

# Inherent Dangers in Orogenital Sex During Pregnancy

Giovanni Sisti, Sorbi Flavia, Fambrini Massimiliano

Department of Science for Woman and Child Health, University of Florence, Florence, Italy

## ABSTRACT

Coitus and cunnilingus during pregnancy are generally safe; whereas orogenital sex involving vaginal air insufflations can be very dangerous, causing even the death of the women. We carried out a search of case reports and reviews concerning air embolism during pregnancy due to orogenital sex. Physicians consultations must cover all the rules of safe sexual behavior, including avoidance of vaginal air insufflations in the third trimester.

**KEY WORDS:** Air embolism, cunnilingus, orogenital sex, pregnancy

## INTRODUCTION

Air embolism produced by vaginal insufflations is uncommon, but life threatening.<sup>[1,2]</sup> One of the causes can be orogenital sex, since it can cause air insufflations. The vagina of a pregnant woman is a highly distensible organ and can accommodate more than 1 liter of air.<sup>[3,4]</sup> The air can then separate the amniotic membrane from the uterine wall and pass into the mother's venous circulation via subplacental sinuses.<sup>[2]</sup> The air embolus follows the inferior vena cava to the mother's right heart, thus resulting in mechanical obstruction of the right ventricular outflow tract, leading to cardiac arrhythmias and pulmonary embolism.<sup>[5]</sup> The air can then enter the arterial circulation via an atrial septal defect, present in about 25% of adults.<sup>[6]</sup> Bubbles can finally reach the mother's brain with fatal consequences. Moreover bubbles have more delayed and diffuse actions, the indirect or surface activity effect. This relates to the blood-bubble interface at which certain circulating enzymes change their configuration and thus their biochemical activity. The effects of this includes endothelial edema, platelet thrombi, increased capillary permeability, and the release of biologic mediators such as smooth muscle acting factor.<sup>[2]</sup> This phenomenon could explain the coagulopathy and bronchospasm observed in some patients.<sup>[5]</sup> Appropriate and prompt therapy for air embolism is necessary to avoid maternal and intrauterine fetal death.

## MATERIALS AND METHODS

We carried out an electronic search of case reports and reviews concerning air embolism during pregnancy due to orogenital sex. The following electronic databases were searched: MEDLINE, Google Scholar, and EMBASE. The following key words were used: Air embolism, pregnancy, pregnant, orogenital sex, oral sex, and adult pulmonary distress syndrome. The search strategy had no language restrictions. We manually searched reference lists of journal articles to locate additional studies. No written protocol of this review has been made or published. Two reviewers independently selected studies for inclusion.

## RESULTS

Our search ended in 16 articles [Table 1],<sup>[1-5,7-17]</sup> two of which contained a review of literature data<sup>[1,2]</sup> and one<sup>[12]</sup> contained multiple case report. The most recent review has been made in 1983.<sup>[2]</sup>

The average age of women was 20.2 years, and only one was older than 30 years. Average and median gestation age was 29 weeks. The setting of the incident is similar to all the cases. The partner was blowing air into the vagina for a few minutes during orogenital sex. In all the cases, the air embolism occurred immediately after the sexual act. The presentation symptoms varied from neurologic coma and dizziness to epilepsy and loss of

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#### Address for correspondence

Dr. Giovanni Sisti,  
Department of Science for Woman and Child Health, Careggi Hospital,  
University of Florence, Viale Morgagni 85, 50134, Florence, Italy.  
E-mail: [giovanni83@email.it](mailto:giovanni83@email.it)

**Table 1: Articles describing air embolism in pregnant women following orogenital sex**

References	Age (in years)	Stage of pregnancy (weeks of gestation)	Circumstances of sex play	Outcome
Heid, 1936 <sup>[7]</sup>	16	20-24	Female seated on chair; man blew into her vagina. History of cunnilingus	Dyspnea, collapse, and sudden death
Benjamin, 1946 <sup>[8]</sup>	17	20	Normal sexual intercourse followed by drinking bout, then mutual orogenital stimulation. Man took a deep breath and blew into vagina	Immediate collapse and death
Wuermeling, 1959-1960 <sup>[9]</sup>	16	24	Had intercourse with fiancé. Seated in kitchen table, fiancé blew air in the vagina	Sudden collapse and death
Allen, 1962 <sup>[10]</sup>	17	Not stated	Had intercourse with a man, 5 mins later he cupped his hands and blew 2-3 times into the vagina	Immediate collapse and death
Hendry, 1964 <sup>[11]</sup>	17	20	During postcoital sex play she dared husband to blow on her genitalia. He applied mouth to introitus and blew hard	Immediate collapse and death
Aronson and Nelson, 1967 <sup>[12]</sup>	20	38	Indulged in manual sex play. Husband placed mouth over vagina and blew several times.	Stiffening, gasping, convulsion, and death
Aronson and Nelson, 1967 <sup>[12]</sup>	28	30	Sexual intercourse prohibited by doctor. Indulged in sex play with husband using hands. Husband put mouth over introitus and blew. Sexual intercourse prohibited by doctor. History of previous cunnilingus involving vaginal inflation	Complaints of pain in abdomen and thirst. Convulsions and death
Herzig and Mojola, 1968 <sup>[13]</sup>	19	Not stated	Involved in cunnilingus	Not stated
Fatteh et al., 1973 <sup>[1]</sup>	16	40	The husband performed cunnilingus at her insistence and inflated air into her vagina. Sexual intercourse prohibited by doctor	Immediate collapse and 35 min later she died
Soska et al., 1978 <sup>[4]</sup>	26	Not stated	Man blew into her vagina several times to achieve maximum enhancement of sexual enjoyment	Strong bleeding and instantaneous death
Bray et al., <sup>[2]</sup>	36	30	Her husband forcefully blew air into her vagina	Abdominal tightness, seizure, deep coma. Hyperbaric chamber treatment, 3 months later memory impairment, inability to walk (survived). Baby died before delivery
Fyke et al., 1985 <sup>[15]</sup>	19	27	Her husband insufflated her vagina during orogenital sex	Heparin treatment (diagnosis made late). Both mother and baby survived
Kaufman et al., 1987 <sup>[5]</sup>	18	32	Her boyfriend had forcibly blown air into her vagina	Lower abdominal pain, nausea, collapse, cardiac arrest
Bernhardt et al., 1988 <sup>[4]</sup>	16	22	Oral sex	Comatose, apnoeic, cyanotic, come. Hyperbaric chamber. Mother survived and baby died before delivery
Hill and Jones, 1993 <sup>[16]</sup>	22	38	Her partner forcibly blew air into her vagina	Mother survived without hyperbaric treatment (diagnosis made late). Baby died in third postpartum day
Kaiser, 1994 <sup>[7]</sup>	20	29	The partner insufflated a large amount of air into her vagina	The mother died and the infant survived
Sanchez et al., 2008 <sup>[3]</sup>	Not stated	29	The partner forcibly blew air into her vagina	Abdominal pain and nausea, loss of consciousness, she underwent hyperbaric oxygen treatment. Both mother and infant survived

consciousness. In the reports of Aronson and Nelson,<sup>[12]</sup> the women were suggested by their doctor not to have intercourse during pregnancy. Air embolism is associated with high risk of death. Four women survived, twelve died, and in one case report the outcome of air embolism was not stated.

The autopsies in the majority of the dead women found air bubbles in the right heart and pulmonary tissue, in the most serious cases they even found subcutaneous bubbles.

## DISCUSSION

The occurrence of air embolism during pregnancy is uncommon. It can be due to vaginal douching with a bulb

syringe or effervescent fluid, powder insufflations as a treatment of vaginal infection,<sup>[7]</sup> and by attempts at criminal illegal abortion.<sup>[6]</sup>

Our data suggests that third trimester pregnancy seems to be the most at risk for this event. No comorbidities were observed in the majority of the cases. Regardless its etiology, treatment of air embolism during pregnancy is not yet defined.

Three articles reported hyperbaric chamber treatment as a specific and highly effective therapy for air embolism of any etiology. However, its effectiveness depends on the time between the incident and the treatment. The shorter is the time, the better is the result. In all of these three

cases, the mother survived, and in two-third the infants survived too.

Nevertheless there are two case<sup>[15,16]</sup> in which the mother survived without hyperbaric chamber treatment. Fyke<sup>[15]</sup> describes initial intravenously heparin administration; only later, when the husband of the patient revealed that his wife's sudden collapse had occurred during orogenital sex, physicians decided to discontinue heparin administration. The woman suddenly improved and was discharged 6 days after; in this case no hyperbaric therapy was given. In contrast, the patient described by Hill<sup>[16]</sup> survived with only support therapy, having the exact diagnosis only in the third day in hospital.

The best treatment seems to be support therapy and praecox use of hyperbaric chamber.

Considering the average age of the women, this pathologic event seems to be related to youth. This can be explained by major prevalence of this type of sexual behavior in young ladies. In some cases, orogenital sex was adopted since intercourse was prohibited by physicians.

Recently, it has been accepted that coitus and cunnilingus are safe for pregnant women, whereas forceful blowing of air into the vagina can be life-threatening.<sup>[18]</sup>

The clinical diagnosis of acute air embolism can be strongly suggested by history of orogenital sex. Unfortunately, in many of the cases we reviewed, during patient history taking, the correct description of the sexual act was omitted.

In conclusion, we believe that physicians' consultations must cover all the rules of safe sexual behavior, including avoidance of vaginal air insufflations in the third trimester.

Besides, air embolism should be considered in the differential diagnosis of pregnant patient with a history of orogenital sex followed by dyspnea, abdominal pain, and loss of consciousness.

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