

## Research Article

# Microbial Flora Pattern in Septic Incomplete Abortion in Port Harcourt

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## Abstract

**Background:** Septic abortion occurs when there is colonization of the upper genital tract by micro organisms following termination of pregnancy usually before the age of viability. This can result from ascending infections from the lower genital tract or direct inoculation of micro organisms from contaminated and poorly sterilized instruments at the evacuation of the uterus in incomplete abortion or during unsafe abortion. Septic abortion is accompanied by significant morbidity, cost and maternal death in Nigeria. Knowledge of the microbial flora causing septic abortion is important in the prevention and treatment of this condition. The aim of this study is to identify the common micro organisms present in the endocervix and posterior vaginal fornix in patients with septic abortions.

**Methods:** This is a prospective study of the micro organisms present in the endocervix and posterior vaginal fornix in 150 women with septic abortion as identified in bacterial cultures between 1st January 2006 and 31st gt; December 2008 at the Obstetrics and Gynaecology units of University of Port Harcourt Teaching Hospital and Braithwaite Memorial Specialist Hospital Port Harcourt.

**Results:** There were polymicrobial colonization of the upper genital tract and vagina in most cases. The commonest organisms cultured are *Escherichia Coli* (49.2%) and *Staphylococcus Aureus*(37.1%). The least commonly identified organisms were *Bacteriodes*(3.8%) and *Clostridium species*(2.3%).

**Conclusion:** *Escherichia Coli* is the commonest organism cultured in septic abortion in this environment. The infections are usually polymicrobial. They are mainly enteric organisms found in genitourinary infections.

**Keywords:** Septic Abortions; Infection Pattern

## Introduction

The infection of the female upper reproductive tract is one of the serious complications of abortion. Ascending bacteria from the vagina or perineum could infect the retained products of conception during spontaneous abortions. Also direct inoculation of the uterine cavity with micro-organisms especially at unsafe abortions could give rise to septic abortion. Septic abortion has been shown to result in 6 to 33 %

of 1-7 maternal deaths in different reports in Nigeria [1-7].

Port Harcourt is an urban city in Nigeria. Current Nigeria 8 Demographic and Health Survey (NDHS) estimates that 47% of the females in the reproductive age resides in the urban areas and only 10% of women in this age group are currently using modern contraceptive method. The incidence of unwanted pregnancy amongst women in Port Harcourt is therefore

anticipated to be high. Induced abortions are still illegal in Nigeria and are largely procured in clandestine manner, in unhygienic places making it unsafe. The microbial flora commonly implicated in septic abortion, are micro-organisms that colonized the cervix and vagina prior to or during the abortive process. The micro-organisms introduced into the uterus from the use of poorly sterilized instruments, during the process of evacuating the uterus as treatment for incomplete abortion or at induced abortion, are also implicated. Common organisms that have been implicated are *Escherichia Coli* (*E. coli*), streptococci, staphylococci and rarely organisms like *Clostridium Welchi*, *clostridium Tetani*, or *clostridium 10,11 perferinges*.

The process of microbiological culture and sensitivity in a low resources setting is not only expensive for the average Nigerian but will take at least 48 hours to complete. Also majority of the patients present late with advanced infectious morbidity and may not be alive in the next 48 hours to benefit from the culture and sensitivity result. In such situations the knowledge of microbiological flora involved in septic abortion will guide the choice of antibiotics treatment. This knowledge will also guide the antibiotics prophylaxis during or after uterine evacuations for incomplete abortions thereby preventing septic abortions.

### **Patients and Methods**

This is a prospective study carried out between January 2006 and December 2007 in the University of Port Harcourt Teaching Hospital and Braithwaite Memorial Hospital. These are both major hospitals offering tertiary care in Port Harcourt the capital city of Rivers State. Ethical approval for this study was given by the UPTH ethics committee. The sample size was determined using the Kish formula at 95% confidence interval, prevalence rate of 10% and sampling error of 2.5%. The calculated minimum sample size was 124. The average combined number of septic abortion in both hospitals was about 48 per year. A period of three years was used to capture our sample size of 150. All the women who were admitted for

incomplete or incomplete septic abortion were included in the study. The patients gave informed consent after counseling prior to collection of the sample. The social and demographic characteristics of these patients were extracted from the patients at time of inclusion into study. Using aseptic techniques, a sterile Cusco speculum was passed into the vagina to expose the cervix and samples were collected from the cervical canal and the posterior fornix of the vagina. Samples were collected with sterile cotton tipped swabs on wooden applicator sticks encased in plastic tubes. The swabs were immediately placed in Bijou bottles containing Stuarts transport media freshly built to expel air. Each swab stick was broken at the middle and the bottles screwed with the cover. The specimens were returned to the microbiology laboratory of UPTH. Each specimen was inoculated on to sterile plates of blood agar, chocolate agar and MacConkey (Bile salt) agar.

The plates were incubated aerobically, anaerobically and microaerophilically in a gas-pack jar at 37 C for 48hours. The anaerobic plates with no growth after the initial 48hours incubation were re-incubated for another 24hours. At the end of incubation, the cultures were read and appropriate colonies subcultured for purity. The routine laboratory methods involving microscopy, biochemical and physiological tests were used to identify the different organisms. A case is regarded as positive when at least a swab from either site identified an organism. The data collected on an excel spreadsheet for analysis. The result presented in percentages and frequency tables.

### **Results**

Samples from 132 patients out of the 150 included in the study grew organisms while the samples from 18 patients had no growth. The incidence of abortion related complications was 11% and septic abortion was 5.1% of all gynaecological admissions in these two hospitals. Septic abortion occurred more in single women with poor education aged 15-25 years and least in those aged 36years or more,

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who were married and with at least secondary education (Tables 1, 2)

AGE (YEARS)	NO.	%
16-20	36	27.3
21-25	64	48.9
26-30	15	14.4
31-35	12	9.1
36-40	5	3.4
<b>TOTAL</b>	<b>132</b>	<b>100</b>

  

MARITAL STATUS	NO.	%
NOT MARRIED	105	79.5
MARRIED	27	20.5
<b>TOTAL</b>	<b>132</b>	<b>100</b>

  

LEVEL OF EDUCATION	NO.	%
PRIMARY	83	62.5
SECONDARY	42	31.8
POST SECONDARY	7	5.7
<b>TOTAL</b>	<b>132</b>	<b>100</b>

**Table 1:** Demographic Characteristics Of Patients

MICRO-ORGANISMS	NO OF POSITIVE CASES	%
Escherichia Coli	65	49.2
Staphylococcus Aureus	49	37.1
Candida Albicans	28	21.2
Klebsiella Species	15	11.4
Group B Streptococcus	8	6.1
Neisseria Gonococcus	7	5.3
Peptostreptococcus	5	3.8
Bacteriodes	5	3.8
Clostridium Species	3	2.3

**Table 2:** Micro-organism Isolated

## Discussion

It is obvious from literature that septic abortion is one of the many causes of admission and

maternal death in the gynaecology wards in Nigeria and this has generated lots of studies estimating the incidence of septic abortion to be as much as 33% in some centres causing about 2.5-8.5% of maternal deaths in Nigeria and up to 33% of abortion related 3-7,13 maternal deaths . Over 75% of those with septic abortion in this study were aged 25years or less. This is in keeping with 12,13 other studies where induced abortion and septic abortion occurred more in these group of people. The low incidence of septic abortion noted here as compared to other studies may be as a result of the existence of many private specialist clinics in Port Harcourt where patients may seek treatment. Two gram negative enteric organisms, E. coli and klebsiella were isolated in over 60% of the infected samples. The proximity of the gut to the female genital tract and poor perineal hygiene could be responsible for this. These organisms have also been generally reported to be the common organisms implicated 9,10 in septic abortion.

All organisms detected in the intracervical swab were also detected with the high vaginal swab except that Neisseria gonococcus was more readily identified with the intracervical swab. The Neisseria gonococci organism are gram negative diplococci which can result in pelvic inflammatory disease and its long term complications of infertility, ectopic pregnancy, pelvic abscess and peritonitis. Rarely, it can lead to gonococcal bacteremia. Staphylococcus aureus and Candida Albican may just be organisms causing local vaginal infection as they did not occur in the endocervix and may not have been responsible for the ascending upper genital tract infection in septic abortions. However, Staphylococcus aureus is one of the several organisms that 9,10 have been reported to cause septic abortion . Clostridium is a spore forming gram positive rod and bacteriodes a gram negative rod both of which are obligate anaerobes. They thrive well in oxygen deficient environment such as retained products of conception. The clostridium is responsible for tetanus, gas gangrene, psuedomembranous colitis. Bacteriodes may be home to the vagina but may cause abscess in septic abortion, pelvic

11 inflammatory disease or tubo-ovarian abscess .

Peptostreptococcus specie are also gram positive anaerobes which are normal flora in the mouth, vagina, and intestines. They are involved in the formation of abscess and septicemia as well as infecting retained products of conception when present in incomplete abortion. The group B streptococcus are gram positive beta haemolytic organism and are normal vaginal flora in up to 25% of women. Again they may become virulent when found elsewhere such as the endometrium, as in incomplete abortion.

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