FGM · Obstetric outcomes · Burkina Faso · Cesarean section

### Introduction

Female genital mutilation (FGM) is a non-therapeutic practice, consisting in the partial or complete removal or injury of each of the external female genitalia [1]. According to the WHO classification there are four types of FGM: type I consists in the removal of the prepuce, with or without the excision of the clitoris; type II consists in the removal of the clitoris with partial or total excision of the labia minora; type III involves the removal of a part or the whole external genitalia, making a suture of the vaginal canal (also called “infibulation”); type IV is unclassified and includes all the procedures modifying normal external genitalia anatomy (e.g., drilling, piercing, cutting, clitoris cauterization, vaginal orifice abrasion) (Table 1) [2]. FGM is still performed in the world despite global and local efforts to end it. According to WHO data, FGM involves about 130 million women in the world [3]. More than 70 million of these women come from Africa [4]. The remaining part of female population who have undergone FGM come from different countries of the Persian Gulf, South America, India and the far East. Procedures are mostly carried out on young girls, aged between infancy and 15 years, and occasionally on adult women [5]. Most

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**Table 1** The classification WHO 2007 of FGM [2]

Classification WHO 2007	
Type I Partial or total removal of the clitoris <sup>a</sup> and/or the prepuce (clitoridectomy)	Type Ia Removal of the clitoral hood or prepuce only Type Ib Removal of the clitoris <sup>a</sup> with the prepuce
Type II Partial or total removal of the clitoris <sup>a</sup> and the labia minora, with or without excision of the labia majora (excision)	Type IIa Removal of the labia minora only Type IIb Partial or total removal of the clitoris <sup>a</sup> and the labia minora Type IIc Partial or total removal of the clitoris <sup>a</sup> , the labia minora and the labia majora
Type III Narrowing of the vaginal orifice with creation of a covering seal by cutting and appositioning the labia minora and/or the labia majora, with or without excision of the clitoris (infibulation)	Type IIIa Removal and apposition of the labia minora Type IIIb Removal and apposition of the labia majora
Type IV Unclassified	All other harmful procedures to the female genitalia for non-medical purposes, for example, pricking, piercing, incising, scraping and cauterisation

<sup>a</sup> Notice that when total removal of the clitoris is reported, it refers to the total removal of the external part of the body of the clitoris

Western and African countries have passed laws prohibiting FGM. Italian law aims to prevent and punish FGM practice, recognizing it as a violation of a person's fundamental rights to physical and mental integrity and to the health of women and girls. The importance of informing health professionals about FGM is related to the spread of this practice to non-traditional countries because of immigration [6]. Women subjected to FGM have marked psychological, gynecological and obstetric consequences [1, 2], that doctors have to consider when they take care of these women.

Possible short-term consequences of FGM are acute pain, acute hemorrhage, injury of neighboring organs, local and generalized infections, as well as death [7]. Regarding infections, besides the clear increase of vaginosis, urinary tract infections and local wound infections after the procedure, also sexually transmitted diseases (HIV, HCV, HBV) are commonly described, due to the use of unsterilized equipment or to the easier scar bleeding after coitus [8]. Moreover infertility, dyspareunia, chronic abdominal pain, and complications during labor are the usual long-term complications [7, 9].

This observational study contributes to the spread of knowledge about obstetric and neonatal outcomes in women with FGM I and II. Thanks to the direct experience of our skilled health professionals and their cooperation with Nanoro Hospital we can also report how the FGM phenomenon is clinically managed nowadays.

## Materials and methods

From October 2011 to February 2012 at the San Camillo hospital in Nanoro, a village 80 km from the capital of Burkina Faso, we conducted an observational study comparing the obstetric outcomes in two groups of

patients: one group consisting of women with FGM and the other one without it. During this period we observed 233 deliveries, but only 180 of these were included in the study. We excluded 20 deliveries because of the lack of information about the FGM type, 9 premature births and 24 cesareans. The 180 women enrolled in the study were divided into two groups: one group of 85 patients, aged from 19 to 46 years, all presenting an FGM type I or II (case group) (Fig. 1); the second group consisting of 95 patients between 17 and 38 years (control group) (Fig. 2). For each patient different clinical parameters were evaluated: age, need of oxytocin administration during labor, duration of the expulsion phase, need of episiotomy, weight of the newborn, Apgar score at birth, resuscitation of the newborn, stillbirth. For "resuscitation of the newborn" we mean all the babies who needed one or more of these interventions: tactile stimulation and airway clearance with a nasopharyngeal tube, oxygen administration, chest compressions.

After comparing vaginal delivery outcomes in women who underwent genital mutilations and women who did not, we observed the rate of cesarean sections among all 233 deliveries carried out and their main indications. In order to evaluate if FGM led to a higher risk of cesarean section, we compared the rate of cesarean sections among all women with FGM (123) and women without FGM (110) who reached the hospital to deliver.

## Statistical analysis

The Statistical Program/SPSS for Windows version 10 (Chicago, IL, USA) was employed. The means were analyzed with Student's *T* test, while percentage data were compared with the Chi square test. *P* value of 0.05 was considered statistically significant. We used Odds ratio as a risk measure.



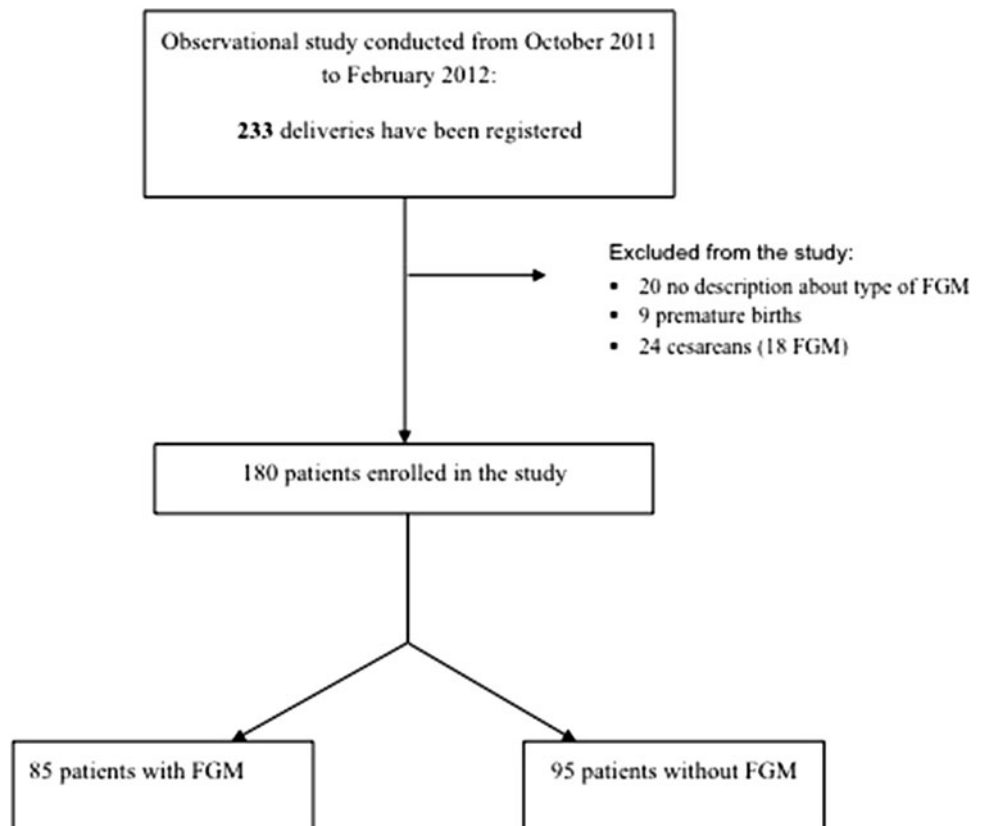
**Fig. 1** Physical examination of external genitalia in a women with FGM II (removal of the clitoris and of the labia minora)

## Results

We observed the obstetric outcomes of 180 women who underwent a vaginal delivery. In this group 85 (47.2 %) had undergone genital mutilation of type I and II, while 95 women (52.7 %) had no FGM. The mean age of the women with FGM was 28 years old (DS  $\pm$ 8.2). The mean age of women without FGM was 23 years old (DS  $\pm$ 6.0). The difference observed between the two means was significant ( $p < 0.001$ ). During labor, in particular at the beginning of

complete or nearly complete cervical dilatation, pregnant women with FGM who needed oxytocin (10 UI in 500 ml of physiologic solution) were 49 (57.65 %), while women without genital mutilation who required oxytocin to complete the delivery were 25 (26.32 %). We noticed that the incidence of labors supported by intravenous oxytocin injection was significant in women with FGM type I and II compared to controls (OR = 3.81; CI 95 % 2.04–7.14;  $p < 0.001$ ). The mean time of the expulsion phase was 9.2 min (DS  $\pm$ 3.7) in women who underwent genital mutilation, whilst in the other group the mean time of expulsion was 3.2 min (DS  $\pm$ 2.1). The difference observed between the two means was significant ( $p < 0.001$ ). Primiparous women with FGM were 23 (27.05 %) (23/85), of which 22 (95.65 %) were treated with episiotomy. The multiparous women with FGM were 62 (72.9 %), of which 49 (79 %) underwent episiotomy. Women without FGM at their first pregnancy were 38 (40 %) (38/95), of which 18 (47.36 %) underwent episiotomy. Among 57 (60 %) multiparous women of the control group, only 11 (19.3 %) underwent episiotomy. Regarding primiparous women we noticed that FGM was related to a higher probability to perform episiotomy during delivery (OR = 24.44; CI 95 % 2.99–200.17;  $p = 0.0001$ ). We observed that FGM is related to a higher risk of episiotomy also among multiparous ones (OR = 15.76; CI 95 % 6.42–38.70;  $p < 0.001$ ). The mean

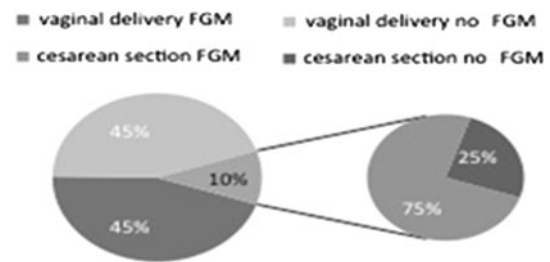
**Fig. 2** Flow diagram of the process of selection of patients for inclusion in our study



fetal weight at birth was 2,800 g for both control group and case group (DS  $\pm 1,200$  in women with FGM;  $\pm 1,400$  in women without FGM). The difference between the means is not significant. The Apgar score considered in the study is 9 in the first minute and 10 at the fifth minute after birth. The Apgar score 9/10 was assigned to 49 (51.6 %) babies born from mothers without mutilation and to 15 (17.65 %) babies born from a mother with FGM (OR = 0.2; CI 95 % 0.1–0.4;  $p < 0.001$ ). Resuscitated babies in the delivery room were 30 (35.3 %) concerning women with FGM type I and II while among the 95 women without FGM the resuscitated newborns were 11 (11.58 %) (OR = 4.17; CI 95 % 1.93–9;  $p = 0.0002$ ). Stillbirth was evaluated considering in both groups of women how many babies died in the first hour after birth, despite essential resuscitation care. Among 85 pregnant women who underwent genital mutilation, 15 (17.65 %) babies died, while only 3 (3.2 %) babies from 95 pregnant women without FGM died (OR = 6.57; CI 95 % 1.83–23.59;  $p = 0.0012$ ) (Table 2). In our study, 24 women (10.3 %) who reached the hospital to deliver underwent cesarean section. Among these women 18 (75 %) had FGM, while 6 (25 %) did not. The main indications for cesarean section were cephalopelvic disproportion and prolonged labor with fetal distress. Among the 123 women with FGM who reached the hospital to deliver, 18 of these (14.6 %) underwent cesarean section, while among the 110 women without FGM, only 6 (5.45 %) cesarean sections were performed (OR = 2.97; CI 95 % 1.13–7.78;  $p = 0.02$ ) (Fig. 3).

## Discussion

Nowadays, even though many campaigns have been conducted worldwide to reveal the adverse consequences of FGM, this practice is still widespread in many countries, including those where the practice is forbidden. In recent



**Fig. 3** Cesarean section rate

years, because of migration, these practices have been observed also in some countries, such as Australia, Europe and North America. Therefore, it is fundamental that Western countries are aware of this practice and its implications. Above all, health professionals must know which are the most frequent labor complications to prevent them and offer the best individualized care to women who underwent genital mutilation. In the literature, the main obstetric and neonatal complications in women with FGM are well described. The most significant consequences are cesarean section, post partum hemorrhage, extended maternal hospital stay, resuscitation of the infant and inpatient perinatal death [10]. Concerning maternal and neonatal complications of women with FGM the hardest moment is the second stage labor. This stage is complicated by the presence of scar tissue resulting from FGM, which opposes fetal descent, prolonging second stage labor and increasing maternal and neonatal complications (perineal tears and stillbirth) [11]. In this study, we observed the necessity of oxytocin during second stage labor to reduce the expulsion time by increasing uterine contractions; in most cases spontaneous uterine contractions plus voluntary abdominal pressure are insufficient. In order to avoid the above-mentioned complications, in women with FGM type I and II the frequency of episiotomy is higher than the

**Table 2** Clinical parameters in pregnant women with FGM (type I and II) and pregnant women without FGM

Clinic parameters	Pregnant women with FGM (n = 85)	Pregnant women without FGM (n = 95)	P value	OR (CI 95 %)
Mean maternal age ( $\pm$ DS)	28 ( $\pm 8.2$ )	23 ( $\pm 6$ )	<0.001	
Oxytocin infusion during labor (%)	49 (57.65 %)	25 (26.32 %)	<0.001	3.81 (2.04–7.14)
Episiotomy primiparous (%)	22 (95.65 %)	18 (47.36 %)	0.0001	24.44 (2.99–200)
Episiotomy multiparous (%)	49 (79 %)	11 (19.3 %)	<0.001	15.76 (6.42–38.7)
Mean time expulsive phase ( $\pm$ DS)	9.2 min ( $\pm 3.7$ )	3.2 min ( $\pm 2.1$ )	<0.001	
Resuscitation of new born (%)	30 (35.3 %)	11 (11.58 %)	0.0002	4.17 (1.93–9)
Apgar score 9/10 (%)	15 (17.65 %)	49 (51.6 %)	<0.001	0.2 (0.1–0.4)
Stillborn (%)	15 (17.65 %)	3 (3.2 %)	0.0012	6.57 (1.83–23.59)
Mean new born weight ( $\pm$ DS)	2,800 g ( $\pm 1,200$ )	2,800 g ( $\pm 1,400$ )	1	

control group. Concerning neonatal complications, resuscitation was performed more frequently in women who underwent genital mutilation, because of a prolonged labor. It is interesting to note that even newborns from women without FGM needed resuscitation in some cases; this may be due to the difficulty in diagnosing fetal distress using a stethoscope. The lack of advanced medical instruments could be responsible for stillbirth in both groups of patients. However, the low death rate among resuscitated newborns demonstrates that resuscitation techniques are valid. The Apgar score 9/10 was observed less frequently in the case group than in the control group. A prolonged second stage labor in women with FGM contributes to lower Apgar scores, as some authors have already observed [12].

The cesarean rate in Nanoro Hospital was 10 %, of which 3/4 were carried out on women with FGM. A 10.3 % rate is not representative because it is not calculated on all the delivering population but only on the inpatient population. Therefore, it does not reflect the real rate of cesarean sections in Nanoro as many women do not access hospital care but deliver at home; therefore, we can suppose that the real rate is lower than 10.3 %. In fact in resource limited countries such as Africa, the access to safe cesareans is estimated at 1–2 % [13, 14], while WHO considers the optimal range rate for cesarean section at 5–15 %. In our study, the main indications for cesarean section were cephalopelvic disproportion and prolonged labor with fetal distress. In resource limited countries there are no standard indications [15, 16], even though obstructed or prolonged labor caused by cephalopelvic disproportion and malpresentation are the most common situations associated with maternal or fetal deaths [17]. The cesarean rate among women with FGM was 14.6 % and it was significantly higher compared to the rate among women without it. So FGM may be considered a risk factor for cesarean section, as other authors have also demonstrated, proving that the more destructive the mutilations are, the higher risk of cesarean section occurs [10]. The 14.6 % rate is higher compared to the range rate of safe cesarean sections in Africa (1–2 %). Even though cesarean section reduces maternal and perinatal mortality [18], in resource limited countries cesareans may be not safe and they could lead to adverse and possibly fatal complications, first of all infections [17]. Cesarean section and its associated complications may establish an additional economic burden in resource limited countries, besides representing a danger for women's health. For this reason, reducing the FGM practice will reduce the risk of performing a cesarean section and its related complications.

Concerning a socio-economical analysis of the population, we observed that women who underwent genital mutilation asking for obstetrician help during labor were fewer than women without FGM in Nanoro. As a matter of fact, women who went for assistance to the medical centers

in Nanoro were those who were able to pay for it, the remaining of the women who were not well off or who were still culturally not ready, usually stayed in their own villages asking women or men able to assist them during labor for help. Despite these data, at present women who stay in their own villages during labor are decreasing thanks to the awareness of fewer risks of baby death during delivery if assisted in a medical center.

FGM is typically performed between 4 and 12 years old, however, the procedure may be carried out shortly after birth to sometime before the age of marriage [19, 20]. Garba et al. [21] found that the mean age at which FGM was performed was 8 days of life  $\pm 7.3$ . In our study, the age of women with FGM who arrive to the medical centers was higher compared to the average of women without FGM, therefore it means that the practice of FGM is decreasing. This could represent an important change in cultural mores, younger women are less willing to have their daughters undergo FGM and this fact is increasing the hope that the practice may be reduced in the future. The drop in the mean age of pregnant women without FGM has been confirmed by the literature and established in a study done in Ethiopia in 2001 [22], as well as a significant and consistent secular decline in the incidence of FGM in Nigeria has been observed [23].

It is also very important to consider that FGM has an economical impact: for example a girl of 15 years with FGM III will cost about I\$ 5.82 (international dollars) over her lifetime, so we can consider FGM not only as a mutilation but also as a waste of money [24]. Another extremely important point is that women with more deliveries are at major risk of dying and suffering complications, so countries with higher rates of medically attended deliveries also have to face a higher cost. It has been observed that the medical costs for obstetric complications due to FGM are between 0.1 and 1 % of total health system spending on women of reproductive age, making FGM an economic burden. According to this evidence, we can say that any money spent on preventing FGM would be a saving to the health system [24].

In Burkina Faso FGM is associated with some demographic, social and economic factors such as age, wealth, ethnicity, place of residence, years of education, household affluence, and religion. Tradition/culture plays a major role in FGM. In Garba et al. [21] study, about 73 % of FGM were done for traditional/cultural reasons: the fathers were the main decision makers for the procedure of FGM. Others think that FGM has religious significance and it curbs female sexual promiscuity in addition to providing hygienic benefits [25].

Moreover, higher educational attainment by women and their parents is inversely associated with probability of being cut [23].

The proportion of women and daughters with FGM is higher among Muslim women [26]. It has also been shown that in Burkina Faso some regions and ethnic groups have a higher risk of practicing FGM and this association has to be considered as a proxy for social norms [26]. Considering socio-economic levels, it has been noticed that women in the middle asset quintiles were more likely to report themselves as having had FGM.

Currently, many African governments recognize that FGM is a violation of the human rights of the girls and women [27]. Burkina Faso is one of the 16 African states where FGM is forbidden by law and it would be important to review the law concerning FGM to identify any differences the law may be making [26].

This study confirms obstetric and neonatal outcomes of women with FGM I and II already widespread in the literature. During our experience there were no cases of pregnant women with FGM III. It would have been interesting to examine the management of these latter patients, in which more complications occur than in women with FGM I and II. Furthermore, it also lacks an evaluation of defibulation procedures that have been demonstrated to improve obstetric outcomes in women with FGM type III [28].

## Conclusion

FGM is associated with a higher risk of gynecological and obstetrical consequences, acting not only on women's health but also on the economy of resource limited countries, both of which should be protected. Moreover, because of migration, health professionals could interface with women with FGM in Western countries too, thus it is important to understand both their religious, social customs and all the medical risks associated with this procedure. Based on our direct experience in Nanoro hospital, it would be advisable to train health professionals to inform women with FGM about the health risks and laws that forbid this practice to raise awareness, to reduce the costs of treating FGM-related psychological and sexual problems, to change attitude to FGM and to stop further FGM in their daughters.

**Conflict of interest** None.

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