THE PREVALENCE, MANAGEMENT AND OUTCOMES OF SEPTIC ABORTIONS AMONGST PATIENTS WHO PRESENTED AT DR GEORGE MUKHARI HOSPITAL: [A TWO-YEAR REVIEW]

BY

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RESEARCH DISSERTATION

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UNIVERSITY OF LIMPOPO (MEDUNSA CAMPUS)

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CO-SUPERVISOR: PROF. O.A. TOWOBOLA

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TABLE OF CONTENTS

Page

Declaration 6
Dedication 7
Acknowledgement 8
List of Tables 9
List of Figures 10
List of Abbreviations & Acronyms 11
Abstract 12

Chapter 1

1.1 Introduction 16
1.2 Literature Review 22
1.3 Objectives of the Study 27

Chapter 2 [Methodology] 29

2.1 Study Design 29
2.2 Study Setting 29
2.3 Study Population 29
2.4 Procedures Performed 29
2.5 Outcome Measures 30
2.6 Data Collection 31
2.7 Data Analysis 31
2.8 Ethical Issues 31

Chapter 3: Results 32
Chapter 4: Discussion 41

Limitations of the study 46
Chapter 5:

Conclusion 47

Recommendations 48

Reliability and Validity of the study 48

References 49

Appendix 1: A copy of the Data Collection Form

Appendix 2: A copy of Ethics approval Certificate issued by MREC (MEDUNSA).
DECLARATION

I, Sinah Magalane Mashiloane declare that the work on which this dissertation is based is original (except where acknowledgements indicate otherwise) and that neither the whole nor part of it has been submitted for another degree at this or any other University, Institution for Tertiary Education or Examination Body.

SIGNED: .................................
(Dr S. M. MASHILOANE)
STUDENT NUMBER: 19805117
DEDICATION

The work of this study is dedicated to the Almighty God for helping me throughout my studies and to my family, my in-Laws, Ernest, Refentse, Hlapogadi and Mologadi for being more than 100% supportive. To my sisters Mmakgomo, Dolly and a brother Dinong Motsepe. Most importantly to the women who at all times we help and also learn from their ill health even though they are going through difficult times.

SIGNED:...........................................
(Dr S. M. Mashiloane)
ACKNOWLEDGEMENTS

I am greatly indebted to the following people, whose invaluable assistance enabled me to accomplish this work: Dr A. N. Muse and Professor O. A. Towobola. I am also indebted to my head of department Professor T. S. Monokoane and the whole Obstetric team who contributed fruitfully and successfully in my training to become a Specialist at Dr George Mukhari hospital.
LIST OF TABLES

Table 1: The interval between procurement of abortion and presentation at DGMH

Table 2: Results of examinations performed on patients who presented with septic abortions

Table 3: Management options of septic abortions at DGMH

Table 4: Various complications from patients with septic abortion at DGMH

Table 5: Length of hospital stay and final outcome of patients with septic abortions
LIST OF FIGURES

Figure 1:  Age range and distribution of patients treated for septic abortions at DGMH

Figure 1a:  Parity distribution of patients in this series

Figure 2:  Gestational age at presentation of septic abortions at DGMH
# LIST OF ABBREVIATIONS AND ACCRONYMS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DGMH</td>
<td>Dr George Mukhari Hospital</td>
</tr>
<tr>
<td>CRP</td>
<td>C-Reactive Protein</td>
</tr>
<tr>
<td>FBC</td>
<td>Full Blood Count</td>
</tr>
<tr>
<td>ICU</td>
<td>Intensive Care Unit</td>
</tr>
<tr>
<td>IVI</td>
<td>Intravenous Infusion</td>
</tr>
<tr>
<td>IVI Abs</td>
<td>Intravenous Infusion (Antibiotics)</td>
</tr>
<tr>
<td>LFT</td>
<td>Liver Function Test</td>
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<tr>
<td>MVA</td>
<td>Manual Vacuum Aspiration</td>
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<tr>
<td>PV</td>
<td>Per Vaginum</td>
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<tr>
<td>RHT</td>
<td>Refusal of Hospital Treatment</td>
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<tr>
<td>TAH</td>
<td>Total Abdominal Hysterectomy</td>
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<tr>
<td>U &amp; E</td>
<td>Urea and Electrolytes</td>
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<tr>
<td>WCC</td>
<td>White Cell Count</td>
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ABSTRACT

**Background:** Septic abortion is an infection of the uterus and its appendages following any abortion especially, illegally performed induced abortions. It is characterized by a rise of temperature of $>38^0\text{C}$, associated offensive or purulent vaginal discharge, lower abdominal pains and tenderness. Septic abortion is a significant health problem with short and long term complications that affect the quality of life of those fortunate enough to avoid mortality.

Although termination of pregnancy has been legalized in the Republic of South Africa since 1996, this study showed that septic abortion is still a problem in SA post-implementation of Termination Of Pregnancy Act of 1996. Pregnancy related sepsis is ranked fourth in South Africa at 5.3% according to saving mother (2008-2010) septic abortion included.

**Objectives:**

- To identify the prevalence of septic abortions at DGM hospital.
- To evaluate the outcome of patients who were treated for septic abortion at DGMH.
**Methods:**

**Study Design:** Is a retrospective study over 2yrs from 1st October 2007 to 30th September 2009.

**Sample:** Files of all patients who had presented and were treated for septic were included in this review. On monthly basis approximately 10 to 13 patients are seen in gynaecological wards with septic abortions. Our annual sample size was approximately 125 patients. Approximately 250 cases were anticipated in this 2year review.

**Data Collection:** Retrieval of medical records of patients was followed by extraction of information from each file into a specially designed data collection forms which was easily adaptable for a computer programme for statistical evaluation.

Data collected included information on:

- Vitals

- History of methods used for the procurement of abortion.

- Laboratory investigations- FBC, U & E, LFT.
**Outcome Measures:**

- Age
- Parity
- Gestational age at presentation
- Management Modalities (including admission to ICU)
- Discharged or demised

**Results:**

During the review period there were a total of 2,266 cases of abortions in our unit. From this number 216 patients were admitted with septic abortion, 52 patients excluded due to incomplete records and 164 were eligible for the study. This translates to incidence of 7.2%. The age distribution was:

- ≤ 17 years (5, 3%); 18 – 34 years old were 130 cases (79.3%); 35 – 39 years old (15.2%) and ≥ 40 years there were 4 (4.5%).

According to parity, nulliparous women were 22%, women of parity 1 – 2 were 59.1%, parity 3 – 4 (11.6%) and parity ≥ 5 was 7.3%. Gestation at which the patients presented at DGMH ranged from the patients presented at DGMH ranged from (≤ 12 weeks (34.1%); 13 – 20 weeks (59.8%); 21 – 26 weeks (5.5%) and those unsure of their dates were (0.6%).
The interval between procurement of abortion and presentation at DGMH was: at 1 week (75%), 8 – 14 days (11.6%) and the interval more than 2 weeks was 9.8%. The methods used to procure abortion were misoprostol tablets (72 patients; 43.9%), stemata (14 patients; 8.5%) and those without records of methods used were 78 patients (47.6%). When all the cases were classified according to the grades of sepsis, low grade accounted for 44 patients (26.8%), moderate grade was 43 patients (26.2%) and severe grade was 77 patients (46.9%).

Outcome of treatment showed that two patients had laparotomy and TAH. One hundred and sixty patients (97.5%) were treated and discharged home. Two patients (1.2%) died, one patient (0.6%) absconded and another one patient signed “refusal of hospital treatment” and discharged herself.

**Conclusion:**

The incidence of septic abortion was higher in adults (79.3%) and also higher in multiparous women (59.1%) compared with 22% prevalence amongst nulliparous women. The majority of the patients were in septic
shock and 46.9% were classified for severe sepsis. Approximately seventy-four (73.8%) of the women had anaemia followed by 54.9% who had renal failure though they did need dialysis.

The majority of the patients had evacuation in the theatre and this study had a mortality of 1.2% and incidence of septic abortion in this study was 7.2%. The findings above concur with previous studies on septic abortions, except the incidences which in this study is more in adults than adolescents.
INTRODUCTION

In 1996 the South African government passed new laws allowing termination of pregnancy (TOP) on demand prior to 13 weeks of gestation. In addition, TOP by the South African law is permitted for socio-economic or medical reasons for pregnancies between 12 and 20 weeks of gestation (1). The legislation was aimed at reducing morbidity and mortality as a result of septic abortion related to TOP, performed by unskilled and unlicensed practitioners and often using inappropriate methods. Pregnancy related sepsis is ranked fourth in the top five causes of maternal mortality in South Africa at 5.3% septic abortion included. It is therefore necessary to assess the prevalence and outcomes of patients presenting with septic abortion at Dr George Mukhari Hospital.

ABORTION

Abortion is defined as the ending of pregnancy before the fetus is viable (2). According to the World Health Organization (WHO) – viability
is pregnancy of more than 22 weeks of gestation or a birth weight of
> 500 gm.

**MISCARRIAGE**

Is often used to refer to spontaneous abortion, whereas the term abortion
refers to termination of pregnancy. Miscarriage is an alternative term to
abortion and is commonly used because many women are distressed by
the term abortion.

**SAFE ABORTION**

This is an abortion where temperature is ≥ 37.2°C, pulse is < 90 beats per
minute, the respiratory rate is < 20 breaths per minute, the uterine size
< 12 weeks, ward haemoglobin of >10 gm/dL and there are no clinical
signs of infection, no system or organ failure and no suspicious
findings on evacuation of the uterus\(^2\).

**UNSAFE ABORTION**

Also referred to as self-induced abortion, in the past it was referred to as
criminal abortion, backstreet abortion, meaning that the pregnancy was
terminated by unconventional methods before fetal viability.
A procedure characterized by lack of or inadequacy of skills of the provider, hazardous techniques and unsanitary facilities in terminating pregnancies \(^{(2)}\). Unsafe abortions are known usually to complicate into septic abortion. A diagnosis of septic abortion is made when an abortion is complicated by fever and the site of sepsis is located in the lower genital tract or within the uterine cavity.

**COMPLICATIONS OF SEPTIC ABORTION**

a) Septic shock: Shock is the clinical syndrome that results from inadequate tissue perfusion. Irrespective of the cause, hypoperfusion induces an imbalance between the delivery of and requirements for oxygen and substrates leads to cellular dysfunction. Septic shock being a systemic response to severe infection, it occurs with invasive procedures whereby bacterial contamination has occurred.

- **Multi-organ involvement**

b) Respiratory failure, circulatory failure, ARDS and death. Patients present with shock induced tachypnoea, relative hypoxia and eventually respiratory alkalosis and diffuse alveolar damage, patient might need mechanical ventilation. Patients will presents with signs and symptoms of hypovolaemia which leads to decreased preload and eventually decreased stroke volume.
As a compensatory mechanism the heart rate will increase to maintain cardiac output. Decreased myocardial activity will result from shock, sepsis, ischaemia, prolonged hypotension and academia results with sub-endocardial haemorrhage.

c) Hepatic failure
Due to severe hypoxia the liver will develop fatty change and eventually central haemorrhage necrosis leading to liver failure.

d) Renal failure
Acute renal failure is a serious complication of shock and hypoperfusion. Decreased renal blood flow will result with acute tubular necrosis that presents with oliguria, anuria and eventually electrolyte imbalances.

e) DIC

f) Pelvic abscesses

g) Death

POSSIBLE COMPLICATIONS FROM EVACUATIONS

- Overzealous dilatation of cervix can cause permanent damage resulting in cervical incompetence.
- Asherman’s syndrome can result from over-vigorous curettage of the uterus which might cause infertility.
- Perforation of the uterus resulting with massive haemorrhage.

The South African National Incomplete Abortion study, conducted in 1994, developed an abortion morbidity classification system in order to
assess and evaluate the severity of sepsis complicating an abortion into low, moderate and high risk of which the latter two are considered unsafe\(^{(3)}\).

**GRADES OF SEVERITY OF SEPSIS**

1. **Low grade**
   - Temperature\(>37^0\text{C}\).
   - Pulse\(>90\) beats per minute
   - Ward haemoglobin \(>10\text{g/dl}\)
   - No clinical signs of infection
   - No systems or organ failure
   - No suspicious findings on evacuation

2. **Moderate grade**
   - Temperature \(37.3^0\text{C} - 37.9^0\text{C}\)
   - Offensive products of conception
   - Localized peritonitis
   - Uterine size 12-16 weeks
   - Pulse rate 90-119 beats per minute
   - Respiratory rate 20-24 breaths per minute
3. Severe grade
   - Temperature > 38°C
   - Respiratory rate > 24 breaths per minute
   - Organ failure
   - Peritonitis
   - Pulse > 120 beats per minute
     - Presence of a foreign body or mechanical injury, on evacuation of the uterus.
   - Systolic blood pressure < 90 mmHg
   - Uterine size of > 16 weeks.

**INDICATIONS FOR HysteroCTOMY**

- Patients with multi-organ dysfunction i.e. more than one dysfunctional organ system should be counselled for hysterectomy.
- Necrotic appearance of the cervix on speculum examination.
- Pus in the abdomen detected via colpopuncture done at the time of evacuation.
- Perforation of uterus

Unsafe abortions carried out by women is a problem in the developing world, particularly among women under the age of 20 years and it is known to range between 1 and 4.4 million a year, in the developing countries. Most of these abortions are unsafe and for some young
women, unsafe abortions result in life-long disability, infertility and sometimes death\(^{(4)}\).

**LITERATURE REVIEW**

Since early 1970s, abortion related admissions have been on the increase in African hospitals. The increase primarily concerns women in their reproductive lives and to lesser extent older women. Urbanization, delayed marriage, extended education and limited access to contraceptives are contributory factors. During the period 1975-82, in Durban (RSA) it was found that 19% of all maternal deaths were due to complications of abortions, mostly sepsis\(^{(5)}\).

In a retrospective study done at Johannesburg hospital (RSA) from 1 January 1993-31 July 1997 death from pregnancy related sepsis 13% (5 cases). Maternal mortality rate following pregnancy related sepsis in SA is as follows 1999-2001 (13.5%), 2002-2004 (11.8%), 2005 – 2007 (9%) and 2008-2010 (5.3%)\(^{(6)}\). In 1996 termination of pregnancy in SA was legalized hence the gradual decline. The legislation aimed to reduce morbidity and death resulting from septic abortion related to unsafe TOP.

Although termination of pregnancy has been legal in the Kingdom of Cambodia since 1997, a number of barriers to safe termination services
persist and many women continue to induce TOP or seek unsafe services that result in complications requiring “Post-abortion care” (7). Forty percent (40%) of all women seeking care for complications either reported or showed strong clinical evidence of prior attempted terminations. Nearly 17% of these women were in the second trimester of pregnancy and 42% of them presented with severe complications.

The annual incidence of complications was 867 per 100,000 women of reproductive age (7). Septic abortion is a common problem in many resource poor settings, with a prevalence as high as 85% (8). Apart from damage to the fallopian tubes with subsequent increase in the risk of ectopic pregnancy and infertility, it significantly contributes to maternal deaths (8).

Clinically recognized spontaneous abortion complicates about 15% of all pregnancies, while induced abortion, which many women use as a method for fertility regulation, represents a staggering 30 – 60 million pregnancy losses annually.

A diverse group of organisms is implicated in sepsis from TOP and these include: Escherichia coli, Klebsiella species, Proteus species, Group-B
beta haemolytic streptococcus, Staphylococcal organism, bacteriodes species, Neisseria gonorrhoea, Chlamydia trachomatis, Clostridium perfringes, and mycoplasma hominis \(^{(8)}\). Two major factors contribute to the development of sepsis: the presence of retained products of conception due to incomplete spontaneous or induced abortion and the introduction of infection into the uterus from a septic procedure, which can spread beyond the pelvis, thereby causing septicaemia \(^{(8)}\).

In a paper published from Nigeria at the department of Obstetrics and Gynaecology, Igbinedion University Teaching Hospital, the total number of patients admitted and managed for septic abortion was 288 \(^{(8)}\). Two hundred and four (77\%) of these patients had induced abortion while sixty (23\%) had spontaneous abortion preceding sepsis. The majority of the women were nulliparous, 216 (81.8\%) and 191 (72.7\%) were unmarried. One hundred and forty-four (54.5\%) had history of previous induced abortions. One hundred and fifty-six (59.1\%) were between the ages of 16 and 19 years. Most of the induced abortion (174; 85.3\%) was by dilatation and curettage. The remaining cases (27; 13.2\%) were through artificial rupture of membranes – which was the preferred method in gestational ages above 18 weeks. Majority of the patients, 192 (72.7\%) had antibiotic coverage and evaluation of retained products of conception, while there were 13 mortalities attributed to acute renal failure,
pulmonary oedema, hepatic encephalopathy and severe anaemia. This review indicates that the preventive efforts are not getting to young people. Those between 16 and 24 years constituted almost two-thirds of the population and were mostly single and nulliparous (8).

In a retrospective study conducted from India, 12% of all maternal deaths were caused by septic abortion (9). Seventy point four percent (70.4%) were for spontaneous abortions and septic abortion, resulting from unsafe induced abortions. The mean age of 30.03 years had septic abortions giving an incidence of 34.7% (122/352). There were 7 (5.74%) primigravidas and 115 (94.26%) multigravidas out of whom 36.6% (42/115) were grand-multiparas and 47.54% (58/122) were admitted in a state of septic shock. Seventeen percent (17%) of the women required exploratory laparotomy and 80.95% (17/21) of them required hysterectomy. Total maternal mortality during this period was 112, out of which 26 (23.2%) were due to septic abortion. The fact that women resort to unsafe abortion despite its risks reflects the unmet need for safe, effective and acceptable ways of avoiding pregnancy or limiting family size (9).

In another study, 63 patients with septic abortion were admitted to the intensive care unit (ICU) of a University hospital in Argentina (10). The mean age was 28.5 years, 33% had had previous abortion. The mean
gestational age was 10.5 weeks. Acute renal failure developed in 73% and blood cultures were positive in 24% of the patients. Twelve women died (19%) and eight of the deaths occurred during the first 48 hours of ICU admission. Compared with survivors, non survivors had higher median number of organ failures\(^{(10)}\).

In a study conducted at the department of Obstetrics and Gynaecology at Khyber, 78.5% of the patients with unsafe abortion were multigravidas and termination was attempted at home or at other small centers. Fifty-seven percent had history of surgical ward interference while 28.5% had used a mechanical device. Seventy-nine (79%) percent of the patients needed evacuation and curettage while 42% had laparotomy for visceral injuries. Fifteen percent (15%) of the patients had a sub-total abdominal hysterectomy, 57% had associated complications and 7.5% of the patients who were admitted for septicaemic shock resulted in mortality\(^{(11)}\). In their conclusion the maternal morbidity and mortality from septic abortions is a burden of patient, health worker and resources. However it is preventable and commitment to health education, family planning promotion is the solution to bring down rates of unsafe abortions \(^{(11)}\).

Induced septic abortion was analyzed between April 1992 and September 1999 in Tu Teaching hospital, Nepal \(^{(12)}\). In 92 of these cases, comprising
6% of total abortions, nine deaths occurred because of disseminated intravascular coagulation, acute renal failure and adult respiratory distress syndrome. Vaginally, intraperitoneal and gum bleeding, epistaxis and malaena resulted in severe anaemia (Hb < 6.0 g/dl) in 11 cases. In 15 cases, laparotomy for pus drainage, salpingectomy, salpingooophorectomy, hysterectomy and uterine repair were conducted, along with four bowel surgeries and six hysterectomies. Post-operative complications included burst abdomen (one case) and re-opened pyoperitoneum which resulted in fecal fistula in three cases, one of these patients died. This study confirmed that induced abortions are a major detrimental factor for maternal mortality and morbidity. Morbidity was four times higher than mortality to the extent that patients suffered hemiplegia and lost their fertility\(^{(12)}\).

It is estimated that 40 – 60 million abortions take place throughout the world and over half of them are performed by unauthorized persons in developing countries with grave consequences\(^{(13)}\). In a review done in India, nine cases of uterine perforation following induced abortion with bowel prolapse outside the introitus were reported. Six were managed by non-physicians and all cases had bowel necrosis.

Terminal ileum was most commonly involved (67%) whereas uterine injuries were mainly fundal, most of the time (78%). Resection,
anastomosis with uterine repair was done in all cases with three cases reported as anastomosis leak but not mortality. The conclusion was that women should be educated to prefer contraception as a mean of birth control and seek abortion if required by trained personnel in a well-equipped setting\(^{(13)}\).

A study was carried out in the department of Obstetrics and Gynaecology, Jinnah hospital in Lahore (Pakistan) from August 2001 till July 2002 \(^{(14)}\). Patients admitted with complicated unsafe abortion were evaluated regarding age, parity, marital and educational status, indication for abortion, method used, qualification of abortion providers, contraceptive usage, complications and death rate in abortion seekers. Fifty-nine patients were admitted with complications of unsafe abortion. The mean age was 29 years, 95% were married and multiparous while 40% had secondary and higher education. Eighty-five percent (85%) approached unqualified abortion providers, who used instrumentation in more than 40% of cases for TOP, resulting in visceral trauma. More than 50% were reported to be using contraception and 5% died due to post-abortion complications. This study highlights the need for post abortion care to minimize morbidity and mortality and to ensure easy accessibility to contraceptives to improve the quality of health\(^{(14)}\).

In the United States of America (USA), deaths from illegal abortion are
mainly due to infection\(^{(15)}\). In 1990, a review of deaths due to abortion in the USA, noted that 62% of deaths from spontaneous abortions were due to infection when compared with 21% of deaths from legal abortions. The risk of death from postabortion sepsis was highest for young women, those who are unmarried, and those who undergo procedures that do not directly evacuate the contents of the uterus\(^{(15)}\).

**OBJECTIVES:**

1. To identify and determine prevalence of septic abortions amongst patients who had either safe or unsafe abortion at Dr. George Mukhari hospital (DGMH).
2. To determine the outcome of the patients managed at this hospital

**CHAPTER 2:**

**METHODOLOGY**

2.1 **Study Design:** The study has been conducted as a retrospective study covering the period from 1\(^{st}\) October 2007 to 30\(^{th}\) September 2009 (a two-year review). A case review of all cases of septic abortions admitted and managed at DGMH.

2.2 **Setting:** The review was conducted in the department of Obstetrics and Gynaecology, University of Limpopo (Medunsa Campus) and Dr George Mukhari hospital, situated approximately 32 km from the city of Pretoria. Dr George Mukhari Hospital is a tertiary public hospital serving
a population from Northwest, North Gauteng, and it has seven referral hospitals and local clinics.

2.3 Subjects: Included were files of patients admitted with a diagnosis of septic abortion from admission and theatre registers, unsafe abortion of <26 weeks, patients meeting the criteria of sepsis according to grades of sepsis as per (SA Incomplete Abortion study criteria) and those patients who had safe abortion in legally recognized institution and became septic from unknown reasons.

2.4 Data collection: The files of all patients treated for septic abortion were included in this review. Approximately 10-13 patients are admitted monthly with septic abortion at DGMH. Approximately 250 patients were anticipated in this 2 year review and we thought the numbers were adequate enough to draw a conclusion. Data extracted included:
- History of methods used.
- Vital signs
- Uterine size and tenderness
- Cervical dilatation of internal Os.
- Foul smelling products, discharge from uterus or presence of pus.
- Laboratory investigations – Blood for FBC, U & E, LFT and C-Reactive protein.
2.4 PROCEDURE S PERFORMED

2.4.1 Manual Vacuum Aspiration (MVA)

Is evacuation of the uterus in the ward using a hand held 60ml syringe (Ipas) and curretts

2.4.2 Evacuation in Theatre

Evacuation of the uterus in theatre under general anaesthesia of those with moderate to severe sepsis.

2.5 Outcome Measures

The following are parameters used to assess the outcome of management of patients in this study: stratification according to grades of sepsis, gestational age at presentation, Management modalities (including admission to ICU), complications that patients presented with, period of hospital stay and whether patient was discharged or demised.

2.6 Data Collection and Statistical Analysis

Retrieval of medical records of patients was followed by extraction of relevant information from each file into a specially designed data collection form. A structured data collection form which was adaptable for a computer programme for statistical evaluation was used (see Appendix A).

Data Analysis: All data were transferred into a computer-based
statistical programme (SPSS) for analyses. Data was analyzed as a descriptive statistics to include the mean, the trend in occurrence over the years of the review and the demographics of the patients. Chi-Square ($X^2$) analysis of the data was performed to determine any association between methods of TOP and the occurrence of septic incomplete abortion. Statistical significance of any of the findings was established if the p-value is $\leq 0.05$

2.7 Ethical Issues

No human subjects were directly involved as participants in this study. However, the study only commenced upon approval of the research protocol by the Institutional review committee (MREC) of the University of Limpopo (Medunsa Campus) and the Superintendent of Dr George Mukhari hospital. Names, addresses or any other information that could lead to the identity of any of the patients was not included in the data collection form.

CHAPTER 3: RESULTS

During the two-year review period (1\textsuperscript{st} October 2007 till 30\textsuperscript{th} September 2009), a total of 2,266 patients were admitted into our unit for abortions. Out of this number, three hundred and seventy-seven (377) cases reported as septic abortions. However, only 302 patients’ files could be
retrieved (retrieval rate of 80%), and an additional one hundred and thirty-eight (138) files were excluded from the review for their incomplete notes in the files or for wrong diagnosis.

This resulted in one hundred and sixty-four files of those patients who qualified for inclusion as septic abortions. When this number was transformed against the 2,266 cases of abortions, it gives the incidence of septic abortions at DGMH during the review period to be 7.2% (164/2,266).

Figures 1 & 1a below show the general demographics of the patients at the time of presenting at Dr George Mukhari hospital (DGMH). Majority of the women 130 (79.3%) were between the ages of 18 and 34 years, only 5(3%)of them were teenagers < 17 years and (4) less than 5% of the women were aged older than 40 years. The parity distribution shown in Figure 1a revealed that 22% of the women were primigravidas, while the majority (59.1%) were of parity 1 - 2

FIGURE 1: Age range of patients treated for septic abortions
and a further 11.6% of the women were of parity 3 - 4. Less than 10% of the women in the series (7.3%) had parity equal to or greater than 5.

FIGURE 1a: Parity distribution of patients in the series.

At the time of presentation at the hospital, 34.1% of the women were at gestational age ≤ 12 weeks, 59.8% were at 13 - 20 weeks of pregnancy while 5.5% presented at between 21 and 26 weeks of gestation (Figure 2).
One woman (0.6%) was unsure of the dates of her last menstrual period prior to being pregnant.

**FIGURE 2: Gestation at presentation at DGMH**

Table 1 below shows the interval between procurement of abortion, presentation at the hospital, as well as the types of abortion and the methods used. One hundred and twenty-three (123) women, representing (75%), presented within the first week of gestation. Nineteen (11.6%) of the women presented between 8 and 14 days, 16 (9.8%) presented at the hospital after 14 days following the procurement of abortion and 6 women (3.6%) were unable to determine the interval between procurement of abortion and reporting at the hospital.

More than three quarters of the women (76.2%) had safe method of
abortion while 39 (23.8%) women procured their abortions using unsafe methods. The various methods used for abortion are also shown in Table 1. Seventy-two women (43.9%) had used misoprostol for their abortions, 47.6% of the women could not recall the type of method used and 8.5% of the women used a chemical agent known as stameta.

When the women presented at the hospital (DGMH), the majority had complained of bleeding per vaginal and of having offensive vaginal discharge.

On examination of the patients (see Table 2 below), the cervix appeared normal in 84.1% of cases, 4 women (2.4%) had necrotic cervix and one woman (0.6%) had evidence of cervical tear (± 4 cm). Out of the 164 women who had abortions, 146 (89.0%) had retained products of conception with offensive smell and 18 women (11.0%) had retained products with non-offensive smell. Sixty-one women (37.2%) were in shock at the time they reported at DGMH.
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<th>INTERVAL BETWEEN PROCUREMENT OF ABORTIONS AND PRESENTATION AT DGMH</th>
<th>NUMBER (%)</th>
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<tr>
<td>0 - 7 Days</td>
<td>123 (75.0%)</td>
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<td>8 - 14 Days</td>
<td>19 (11.6%)</td>
</tr>
<tr>
<td>➢ 14 Days</td>
<td>16 (9.8%)</td>
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<tr>
<td>Unsure of dates</td>
<td>6 (3.6%)</td>
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**ABORTIONS**

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<tr>
<td>Unsafe method of abortions</td>
<td>125 (76.2%)</td>
</tr>
<tr>
<td>Safe method of abortions</td>
<td>39 (23.8%)</td>
</tr>
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**METHODS USED FOR ABORTION**

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<tr>
<td>Misoprostol</td>
<td>72 (43.9%)</td>
</tr>
<tr>
<td>Stameta</td>
<td>14 (8.5%)</td>
</tr>
<tr>
<td>Unknown</td>
<td>78 (47.6%)</td>
</tr>
</tbody>
</table>

There was an assessment of sepsis for the patients which showed low grade sepsis (44 patients; 26.8%), moderate grade (43 patients; 26.2%) and severe sepsis was recorded for 77 patients (46.9%). The criteria used included temperature, pulse, respiration.

**Table 2:** Results of examinations performed on patients who presented with septic abortion.
<table>
<thead>
<tr>
<th>EXAMINATIONS</th>
<th>Number</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CERVIX: [N = 164]</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Normal</td>
<td>138</td>
<td>84.1%</td>
</tr>
<tr>
<td>Necrotic</td>
<td>4</td>
<td>2.4%</td>
</tr>
<tr>
<td>No Comments</td>
<td>21</td>
<td>12.8%</td>
</tr>
<tr>
<td>Cervical Tear [± 4 cm]</td>
<td>1</td>
<td>0.6%</td>
</tr>
<tr>
<td><strong>RETAINED PRODUCTS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Number [N = 164]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Offensive</td>
<td>146</td>
<td>89.0%</td>
</tr>
<tr>
<td>Non-Offensive</td>
<td>18</td>
<td>11.0%</td>
</tr>
<tr>
<td><strong>PATIENTS IN SHOCK</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>61</td>
<td>37.2%</td>
</tr>
<tr>
<td>No</td>
<td>103</td>
<td>62.8%</td>
</tr>
<tr>
<td><strong>SEPSIS</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td>44</td>
<td>26.8%</td>
</tr>
<tr>
<td>Moderate</td>
<td>43</td>
<td>26.2%</td>
</tr>
<tr>
<td>Severe</td>
<td>77</td>
<td>47.0%</td>
</tr>
</tbody>
</table>

The various modalities used for the management of septic abortions are shown in Table 3 below. A third of the patients (54; 32.9%) were managed by doing MVA in the gynaecology ward while 110 (67.1%) of the patients needed evacuation in theatre. Of the 54 cases who had initial MVA carried out in the ward, 3 of them needed an evacuation in the theatre, and one case of evacuation was followed by hysterectomy.

Table 3: Management options for septic abortions at DGMH
Management Procedures | Number | Percentage
--- | --- | ---
**EVACUATION:**
MVA in the Ward | 54 | 32.9%
Evacuation in Theatre | 110 | 67.1%
Repeat evacuation in Theatre after MVA | 03 | 1.8%
Evacuation followed by hysterectomy | 01 | 0.6%

**ANTIBIOTICS**
IVI | 158 | 96.3%
Oral Antibiotics | 6 | 3.7%

**Intravenous Fluid Therapy** | 164 | 100%

**BLOOD TRANSFUSION** | 121 | 73.8%

**OTHER SURGICAL PROCEDURES**
Laparotomy | 2 | 1.2%
Re-Laparotomy | 2 | 1.2%
Re-Look following Re-Laparotomy | 1 | 0.6%
Hysterectomy [2 were booked] | 2 | 1.2%
(1 signed “RHT”) | 1 | 0.6%
(1 Absconded from hospital) | 1 | 0.6%

“RHT” = Refused Hospital Treatment; IVI = Intravenous Infusion; MVA = Manual Vacuum Aspiration

All the patients were given antibiotics, with 96.3% being given IVI and the remaining 3.7% received oral antibiotics. It was the general practice to give intravenous fluid therapy and all the patients in this series received fluid therapy.

Blood transfusion was needed in 73.8% (121) of the cases and the few cases who required surgical management were 2 cases of laparotomy (1.2%), 2 cases of re-laparotomy (1.2%) and one case of re-look following a re-laparotomy (0.6%). Two patients were booked for
hysterectomy which could not be performed because one of them signed “RHT” and the second woman absconded from hospital.

Table 4 shows the various complications arising from the management of cases of septic abortions at DGMH. The predominant findings showed

<table>
<thead>
<tr>
<th>COMPLICATIONS</th>
<th>NUMBER (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Severe Anaemia</td>
<td>21 (73.8%)</td>
</tr>
<tr>
<td>Raised White Blood Cell Count</td>
<td>113 (68.9%)</td>
</tr>
<tr>
<td>Deranged Renal Functions</td>
<td>90 (54.9%)</td>
</tr>
<tr>
<td>Deranged Liver Functions</td>
<td>14 (8.5%)</td>
</tr>
<tr>
<td>Disseminated Intravascular Coagulopathy</td>
<td>2 (1.2%)</td>
</tr>
<tr>
<td>Vesico-Vaginal Fistula</td>
<td>1 (0.6%)</td>
</tr>
<tr>
<td>Bowel Perforation</td>
<td>1 (0.6%)</td>
</tr>
<tr>
<td>Pelvic Abscess</td>
<td>1 (0.6%)</td>
</tr>
<tr>
<td>Peritonism</td>
<td>1 (0.6%)</td>
</tr>
</tbody>
</table>

severe anaemia to be the most common 121 cases (73.8%), followed closely by raised white blood cell counts which occurred in 68.9% cases and 54.9% of the patients had deranged renal functions. Other notable complications associated with septic abortions were deranged liver
functions 14 cases (8.5%) and disseminated intravascular coagulopathy

2 cases (1.2%). There was a case each (0.6%), of vesico-vaginal fistula, bowel perforation, pelvic abscess and peritonitis.

Table 5 illustrates the length of hospital stay as well as the final outcomes for the patients treated for septic abortion.

Table 5: Number of Days in Hospital and the eventual outcome for each patient

<table>
<thead>
<tr>
<th>Duration of Hospital Stay</th>
<th>Number (Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 – 3 days</td>
<td>13 (68.9%)</td>
</tr>
<tr>
<td>4 – 7 days</td>
<td>9 (23.8%)</td>
</tr>
<tr>
<td>8 – 14 days</td>
<td>7 (4.3%)</td>
</tr>
<tr>
<td>&gt;14 days</td>
<td>4 (2.4%)</td>
</tr>
<tr>
<td>Absconded</td>
<td>1 (0.6%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Final Outcomes</th>
<th>Number (Percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discharged from Hospital</td>
<td>60 (97.56%)</td>
</tr>
<tr>
<td>Demised</td>
<td>(1.2%)</td>
</tr>
</tbody>
</table>

Majority of the patients 113 cases (68.9%) were treated and discharged within 3 days of admission into hospital. Another (39) 23.8% of patients spent between 4 and 7 days in hospital. But very few of them stayed in hospital beyond seven days and were made up of 4.3% who stayed for
8–14 days and 4(2.4%) who were discharged after 14 days.

In this series, out of a total of 164 patients admitted for septic abortion, one hundred and sixty (97.56%) were treated and discharged home. The remaining two patients (1.2%) demised as a result of complications arising from septic abortion and 1 patient (0.6%) signed RHT and 1 patient (0.6%) absconded.

CHAPTER 4:
DISCUSSION

Unsafe abortion is an important public health problem and it occurs practically in every society. The frequency and annual hospitalization rate from unsafe abortion varies globally depending upon contraception services, abortion laws, cultural and religious attitudes.

Adults between the age of 18 and 34yrs constituted a significant proportion of 79.3%. This is because adult women are possibly more experienced to know where to seek advice, and they have greater control over timing of births. Unlike adolescents who are slower to recognize and accept pregnancy. These women are at a risk of unwanted pregnancies and induced abortions if their family planning needs are not met. In Africa, teenagers account for a large percentage of women with unsafe abortions, 60% of unsafe abortions are in women less than 25 years old, as compared to 30% in Asia\(^{(14)}\). In a study done in Kenya
40% of women were of ages 25-34 years, another three nation African countries Benin, Cameroon and Senegal septic abortion constituted 60% in ages 20–34 years. The age range 18-34 yrs in this study was significant and is comparable to other studies\(^{8,9,14}\). About 59.1% were para 1-2, in this study. This is similar to studies done in India and Pakistan. This study was done in a setting where the hospital is servicing more than three big tertiary institutions, hence high rates of septic abortion in adult population. In a study done in India, there were 7 (5.74%) primigravidas and 115 (94.26%) multigravidas of whom 36.62% were grand-multiparous (parity of >4).

In Pakistan, a study was conducted and parity of patients was from 0 – 6 and mean parity was 4.08, 50% of patients having ≥ 4 children\(^{9,11}\). The majority of women in this series are those with one or more babies which is contrary to the majority of Western literature. Probably, the adult population still pursuing their careers, unmarried and still hoping to get a committed life partner and plan family with. Socio-economic status might be the secondary reason.

The major reason why more unsafe abortions are seen among parous women is not known but a controlled study in Zimbabwe identified lack
of social support as an important factor\textsuperscript{(13)}. The decision to terminate pregnancy can be viewed as a desperate but often responsible decision not to pursue a pregnancy when already having $\geq 2$ babies with social and economic circumstances not favorable\textsuperscript{(13)}.

According to South African Act of termination of pregnancy, 1996, laws were passed allowing TOP prior to 13 weeks of gestation and for socio-economic and medical reasons between 13 – 20 weeks. In our study, the majority of patients presented at a gestation of 13 – 20 weeks probably because of being teenagers, having problem accepting pregnancy, keeping the pregnancy until it starts showing and resort to unsafe abortion.

These study series differs with the majority of previous studies as their patients presented prior to 12 weeks for socio-economic reasons\textsuperscript{(10)}. Second trimester presentation is associated with major complications hence in RSA vital indications must exist for TOP at this gestational age. DGMH family planning services offers TOP services, infertility services etc, yearly total number of patients who had TOP ranges from 1123 – 1340 patients (2007-2011), the majority of them more than 18 yrs and majority at gestational age less than 13 weeks. The major reasons why these TOP services were not utilized is not known, whether is due to
health workers attitude or stigmatization the study did not elicit the reasons. Whether the patients in this study used or knew about contraceptive methods was not addressed.

The interval between procurement and presentation was hundred and twenty three patients (75%) presented in one week, nineteen patients (11.6%) presented in two weeks, sixteen patients (9.8%) presented after two weeks and 6 patients (3.6%) the interval was not known. The presentation of all patients was generally late hence the majority had complications already\(^{(15)}\). The late presentation is probably associated with the stigma of having procured an abortion, the fear of the reaction of health care workers to the act or poorly informed that all products of conception will be expelled. The delayed presentation was associated with severe complications in this study.

Over the years, there have been so many methods sed to procure an unsafe abortion. Methods like oral ingestion of herbal medications, strong teas, douches, enema, twigs, knitting needles and catheters placed through the cervix often in unsterile conditions. In this study, 72 patients (43.9%) used misoprostol from unskilled personnel, 78 patients (47.6%) method used not known and 14 patients (8.5%) used stametta (Is an energy booster containing 1.667 gram aloe, 1.667g ascorbic acid and 71.667gm of magnesium sulphate.
In the Dominican Republic, a study was done which suggested that over the counter purchase of misoprostol, a synthetic prostaglandin, might have led to this method replacing previous more dangerous methods because of its efficiency and reduction of sepsis. Despite late presentation of patients in this study the majority had normal cervix and 2.4% (4 patients) had necrotic cervix and were scheduled for laparotomy to have TAH. One of the patients absconded, one of them signed refusal of hospital treatment form. The remaining two (1.2%) had laparotomy, TAH done. Both had complications and had a relaparotomy. Later one of them had a repeat- relaparotomy where she was found to have pelvic abscess, small bowel perforation, vesico-vaginal fistula, resection and re-anastomosis done taken to ICU. In these two years study, two patients (1.2%) died from complications of septic abortion.

Compared to the majority of the studies of septic abortions, the complications identified in this study are the same\(^\text{(9,11,12,13)}\). About 37.2% patients were in septic shock. The grades of classification of sepsis were as follows: low grade 44 patients (26.8%), moderate grade 43 patients (26.2%) and severe grade 77 patients (46.95%) and differed with the study done in 2000 in South Africa patients with 72.4% low grade sepsis, moderate (17.9%), severe 9.7% and mortality 1%. DGM is a
tertiary hospital getting referrals from seven hospitals, clinics from North Gauteng and part of population at Northwest. These could explain the large numbers in severe grades of sepsis.

Management options in this study were as follows: Evacuation which included manual vacuum aspiration done in the ward and evacuation in theater done on the majority of the patients. About three patients (1.8%) had re-evacuation from retained products of conception and one of the evacuation ended with a hysterectomy. All patients in the study had antibiotic therapy for a maximum of three days, 96.3% intravenous antibiotics and 3.7% had oral antibiotics. All patients had intravenous therapy of ringers lactate and voluven. The above management was in keeping with management protocol of septic abortion patients in RSA as appeared in saving mothers report (6,15,16).

On presentation about 73.8% patients had anaemia and were transfused, 68.9% had raised white cell counts. Of note was that 54.9% had deranged renal functions prior hepatic derangement. One patient had pelvic abscess, perforation of bowel, vesico-vaginal fistula and had laparotomy for further management. The majority of previous studies concurs that on presentation, patients with septic abortion are usually anaemic, have renal affectation and have raised white cell counts. These findings are similar to those of India which concluded that 73% of
patients who underwent laparotomy had concomitant injury to the small bowel and overall 16.4% of 67 patients with septic abortion had intestinal injury. Patients who had simple closure of perforation had high mortalities of 66%.

The majority of our patients (68.9%) stayed for 3 days in hospital. The length of stay increased depending on the complications if they are resolved. One hundred and sixty (97.5%) were fully resuscitated, treated and discharged home. Two patients (1.2%) had laparotomy, complicated and both had re-look laparotomies, the other had a repeat re-look laparotomy and stayed in hospital for more than three weeks. Two patients demised from severe complications: septic shock, pelvic abscess and septicaemia.

The result of this study concurs with most studies done previously. Septic unsafe abortion is still widespread even though TOP is legalized in South Africa. Morbidity and mortality following septic abortion is still evident with dire complications if no adequate management is rendered by skillful personnel.

**Limitations of the study**

The study did not look into marital status of patients

Reasons for procurement of abortions was not explained in this study
because data was not available in patients records. Level of education was not recorded this could help with future planning by identifying areas that needs intense health education. Most studies had increased incidence of married woman and women who passed higher standards. Retro viral status of each patient was not determined, this data would probably bring a different conclusion. 36.6% patients records were incorrectly filled with wrong diagnosis hence were excluded from the study. This wrong diagnosis were made by house doctors prior review by senior doctors.

CHAPTER 5:
CONCLUSION

The World Health Organization (WHO) estimates that unsafe termination accounts for 13% of global pregnancy related deaths. Nearly all of them can be prevented. In South Africa pregnancy related sepsis maternal death is in the top 5 conditions at 5.3%. In this 2-year retrospective study, 164 patients with septic abortion and severe complications were seen and incidence of septic abortion of 7.2%. The study demonstrated that patients with septic abortion still encounter severe complications like renal failure, bowel perforations, undergo hysterectomy and incidences of mortality post legalization of in 1996. Mortalities related to pregnancy and sepsis in Saving Mothers” report in 1999–2001 was ranging between 8.6%. In 2002 – 2004 mortality
related and sepsis was 8.3%, and between 2005 and 2007 mortality related to sepsis in pregnancy is 5.6% and 2008-2010 is 5.3% which a gradual decline. The outcome of 160 patients discharged home in this study in satisfactory condition is good, 2 mortalities (1.2%) is one too many. The fact that women resort to unsafe abortion despite its risks, reflect the unmet needs for safe, effective and acceptable ways of avoiding pregnancy or limiting family size.

RECOMMENDATIONS
Measures to educate patients on contraceptions, accessibility of TOP services needs to be reinforced in order to reduce unsafe abortions. The data capturing and filling system needs to be improved for ease retrieval and in order to reduce biased conclusions.

Reliability and Validity of the Study
A retrospective study using patients’ files was not without some inherent problems of reliability and validity. But for a true assessment of the stated objectives, a near complete retrieval of medical records of patients was vigorously pursued. This provided a reliable representativeness of the pattern of the clinical problem for the years of the review (2 years).
REFERENCES


4. Women’s International Network-Unsafe abortion increasing among young women, The Johns Hopkins School of public health, Baltimore.


22 Biddlecon A. – Abortion in Kenya, in brief, New York: Guttmacher Institute, 2008; No 4


25 Schorge O., SchaffeJ.I – Williams Gynaecology, 2008; Chapter 6: Pg 142 - 143.
APPENDIX A

DATA COLLECTION FORM:

Title: The prevalence, management and outcomes of septic abortion amongst patients presenting at DGMH

<table>
<thead>
<tr>
<th>Study No</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Parity</th>
<th>Abortion</th>
<th>SAFE</th>
<th>UNSAFE</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
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</table>

<table>
<thead>
<tr>
<th>Gestational Age @ presentation (wks)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Date of procurement of abortion</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Interval (Days) since abortion to presentation at DGMH</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Vitals</th>
<th>Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Pulse</th>
</tr>
</thead>
<tbody>
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<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Blood Pressure</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

| Investigations: | Full Blood Count (WBC) | Raised | Not Raised |
|                 | Haemoglobin            | Normal | Abnormal   |
|                 |                        |        |            |

<table>
<thead>
<tr>
<th>Urea &amp; Electrolytes</th>
<th>Normal</th>
<th>Abnormal</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Liver Function Test</th>
<th>Normal</th>
<th>Abnormal</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>C-Reactive Protein</th>
<th>Normal</th>
<th>Abnormal</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>On Examination:</th>
<th>Cervix</th>
<th>Normal</th>
<th>Necrotic</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Refrained products</th>
<th>YES</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>PV Discharge</td>
<td>Offensive</td>
<td>Non Offensive</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Is the patient in septic shock</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Treatment</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>--------------------</td>
<td>-----</td>
<td>----</td>
</tr>
<tr>
<td>Antibiotics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evacuation</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>- Evacuation in Theatre</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>- MVA in Ward</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Fluid Therapy</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Hysterectomy</td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Admission in ICU</td>
<td>YES</td>
<td>NO</td>
</tr>
</tbody>
</table>

If admitted in ICU | Number of days: |  
OUTCOME: | Discharged | Demised |
MEDUNSA RESEARCH & ETHICS COMMITTEE

CLEARANCE CERTIFICATE

MEETING: 08/2010

PROJECT NUMBER: MREC/M/194/2010: PG

PROJECT:

Title: The prevalence, management and outcomes of septic abortions amongst patients presenting at Dr George Mukhari Hospital

Researcher: Dr SM Mashiloane
Supervisor: AN Muse
Co-Supervisor: OA Towobola
Department: Obstetrics and Gynecology
School: Medicine
Degree: MMed (Obstetrics and Gynecology)

DECISION OF THE COMMITTEE:

MREC approved the project.

DATE: 05 October 2010

PROF GA OGUNBANJO
CHAIRPERSON MREC

Note:

i) Should any departure be contemplated from the research procedure as approved, the researcher(s) must re-submit the protocol to the committee.

ii) The budget for the research will be considered separately from the protocol. PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES.

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