

Provoked abortion in adolescents: pathological analysis of the material collected by uterine curettage

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CONTEXT: The objective was to describe the anatomical and pathological findings following provoked abortion. **METHODS:** A structured questionnaire of 201 adolescents faced with an incomplete abortion and subjected to uterine curettage in hospitals which are part of the Sistema Único de Saúde (The State Run Health Programme). **RESULTS:** With regards to the study subjects, the average age was sixteen years old. Most were mullatos with a stable partner with an average gestational age of 13.2 weeks. The study revealed that 98.0% of the abortions were provoked, with 81.6% being certainly provoked, 10.0% being probably provoked and 6.5% possibly provoked. Embryonic development and maternal tissues, following anatomical pathological analysis, amounted to 88.6% and 11.4%, respectively. Amongst the certainly provoked abortions, there was one case of hydatidiform mole. There were no uterine punctures or perforations nor blood transfusion. **CONCLUSION:** It is recommended to carry out a anatomical pathological analysis to determine the identity of the abortion material.

Keywords: Abortion, Provoked abortion, Epidemiology, Adolescent, Anatomical pathological, uterine curettage.

INTRODUCTION

Induced abortion, one of the most common and worrisome complications of pregnancy, has been recognized worldwide as an important public health problem. It especially results in damage to the female population under 20 years of age and has serious social, political and medico-legal consequences (Lukman and Pogharian, 1996). In developing countries, induced abortion is aggravated by the fact that it is sometimes illegally performed under less ideal conditions. The World Health Organization (WHO) estimates that about 20 million abortions occur annually worldwide under these conditions (Sedgh *et al.*, 2007).

In Brazil, where abortion is only allowed by law in cases of rape and risk of death to the mother, it is, nevertheless, a well-known practice with divergent estimates (Monteiro and Adesse, 2006). However, the lack of official statistics and population-based studies in

this country complicates an assessment of the magnitude of the problem. However, few available data are obtained through hospital research which underestimates the population that makes use of such practice (Baird *et al.*, 2006).

For this reason, the Health Ministry of Brazil in March 2005 released the Manual of Technical Norms for the humanized assistance of abortions in Public Hospitals of the Brazilian Sistema Único de Saúde (SUS). Despite this effort, there remains no recommendation for histological analysis of the specimen derived from uterine curettage (Brasil, 2005).

There is still no general consensus that histological analysis of the products of conception is of value in cases of induced abortion. However, this analysis can determine possible causes of recurrent pregnancy loss or reveal unexpected pathology. This justifies the histological examination as an invaluable test to ensure

the diagnoses of the product eliminated by the abortion procedure (Heath *et al.*, 2000).

There is also a medico-legal aspect which recommends that a sample of the contents obtained by uterine curettage undergo an anatomico-pathological analysis to confirm the presence of intrauterine fetal tissue (Bagshowe *et al.*, 1990). Such concern has provided the diagnosis of gestational trophoblastic disease, which consists of benign and malignant neoplasms, related to pregnancy, characterized by abnormal proliferation of trophoblast from the placenta.

Among abortion cases there may be hidden cases of partial or complete hydatidiform mole, from which close to 5.0-20.0% develop malignant forms, jeopardizing the life of the woman if they are not diagnosed. The histological exclusion of these conditions has an obvious medical importance because of the possible progression to choriocarcinoma (Heatley and Clark, 1995).

At present, with the improvement of techniques and equipment, it is possible to confirm many diagnostic hypotheses about pregnancy. Since the 1950s, obstetric ultrasound has been used in developed countries, but its dissemination in Brazil started in the 80s and created new perspectives for the health care of women with miscarriage symptoms (Maslovitz *et al.*, 2004). The ultrasonographic examination has been employed as a diagnostic method capable of identifying the need for treatment for incomplete abortion. In the last decade, vacuum, electrical or manual aspiration has been recommended as an alternative to uterine curettage (Hemlin and Moller, 2001). In Brazil, surgical uterine curettage has still been the method of choice to treat the cases in hospitals of the SUS (Araújo and Viola, 2003). Although it is a simple medical procedure, it is not free of complications such as uterine perforation, hemorrhage and infection (Wood and Brain, 2002). Data from the SUS reveal that in 2006 there was an average of 220,000 hospital admissions to perform curettage for abortion (Shenk, 2007).

Due to the importance of the topic and the scarcity of studies that analyze the anatomico-pathological findings in material from provoked abortion in Brazilian women, the current study was undertaken. The aim of this study was to describe the type of abortion, its motivation and complications, its socio-demographic characteristics, the use of ultrasound and the anatomico-pathological analysis in pregnant teenage girls submitted to uterine curettage in a Maternity of the Health System of northeast Brazil.

METHOD

From March 2008 to April 2009, a descriptive study was made of 201 pregnant adolescents who underwent uterine curettage in a hospital in Maceió, Alagoas, Brazil which is linked to the SUS.

Techniques for gathering information, such as a questionnaire with pre-established guidelines, including questions on socio-demographic characteristics (age, marital status, and ethnicity); ultrasound findings, complications of uterine curettage procedures (perfo-

ration and blood transfusion) and analysis of anatomico-pathological material from such curettage were used. A checklist was applied to determine the proportion of induced abortions, classifying them into four categories in accordance with their types (World Health Organization, 1987): certainly provoked, probably provoked, possibly provoked and spontaneous.

For the curettage process, the women underwent anesthesia with the combination of hypnotic and analgesic intravenous substances (Vale, 1997). After the antisepsis of the genitalia as well as emptying the bladder and the introduction of a vaginal speculum, the cervix was held with the Pozzi pinch to centralize the uterine body. Sharp or non sharp fenestrated curettes, numbers 1-6, and pinches of winter, numbers 1 through 3 were used.

The criterion for completion of the procedure was the presence of shining and sparkling red blood and the sensation of roughness in the empty cavity. The material obtained from the uterine specimen was fixed in 10% formaldehyde, embedded in paraffin, sliced in cuts of 5µm thickness, stained with hematoxylin-eosin (HE) and examined anatomico-pathologically (Ornoy *et al.*, 1981).

Before beginning the interview, each woman was informed about the purpose of the study and invited to sign the consent form for their participation. The confidentiality for the information provided was assured to the participants. The interviews were conducted in private after the initial obstetric examination and before the surgery. No teen selected for the interview who refused to participate.

The Epi-Info version 6.04d was used for the calculation of frequencies and to format the tables. This research was carried out in accordance with the guidelines for human research, established by the Resolution 196/96 of the NHC (National Health Council), following the ethical principles of the Declaration of Helsinki and after approval by the Ethics Research Committee of Federal University of Alagoas/UFAL under the Case No. 010679/2008-51.

RESULTS

The total number of uterine curettages performed during the study period was 847. A total of 201 cases (23.4%) met the criteria for inclusion and were collected from all pregnant teenagers. Taking the age group into consideration, the biggest proportion of students 177 (88.1%) were between 15 and 19 years old. Their average age was 16. The age of pregnancy was calculated from the first day of the last menstrual period (LMP) and confirmed by an early ultrasound when available. The mean gestational age was 13.2 weeks, ranging from ten to seventeen weeks of pregnancy. Regarding marital status, most (129 or 84.18%) were living with a stable partner. The remaining (72 or 35.82%) did not reside with a partner. In terms of ethnic groups, the highest prevalence of abortion was observed in mixed race adolescents (121 or 60.2%), followed by white (72 or 35.8%) and black (8 or 3.4%).

According to the motivation for abortion, 4 (2.0%) aborted spontaneously. While applying the criteria established by the WHO (14), 197 (98.0%) of the adolescents had their pregnancies voluntarily interrupted, that is, their abortions were considered as induced, 164 (81.6%) were provoked, 20 (10.0%) probably provoked, and 13 (6.47%) possibly provoked.

In Table 1, there are three possibilities, according to the ultrasound of teenagers under the risk of miscarriage. Most of these cases presenting a suggestive picture of residual viable eggs (176 or 87.6%); 25 or 14.4% showed a gestational sac, 16 (8.0%) were without any embryo and 9 (4.5%) had a gestational sac with a dead embryo.

Table 1. Distribution of pregnant teenagers, according to the ultrasound findings and the type of abortion. Maceió (AL), 2008.

Types of Abortion	Ultrasound Findings								Total	<i>p</i> *	
	Ovular Residues				Gestational Sac						
	Without Embryo		With Dead Embryo		Without Embryo		With Dead Embryo				
n	%	n	%	n	%	n	%	n	%		
Certainly Provoked	1	33,3	163	82,3	8	88,8	156	81,2	164	81,5	
Probably Provoked	2	66,6	18	9,0	1	11,1	19	9,9	20	9,9	
Possibly Provoked	0	0,0	13	6,5	0	0,0	13	6,7	13	6,4	ns
Spontaneuos	0	0,0	4	2,0	0	0,0	4	2,0	4	1,9	
Total	3	1,4	198	98,5	9	4,4	192	95,5	201	100,0	

**p*, ns= not significant (χ^2 test)

Table 2 shows the distribution of pregnant adolescents in accordance with complications that arose from their abortion. Most adolescents, and in all categories of abortion, did not suffer complications, either a uterine perforation (198 or 98.5%) or requiring a blood transfusion (92 or 95.5%).

Among the 3 cases (1.5%) of adolescents with uterine perforation, the type of abortion was certainly

provoked in one woman and there was no case of drilling in the spontaneous abortion. Blood transfusion was performed in 9 (4.5%) patients. In 8 (88.9%) of these cases, the abortion was classified as certainly induced, and there was only one case (11.1%) of likely induced abortion. There was no case of transfusion in spontaneous abortions.

Table 2. Distribution of pregnant adolescents in accordance with the complications arising from abortion. Maceió (AL), 2008.

Types of Abortion	Procedural risk								Total	<i>p</i> *	
	Uterine perforation				Blood transfusion						
	Yes		No		Yes		No				
n	%	n	%	n	%	n	%	n	%		
Certainly Provoked	1	33,3	163	82,3	8	88,8	156	81,2	164	81,5	
Probably Provoked	2	66,6	18	9,0	1	11,1	19	9,9	20	9,9	
Possibly Provoked	0	0,0	13	6,5	0	0,0	13	6,7	13	6,4	ns
Spontaneuos	0	0,0	4	2,0	0	0,0	4	2,0	4	1,9	
Total	3	1,4	198	98,5	9	4,4	192	95,5	201	100,0	

**p*, ns= not significant (χ^2 test)

The histological aspects were considered in two categories when basing them on classical criteria of pathological anatomy. Table 3 shows the distribution of pregnancies, according to the pathology and the type of abortion. During the period of the study in which the histopathological analysis of material from curettage of the uterine cavity was made, there was no evidence of

embryonic tissues in 23 (11.4%) of the cases. Of these, 19 (82.6%) were considered certainly provoked abortions. Among the cases where the pathology showed evidence of embryonic tissue there was one case involving a complete hydatidiform mole, included in the group of certainly provoked abortions.

Table 3. Distribution of pregnant teenagers, according to the anatomo-pathology analyses and the type of abortion. Maceió (AL), 2008

Types of Abortion	Anatomopathological Exam					p*	
	Embryonic Tissues		Maternal Tissues		Total		
	N	%	N	%	%		
Certainly Provoked	145	81,46%	19	82,61%	164	81,59%	ns
Probably Provoked	18	10,11%	2	8,70%	20	9,95%	
Possibly Provoked	11	6,18%	2	8,70%	13	6,47%	
Spontaneous	4	2,25%	0	0,00%	4	1,99%	
Total	178	88,56%	23	11,44%	201	100,00%	

*p, ns= not significant (χ^2 test)

DISCUSSION

Many women who go to an emergency medical center following an abortion have to be promptly assisted; otherwise their clinical condition can worsen. According to several studies, complications of abortion are the first or are, at least, among the three most important causes of maternal morbidity and mortality in developing countries (World Health Organization, 2004).

Regarding the age of the teenager who presents with symptoms following an abortion, results of the present study show that 177 (88.1%) were between 15 and 19 years old, while those less than or equal to 15 were the ones who least sought assistance for abortion 24 (11.9%).

These findings suggest that the largest number of miscarriages happen at the age in which young women start their sexual life. Similar results have been observed with 20.1% of abortions under 20-year old teenagers (Brasil, 2005).

It was found that 129 (64.2%) adolescents of the studied population who were hospitalized due to abortion-related reasons reported living with a stable partner, while 72 (35.8%) declared themselves not living with a stable partner. These results are similar to those described previously (Sedgh *et al.*, 2007).

Brazil is considered a mosaic of races; because of this the ethnic aspect of the study in relation to abortion cannot be conclusive. It was found that most adolescents who underwent abortions (121 or 60.2%) were mixed race. This result can be explained by the fact that these adolescents come from a population of mostly Afro-American descendents. These findings were different from those reported by Olinto and Moreira-Filho(2006), who found that 84% of women with signs of miscarriage were whites.

The WHO, (1987) attempting to ascertain the number of times that pregnancy is purposely terminated, i.e, that it is induced or provoked, proposed a classification into four categories. Two categories previously referred to as spontaneous

abortion were reclassified as possibly or probably provoked. Through these criteria it appears that there was evidence that the interruption of pregnancy in 164 (81.6%) of the adolescents in this study had been definitely provoked and that four (2.0%) underwent a spontaneous abortion. According to Sedgh *et al.*(2007) even with the same difficulty related to the veracity of records in South America, Chilean women were those with the highest percentage of provoked abortion (35% of pregnancies), followed by Brazil, (31% of pregnancies).

Induced abortion has been described by WHO (2004), and by the authorities governing the Ministry of Health as a public health problem and its reduction is of vital importance to improve women's health (Shenk, 2007).The diagnosis of abortion was made by anamnesis, clinical examination and confirmed by a transvaginal ultrasound. The gestational ages were found or calculated from the date of the last menstrual period, varying from 10 to 17 weeks. Based on a median of 13.2 weeks Rossier(2003) found that the gestational age at which abortion occurs significantly increased the percentage of complications, being more than twice as high when performed at the third month or later when compared to the first month.

The ultrasonographic findings of incomplete abortion have yielded variable percentages. In the present study, the incidence of incomplete abortion was 176 (87.6%), different from observations made by other authors, 5 to 8.8% (Cashner *et al.*, 1987).

In pregnancies that lacked an embryonic sac, the observed incidence was 16 (8.0%), being slightly below the percentage shown in other studies where the variation was between 8 and 26% (Mantoni, 1985). Perhaps these differences were due to a longer interval of time between the onset of bleeding and the completion of the ultrasonographic examination. Thus, cases of blighted ovum could evolve following the partial removal of its contents, presenting at the time of ultrasonographic diagnosis as ovular remains. The ultrasound finding of a dead

embryo gestational sac is frequent in the evaluation of abortion in the first three months, as it was also observed in other studies (Cashner *et al.*, 1987).

The presence of a case which involves a complete hydatidiform mole was diagnosed by an anatomic-pathological examination and not identified by ultrasound. It is described in the medical literature that some cases of hydatidiform mole in early pregnancy may present as poorly developed blisters, becoming undistinguishable in a diagnostic of ovoid fragments (Coleman and Arger, 1988).

In all the cases selected for the present study, the choice of treatment was curettage for removal of the placental fragments, which is certainly the most common method for abortion treatment in the majority of public hospitals of Brazil (Coleman and Arger, 1988). In the past, this was considered the most recommended treatment for uterine curettage because there was a belief that the retained debris after fetal death could be a cause of infection and the onset of coagulation disorders (Mitwally *et al.*, 2006). Even today, this is still a very common treatment. Griebel *et al.*, (2005) emphasizes that the selection of patients is another reason for this choice.

In this study, uterine perforation was observed as a complication in 3 cases (1.5%), among those with provoked abortion. Likewise, women who required a blood transfusion were mostly classified as certainly induced-abortion patients (8 of 9). Perforation was not observed in cases of spontaneous abortion.

Griebel *et al.*, (2005), assessing complications associated with abortion, observed rare cases of patients undergoing laparotomy or any other kind of curettage. They, however, report that abortion complications are among the leading causes of hospital admission.

Surprisingly, the number of induced abortion cases with severe sequel and the coefficient of mortality have shown a considerable decrease over time. It is possible that this is related to the growing use of misoprostol as an abortion method for low-income women (Sedgh *et al.*, 2007).

In Brazil, it is known that the vast majority of abortions are not performed in hospitals, but rather in unsafe places that need to remain anonymous. Therefore, women who have post-abortion complications, such as bleeding, infection, etc. are not seen in maternity wards, but in general hospitals, presenting with disorders not typically associated with the abortion process. This increases the rates of under reporting (Coleman and Arger, 1988).

Surgical procedures in the treatment of abortion afford the possibility of studying the specimen by anatomic-pathological analysis. In this study, representative material of embryonic remains was only found in 178 (88.6%) cases. It was clear, therefore, that in 23 (11.4%) of the adolescents, abortion had been spontaneously completed before the curettage.

Heatley *et al.*, (1995) performed anatomic-pathological examination in 400 samples originating from an incomplete abortion, where embryonic remains were identified in 146 cases. In the remaining material there were no placental residues.

In spite of existing doubts about its real necessity (Maslovitz *et al.*, 2004), the importance of anatomic-pathological examination lies in clarifying the differential diagnosis with other pathologies, especially hemorrhagic syndromes of the first half of pregnancy (Fram, 2002).

Thus, the discovery of a case of hydatidiform mole among 201 pregnant adolescents is extremely significant for us because it is a disease with a potential for malignant transformation and is curable in almost 100% of cases, if early detected and treated. Otherwise, it may lead to death in neglected situations (Hancock and Tidy, 2002). There is not yet in Brazil, from the Ministry of Health, recommendations to carry out anatomic-pathological analysis of ovoid debris (Brasil, 2005).

This fact makes the incidence of hydatidiform mole and, consequently, of trophoblastic neoplasia inaccurate in Brazil. In 2006, the Roy Hertz Institute was created as a reference center for women with gestational trophoblastic neoplasia, together with the State Health Department of Rio de Janeiro. In this context, the incidence of hydatidiform mole is based on hospital records, in general tertiary centers and, for that reason, is probably overestimated. Care must be taken to compare findings with data in the literature, where there are both population and hospital incidences.

Studies in Goiania, Rio de Janeiro and São Paulo (Belfort and Baptista, 2007), showed no record, respectively, of a hydatidiform mole in 56 births, one in 514 births and choriocarcinoma and a hydatidiform mole in 215 pregnancies. Astonishingly, Fram (2002) noted a partial mole in 51 cases and a complete mole in three cases, from 293 specimens which had undergone uterine curettage.

Moreover, it is worth mentioning that in the last 20 years, due to the use of ultrasound in early pregnancy, both for routine assessment and for cases of vaginal bleeding, the clinical, ultrasonographic and histopathological presentation of molar pregnancy has markedly changed (Griebel *et al.*, 2005, Fram, 2002). This fact, together with results from the literature (Tasci *et al.*, 2005), further strengthens the need for anatomic-pathological examination of all abortion material, especially those with a diagnosis of a nonviable early pregnancy.

CONCLUSION

The great challenge for health professionals, society and, administrators are to offer differentiated services to adolescents before they are pregnant so as to prevent the occurrence of induced abortion. The obligation of anatomic-pathological analysis of the material from uterine curettage for abortion has

been recommended. To favor its acceptance there is also the fact that it is the simplest method for diagnosis of hydatidiform mole (Heatley and Clark, 1995). The creation of Regional Reference Centers of trophoblastic gestational neoplasia, with a record of all cases, would make reliable the epidemiology of the disease in Brazil and, thus, implementation of strategies for diagnosis and for a more appropriate treatment.

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