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Outcome of patients with incomplete miscarriages admitted to Chris Hani Baragwanath Hospital

Suleiman, Fatma Muslim

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Outcome of patients with incomplete miscarriages admitted to Chris Hani Baragwanath Hospital.

A postgraduate research report

Faculty of Health Sciences

Department of Obstetrics and Gynecology

University of Witwatersrand

Student Name : Dr Fatma M Suleiman

Student No : 314345

Student Qualification*:* MD (Dar)

Supervisor's Name: Dr Jayati Basu

Supervisor's Qualifications: DIP (obs) SA, MscMed(Wits),FCOG(SA),MMed(Wits)

Supervisor's Name: Professor Eckhart Johannes Buchmann

Supervisor's Qualifications: MSc.(Med) (WITS), FCOG (SA), PhD (WITS)c

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Declaration

I Dr Fatma M. Suleiman declare that this research report is my own work. It has been submitted for the degree of Master of Medicine in Obstetrics and Gynaecology at the University of Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at this or any other university.

…….

Dr Fatma Suleiman.

20th day of March 2013

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Research report summary:

Student name	Fatma Suleiman
Student's qualification	MD (Dar)
Degree for which research will be done	MMed (Obs & Gyn) & Fellow of College of Obstetricians & Gynaecologists
Department	Obstetrics and Gynaecology, Chris Hani Baragwanath hospital, University of the Witwatersrand.
Supervisor name	Dr Jayati Basu
Supervisor's qualification(s)	DIP (obs) SA, MscMed(Wits),FCOG(SA),MMed(Wits)
Supervisor name	Prof Eckhart J Buchmann
Supervisor's qualification(s)	MSc.Med (WITS), FCOG (SA), PhD (WITS)
Title of the study	Outcome of patients with incomplete miscarriages admitted to the Chris Hani Baragwanath Hospital.

Abstract

Background

Incomplete miscarriage is a frequent reason for emergency gynaecological admission in South Africa. Incomplete miscarriages, especially related to unsafe abortion, may occasionally result in maternal death. This study was done to determine the incidence, complications, management and final clinical outcome in women admitted with incomplete miscarriages to the Chris Hani Baragwanath Hospital.

Methods

This was a descriptive study. Data collection was by retrospective record review of all women who were admitted for incomplete miscarriage to the gynaecology ward at the Chris Hani Baragwanath Hospital from June to December 2009.

Results

The total number of women who presented with incomplete abortion to the Gynaecology Outpatient Department was 1283. One hundred and sixty-four of these women (13%) were admitted to hospital, and 151 files (92%) could be retrieved from the records room for data collection. All of these women underwent surgical uterine curettage. A frequent complication was moderate to severe anaemia (haemoglobin < 9 g/dL) which occurred in 103 women (68%). Thirty-three of the miscarriages (21%) resulted from unsafe abortion. There were two uterine perforations (1%). Red cell blood transfusion was given to 56 women (37%) and 53 received intravenous antibiotics (35%). Five women (3%) were admitted to the main hospital Intensive Care Unit (ICU) ward, two required hysterectomy, one for ongoing haemorrhage and one for sepsis. There were no maternal deaths.

Conclusion

Large numbers of women continue to present to this hospital with complicated miscarriages, requiring admission. However, the management of these women resulted in generally good clinical outcomes overall with no maternal deaths. Blood transfusions were frequently used. An area of concern was that contraceptive advice was not noted, nor were women given any type of contraception on discharge. This may contribute to continuous unmet contraceptive needs and contraceptive failure, resulting in unplanned or unwanted pregnancies.

Table of contents page

Research protocol summary i

Abstract ii

Acknowledgment iv

Glossary of the terms 1

List of abbreviations 3

Introduction 4

Objective of this research 16

Setting 18

Methods 20

Results 22

Discussion 36

Limitations 40

Conclusion and Recommendations 41

Reference 42

Appendix A 46

Appendix B 51

Glossary of terms

Incomplete miscarriage: a condition when the products of conception are retained in the uterus after spontaneous expulsion of the fetus before its viability. In general, the term 'miscarriage' is used to indicate spontaneous early pregnancy loss, whereas 'abortion' is used in relation to intended termination of pregnancy.

Septic miscarriage: a condition when incomplete miscarriage is associated with ascending infection of the endometrium, parametrium, adnexa, or peritoneum.

Anaemia: for the purposes of this study, a haemoglobin level than 11.0 g/dL.

Complications category (American College of Obstetrics and Gynecology[a]):

- Uncomplicated incomplete miscarriage: when incomplete miscarriage is associated with a temperature equal or less than 37.3^0 C, no sign of infection and a haemoglobin of more or equal to 9 g/dL.
- Mildly complicated incomplete miscarriage: when incomplete miscarriage is associated with a temperature of 37.4-37.9^0 C, signs of infection (tender uterus and offensive vaginal discharge) and/or haemoglobin of 7.0-8.9 g/dL.
- Severely complicated incomplete miscarriage: when incomplete miscarriage is associated with a temperature of 38^0 C and above , and/or a heart rate of 120 beats/minute, haemoglobin less than 7 g/dL, or any sign of organ failure, peritonitis and or death.

Event of miscarriage.[2]

- Spontaneous miscarriage: the expulsion of the embryo or fetus before viability (24 weeks of gestation)

- Unsafe abortion: termination of unintended pregnancies by either persons lacking the necessary skill or in an enviroment lacking the minimum medical standards, or both.

- Safe abortion: termination of unintended pregnancies by a skilled person and in an enviroment were there is availability of minimal medical standards.

- The term ‘abortion’ in this dissertation is therefore used to indicate purposeful termination of pregnancy

Glossary reference list

a. Jones RK. How commonly do US abortion patients report attempts to self-induce? Am J Obstet Gynecol 2011;204:23.e1-e4.

List of abbreviations used more than once:

AIDS	Acquired immunodeficiency syndrome
BP	Blood pressure
FFP	Fresh frozen plasma
GOPD	Gynaecological outpatient department
HIV	Human immunodeficiency virus
ICU	Intensive care unit
INR	International normalized ratio
MVA	Manual vacuum aspiration
RPR	Rapid plasma reagin
TOP	Termination of pregnancy

Introduction

Epidemiology

Approximately 210 million women become pregnant globally every year and 15% to 20% of these pregnancies result in miscarriages.[1] About 19-20 million unsafe abortions take place every year worldwide, of which 97% are from developing counties. In Africa the rate is about 24/1000 for women in the age group of 15-44 years. The rates in northern and southern Africa are both approximately 15-20/1000 pregnancies, and may be as high as 30-35/1000 in eastern Africa.[2] Causes for spontaneous miscarriage include chromosomal abnormalities, intrauterine infections, fetal anomalies, or maternal factors could be infection (such as malaria, HIV and AIDS), luteal-phase defect, poorly controlled diabetes mellitus and other uncontrolled endocrine disorders, uterine physical defects (such as sub-mucosal leiomyoma, uterine polyp), systemic disorders affecting maternal vascularity (antiphospholipid antibody syndrome) and physical violence. However, in many cases the cause of spontaneous miscarriage is still unknown.[3] Unplanned pregnancy is the major cause of induced abortion.[2] An estimated 80 million women have unplanned pregnancies each year, and 42 million of these women consider undergoing abortion. About twenty million abortions are done illegally and 3 million are done in advanced pregnancies, resulting in stillbirths.[2] In an analysis done in 1995, there were 46 million procedures recorded worldwide. This number dropped to 42 million by 2003.[4]

Women that undergo illegal abortions or terminations of pregnancy (TOPs) outside health care facilities frequently present at health care institutions with incomplete miscarriages and the complications thereof.[1,4] In countries where induced termination of pregnancy is illegal it is difficult to obtain reliable data on the prevalence of unsafe abortion because underreporting is a common phenomenon. Stigma is still present even in countries where abortion is legal.

The source of stigma may be rooted in cultural norms, based on religious beliefs, or follow political leaders' ideologies, and this may also lead to under-reporting.[2] Stigma has been dealt with partially in some areas by using other terms or euphemisms to document induced TOP, such as menstrual regulation, mini-abortion and regulation of a delayed or suspended menstruation.[5] This may result in misleading information on the frequency of induced abortion.

A recent United Kingdom (UK) debate on legal abortion around the world, recently published by Brown,[4] showed that the frequency of abortion in the United States of America (USA) stagnated after an initial decline that followed the legalization of TOP in 1973. Despite a further drop from 1995, the induced abortion rate in the USA has remained relatively high compared with other high income countries. A slight increase has also been observed in Europe due to immigration of people who may use less contraception preventive methods. Asia also has high abortion rates, with China alone recording about 9 million abortions each year.[4] In Africa there are very few countries where abortion is legal, with only South Africa and Tunisia having liberal abortion laws.

An article by Sedgh and colleagues presented statistics on the frequency of induced legal abortions in 60 countries.[6] In some countries, the documentation was available from public facilities only, whereas large proportions of abortions were performed at private facilities. Thirty-three countries worldwide had abortion documentation that was complete, with Cuba having the highest number of official abortions (109 per 100 live births) followed by the Russian Federation (104 per 100 live births), with Nepal, South Africa and Tunisia having had the lowest official abortion rates (less than 9 per 100 live births).[6] This large gap may be due to the unavailability of abortion services in the latter countries.

Self-termination of pregnancy may have become a more frequent undertaking in recent years because of the introduction and availability, including black market procurement, of misoprostol (Cytotec®) as a viable medical abortion option. A recent study was conducted in the USA on the frequency of reported self-induced abortions. Out of 107 providers sampled, 95 participated. Seventy-four per cent (n=9493) of the women using the facilities responded to the questionnaires. A small proportion of women (n=101; 2%) indicated that they had ever taken misoprostol (Cytotec®) for terminating their pregnancies, and 0.8% had done it in their current pregnancies. According to this report, the prevalence rate of self-medication with misoprostol was highest in the age group of 30 to 34 years. The study revealed that there is a small proportion of women in the US who had attempted medical abortion without supervision.[7]

Incomplete miscarriage is one of the most common reasons for emergency gynecological admission in public hospitals in developing countries. The relative frequency of incomplete miscarriage is about 15% to 20% of pregnancies.[1] This presenting complaint was found to make up 45% of all gynaecology emergency admissions at the Charlotte Maxeke Johannesburg Academic Hospital in 2008,[8] and records from Kenyatta National Hospital in Nairobi, Kenya, have shown that 60% of gynaecological emergency admissions were due to miscarriage or abortion complications.[9]

A study on the epidemiology of incomplete miscarriages in South African public hospitals estimated the annual incidence of incomplete miscarriage to be 385 per 100 000 women of reproductive age. [10] Women under the age of 20 years were found to be three times more likely to have septic miscarriages as those over 20 years. Septic miscarriages were also more likely to occur if the gestational age was over 22 weeks. Complications observed were, among others, hypovolaemic shock, disseminated intravascular coagulopathy, and renal

failure and adult respiratory distress syndrome, with no differences noted between the different age groups.[10]

Another multicentre South African study determined the impact of age on the epidemiology of incomplete miscarriages after legalization of TOP in South Africa in 1996. The study found that women above 30 years of age were more likely to have offensive products of conception (an indication of septic miscarriage) compared with younger women.[11]

Complications of incomplete miscarriage

Globally, the proportion of maternal deaths accounted for by unsafe abortion is close to 13% with most of the abortions being carried out at ages of 15-24 years. It is estimated that in each year, 66 500 deaths are attributed to unsafe abortions, of which 54% occur in Africa, mostly in Africa south of the Sahara.[2] A Zambian study, in which women in the community were interviewed, revealed that 69% of respondents knew one or more women who had died from unsafe abortion although this data was not generally available from routinely collected health statistics.[12] Likewise, unsafe abortion causes about 50% of maternal deaths in Nigeria annually, where approximately 25 abortions per 1000 women were reported in a group of women aged 15-44 years.[13]

Although an estimated 66 500 women die every year from unsafe abortion,[2] a million more are injured, some of them permanently.[14] Haemorrhage, infection and poisoning from substances used to induce abortion are the leading final causes of death. The management of complications of unsafe abortions may overwhelm health care services and divert limited resources from other critical heath care programs, especially in developing countries. The legalization of abortion and access to modern contraception has been shown in many

countries to improve women's health remarkably, but is insufficient on its own to eliminate unsafe abortion.[14]

Doctors have a role in making legal abortion accessible to women and decreasing the rate of complications, not only through complying with the law where abortion is legalized, but also by advocating for a change in law where access to choice on TOP is restricted. A study done in Brazil on attitudes among doctors found that 85% supported abortion after rape and incest, and 39% supported abortion on request.[15] Thirty-five percent stated that they would perform abortion procedures themselves, and another 50% said they would request a colleague to perform an abortion procedure. The reminder indicated that they would advise a woman to seek another doctor, refer her elsewhere, or turn the woman away with no advice. Almost 80% of doctors said they would help a colleague, but only 40% stated they would help a client.[15] In order to prevent the complications of unsafe abortions, it is necessary for health workers to overcome their resistance to perform legal abortions, or at least to treat women who present with complications after legal abortions.[15]

A study done in Kenyan public hospitals investigated 869 patients with complications of unsafe abortion, in all hospital wards.[9] About 695 women (80%) had retained products of conception upon presentation. Thirty-five women had vaginal or cervical lacerations, while 3 had uterine perforation and 2 had tenaculum marks on the cervix. Second trimester abortions had a higher risk of mechanical injury than first trimester abortions.[9] Evidence of mechanical injury among adolescents (less than 20 years old) was twice that of adult women (OR 2.0; 95% CI 1.0-4.1). Almost all women were treated with antibiotics that were generally given on admission. Most antibiotics were given orally (72%), while less women received parenteral antibiotics. Only 14% of the cases had medical indications for antibiotic treatment (fever, clinical sign of infection, organ failure and suspect infection on evacuation).[9]

Results from the Confidential Enquiries into Maternal Death in South Africa from 2005 to 2007 showed that pregnancy related sepsis contributed 5.6% of total maternal deaths. Septic miscarriage and puerperal sepsis were combined as a single group of maternal deaths, as 'pregnancy-related sepsis', listed as one of the top five causes of maternal death in South Africa. Septic miscarriages, a proportion of which would have resulted from unsafe abortions, contributed 3.4% of the total number of deaths.[15] This number may have been an underestimated because a large number of women with miscarriages in association with HIV were classified as deaths resulting from AIDS.[16]

Carmago and colleagues, in Brazil, conducted a secondary analysis of a demographic and health survey (DHS) in 2006 on the occurrence of spontaneous miscarriages and induced abortions, and maternal morbidity associated with abortion.[17] A total of 15 575 women aged 15-49 years were interviewed (11 062 from urban households and 4 513 from rural households). Three hundred and fifty-eight women (2.3%) reported ever having had an induced abortion, while 2067 women (13.3%) had had at least one spontaneous miscarriage in their lifetimes. Haemorrhage (23.5%) and infection (2.5%) were significantly more frequent complications in women whose pregnancies ended in miscarriage compared to the women whose pregnancies ended in childbirth.[17]

The most common complications of incomplete miscarriage are severe bleeding, sepsis (septic miscarriage), prolonged hospital stay, pelvic inflammatory disease (PID), admission to an intensive care unit (ICU), and rarely death.[18] When incomplete miscarriage results in complications, such as severe hemorrhage or sepsis, the amount of time and resources required to manage them escalates rapidly.

Management of incomplete miscarriage

Specific modern management of incomplete miscarriage started with instrumental curettage in the 1920s, employing rigid metal curettes in the operating room, usually under general anesthesia. This remained the standard of care for many decades. Suction curettage, using electrical or manual syringe sources with plastic or metal cannulae only became popular from the 1970s. An early report from 1970 described suction evacuation for incomplete miscarriage performed in 250 women in Mulago Hospital, Kampala, Uganda.[19] This was shown to be less time consuming, with no need for general anesthesia, and followed by less complications and no deaths. There were no uterine perforations in the series, and only four women needed readmission for incomplete evacuation. More recent advances include medical management with uterotonics and expectant management, and these will be discussed below.

Currently, the management of miscarriage varies from expectant to medical management, suction evacuation, combined medical management and suction evacuation, and currettage in the operating theatre. The option of medical management with misoprostol tablets may be suitable for women with uncomplicated incomplete miscarriage, provided that they are informed about the possibility of vaginal bleeding for a longer period than is usual after uterine evacuation. Curettage may be offered to women who prefer general anaesthesia and also to women who present with complicated incomplete miscarriage.[20]

The national South African incomplete abortion study was a prospective study done in 1996 including 803 women.[21] The authors noted that evacuation of the uterus by sharp curettage, done in 96.4% of cases of incomplete miscarriage, was a common method of management of incomplete miscarriage, for which general anesthesia was used in 88% of procedures. Thirty-four women (5.1%) required additional surgery, of which 24 underwent re-evacuation. The

duration of hospital stay was 1 day or more in 748 women (95.9%), and the length of stay tended to be longer in smaller hospitals. Five of the women (0.6%) required admission to an ICU. Antibiotics were prescribed and blood transfusions were given for 396 (49.5%) and 125 (17%) of women respectively.[21]

A randomized controlled trial was carried out in Egypt from 2007 to 2008 on 697 women, who presented with an incomplete abortion and a maximum uterine size of 12 weeks of gestation.[22] Women were randomly assigned to undergo either manual vacuum aspiration (MVA) or to receive a single dose of sublingual misoprostol 400 micrograms. In the MVA group, one woman required surgical curettage following persistent bleeding and pain. In the misoprostol group, two underwent surgical curettage following heavy bleeding, and three women required surgical curettage for retained products. Women in the misoprostol group reported bleeding for a longer period of time than those undergoing MVA. Side effects experienced were lower abdominal pain and cramps, reported by both groups (87.8% in the misoprostol group and 75.9% in the MVA group), fever and chills (28.4% in the misoprostol group and 21.4% of women in the MVA group). In both groups, over 95% of women stated that they were satisfied with the treatment received.[22] The study showed that misoprostol can be used as a first line drug and is as effective as manual vacuum aspiration with few complications, although bleeding is more frequent and prolonged than it is with MVA.

A systematic review reported on clinical trials that were done from 1996 to 2003, and was targeted at investigating effective methods of treating incomplete abortion at gestations of 12 weeks and less.[23] The trial reported on comparisons of: 1) expectant management with uterine curettage; 2) misoprostol with expectant management; and 3) misoprostol with curettage. The authors included 13 studies, for which 8 studies reported on missed abortion and incomplete abortion, 4 studies reported on missed abortion only, and 1 study reported on incomplete abortion only (Table 1). The review showed that curettage has the highest probability of

complete evacuation when a woman presents with early pregnancy loss, followed by use of misoprostol.[23] Manual vacuum aspiration was not included in the comparisons.

Table 1: Results of a systematic review on clinical trials of management of incomplete miscarriage, for trials published from 1996 to 2003.[23]

	Expectant management vs. curettage	**Expectant management vs. misoprostol**	**Misoprostol vs. curettage**
Percentage with complete evacuation	71 vs. 98	41 vs. 79	68 vs. 97
Days of bleeding (mean)	9.9 vs. 7.5	13.8 vs. 12.6	The largest study on the comparison did not report on this
Number of studies	3	5	5

A multicentre prospective cross-sectional study from South Africa on management of incomplete miscarriages included 761 women with incomplete, complete, missed or inevitable miscarriages.[24] One third of these women received antibiotics. Women with second trimester miscarriages were significantly more likely to require intravenous antibiotics compared to those with first trimester miscarriages. The frequency of transfusions of blood or blood products was 8.3%. Most of the women (87.8%) had uterine evacuation either by sharp curettage (82%) or by manual vacuum aspiration (14.8%). Although general anaesthesia or sedation was commonly used, 7.8% of women received no analgesia or anaesthesia.[24] This study showed, as others have also done, that complications (here measured as the need for intravenous antibiotics) are more frequent after second trimester than after first trimester miscarriages.

A retrospective study was done of 240 women who underwent MVA from 2003 to 2005 in Aberdeen Maternity Hospital in Scotland.[25] Prophylactic antibiotics were not routinely administered, and local anaesthesia was used. There were no major complications in the form of haemorrhage requiring blood transfusion, or perforation of the uterus. The procedure was 94.7% effective, with 13 women (5.3%) classified as having failed MVA of whom 12 had retained products of conception. Standard curettage was done in 8 of these women and 4 were successfully managed expectantly. [25]

A randomized trial from Kagera Regional Hospital, Tanzania, compared two methods (misoprostol and MVA) for management of incomplete miscarriage, with respect to efficacy and acceptability, from 2004 to 2005.[26] The study included 300 women with incomplete miscarriages arising from TOP or other reasons. The success rate was high in both arms of the study (99% for misoprostol and 100% for MVA). Women in the misoprostol arm (31%) were more likely to bleed significantly than women in the MVA arm (7%) immediately after treatment. Although the pain score was higher in the MVA arm, women were equally satisfied with both types of treatment.[26] This study showed that it is feasible to use misoprostol in low-resourced settings where skills for uterine evacuation procedures are in short supply. The diagnosis of incomplete abortion was made clinically because of the unavailability of ultrasound scanning. However, the side effects of misoprostol still have to be borne in mind before it is used on a wide scale, in any setting.

A randomized controlled trial was conducted in seven hospitals in the United Kingdom, to determine the effects of different treatments of miscarriage on post-abortal infection.[27] A total of 1200 women was included in the study with first trimester fetal death or incomplete miscarriage. The trial compared the frequency of pelvic infection between surgical (MVA), expectant, and medical management. Antibiotics were not routinely given. There was no difference in the incidence of infection within the first 14 days after treatment, and the

frequency of infection was low (surgical, 3%; expectant, 3% and medical, 2%) in all groups. The frequency of hospital admissions was significantly higher (49%) in the expectant management group than that of the medical management group (18%) and the surgical management group (8%). In the medical management group category, 23% required curettage because of failure of medical management. Cessation of bleeding was significantly earlier in the surgical management group than that of the medical and expectant management groups but this did not affect the haemoglobin concentration and haematocrit level at 14 days.[27] The study showed that the infection rates after expectant, medical, and surgical management were not significantly different and were reassuringly low. It can also be concluded that the routine use of antibiotics in the management of miscarriage is not necessary unless there is clinical evidence of infection, or high risk status associated with unsafe abortion practice.

Effective counselling is an integral part of quality in the management of any disease or medical problem. It is very important to involve the patient in her care.[28] Counselling allows the woman to consider her options and ensures that she can make decisions from her own perspective. This is discussed in the World Health Organization (WHO) manual regarding post abortion care. Post abortion care counseling is structured so that the client voluntarily receives emotional support and guidance from trained personnel in an environment that is conducive for openness and the sharing of feelings and perspectives. Counseling should also be offered before and during abortion care, and be provided for as much time as needed by the woman. The safety and efficacy of early abortion treatment should be explained together with information on the abortion procedure. Contraception information and service should also be provided.[28]

A cross-sectional questionnaire-based survey was conducted in 2006 in southern Nigeria on 431 health professionals.[29] Among them were 270 medical doctors (62.6%), and 161 nurses

(37.4%). A significantly greater proportion of medical doctors performed post abortion care counseling (n=203; 75.2%) compared with the nurses (n=99; 61.5%). University teaching hospitals had the highest reported frequency of counseling (90.5%), followed by private specialist hospitals (80.8%), private general hospitals (56.5%), and finally midwife homes (56.3%). Of all participants, 40.1% had received formal training in post abortion care counseling (42.2% of doctors and 36.7% of nurses).[29] While counselling is very important in all aspects of abortion care, professionals should best be trained formally so that abortion counselling can be done properly.

Objectives

Broad objective:

The main aim of the research was to determine the clinical outcome of patients admitted for incomplete miscarriage to the Chris Hani Baragwanath hospital.

Specific objectives

1. To determine the demographic and obstetric background of women admitted with incomplete miscarriage at Chris Hani Baragwanath Hospital.

2. To determine the following outcomes and findings:

a) Clinical and laboratory findings: vital signs, history and main complaint on admission, symptoms on admission and gestational age on admission. Full blood count, urea and electrolytes, C-reactive protein, chest x-ray (if any), arterial blood gas (if any), Rhesus, rapid plasma regain (RPR) and HIV results, and other investigations (if done).

b) Management: treatment (medical, surgical or expectant), hysterectomy (if any), salpingectomy (if any), drainage of tubo-ovarian abscess (if any), repair of bowel or uterine injury, type of anaesthesia, duration of stay, ICU admission (if any) and renal dialysis (if any).

c) Complications: anaemia (haemoglobin <11.0 g/dL), sepsis (fever, offensive products, raised white cell count and septicaemia), organ dysfunction (renal failure, thrombocytopenia, disseminated intravascular coagulation, adult respiratory distress syndrome, uterine perforation, bowel injury and death).

3. To compare demographic and obstetrics back grown and clinical out comes between women with spontaneous miscarriage, safe abortion and unsafe abortion

Setting

Management of incomplete miscarriage at Chris Hani Baragwanath Hospital

At Chris Hani Baragwanath Hospital, where this study was undertaken, women with incomplete miscarriage present at the gynaecological outpatient department, either as emergencies from home, or as referrals from clinics in the nearby Soweto, Orange Farm and Lenasia localities, with a population of about 2 million people. Women presenting with incomplete miscarriage are managed according to the protocol of the department. Traditionally, and for many years, all women with incomplete miscarriage were admitted for uterine evacuation, including sharp curettage, under general anesthesia. During the last 5 years, MVA with day-case care has increasingly gained favour, and more recently, some women who are clinically stable are also managed by using either expectant or medical management. In such cases, women are counseled that they might bleed for a longer period and are reviewed after one week by clinical examination and ultrasound for evidence of retained products of conception. Women who have retained products at that stage usually undergo MVA, and then they are discharged.

Women who are clinically unstable are admitted and are managed according to the prevailing complications. The evacuation procedure of choice in such patients is curettage of the uterine cavity in theatre under general anesthesia and at least an overnight hospital stay. Testing for Rhesus blood group is performed and anti-D immunization given if appropriate. Once stabilized, these women are discharged. Contraceptive advice and provision is not routine at the hospital, because contraception is considered a district service function by the provincial

health authorities. In general, admission for evacuation of the uterus under general anesthesia is reserved for women with complicated incomplete miscarriage as follows:

1. Uterus 14 weeks' size or greater
2. Evidence of septic miscarriage
3. Severe anemia (haemoglobin level less than 7-8 g/dL)
4. Excessive haemorrhage during the miscarriage
5. Uterine abnormalities
6. Failed manual vacuum aspiration[30]

In addition, the Chris Hani Baragwanath Hospital gynaecology department has a separate admission ward for women who request TOP in accordance with legal guidelines dictated by Choice on Termination of Pregnancy legislation. The usual management is misoprostol followed by MVA for women less than 13 weeks pregnant, and admission with misoprostol followed by (usually) evacuation and curettage of the uterus under anesthesia for those above 13 weeks. Rarely, evacuation and curettage is required after TOP before 13 weeks where there has been a failed MVA, or where there is evidence of uterine sepsis. In such cases further attempts at MVA would be unsafe.

Methods

The study was done at the gynaecological emergency admission ward of the Chris Hani Baragwanath Hospital. About 6000 women are admitted annually in this ward. The study design was a descriptive study. The study population was all women admitted for incomplete miscarriage, excluding women who were managed as outpatients for incomplete miscarriage, whether by MVA or conservative measures. While women admitted for legal TOP were excluded, those readmitted for incomplete abortion after being discharged following legal TOP were included. A consecutive sample of women admitted from 1 June 2009 to 31 December 2009 was collected. The sample size was not predetermined, as it would be the total number of women admitted during the study period (at least 100).

Data collection was by retrospective record review, using inpatient case-files of women admitted in the gynaecological unit. A data sheet was used for raw data entry. Explanatory variables included demographic characteristics such as age and occupation, obstetric information such as gravidity, parity, and previous obstetric outcomes, and clinical findings on admission to hospital. Gestational age was calculated using last menstrual period if available. Outcome measures included need for blood transfusion and intravenous antibiotics, uterine perforation, hysterectomy, ICU admission, and maternal death. Laboratory results were accessed from the files. Detail on these variables and measures is attached in the data sheet as Appendix A.

Data management and analysis was done using Epi-info and Stata software. Descriptive statistics were used, with means ± standard deviations, medians and ranges, and frequencies with percentages. Comparisons of categorical variables between subgroups of interest were done using Fisher's exact test, with significance accepted at $P< 0.05$, by the supervisor who is well acquainted and experienced with simple bio-statistics assisted in data analysis.

The protocol was submitted to the University of the Witwatersrand's Human Research Ethics Committee" and approved (Appendix B). Confidentiality of records was maintained. The names and hospital numbers of patients were not recorded in the data sheets. A research study number was used instead. All data were accessible only to the researcher of this study.

Results

The total number of women who presented with incomplete miscarriage to the Chris Hani Baragwanath Hospital Gynaecology Outpatient Department (GOPD) during the study period was 1283. One hundred and sixty-four of these women (13%) were admitted to hospital and therefore eligible for inclusion in the study. Out of these 164 women, 151 files (92%) could be retrieved from the records room. The demographic details of these 151 women are shown in Table 1. The mean age was 28.6 ± 4.3 years. There were 16 women (11%) under the age of 20 years. The median parity was 1 (range 0-5). One hundred and twenty-nine women (85%) were Black African. One hundred and twelve (74%) women were single and not widowed or divorced, and 25 women (17%) were married. Eighty-seven women (58%) had matriculated or gone on to tertiary studies.

The reproductive and obstetric details of the women are shown in Table 2. The mean gestational age was 17.0 ± 4.5 weeks. One hundred and eighteen women (78%) were from 13 to 20 weeks pregnant. Thirty-nine (26%) were primigravid and, among the multigravid women, 24 (21%) reported previous miscarriages and 18 (16%) previous caesarean sections. Three women stated that they had terminated their previous pregnancies. Of those who had used contraception (n=21) in the year before becoming pregnant, 11 (52%) had used injectable progestagens.

Table 1: Demographic details of women admitted with incomplete abortion (n=151)

Variables	n	%
Age in yrs		
10-19	16	11%
20-34	116	77%
35-39	16	11%
>40	3	1%
Ethnicity		
Black	129	85%
White	7	5%
Asian	6	4%
Mixed	9	6%
Marital status		
Married	25	17%
Single co-habiting	28	18%
Single non cohabiting	84	56%
Divorced	9	6%
Widowed	5	3%
Education		
Primary school or less	8	5%
High school	55	36%
Matriculation	78	52%
College/University	9	6%
Others	1	1%
Employment		
Unemployed	119	79%
Employed	32	21%

Eighty-seven of the incomplete miscarriages (58%) were spontaneous, and the remaining 62 (42%) followed attempted terminations, 29 of them (19% of the total) being legal 'safe' abortions, with 33 (21%) unsafe (Table 3). Table 4 shows clinical presentation on admission. All women presented with vaginal bleeding and most (n=131; 87%) had abdominal pain. General physical signs on admission included pallor in 71 women (47%) and a temperature of 37.3 degrees C or more in 20 (13%) (Table 5). The mean systolic blood pressure was 105±21 mmHg and the mean diastolic blood pressure was 63±14 mmHg.

Table 6 shows findings on abdominal examination. One hundred and twenty (82%) of women had a palpable uterus of 13 weeks or more, with uterine tenderness elicited in 99 women

(66%). Thirty women (22%) had evidence of guarding, rebound tenderness or abdominal rigidity. On vaginal examination, the cervix was open in 150 women (99%) with excitation tenderness noted in 6 cases (4%). There was 'severe' bleeding in 24 cases (16%) (Table 7).

Table 2: Reproductive profile of women admitted with incomplete abortion (n=151)

Variables	Total number of women	n	%
Gestation age	151		
< 13		13	9%
13 to 20		118	78%
>20		16	11%
Missing		4	2%
Availability of ANC card	151		
Yes		5	3%
No		146	97%
Parity	151		
Primigravida		39	26%
Para 1 to 4		107	71%
Para ≥5		1	1%
Missing		4	2%
Previous miscarriages	22		
1		19	79%
2		2	17%
4		1	4%
Previous terminations	3		
Safe		1	50%
Unsafe		2	50%
Previous caesarean section	151		
0		129	85%
1		15	10%
2		3	2%
Missing data		4	3%
Type of contraception in last year	21		
OC pills		3	14%
Injectables		11	52%
Condoms		7	34%
IUCD		0	

P=parity, ANC=antenatal clinic, OC pill=oral contraceptive pill, IUCD=intrauterine contraceptive device.

Table 3: Event of miscarrige (n =149)

Event of miscarriage	n	%
Spontaneous	87	58%
Safe abortion	29	19%
Unsafe abortion	33	21%

Table 4: Clinical symptoms on admission (n=151)

Symptoms	n	(%)
Vaginal bleeding	151	100%
Abdominal pain	131	87%
Abdominal distension	0	
Fever	5	3%
Vaginal discharge	17	11%
Unconsciousness	0	
Delirium	1	1%

Table 5: General and non-abdominal physical signs on admission (n=151)

Sign	n	%
Color		
Pink	80	53%
Pallor	71	47%
Temperature (degrees C)		
< 37.5	136	90%
≥37.5	15	10%
Heart rate (beats/min)		
<90	42	28%
90-100	25	16%
101-119	46	31%
≥120	37	25%
Chest examination		
Abnormal	5	3%
Normal	146	97%
Heart examination		
Abnormal	1	1%
Normal	150	99%
Neurological system		
Abnormal	1	1%
Normal	150	99%

Table 6: Findings on abdominal examination (n=151).

Sign	Total number of women	n	%
Inspection			
Normal	151	151	100%
Uterine size on palpation	147		
Up to 12 weeks		27	18%
13 to 19 weeks		117	80%
≥ 20 weeks		3	2%
Uterine tenderness	151	99	66%
Rebound tendeness	151	5	3%
Abdominal guarding on palpation	151	19	13%
Abdominal rigidity on palpation	151	6	4%

Table 7: Findings on vaginal examination of 151 women (n=151).

Sign	N	%
External inspection		
Normal	150	99%
Abnormal	1	1%
Cervix		
Open	150	99%
Closed	1	1%
Excitation tenderness	6	4%
Amount of bleeding		
Mild	59	39%
Moderate	68	45%
Severe	24	16%

Ultrasound scanning was done in all women and retained products were confirmed in every scan. Blood test results on admission to hospital are shown in Table 8. The mean haemoglobin level on admission was 9.4 ± 1.3 g/dL. Sixty-nine women (37%) were moderately or severely anaemic with a haemoglobin level less than 9 g/dL. White cell counts were raised above $15x10^9$/L in 44 women (30%). There were no women with platelet counts less than $100x10^9$/L. Five women had a creatinine level greater than 100 μmol/L. Of 65 women tested for HIV, 23 (35%) were HIV-positive. No woman had Rhesus blood grouping tested on admission.

Table 8: Blood test results on admission (n=151)

Paramiter	Total number of women documented	n	%
Haemoglobin level	149		
Normal (≥11.0g/dL)		48	32%
9.0-10.9 g/dL		32	21%
7.0-8.9 g/dL		25	17%
<7.0 g/dL		44	30%
White cell count ($x10^9$/L)	149		
<11		87	58%
≥11		62	42%
Platelets ($x10^9$/L)	149		
≥150		145	97%
100-149		4	3%
< 100		0	
Urea (mmol/L)[a]	148		
<7		128	93%
≥7		20	7%
Creatinine (µmol/L)[a]	148		
<100		140	95%
≥100		8	5%
HIV	65		
Positive		23	33%
Negative		42	67%

[a]Cut-off values for urea and creatinine levels are based on practical rounded figures for upper limits of normal in non-pregnant women, as a number of women were in very early pregnancy or technically no longer pregnant

In addition to usual treatment (admission and uterine evacuation for all women) and oral antibiotics and analgesics (not shown), a proportion of women received additional treatment. Fifty-three women (35%) received intravenous antibiotics, 56 (37%) received red cell blood transfusion, and 21(14%) received fresh frozen plasma. Two had uterine perforations, one of whom needed surgical uterine repair. On discharge from hospital, 83 women (55%) received oral antibiotics, and 62 (42%) oral iron supplements. The median duration of stay was 1 day (interquartile range 1 – 1.5 days). Contraception advice was not noted for any of the women at discharge from the hospital, nor were any women were given any type of contraception. Severe morbidity occurred in five women, who were admitted to the Intensive Care Unit, of

whom two required hysterectomy. There were no deaths. The five cases with severe morbidity are described individually below.

Comparison of women who had spontaneous miscarriages with those that had induced abortions (safe and unsafe) showed significantly higher proportions of teenage pregnancies and women not attaining matriculation in the induced abortions group (Table 9). Women with induced abortions also had significantly higher frequencies of pyrexia, tachycardia, and abdominal physical signs, as well as lower haemoglobin levels, need for blood transfusion and need for intravenous antibiotics. There were also non-significant trends to severe morbidity such as intensive care unit admission and emergency hysterectomy in the induced abortion group. There were significantly more first-trimester events among the induced abortions.

Table 9: Comparison of women who had spontaneous miscarriages with those that had induced abortions (n=151)

	Spontaneous miscarriages (n=89)	**Induced abortions (n=62)**	**P value**
Teenage pregnancies (<20 years)	4 (4.6%)	12 (19.4%)	0.02
Single and not cohabiting	51 (58.6%)	46 (74.2%)	0.06
Not attained matriculation	30 (65.5%)	32 (51.6%)	0.04
Gestational age:			
<13 weeks	3 (3.6%)	9 (15.0%)	0.046
13-20 weeks	71 (83.6%)	46 (76.7%)	
>20 weeks	11 (12.9%)	5 (8.3%)	
Nulliparous	22 (35.5%)	16 (26.7%)	>0.99
HIV infected (n=65)	12 (30.8%)	11 (42.3%)	0.30
Temperature >37.3 degrees	5 (5.6%)	15 (24.2%)	<0.01
Heart rate >100 beats per minute	35 (39.8%)	37 (60.0%)	0.02
Uterine tenderness	50 (57.5%)	47 (75.8%)	0.02
Abdominal guarding or rigidity	9 (10.1%)	21 (33.9%)	<0.01
Moderate to severe vaginal bleeding	49 (56.3%)	41 (66.1%)	0.24
Haemoglobin level <11 g/dL	51 (59.3%)	50 (82.0%)	0.04
White cell count $\geq 15x10^9$/L	68 (79.1%)	45 (73.8%)	0.55
Urea ≥7 mmol/L	5 (5.6%)	15 (24.2%)	<0.01
Blood transfusion	22 (24.7%)	34 (54.8%)	<0.01
Intravenous antibiotics	20 (22.5%)	33 (53.2%)	<0.01
Intensive care unit admission	1 (1.1%)	4 (6.5%)	0.16
Emergency hysterectomy	0	2 (3.2%)	0.17

Note: small discrepancies in percentages are due to missing data

Comparison of women who had safe induced abortion with those who had unsafe induced abortion showed significant differences in heart rate, uterine tenderness and increased white cell count (Table 10). There were however no significant differences in anaemia on admission, need for blood transfusion and need for intravenous antibiotics. There was a non-significant trend to severe morbidity (intensive care unit admission and emergency hysterectomy) in the unsafe abortions group.

Table 10: Comparison of women who had safe induced abortions with those that had unsafe induced abortions (n=62)

	Safe abortion (n=29)	**Unsafe abortions (n=33)**	**P value**
Teenage pregnancies (<20 years)	5 (17.2%)	7 (21.2%)	0.76
Single not cohabiting	20 (69.0%)	26 (78.8%)	0.40
Not attained matriculation	15 (51.7%)	17 (51.5%)	>0.99
Gestational age:			
<13 weeks	4 (14.3%)	5 (15.6%)	0.08
13-20 weeks	24 (85.7%)	22 (68.8%)	
>20 weeks	0	5 (15.6%)	
Nulliparous	6 (21.4%)	10 (31.3%)	0.56
HIV infected (n=78)	4 (40.0%)	7 (43.8%)	>0.99
Temperature >37.3 degrees	4 (13.8%)	11 (33.3%)	0.09
Heart rate >100 beats per minute	17 (58.6%)	30 (90.9%)	<0.01
Uterine tenderness	17 (58.6%)	30 (90.9%)	<0.01
Abdominal guarding or rigidity	6 (20.7%)	15 (45.5%)	0.06
Moderate to severe vaginal bleeding	20 (69.0%)	21 (63.6%)	0.79
Haemoglobin level <11 g/dL	23 (82.1%)	27 (81.8%)	>0.99
White cell count $\geq 15x10^9$/L	4 (13.8%)	12 (37.5%)	<0.05
Urea ≥7 mmol/L	5 (17.2%)	10 (30.3%)	0.25
Blood transfusion	14 (48.2%)	20 (60.6%)	0.44
Intravenous antibiotics	14 (48.2%)	19 (57.6%)	0.61
Intensive care unit admission	1 (3.6%)	3 (9.1%)	0.62
Emergency hysterectomy	0	2 (6.1%)	0.49

Note: small discrepancies in percentages are due to missing data

Case details of women admitted in ICU

Case 1:

MS, a 28 year old woman was brought into GOPD with a history of having attempted a TOP. She complained of lower abdominal pain and vaginal bleeding of about 2 weeks' duration. She was at 18 weeks gestation with her second pregnancy. She had an uncomplicated normal vaginal delivery in 2007.

On examination, she was pale with a temperature of 36.6ºC and heart rate of 102 beats/min. Her blood pressure (BP) was 70/45 mmHg. Her respiratory, cardiovascular and neurological systems were normal. The abdomen was tender on palpation, and a 14 week size uterus was felt. She did not have peritonitis. Her vulva and vagina were normal. The cervix was open and products of conception were felt. She had severe vaginal bleeding.

Investigations

Hb 2.9g/dL; WCC $15x10^9$/L, Platelets: $314x10^9$/L

Urea 12.8 mmol/L; Creatinine 167 µmol/L

HIV was not done

Blood gas on 40% oxygen:

PO_2 65 mmHg, PCO_2 55 mmHg, SaO_2 66.9%, Base excess -11.6 mmol/L, pH 7.43, HCO_3^- 9.1 mmol/L.

An ultrasound scan showed retained products of conception.

Treatment

MS was resuscitated in the admissions area. She was taken to theatre and curettage was done. The anaesthetist did not extubate her after surgery because her haemoglobin was still 3.2 g/dL and the base excess was -13.4 mmol/L. She was taken to ICU subsequently. She received intravenous antibiotics, 6 units of red cells, and 2 units of FFP (fresh frozen plasma). After 5 days in ICU she was discharged to the wards and 2 days later she was discharded from the hospital.

Case 2:

Presentation

TN, a 25 year old woman, was brought to GOPD. She had a history of attempting a termination of pregnancy and complained of lower abdominal pain, vaginal bleeding and an offensive vaginal discharge for 4 days. This was her third pregnancy, and she was at 18 weeks' gestation. Both her previous deliveries were uncomplicated. On examination, she was pale with a temperature of 38.4ºC and a heart rate of 135 beats/min. Her BP was 93/45 mmHg. Her Glasgow Coma Scale was 12/15. Her abdomen was tender on palpation and the uterus was approximately at 20 week size, and there was no evidence of peritonitis. Her vulva and vagina were normal. On digital examination, the cervix was open and products of conception were felt. There was moderate, offensive vaginal bleeding.

Investigations

Hb 5.2g/dL, WCC $28.3x10^9$/L, Platelets $134x10^9$/L

Urea 16.3 mmol/L, Creatinine 98 µmol/L

HIV was not done

Blood gas on room air :

PO_2: 65.4 mmHg, PCO_2: 17.2 mmHg, HCO_3^- 13.7 mmol/L, Base excess -12.2 mmol/L, pH 7.34

An ultrasound scan showed retained products of conception.

Treatment

TN was resuscitated in the casualty area and then taken to theatre where a curettage was done. The anaethetist advised against extubation after surgery owing to severe acidosis. She was then taken to ICU. She received intravenous antibiotics, 6 units of blood and 2 units of FFP. She was discharged 10 days after admission which included 6 days in ICU.

Case 3:

Presentation

JC, a 33 year woman, presented to GOPD with a history of vaginal bleeding for 6 days. This was her fourth pregnancy, and she was not sure of her gestational dates. On examination, she was pale with a temprature of 39.1ºC and a heart rate of 145 beats/min. Her BP was 83/59 mmHg. Her chest had signs suggestive of a lower respiratory infection. The cardiovascular and neurological systems were normal. The abdomen was tender on palpation, but with no evidence of peritonities, and an 18 week size uterus was felt. Her vulva and vagina were normal. The cervix was open and revealed retained products of conception.

Investigations

Hb 3.2 g/dL, WCC $8.3x10^{9}$/L, Platelets $382x10^{9}$/L

Urea 3.3mmol/L, Creatinine 66 µmol/L

RPR was negative

HIV was positive, CD4 $31x10^{6/}$L

Blood gas on 40% oxygen:

PO_2 45 mmHg, PCO_2 37.9 mmHg, SaO_2 66.9%, HCO_3^- 15.7 mmol/L, Base excess -7.35 mmol/L, pH 7.34.

Chest x-ray showed patchy opacification.

Sputum for acid-fast bacilli was negative.

An ultrasound scan showed retained products of conception.

Treatment

JC was resuscitated in the casualty area. She received one litre of Ringer's Lactate and was taken to theatre where a curettage was done. The anaesthetist did not extubate the patient because of low oxygen saturation (82%) on the ventilator, and so the patient was taken to ICU. She received intravenous antibiotics, 4 units of packed cells, and 2 units of FFP. She was discharged home after less than one week, including 2 days in ICU.

Case 4:

Presentation

EM, aged 33 years, presented with the history of trying to terminate her pregnancy by using pills which she had brought on the street. She complained of lower abdominal pain, vaginal bleeding and fever. This was her fourth pregnancy, and she was 7 weeks pregnant by dates. On examination she appeared pale. Her temperature was 36.5ºC, her heart rate was 105 beats/min and her BP was 80/59 mmHg. Her chest had course crepitations, and a gallop rhythm was heard on auscultation. Her neurological system was normal. The abdomen was tender on palpation and the uterus was of 23 week size, with signs of peritonitis. Her vulva and vagina were normal. The cervix was open with products of conception felt.

Investigations

Hb 5.2 g/dL, WCC 7.6 x 10^9/L, Platelets 204x10^9/L

Urea 12.2mmol/L, Creatinine 118 µmol/L

HIV was positive, CD4 250x10^6/L

Blood gas on 40% oxygen:

PO_2 53 mmHg, PCO_2 30.8 mmHg, SaO_2 75.9%, Base excess -12.5 mmol/L, pH 7.29

The chest x-ray showed patchy opacifications.

Sputum for acid-fast bacilli was negative.

An ultrasound scan showed products in the uterus with free fluid in the pouch of Douglas.

Treatment

EM was resuscitated in the admissions area. She was taken to theatre and curettage was attempted. She continued to bleed and laparotomy was performed. At laparotomy the uterus appeared partially necrotic and a total hysterectomy was done. The patient could not be extubated after the operation because she could not maintain her blood pressure and remained severely acidotic, and whe was taken ICU. She was given intravenous antibiotics. In theatre she received 3 units of red cells, and in ICU she was given another 3 units of red cells and 2 units of FFP. She required inotropic support and haemodialysis in ICU. She spent 9 days in ICU and was discharged from hospital 3 days later. She needed readmission for a burst abdomen and she was discharged 5 days after surgical repair.

Case 5:

Presentation

TN, 34 years old, presented in her third pregnancy with a history of unsafe abortion at 20 weeks' gestation, with abdominal pain,vaginal bleeding, fever and offensive vaginal discharge. On examination the temperature was 39.1º C and the heart rate was 123 beats/min. Her BP was 60/30 mmHg. There was abdominal rebound tenderness, guarding and rigidity, and the uterus was of 16 week size. Her external genitalia were normal.The cervix was open and products of conception were felt. There was moderately foul-smelling vaginal bleeding.

Investigations:

Hb 7.1 g/dL,WCC $18.3x10^9$/L, Platelets $235x10^9$ /L

Urea 3.7 mmol/L, Creatinine 76µmol/L

HIV was not done

Blood gas on 40% oxygen mask:

PO_2 70.2 mmHg, PCO_2 28.1 mmHg, SaO_2 89.6%, Base excess -13.2 mmol/L, pH 7.33

An ultrasound scan showed products of conception in the uterus

Treatment

After resuscitation, TN was taken to theatre for curettage. She continued to bleed, necessitating hysterectomy. Subsequently the anaesthetist could not maintain the oxygen saturation despite adrenaline infusion, and she could not to be extubated. She was then transferred to ICU. She received intravenous antibiotics, 8 units of red cells and 4 units of FFP. She was discharged 15 days after admission and had spent 8 days in ICU.

Discussion

Since the Choice on Termination of Pregnancy Act of South Africa was passed in 1996, there has been an appreciable national reduction in morbidity and mortality resulting from incomplete miscarriage.[10] In keeping with the national statistics, a low level of morbidity was seen in this study where 1283 women presented with incomplete miscarriage, and only 164 (13%) were admitted. The remaineder were managed as outpatients, using mainly MVA. There were also no maternal deaths related to incomplete miscarriage during the study period.

The demographic data in this retrospective review of women admitted with incomplete miscarriage found that most of the women were aged from 20 to 34 years. This differed from similar studies by Rees and colleagues from South Africa,[21] and by Gebreselassie from Kenya,[9] where a large proportion of women with incomplete miscarriages were aged less than 20 years. This could have been an incidental finding, or it may relate to age differences between women admitted for incomplete miscarriage and those discharged home in this study. We did not have age range data for women who were managed as outpatients in this study. Most women admitted (78%) were in their second trimester of pregnancy, and mostly primigravid (71%). The Kenyan and South African studies mentioned above included second-trimester miscarriages (39% and 38% respectively).[9,21]

Miscarriages, or abortions, may be spontaneous or induced. The causes for spontaneous miscarriage may include chromosomal abnomalities, intrauterine infections, uterine and cervical structural abnormalities, fetal anomalies, malaria and other febrile illnesses, disease related to HIV infection, and physical violence.[2] Induced second-trimester abortions, often requiring admission, may be related to delay in the diagnosis of pregnancy, relationship problems with the husband or partner, and socioeconomic stress or loss.[14] This study did not collect data on suspected causes because information on social background and underlying or

comorbid conditions was not routinely found in the records. HIV testing was infrequently performed.

Twenty-one women (13%) in this study were using contraception when they became pregnant, and of these 11 were using injectable progestogens and 7 were using condoms. Similar results from Kenya showed that 14% of women presenting with incomplete miscarriages were using contraception when they became pregnant, and that 34% had been using contraception.[9] The most commonly used methods in that study were oral contraceptives (48% of current and 34% prior users) and injectable contraceptives (34% and 43% respectively). This may be due to contraceptive failure or incorrect use of contraceptives, possibly related to be lack of knowledge of the modern method, concern about side effects, or partner objection. This shows that there is still a large unmet need for effective reproductive health services for young women. The World Health Organization has estimated that more than 150 million women of reproductive age worldwide have an unmet need for contraception. This may be due to difficultly in paying for or obtaining modern contraceptive method, religious values regarding the modern method, lack of knowledge or partner objection.[2]

Of all women in this study, 58% appeared to have had spontaneous miscarriages, 23% had unsafe abortions and 29% had safe (legal) abortions. A number of women may have withheld information about illegally procured unsafe abortions. These results are similar to those of a study done in South Africa which showed that 34% of hospital admissions for incomplete abortion resulted from unsafe abortion practice.[21] Again, it must be noted that admission criteria differ between the two studies, with the percentage inflated in this study due to admission bias related to severity of presentation.[21] Population-based data are available from the World Health Organisation, which has given rates of unsafe abortion in both North and South Africa as approximately 15 to 20 per 1000 women of reproductive age per year.[2] A

study in Brazil showed the corresponding rate of unsafe abortion to be 16 to 33 per 1000 women.[17] It is difficult to relate these rates to our study, given uncertainties about population estimates and about frequencies of unsafe abortion. Also, it is not known how many of the non-admitted women with incomplete abortion had unsafe abortions.

Anaemia was frequent in this study, with 30% of women having severe anaemia and another 17 having moderate anaemia. Packed red cell transfusion was needed for 37% of women and fresh frozen plasma was required in 14%. Again, this reflects the degree of severity of women admitted to hospital. The frequency of inappropriate blood transfusion was not studied, but it has been found previously that excessive and wasteful blood transfusions are sometimes used in women with incomplete miscarriage.[21]

It was not unexpected that women who were admitted after induced abortion were found to have greater morbidity in terms of clinical evidence of infection as well as higher rates of anaemia and need for blood transfusion. This was similar to a study done by Bankole and colleages, who found that 50% of maternal deaths in Nigeria resulted from unsafe abortion[12]. There were also similar findings in studies by Rees and colleagues from South Africa,[20] and by Gebrelassie from Kenya, [8] where relatively larges proportion of women with complications had unsafe abortions. Induced abortion is expected to result in a greater risk of infection and larger amounts of blood loss. When safe induced abortions were compared with unsafe induced abortions in this study, the differences in morbidity were statistically not remarkable, with most parameters indicating similar morbidity. However, 4 of the 5 women with severe morbidity had clear histories of unsafe abortion. Also, the results may not reflect a true lack of difference in infection and haemorrhage, because this study only considered women admitted to hospital, for clinical reasons. It is very likely that a large number of safe induced abortions were not admitted, even after returning for re-evacuation for retained

products. A similar artefactual reason may explain why there were more first-trimester events among the induced abortions than among the spontaneous miscarriages.

Use of parenteral antibiotics is a non-specific marker of infectious morbidity in women with incomplete miscarriage. There was a high frequency of use of parenteral antibiotics (35%) on admission, and 54% of women were discharged with oral antibiotics according to the clinicians' judgement. This may indicate inappropriate use of antibiotics, as shown by a multicentre trial that found it not necessary to give antibiotics to all women with incomplete miscarriage, whether for prophylaxis or as routine empirical treatment.[27] However, again, this study considered only women who were admitted to hospital, representing those incomplete miscarriages that were most unwell. The Kenyan study reported findings suggesting an over-use of antibiotics,[9] with similar findings from the previous study done in South Africa.[21]

HIV is a major aspect that could have influenced the outcome of the study, and is especially important in a South African setting. It seems unfortunate that the majority of women may not have been tested for HIV. This includes three women admitted in ICU. Nevertheless, the seroprevalence rate in the women tested was 35%, not much different from the antenatal seroprevalence rate in South Africa, which is 29%.[31]

All women in this study had uterine evacuation by surgical curettage, this being associated with admission to hospital. Of these women, two had uterine perforations, although it was not clear from the records if the perforations occurred during or before the surgical procedures. One had conservative management and the other required a laparotomy to repair the uterus. Surgical curettage has the highest complete evacuation rate in women with incomplete abortion.[23] Trinder and colleagues have shown that surgical curettage still offers the greatest complete evacuation rate, and the lowest risk of admission for a long period, and a shorter duration of bleeding.[27] Surgical curettage is therefore appropriate for women with

complicated incomplete miscarriages, where problems may be expected with MVA or conservative methods.

This study found that Rhesus blood grouping was not done in all women who were admitted with incomplete miscarriage although there is a protocol on testing and prophylaxis. A reason for failure to test for Rhesus grouping may be erratic supply of testing kits to the gynecological wards. The Rhesus test is important in order to identify Rh-negative women who need prophylaxis to prevent them from iso-immunization by their fetus. It was also found that women were not advised on future contraception. Promotion of contraception is the primary prevention of induction of unwanted pregnancy which may lead to an increase in admissions for incomplete abortion in the gynecological wards.[32,33]

Five women needed high-care admission, and five women needed ICU admission. Of the latter, two required hysterectomy, one for sepsis and one for ongoing bleeding after surgical evacuation. Severe morbidity can be expected in a small proportion of cases, especially those with unsafe abortions, and this study was no exception. The numbers were however too small to provide a reliable 'severe morbidity rate' for incomplete abortion.

Limitations

This was a retrospective study, depending for data on information in the women's files. There was missing information on method, if any, of abortion, the amount of bleeding and severity of pain. Selection of women for the study was based on attending doctors' opinions on whether women should be admitted. This could not be standardized prospectively. Therefore, the results would not necessarily be applicable to other institutions with different admission criteria for miscarriage. A sample size of 151 patient is a small number to work out

important analyses based on describing the outcome of different groups of incomplete miscarriages or abortions.

Conclusion and Recommendations

Large numbers of women continue to present to this hospital with complicated miscarriages, requiring admission. However, the management of these women resulted in generally good clinical outcomes overall with no maternal deaths. Blood transfusions were frequently used. An area of concern was that contraceptive advice was not noted, nor were women given any type of contraception on discharge. This may contribute to continuous unmet contraceptive needs and contraceptive failure, resulting in unplanned or unwanted pregnancies.

To improve on the quality of data collected it is recommended that more detailed records of the symptoms,signs, results and management be documented by the doctors. Another aspect requring attention is HIV, a major factor in maternal morbidity and mortality in South Africa. Voluntary counselling and testing, with CD4 measurement when applicable, should be mandatory when a woman presents with miscarriage.

References:

1. Pattinson RC, De Jonge ETM. Abortion. In: Odendaal HJ, Schaetzing AE, Kruger TF, (eds). Clinical Gynecology. Second edition. Juta 2001; 166.

2. World Health Organizaton.Unsafe abortion: global and regional estimate of incidence of unsafe abortion and associated mortality in 2003. Fifth edition. Geneva: World Health Organization,2007.

3. Kumar V, Abbas AK, Fausto N, Aster J, eds. Robbins and Cotran Pathologic Basis of Disease, Professional edition. 8th ed. Philadelphia, PA, Elsevier Saunders, 2009.

4. Brown H. Abortion around the world. BMJ 2007;335:1018-19.

5. Nations MK, Misago C, Fonseca W, Correia LL, Campbell OM. Women's hidden transcripts about abortion in Brazil. Soc Sci Med 1997;44:1833-45.

6. Sedgh G, Henshaw SK, Singh S, Bankole A, Drescher J. Legal abortion worldwide: incidence and recent Trends. Int Fam Plann Perspect 2007; 33:106-16.

7. Jones RK. How commonly do United States abortion patients report attempts to self-induce?. Am J Obstet Gynecol 2011;204:23.e1-4.

8. Basu JK. Legal unsafe abortion. Conference proceeding, 33rd national congress of South African Society of Obstetricians and Gynecologist, Stellenbosch, 4–7 October; 2008.

9. Gebreselassie H, Gallo MF, Monyo A, Johnson B R. The Magnitude of Abortion Complications in Kenya. BJOG 2005;112:1229-35.

10. Jewkes R, Rees H, Dickson K, Brown H, Levin J. The impact of age on epidemiology of incomplete abortion in South Africa after legislative change. BJOG 2005;112:355-59.

11. Fawcus S, Rees H,Katzaenellenbogen JM, Shabodien R, McIntyre J, Jewkes RK et al. Management of incomplete abortions at South African public hospitals. National Incomplete Abortion Study Reference Group. S Afr Med J 1997;87(4):438-42.

12. Koster-Oykan W. Why resort to illegal abortion in Zambia? finding of community based study in western province. Soc Sci Med 1998;46:1303-12.

13. Bankole A, Oye-Adeniaran B A, Singh S, Adewole I F, Wulf D, Sedgh G et al. Unwanted pregnancy and induced abortion in Nigeria: causes and consequences. New York: Guttmacher Institute; 2006.

14. Grimes D A, Benson J, Sing S, Romero M, Ganatra B, O-Konofua F E, Shah I H. Unsafe abortion the preventable pandemic. Lancet 2006;368:1908-19.

15. Faundes A. Barriers to legal abortion in Latin America. Women deliver conference, London :19 October 2007.

16. Department of Health. Saving Mothers: Fourth report on confidential enquiries into maternal deaths in South Africa 2005- 2007. Pretoria: Department of Health;2009.

17. Camargo RS, Santana D S, Cecatti JG, Pacagnella RC, Tedesco R P, Melo EF et al. Severe maternal morbidity and factors associated with the occurrence of abortion in Brazil. Int J Gynecol obstet 2011;122:88-92.

18. Brown HC, Jewkes R, Levin J, Dickson-Tetteh K, Rees H . Management of incomplete abortion in South African public hospitals. BJOG 2003;110:371-7.

19. Rashid S, Smith P. Suction Evacuation of uterus for incomplete abortion. J Obstet Gynecol of Br Commonw 1970;77:1047-48.

20. James DK, Steer P J, Weiner CP, Gonik B.In High Risk Pregnancy, management options, Third edition. Elsevier Saunders2005;84-101.

21. Rees H, Katzenellenbogen J, Jewkes R, Mclntyre J, Fawcus S, Shabodien R et al 1997.The epidemiology of incomplete abortion in South Africa. S Afr Med J 1997; 87:432-37.

22. Dabash R, Ramadane MC, Darwish E, Hassanien N, Blim J, Winikoff B. A randomized controlled trial of 400µg sublingual misoprostol versus manual vacuum aspiration for the treatment of incomplete abortion in two Egyptian Hospitals. Int J Gynecol Obstet 2010;110:131-35.

23. Graziosi GCM, Mol BW, Ankum WM, Bruisen HW. Management of early pregnancy loss. Int J Gynecol Obstet 2004;84:337-46.

24. Jewkes R, Brown R, Dickson-Tetteh K, Levin J, Rees H. Prevalence of morbidity associated with abortion before and after legalization in South Africa. BMJ 2002;324: 1252-53.

25. Milingos DS, Mathur M, Smith NC, Ashok PW. Manual vacuum aspiration a safe alternative for surgical management of early pregnancy loss. BJOG 2009;116 :1268-71.

26. Shwekerela B, Kalumurua R, Kipingili R, Mashaka N, Westheimer E, Clark W et al. Misoprostol for the treatment of incomplete abortion at the regional hospital level: result from Tanzania. BJOG 2007;114:1363-67.

27. Trinder J, Brocklehurst P, Porter R, Read M, Vyas R, Smith L. Management of miscarriage: expectant, medical or surgical? Result of randomized control trial (Miscarriage treatment (MIST) trial). BMJ 2006;332:1235-40.

28. World Health Organation.Safe abortion techniques and policy guidance, for health systems, WHO: Geneva 2003; 26-27

29. Adinma JI, Ikeako L, Adinma EA, Ezeama C, Eke N. Post abortion care counseling practiced by health professionals in southeastern Nigeria. Int J Gynecol Obstet 2010;111:53-56.

30. Verkuyl DAA, Crowther CA. Suction versus conventional curettage in incomplete abortion. A randomized controlled trial. S Afr Med J 1994;46:27-32.

31. Department of Health. The 2010 national antenatal sentinel HIV and syphilis prevalence survey in South Africa. Pretoria: Department of Health, 2011

32. Shaw D. The FIGO initiative for the prevention of unsafe abortion. Int J Gynecol Obstet 2010;110: 17-19.

33. Warriner IK, Shah IH. Preventing unsafe abortion and its consequences, priorities for research and action . New York: Guttamacher Institute; 2006.

Appendix A

Data sheet

Hospital admissions of incomplete miscarriages at the Chris Hani Baragwanath Hospital.

Research study no: _____

Date of admission:_____ Date of discharge: _____

Demography

Age :--------

Ethnicity: African:---, Caucasian:---, Asians:---, Mixed:----

Marital status: Married:_____ Single cohabiting:_____ Single non-cohabiting:___

Divorced:____ Widower:_____

Educational level: Matric:_____ Non-Matric:_____College/University:_____ Other:_____

Employement status: Employed:_____ Unemployed:_____

Gestational age at presentation:____

Antenatal card available: Yes/No

Obstetrical/Gynaecological history

Parity _____.+ Gravidity.....

Previous pregnancy.....

Previous micarrages.....

Previous legal TOP.....

Previous C/S .....

Contraceptive history : contraception used in the last year

Oral contraception	
injection	
condom	
Intra uterine dervice	
others	
none	

Presenting symptoms:

Vaginal bleeding: _____ Abdominal pain: _____ Abdominal distension:_____

Fever:_____Vaginal discharge(offensive/non-offensive):_____ unconscious: _____

Delirious/confused:_____ Others:_____

Events of miscarriage: spontaneous:____ Interfered (Cytotec/ MVA/other):_____

Clinical findings:

General:

Colour:_____ Temperature:_____ Pulse:_____ Blood pressure:_____

Systemic:

Chest:_____CVS:_____Neurological:____

Abdomen:

Inspection:_____ Palpation:_Uterine size(in weeks):_____ Uterine consistency:____Uterine tenderness (Yes/No):_____Distension:____Rebound:____ Guarding:____ Rigidity:_____

Vaginal:

Inspection:_____

Palpation: Vulva:____ Vagina:____Cervix: Closed os (Y/N)_____ Dilatation (in cm):____cervical consistency:_____Cervical excitation tenderness:_____ Amount of bleeding(mild/mod/severe):_____uterine size:_____Any protruding bowels (Yes/No):_____

Investigations:

	On Admission	**On Discharge**
Hb		
Wcc		
Platelets		
RH		
INR		
RPR		
HIV		
CD4		
creatinen		

Additional investigations:

Investigations	**Results**
Chest Xray	
Arterial blood gas(lowest)	
Blood culture	
SONAR	
HISTO	
Pus Swab	

Management details:

DOA	DOD	Final diagnosis	Medical treatment	Surgical treatment	Final outcome (discharge/death)

A

ICU details:

Admitted to ICU or not: Yes/No

If Yes, specify reasons: Sepsis/Haemorrhage/post operative/organ dysfunction(specify the organs): _____

Duration of ICU stay: _____

Final outcome from ICU: _____

Follow-up plan (if any):

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG
Division of the Deputy Registrar (Research)

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)
R14/49 Dr Fatma M Suleiman

CLEARANCE CERTIFICATE	**M10424**
PROJECT	A Retrospective Audit of Incomplete Miscarriages at CH Baragwanth Hospital
INVESTIGATORS	Dr Fatma M Suleiman.
DEPARTMENT	Department of Obstetrics & Gynaecology
DATE CONSIDERED	30/04/2010
DECISION OF THE COMMITTEE*	Approved unconditionally

Unless otherwise specified this ethical clearance is valid for 5 years and may be renewed upon application.

DATE 03/05/2010 **CHAIRPERSON** .....
(Professor PE Cleaton-Jones)

*Guidelines for written 'informed consent' attached where applicable
cc: Supervisor : Dr J Basu

DECLARATION OF INVESTIGATOR(S)

To be completed in duplicate and **ONE COPY** returned to the Secretary at Room 10004, 10th Floor, Senate House, University.
I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee. **I agree to a completion of a yearly progress report.**

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES...