EXTERNAL CEPHALIC VERSION FOR BREECH PRESENTATION AT TERM - MISSED OPPORTUNITIES?

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MMBGLAOO1

SUBMITTED TO THE UNIVERSITY OF CAPE TOWN,

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE

MMED IN OBSTETRICS AND GYNAECOLOGY

FACULTY OF HEALTH SCIENCES

UNIVERSITY OF CAPE TOWN.

DATE OF SUBMISSION: 21st January, 2014

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DECLARATION

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ACKNOWLEDGEMENTS

I would like to thank all colleagues in the department for all the help and support during the preparation of the dissertation, and would like to acknowledge the following:

PROF. SUSAN FAWCUS

MA, MB.BS, FRCOG

Head of Obstetrics: Mowbray Maternity Hospital, for supervising and guiding me throughout the duration of this project.

DR. DEON KENNEDY

MBChB, FCOG (SA)

Consultant Obstetrician and Gynaecologist: New Somerset Hospital, for co-supervising the research project.

HENRI CARRARA

Analytical epidemiologist/Biostatistician

Faculty of Health Sciences

University of Cape Town, for help with the statistical analysis.

DR. GREGORY PETRO

MBChB, FCOG (SA), CBAM (DMS)

Head of Obstetrics and Gynaecology: New Somerset Hospital, for helping with sample size calculation and devising the data collection sheet.

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LIST OF ABBREVIATIONS

ACOG	American College of Obstetricians and Gynaecologists
ANC	Antenatal clinic
CI	Confidence Interval
CS	Caesarean section
CSR	Caesarean Section Rate
CTG	Cardiotocograph
HIV	Human Immunodeficiency Virus
IQR	Interquartile range
MMH	Mowbray Maternity Hospital
MOU	Midwife Obstetric Units
NSH	New Somerset Hospital
OR	Odds ratio
PR	Prevalence ratio
RCOG	Royal College of Obstetricians and Gynaecologists
SD	Standard deviation
UCT	University of Cape Town
UK	United Kingdom
USS	Ultrasound scan
VS	Versus
WHO	World Health Organisation

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ABSTRACT

Background

External Cephalic Version (ECV) is the manipulation of the baby, through the mother's abdomen to a cephalic presentation. ECV is typically performed antenatally, in women with a breech presentation who are not in labour, at or near term, to improve their chances of having a normal vaginal delivery. ECV is one of the few obstetric interventions for which there is evidence that its use leads to a fall in caesarean section rates. ECV is an intervention that gives women another option, prior to considering caesarean section.

Objective: To evaluate whether there were missed opportunities for performing ECV in women that had caesarean sections for breech presentation at term, and to determine the reasons why ECV was not offered or attempted for women with breech presentation, who had a caesarean section for that reason.

Design: Retrospective observational study (Folder review)

Setting: Mowbray Maternity Hospital and New Somerset Hospital, Cape Town, South Africa.

Study Population: A total of 165 pregnant women, who had emergency and elective Caesarean sections for breech presentation at term.

Methods: Randomized computer selection of folders was used for sampling. Theatre records were reviewed retrospectively from July 2011 to July 2012. Data collection was completed after identification and retrieval of the folders of 165 subjects who satisfied the inclusion criteria. Statistical analysis done using STATA.

Main outcome measures: Proportion of women who were offered ECV, percentage of missed opportunities for ECV, reasons for not attempting ECV.

Results: A total of 7560 caesarean sections were performed. The proportion of caesarean sections that were done for breech presentation as the sole indication was 3.1%. Of the 165

folders analysed, 69 women (42%) and 96 women (58%) had emergency caesarean sections and elective caesarean deliveries respectively. Fifty two women (31.5%) had had ECV offered to them; and 113 (68.5%) women did not have any documentation of ECV being discussed or offered to them. Patients with absolute contraindications to ECV were excluded from this study, but those that were HIV positive were included. Twenty two women (13%) were HIV positive, hence had possible relative contraindications to ECV as per protocol at Mowbray and Somerset Hospitals. Out of the 165 women, 21 (12.7%) had ECV attempted. Of those, 19 (95.2%) failed and in one of them (2.4%), the procedure was abandoned due to pain, and in one other woman (2.4%), the fetus reverted to breech presentation , hence required CS. There was no ECV attempt in 144 (87.3%) women. Of these 144 women, 113 women (78%) had the ECV neither offered nor done. Fifty seven of the 113 (50.4%) did not have the ECV offered because they were in labour at the time of diagnosis of the breech presentation. The remaining 56 (49.6%) were not offered ECV antenatally, and there was no documentation in the case notes why ECV was not offered. Of the 144 women that did not have an ECV attempt, 31 women (22%) were offered ECV but did not have it done because 19 of them (61%) declined the procedure and opted for an elective caesarean delivery, and 12 (39%) were in labour before the ECV could be done. For 16 (84.2%) of the women, there was no reason indicated in the case notes as to why they declined the procedure. One declined because of pain, and 2 (10.5%) declined because they did not like the risks. In the whole group, women that had a detailed ultrasound assessment for were more likely to have an ECV offered to them than those that did not have the USS assessment (t-statistic = 2.125, p = 0.035). In the whole group, women who had antenatal visits at a level 2 health facility before their caesarean section were more likely than those from level 1 to have their breech presentation diagnosed in the antenatal period rather than in labour (t-statistic =3.83, p = 0.0001).

Conclusions: There were missed opportunities for external cephalic version at the two level 2 hospitals where the study took place. The reasons for these missed opportunities included missed diagnoses antenatally, clinicians not discussing or offering ECVs to eligible women, reluctancy to perform ECV due to the theoretical or unknown risk of mother to child HIV transmission, women going into labour before the day the ECV was planned to be done, women already being in labour when the diagnosis of breech was made for the first time, and women declining the procedure. We also found that there was inadequate ultrasound assessment of women for eligibility for ECV. There was inadequate documentation about whether ECV was offered, and why women who were eligible for ECV declined the procedure, leading to a wide gap in knowledge on why women decline ECV.

INTRODUCTION

Breech presentation complicates 3–4% of all term deliveries and a higher proportion of preterm deliveries. It is more common where there has been a previous breech presentation, in women with pre-term labour, low lying placenta / placenta praevia, congenital fetal abnormalities or uterine abnormalities in the mother. There is higher perinatal mortality and morbidity associated with vaginal breech delivery compared to vaginal cephalic deliveries, mainly due to prematurity, congenital malformations and birth asphyxia or trauma (1). Breech presentation, whatever the mode of delivery, is associated with increased risk of subsequent handicap. Caesarean section (CS) for breech presentation has been suggested as a way of reducing the associated perinatal problems and in many countries in Northern Europe and North America, and it has become the normal mode of delivery for women with a breech presentation (2). The incidence of caesarean section for breech presentation has increased markedly in the last 20 years (3) and further with the publication of the Term Breech Trial (4). This trial concluded that, at least for mortality and markers of intermediate term morbidity, elective caesarean section was safer for the fetus and of similar safety to the mother when compared with intention to deliver vaginally. The study authors in this trial therefore recommended a policy of offering caesarean section to women that present with a breech presentation. This means that measures to reduce the incidence of breech presentation have become more important and that the effect of any such measure on the incidence of caesarean section will be more marked.

External Cephalic Version at term is one of those measures that have been proven to reduce the incidence of breech presentation and subsequently reduce the caesarean section rates for breech presentation. External Cephalic Version (ECV) is the manipulation of the baby, through the mother's abdomen to a cephalic presentation. ECV is typically performed antenatally, in women who are not in labour, at or near term to improve their chances of

having a normal vaginal delivery. ECV is one of the few obstetric interventions for which there is evidence that its use leads caesarean section rates to fall (5). ECV is an intervention that gives women another option prior to considering caesarean section. It appears to be generally well tolerated, safe, non-invasive and relatively painless. Performing an external cephalic version will reduce the risks associated with vaginal breech delivery, as well as increase a woman's chance of having a normal cephalic vaginal delivery. This will also help reduce the rates of caesarean sections for breech presentation.

Preventing that one caesarean section, especially a woman's first one, will prevent the morbidity and sometimes mortality associated with caesarean sections. This morbidity and mortality referred to is not just for that first caesarean section, but for the subsequent pregnancy and delivery considering that clinicians would have a low threshold for a caesarean section in a woman with a scarred uterus. The uterine scar itself carries the risk of uterine rupture, ectopic pregnancy, placenta praevia, accreta and abruption. Surgery for the second time carries with it risks of adhesions, difficulty with accessing the uterus due to these adhesions, risk of increased blood loss, risk of blood transfusion, risk of blood transfusion reactions, risk of puerperal infection, hysterectomy, and venous thrombo-embolism. The woman is also at risk of anaesthetic complications. It is thus important for midwives, clinicians or obstetricians to have in-depth knowledge and an understanding of alternative methods that may help reduce the incidence of breech presentation at term and also to have the skills to perform ECV.

This is a retrospective observational study that aimed to evaluate whether there were missed opportunities for performing ECV in those women that had caesarean sections for breech presentation at term, and also aims at determining the reasons if any, why ECV was not performed for women with breech presentation who had a caesarean section for that reason.

LITERATURE REVIEW

OPINIONS AND RESEARCH EVIDENCE CONCERNING OPTIMAL MODE OF DELIVERY FOR TERM BREECH

The Term Breech Trial (4), a randomised trial to compare a policy of planned caesarean section with a policy of planned vaginal birth for selected breech-presentation pregnancies has led to changes in the way breech presentation at term is managed. The study found that out of 1041 women that were assigned planned caesarean section, 90.4% were delivered by caesarean section. Of the 1042 women planned for vaginal delivery, 56.7% delivered vaginally. Perinatal mortality, neonatal mortality, or serious neonatal morbidity were significantly lower for the planned caesarean section group than for the planned vaginal delivery group (17 of 1039 [1.6%] vs 52 of 1039 [5.0%]; relative risk 0.33 [95% CI 0.19—0.56]; p<0.0001). There were no differences between groups in terms of maternal mortality or serious maternal morbidity (41 of 1041 [3.9%] vs 33 of 1042 [3.2%]; 1.24 [0.79—1.95]; p=0.35). Reitberg et al (6) reported that a policy of routine planned caesarean section for women with breech presentation as a recommendation from the Term breech trial has been followed by improved neonatal outcomes. They also comment that the original publication of the trial led to an immediate change in both clinical practice and professional guidelines by both the Royal College of Obstetricians and Gynaecologists (RCOG), and the American College of Obstetricians and Gynaecologists (ACOG).

A Cochrane review (7) of planned CS versus planned vaginal delivery for breech presentation at term, reported that even though 45% of women in the planned vaginal delivery group were delivered by CS, planned CS was associated with an increase in maternal morbidity (RR1.29, 95% CI 1.03-1.61).

ROLE OF ECV AND EVIDENCE SUPPORTING IT

A review of strategies to reduce CS rates identified ECV as the only clinical intervention with demonstrated Level 1 evidence for reducing primary CS rates overall (5).

A systematic review of five randomized trials of ECV at term illustrated the effectiveness of ECV for decreasing the proportion of women with breech presentation at the onset of labour and decreasing the frequency of Caesarean delivery. Compared with women with breech presentation who had no attempt at ECV, women who attempted ECV had a significant reduction in both non-cephalic births (relative risk [RR] 0.38, 95% confidence interval [CI] 0.18-0.80) and caesarean delivery (RR 0.55, 95% CI 0.33-0.91)(8). Although ECV decreased the frequency of caesarean delivery compared with no ECV, studies have shown that the caesarean delivery rate after successful ECV remains higher than in the general obstetrical population.

The success rates of ECV vary from 30% to 80% in different studies (8-10). Several factors affect the success rate. These include race, parity, gestational age, placental position, uterine tone, liquor volume, engagement of the breech, fetal size, whether the head is palpable, and the use of tocolytic agents. Published individual success rates may vary because of case selection as well as these factors. The highest success rates are seen with multiparous, non-white women with a relaxed uterus, where the breech is not engaged and the head is easily palpable. Success rates are said to be also higher with higher liquor volume, although very high liquor volume may increase the rates of spontaneous reversion. An overall success rate of 40% for nulliparous, and 60% for multiparous women can usually be achieved (11).

TIMING OF ECV

With regards to the timing of ECV, a Cochrane review reported that ECV at term (≥37 weeks) decreases both the likelihood that the fetus will be in a breech presentation at birth and the need for caesarean section; and concluded that ECV should be recommended for all women with a breech fetus at term when there is no contraindication (12-14). Another study investigated whether initiating external cephalic version (ECV) earlier in pregnancy might increase the rate of successful ECV procedures, and be more effective in decreasing the rate of breech presentation at birth and of caesarean section. Participants were randomly assigned to having a first ECV procedure between the gestational ages of 34+0/7 and 35+6/7 weeks of gestation (early ECV group) or at or after 37+0/7 weeks of gestation (delayed ECV group). Fewer fetuses were in a breech presentation at birth in the early ECV group (41.1%) versus 49.1% in the delayed ECV group; relative risk [RR] 0.84, 95% CI 0.75, 0.94, P = 0.002). The authors concluded that ECV at 34–35 weeks versus 37 or more weeks of gestation increases the likelihood of cephalic presentation at birth but does not reduce the rate of caesarean section and may increase the rate of preterm birth (15).

CONTRAINDICATIONS TO AND COMPLICATIONS ASSOCIATED WITH ECV

ECV is contraindicated where the following conditions are present: placental abruption, fetal heart rate abnormalities, fetal anomalies, rupture of membranes, uterine anomalies, placenta praevia, severe oligohydramnios and polyhydramnios. Although there are no studies of the risk of mother-to-child transmission of HIV from ECV, indirect evidence suggests that any increased risk is likely to be very small (16).

A systematic review of studies of ECV performed after 36 weeks (84 studies and 12,955 women) concluded that serious adverse maternal and fetal outcomes after ECV were infrequent. These complications included: transient fetal heart rate changes 4.7%,

fetomaternal transfusion 0.9%, emergency caesarean delivery 0.4%, vaginal bleeding 0.3%, prelabour rupture of membranes 0.2%, fetal death 0.2%, placental abruption 0.2%, and cord prolapse 0.2%. The overall risk of complications was 6.1% (17). Because of these rare but possible complications, it is recommended that ECVs should be performed where ultrasound, cardiotocography and quick access to theatre facilities are available in case urgent delivery is necessary.

INCREASING CAESAREAN SECTION RATES FOR BREECH PRESENTATION

The C-section rate is increasing in many countries across the globe beyond the acceptable level of between 10%-15% as recommended by the World Health Organisation (WHO) (18). According to the District Health Information System of South Africa of 2010, the national average C-section rate in South Africa was 22.5% and varied from 14.7% to a high of 24.6%, the lowest rates being in Limpopo province, and the highest in the Western Cape (19). International concern over such increases have prompted the World Health Organisation to suggest that caesarean section rates should not exceed 15% (18), with some evidence indicating caesarean section rates above 15% are not associated with additional reduction in maternal and neonatal mortality or morbidity (20). The decision to perform a primary CS has important implications for maternal morbidity in the current pregnancy and mode of delivery and maternal morbidity in subsequent pregnancies (21-23). The high caesarean delivery rate for breech presentation therefore makes ECV an important obstetric intervention.

STUDIES ON UTILIZATION OF ECV IN OTHER SETTINGS.

In the Netherlands, the number of women that were potentially suitable for ECV who were not offered an attempt ranged from 4% to 33% (24-25). Yogev and colleagues performed a study in Israel. They reported that in 1995, more than half the women (52.7%) had heard of ECV and 53.8% were willing to consider it, whereas in 2001, 73.2% had heard of it but only

23.9% were willing to consider it (26). Johanson reported that out of a group of 323 pregnant women with a fetus in breech presentation, 65% opted for external cephalic version after they were informed (27). They also demonstrated an association between the gynaecologists who provided information and the level of uptake by the women i.e the more senior and experienced the gynaecologist was, the more uptake of ECV there was.

The results of a patient attitude survey of term breech deliveries at a university teaching hospital in the UK showed that half of respondents were not offered ECV and that two-thirds of these women were not eligible for ECV, either having had a previous caesarean or breech presentation diagnosed in labour. One-third of women, potentially suitable for ECV, were not made aware of their options. The majority are offered elective caesarean section with a small minority (10%) opting for planned vaginal breech delivery (28).

An Australian study of decision making for Caesarean Section conducted in 1996 included 62 women with a breech presentation. Of these, 39 women were offered ECV and 12 (31%) "decided against it". Further, 37 women were offered vaginal breech birth but 14 (38%) women chose Caesaren Section (29).

A study by Vlemmix et.al found that ECV is cost-effective when compared to a scheduled caesarean for breech presentation. As the additional costs of a caesarean section as compared to vaginal delivery are estimated to be 1.500 Euros, the potential saving of improved implementation of ECV could reduce costs by 2 to 3 million Euros per year for direct medical costs only. (30)

THE RATIONALE FOR THE STUDY

Although an elective caesarean section is safer for the baby compared to a vaginal breech delivery, it increases maternal morbidity. Moreover, the uterine scar carries a risk for future pregnancies (31). External cephalic version (ECV) reduces the rate of non-cephalic presentations at term by 40-50%, and thus the number of caesarean deliveries performed for at term breech presentation, without any increased risk to the baby (31). The high caesarean delivery rate for breech presentation makes ECV an important obstetric intervention and it is therefore recommended by the Royal College of Obstetricians and Gynaecologists in the Clinical Green Top Guidelines. The Royal College of Obstetricians and Gynaecologists recommends that a skilled service for ECV should be available and offered to women with breech presentation at term. In addition, the utilisation of ECV is one of the auditable standards recommended by the Royal College of Obstetricians & Gynaecologists (32). Likewise, the American College of Obstetricians and Gynaecologists (ACOG) recommends that all women near term with breech presentation should be offered an attempt at version (33).

There has not been an audit to determine how well ECV is being utilized as a measure to reduce the rates of caesarean sections in our setting. While safer than vaginal breech birth, planned CS is not without risk. Complications of a prior caesarean section delivery include increased risk of pulmonary embolism, infection, bleeding, damage to bladder and bowel, slower recovery from the birth, longer hospitalization, respiratory difficulties for the baby, delayed bonding and breastfeeding and compromise of future obstetric performance (34).Therefore, the best way to avoid the increased risks associated with term breech presentation is to avoid it altogether, and this is possible via external cephalic version, which helps to reduce the cost of caesarean sections as ECV has been reported to be cost-effective in studies from the United States and United Kingdom, where estimated baseline cost for ECV equalled $1,024, and that of CS equalled $8023. This estimated cost of ECV included costs of

fetal heart rate monitoring, ultrasound scanning, blood tests, tocolysis, intravenous kits, obstetrician's and nurse's professional services and the mothers' time (35).

There are a number of reasons why women having a caesarean section for breech presentation at term may have missed an opportunity to have ECV performed. These reasons may be that the diagnosis of breech presentation was missed antenatally, the service provider did not offer the ECV, the woman had contraindications, the woman declined to have ECV and opted for a caesarean section, or that the woman was not aware of such an intervention and that there was lack of adequate information on the problem and management options i.e. decision aids.

There has not been a study in our setting to look at how well ECV is utilized as an intervention to reduce the numbers of CS done for breech presentation or reasons why ECV may not be offered or attempted at Mowbray and Somerset hospitals and hence a case could be made for suggestions to offer the service more, if the reasons are those that can be addressed. This would help reduce the rates of caesarean section for breech as well as morbidity and mortality associated with caesarean sections.

OBJECTIVES

MAIN OBJECTIVE:

To evaluate whether there were missed opportunities for performing ECV in those women that had caesarean sections for breech presentation at term.

SPECIFIC OBJECTIVES

- To identify women who have an elective or emergency caesarean section at term for breech presentation as the sole indication at Mowbray Maternity Hospital and at Somerset Hospital; and estimate what proportion of total caesarean sections are done for this indication.
- To determine the proportion of women having an elective or emergency caesarean section for breech presentation at term that had been offered ECV and / or had had ECV attempted at Mowbray and Somerset Hospitals.
- To determine the proportion of women having CS for term breech presentation, for whom ECV was attempted but was not successful
- To determine the proportion of women having CS for term breech presentation, for whom ECV was not offered or attempted.
- To explore the reasons for ECV not having been offered or attempted in eligible women with breech presentation who had a caesarean section for that reason.

METHODS

Study Design

This was a retrospective observational study, where folders of patients from Mowbray Maternity Hospital (MMH) and New Somerset Hospital (NSH) that had an elective or emergency caesarean section for breech presentation at term were reviewed. The study included all women who had had a CS for breech presentation at term, over a one year period, between July 2011 and July 2012.

Study Setting

Mowbray Maternity Hospital is a secondary level referral hospital for three primary level care Midwife Obstetric Units (MOUs), and also offers maternity services for women living within the catchment area. On average, it has a total of around 10 000 deliveries per annum. The policy of ECV at Mowbray Maternity Hospital is that any woman with a breech presentation at or near term (from 36 weeks of gestation) without any contraindications to ECV should be offered an ECV. The mode of delivery for a woman with a breech presentation in labour is an emergency caesarean section. For those women who decline ECV or have contraindications to ECV, the mode of delivery is an elective caesarean section between 38 to 39 weeks gestation. At MMH, there is a dedicated breech clinic on Thursdays and an experienced Principal Medical Officer to do them and train others.

New Somerset Hospital is also a secondary level referral hospital and on average performs about 7000 deliveries per annum. The policy of ECV at Somerset it that any woman with a breech presentation at or near term (from 36 weeks of gestation) without any contraindications to ECV should be offered an ECV. The mode of delivery for a woman with a breech presentation in labour is an emergency caesarean section. For those women who decline ECV or have contraindications to ECV, the mode of delivery is an elective caesarean section between 38 to 39 weeks gestation.

Study population: Pregnant women who had emergency or elective Caesarean Sections for breech presentation at term, at Mowbray Maternity and Somerset Hospitals

Inclusion criteria: All women having emergency and elective Caesarean sections at term for breech presentation as the sole indication.

Exclusion criteria:

- Those that were preterm (less than 37 completed weeks) at the time of the caesarean section.
- Those where there was a term breech presentation but the CS was done for another reason such as eclampsia, placenta praevia, abnormal CTG
- Those with contraindications to ECV e.g breech presentation with a prior caesarean section, twin pregnancies, rupture of membranes or oligohydramnios.

SAMPLE SIZE

Randomized computer selection of folders was used for sampling. This was done to prevent selection bias. A total of 165 folders were reviewed. The rationale for this sample size was that this is an Observational Study with no control group required. New Somerset Hospital has an average of 280 Caesarean sections per month, 4.4% of which are for breech presentation. Mowbray Maternity Hospital has an average of 350 Caesarean sections per month, 5.4% of which are for breech presentation. Therefore 32 caesarean sections for breech per month are done between the two hospitals; i.e. 384 per annum.

This sample size was calculated with the assumption that the hypothesised percentage frequency of the outcome i.e. missed opportunities for ECV is around 25% as quoted from literature. This would give a 95% power at the 5% confidence level.

DATA COLLECTION AND ANALYSIS

Theatre records were reviewed retrospectively from July 2011 to July 2012. A total of 384 women who were documented in the theatre registers, to have had a CS for breech presentation were identified. The folders were reviewed and 150 folders were excluded as they did not meet the inclusion criteria. 234 folders of women who met the inclusion criteria were entered into a computer program (Research Randomizer) for random sampling. The data collection was completed after random selection and retrieval of the folders of 165 subjects who satisfied the inclusion criteria. The following information was collected: demographic characteristics, where the diagnosis of breech presentation was made i.e. primary level or secondary level care, whether the diagnosis of breech presentation was made intrapartum or antenatally, number of missed diagnoses, whether there was documentation of the woman having been offered ECV, whether the ECV was performed, reasons for not offering / performing the ECV, womens' reasons for declining ECV, HIV status and Rhesus blood group, and wether or not they had a detailed USS

Raw data was collected onto a data collection sheet (see appendix A) and entered onto Microsoft Excel. The data was analysed using STATA Statistical Package.

ETHICAL CONSIDERATIONS

Ethical approval was sought first, and approval granted from the Human Research Ethics Committee before commencing the study (HREC: 462 / 2012). Strict confidentiality was practised as no maternal direct identifiers like names and contact details were entered in the data sheet and maternal folders were not taken out of the maternity units. Transfer of participants' information from folders was only done by the study investigator. After the final report the study database will be kept in the University of Cape Town department of Obstetrics and gynaecology database. (See appendix A and B for the data collection sheet

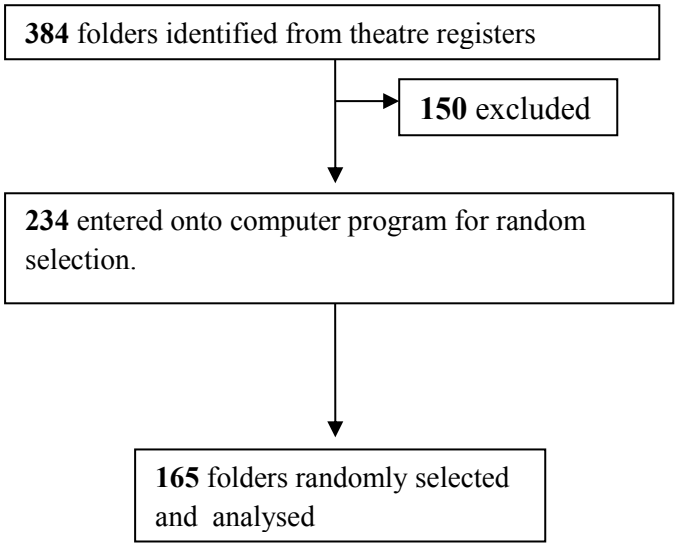
and ethical approval letter). Since all data was collected by retrospective folder review; there was no need for individual patient consent.

RESULTS

A total of 7560 caesarean sections were performed in the two hospitals during the study period. Of these, 384 were identified in the theatre register to have been done for breech presentation. Of the 7560 caesarean sections, 3360 (44.4%) were done at NSH and 4200 (55.6%) were done at MMH. Of the 384 folders of women who were documented to have had a CS for breech presentation 150 did not meet the inclusion criteria and were excluded. 234 women met the inclusion criteria giving a CSR for breech presentation as the sole indication of 3.1%

A computer program (Research Randomizer) was then used to randomly select the 165 folders required for the sample size, from the 234 folders (Figure 1).

FIGURE 1 - FLOW CHART FOR PROCESS OF DATA COLLECTION



A total of 165 folders of women were analysed. Of these, 94 folders were from MMH and 71 folders were from NSH.

The demographics of the study population are summarized in Table 1. The mean age was 26.8 years ± 6.1SD. Seventy two (43.6%) of the women were nulliparous and 51 (30.9%) were primiparous; with a median parity of one. Sixty-two women (37.6%) were primigravid, with a median gravidity of 2. The median number of antenatal visits was 4, with an interquartile

range of 4-7. The mean gestational age at delivery was 38 weeks (±1.1) and the median gestational age at booking was 21 weeks.

148 (90%) of the women were Rhesus blood group Positive, 12(7%) were negative, and 5 (3%) of the women did not have a Rhesus blood group recorded. The prevalence of a negative Rhesus blood group amongst those whose blood group was known was 6.8%

Prevalence of HIV amongst the study population was 13%. There were 5 women (3%) whose HIV status was unknown.

TABLE 1 – DEMOGRAPHIC CHARACTERISTICS OF THE STUDY POPULATION

STUDY SAMPLE n = 165

AGE(years) Mean (SD)	26.8 (6.1)
PARITY n (%),	Median=1 IQR =0-2
0	72 (43.6)
1	51 (30.9)
2	25 (15.1)
>2	15 (10.2)
GRAVIDITY n (%)	Median=2 IQR =1-3
1	62 (37.6)
2	45 (27.3)
3	33 (20)
>3	25 (15.1)
BOOKING GESTATION (weeks) Median (IQR)	21 (16-27)
No. ANC VISITS Median (IQR)	6 (4-7)
HIV STATUS n (%)	
Positive	21 (13)
Negative	142 (86)
Unknown	2 (1)
RHESUS BLOOD GROUP	
Positive	148 (90)
Negative	12 (7)
Unknown	5 (3)
GESTATIONAL AGE AT DELIVERY (weeks)Mean(SD)	38 (1.1)

TIMING OF CAESAREAN SECTION

Figure 2 summarizes the timing of caesarean sections that were done for breech presentation. Out of the 165 women that had caesarean section for breech presentation, 69 (42%) had an emergency caesarean section and 96 (58%) had an elective caesarean delivery. Of the 69 women that had emergency CS, 57 (83%) of them had not had ECV offered to them because the breech was diagnosed for the first time in labour, and 12 (17 %) had been offered ECV but presented in labour before the ECV was scheduled to be done. We did not separate or specify what proportion of those who were in labour, were in latent or active labour however.

FIGURE 2 – TIMING OF CAESAREAN SECTIONS

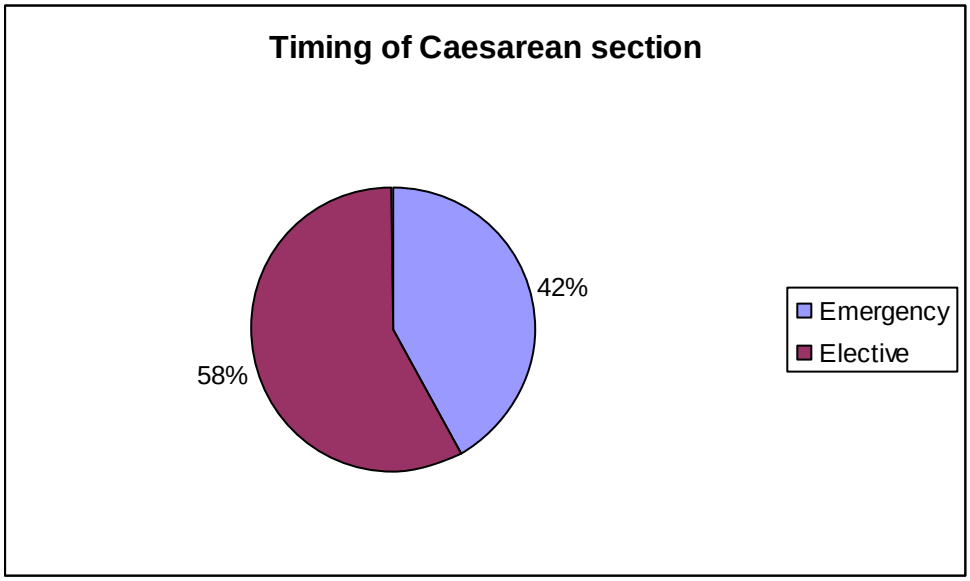


Table 2 summarizes the timing of the 165 caesarean sections, and provides a breakdown of the proportions from the two hospitals. NSH and MMH had a total of 71 and 94 CSs for breech, representing 43% and 57% of the 165 women respectively. There were 36 (38%) and 33 (46%) emergency CSs at MMH and NSH respectively. With regards to elective CSs, there were 58 (62%) and 38 (54%) at MMH and NSH respectively.

TABLE 2- SUMMARY OF TIMING FOR CAESAREAN SECTIONS

	MMH n (%)	NSH n (%)	TOTAL n (%)
Emergency CS	**36 (38)**	**33 (46)**	**69**
Elective CS	**58 (62)**	**38 (54)**	**96**
TOTAL CS	**94 (100)**	**71 (100)**	**165**

PROPORTION OF WOMEN THAT HAD ECV OFFERED

Figure 3 illustrates that for 52 women (31.5%) there was documentation in the case notes that ECV was discussed and offered but for 113 (68.5%) women there was no documentation that it was discussed or offered.

FIGURE 3 – PROPORTION OF WOMEN THAT HAD ECV OFFERED

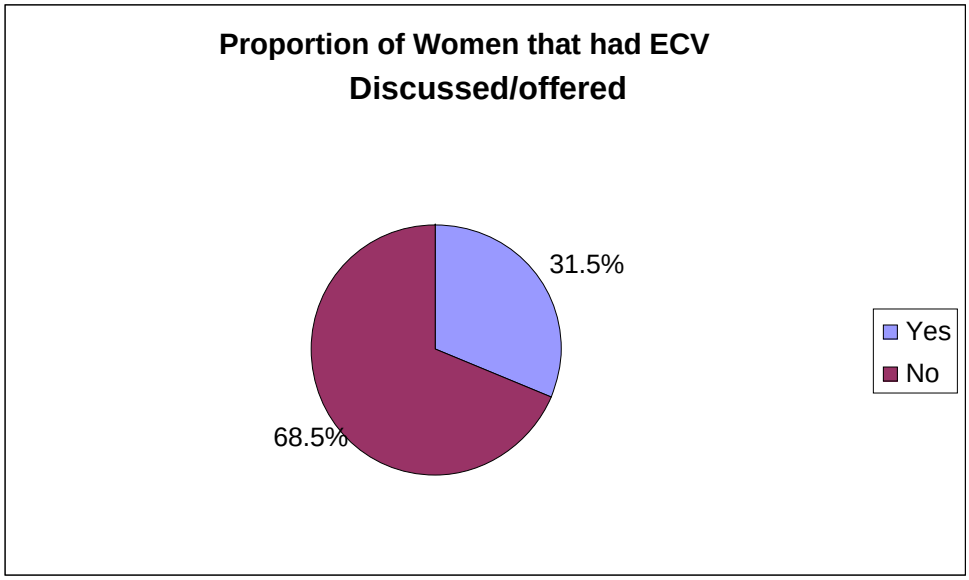
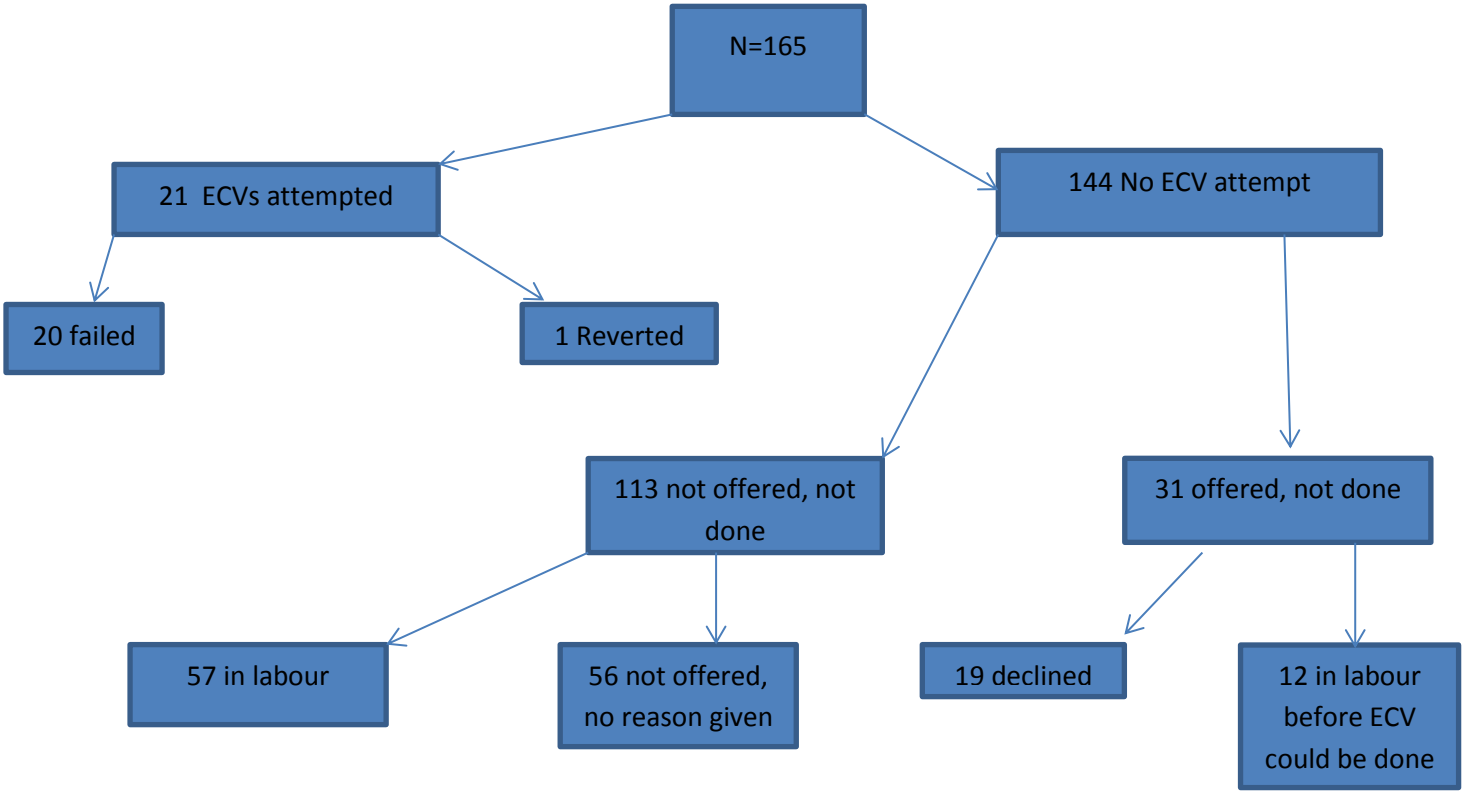


Figure 4 is a flow chart that summarizes information for the 165 women in terms of proportions that did and did not have ECV offered and or attempted.

FIGURE 4 – SUMMARY OF ECV OFFERED, NOT OFFERED, ATTEMPTED AND NOT ATTEMPTED.



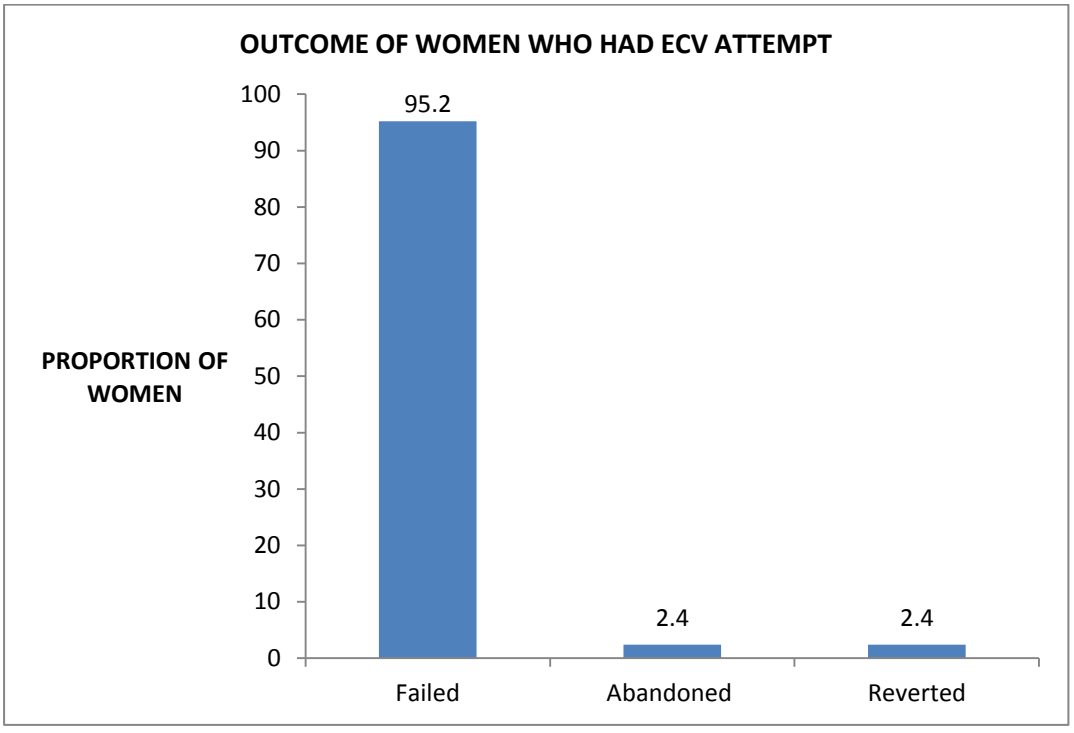
Out of the 165 women, 21 (12.7%) had ECV attempted. Of the 21 women, 19 (95.2%) failed and in one of them (2.4%), the procedure was abandoned due to pain, and in another woman (2.4%), the fetus reverted to breech presentation, hence had an elective CS. There was no ECV attempt in 144 (87.3%) women. Of these 144 women, 113 women (78%) had the ECV neither offered nor done. Fifty seven of the 113 (50.4%) did not have the ECV offered because they were in labour at the time of diagnosis of the breech presentation, and 56 (50.6%) were not offered ECV antenatally and there was no documentation in the case notes why ECV was not offered. Of the 144 women that did not have an ECV attempt, 31 women (22%) were offered ECV but did not have it done because 19 of them (61%) declined the procedure and opted for an elective caesarean delivery, and 12 (39%) were in labour before the ECV could be done. For 16 (84.2%) of the women who declined ECV, there was no

reason indicated as to why they declined the procedure. One declined because of pain, and 2 (10.5%) declined because they did not like the risks.

OUTCOMES OF WOMEN IN WHOM ECV WAS ATTEMPTED

Out of the 165 women, 21 (12.7%) had ECV attempted. Of those, 19 (95.2%) failed and in one of them (2.4%), the procedure was abandoned due to pain, and in one another woman (2.4%), the fetus reverted to breech presentation, hence had a CS. This is illustrated in figure 5.Nineteen women from the 21 women were from MMH and 2 were from NSH. The two women from NSH, included the one for whom the procedure was abandoned due to pain and one for whom the procedure failed.

FIGURE 5 - OUTCOMES OF WOMEN IN WHOM ECV WAS ATTEMPTED (N=21)

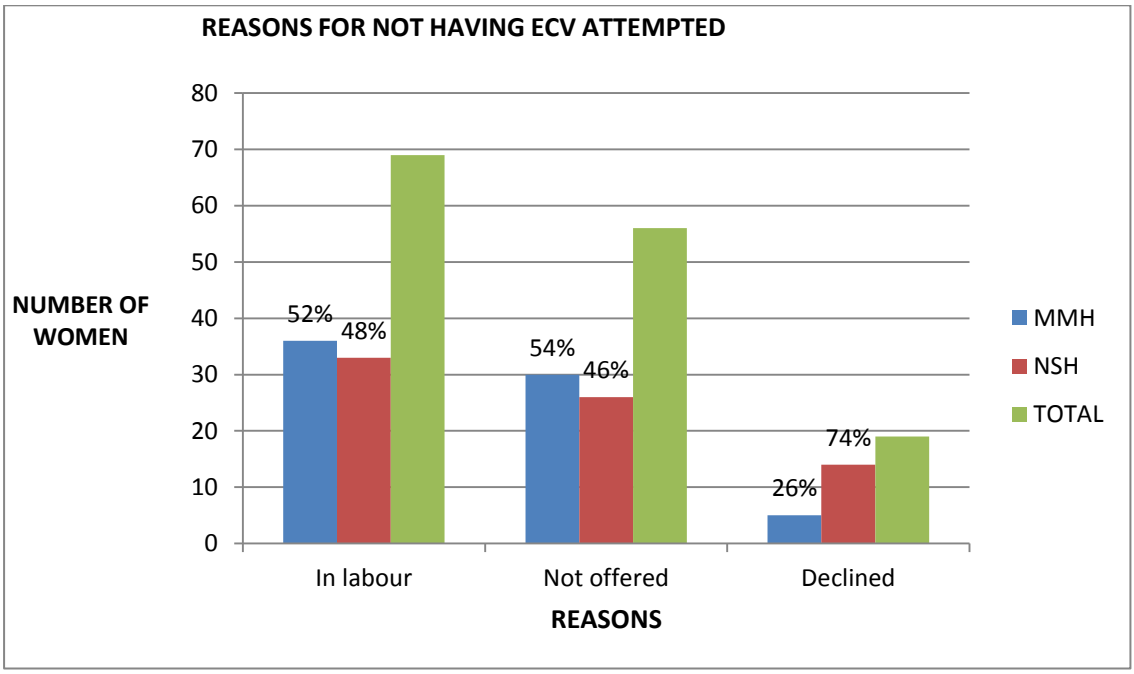


REASONS FOR NOT HAVING ECV ATTEMPTED

There were a total of 144 women who did not have an ECV attempt (see figure 4). This included 69(48%) women who presented in labour, none of whom had an ECV attempted. We did not however specifically separate them into those who were in active labour and those who were in latent labour. These 69 women included 12 who were actually offered ECV antenatally but went into labour before the day the ECV was scheduled to be done; and 57 for whom the diagnosis of breech was first made in labour

Fifty six women (38.9% of those who had no ECV attempt) were not offered ECV antenatally and there were no documented reasons for this in the case notes. There were 19 women who had declined ECV after it had been offered. Figure 6 illustrates this.

FIGURE 6– REASONS FOR NOT HAVING ECV ATTEMPTED (N= 144)



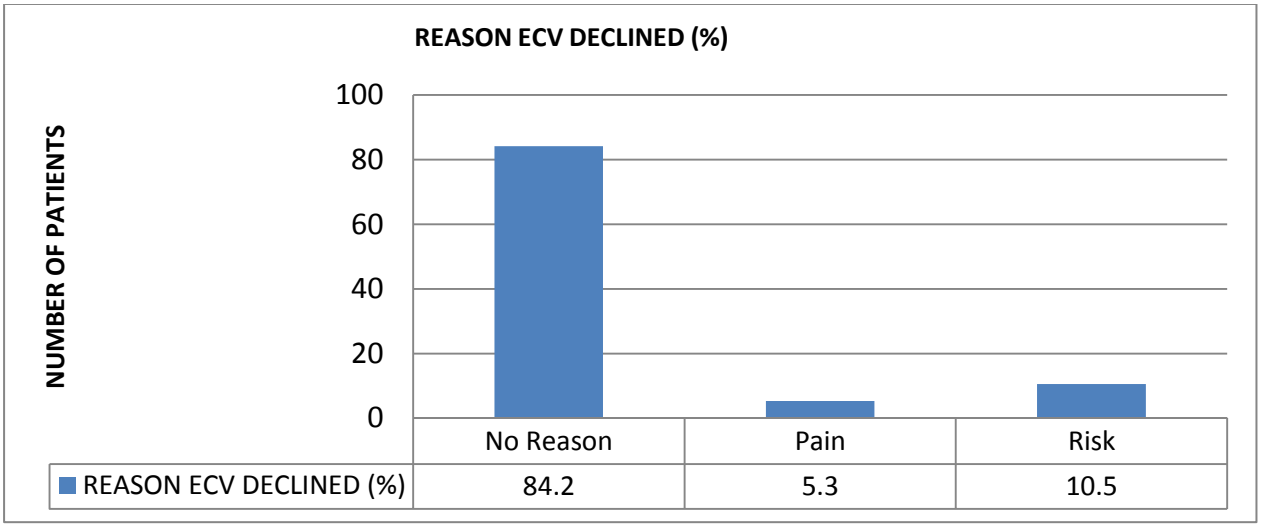
When comparing the two hospitals, similar proportions presented in labour with breech presentation and similar proportions were not offered ECV antenatally. However a greater

proportion of women at NSH declined the procedure, meaning that fewer ECVs were attempted at this facility. None of the 22 women (13%) who were HIV positive had ECV either attempted or offered.

REASONS FOR DECLINING ECV

Figure 7 summarizes the reasons why the women declined ECV. Nineteen women (11.5%) who were offered ECV declined the procedure and opted for an elective caesarean delivery. For 16 (84.2%) of the women, there was no reason indicated as to why they declined the procedure. One of the women declined because of pain, and 2 (10.5%) of the women declined because they did not like the risks associated with the procedure.

FIGURE 7 – REASONS FOR DECLINING ECV (N= 19)



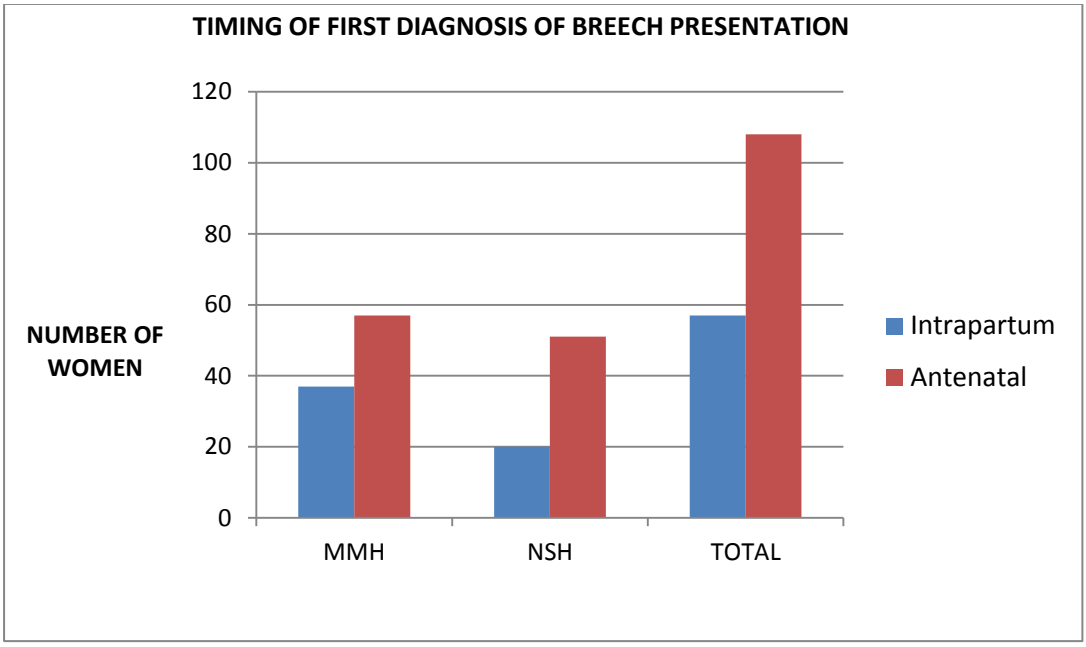
TIMING OF THE DIAGNOSIS OF BREECH PRESENTATION.

Since a large number of subjects had the CS done for breech in labour it is useful to establish when the initial diagnosis of breech was made for the women in the study group. It was found that, for 57 women (34.5%) women, the diagnosis of breech presentation was made in labour

for the first time; whilst for 108 (65.5%) of the women the diagnosis was made antenatally. These 108 women included the 12 women in whom the diagnosis of breech presentation had been made antenatally but had gone into labour before the ECV could be done.

For the 96 women who had elective CS, the diagnosis of breech presentation had been made antenatally. The 69 women who had emergency CS included the 12 women who had the breech diagnosed antenatally and offered ECV but arrived in labour; and the 57 women for whom the breech was diagnosed for the first time in labour. At MMH, 37 women (39%) had the diagnosis of breech presentation made for the first time in labour and 57 women (61%) had the diagnosis made antenatally. At NSH, 20 women (28%) had the diagnosis of breech presentation made for the first time in labour and 51 women (72%) had the diagnosis made antenatally. Figure 8 below illustrates these findings.

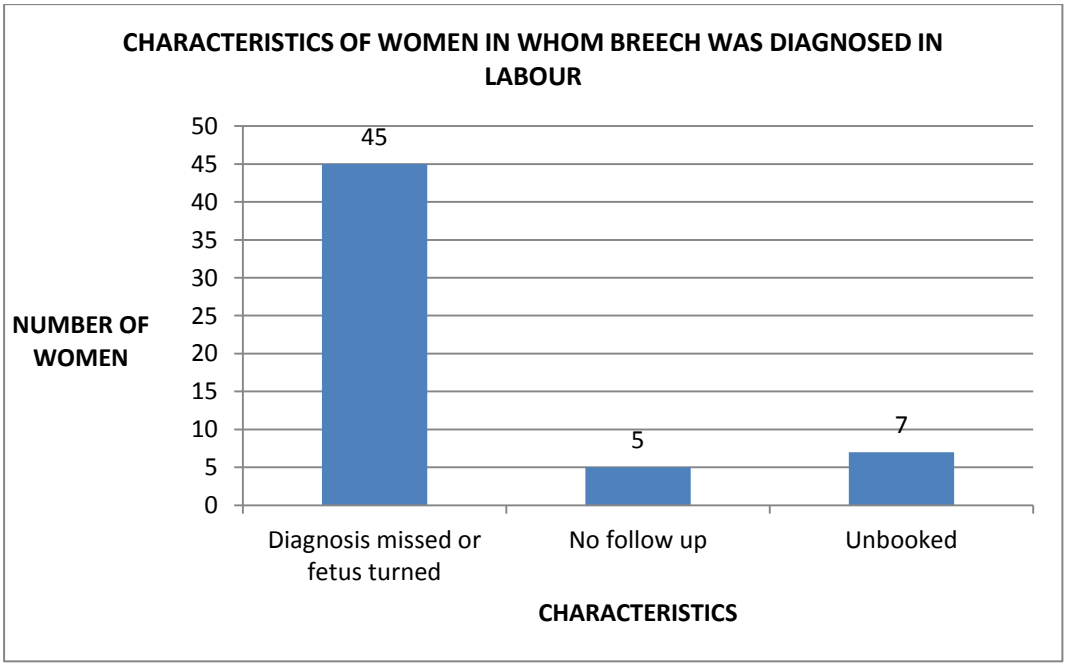
FIGURE 8 – TIMING OF FIRST DIAGNOSIS OF BREECH PRESENTATION



CHARACTERISTICS OF WOMEN IN WHOM DIAGNOSIS OF BREECH WAS MADE INTRAPARTUM

Among the 57 patients in whom the diagnosis of breech presentation was made for the first time in labour, a large majority of the patients, 45 (79%) did not have a diagnosis of breech presentation made at their last antenatal visit, meaning that the breech presentation was missed or the fetus had turned since that visit. Five (9%) did not follow up at antenatal clinic as planned, but the fetal presentation had been documented as cephalic at their last visit. 7(12%) were unbooked at the time of admission in labour (Figure 9).

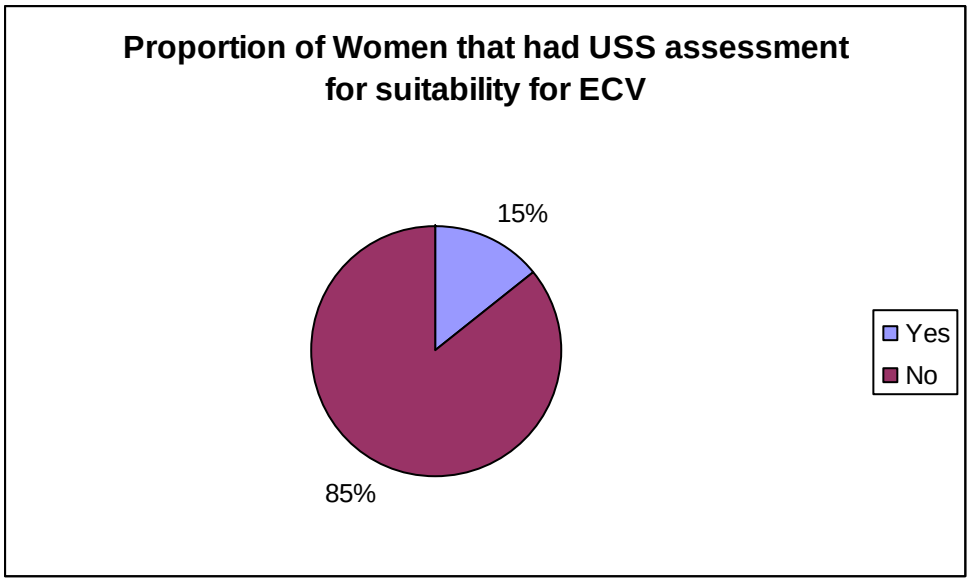
FIGURE 9 - SUMMARY OF CHARACTERISTICS OF WOMEN IN WHOM DIAGNOSIS OF BREECH WAS FIRST MADE INTRAPARTUM



PROPORTION OF WOMEN WHO HAD DETAILED ULTRASOUND ASSESSMENT FOR SUITABILITY FOR ECV.

25 (15%) women had a detailed ultrasound (USS) assessment for suitability for ECV as well as a scan to diagnose the breech presentation, compared to 140 (85%) who did not have this detailed USS assessment i.e. women had a scan to diagnose the presentation but not a detailed one to assess suitability for ECV in terms of liquor volume, placental location, presence of fetal or uterine anomalies and fetal size. The 25 women who had a detailed USS assessment were among the 52 women who were offered ECV, and 21 women from the 25 that had a detailed USS had an ECV attempted. The remaining 27 had a documented USS to confirm presentation and assess liquor volume but did not have a detailed USS (or detailed USS findings were missing in their case notes), (Figure 10).

FIGURE 10 - PROPORTION OF WOMEN WHO HAD ULTRASOUND ASSESSMENT FOR SUITABILITY FOR ECV

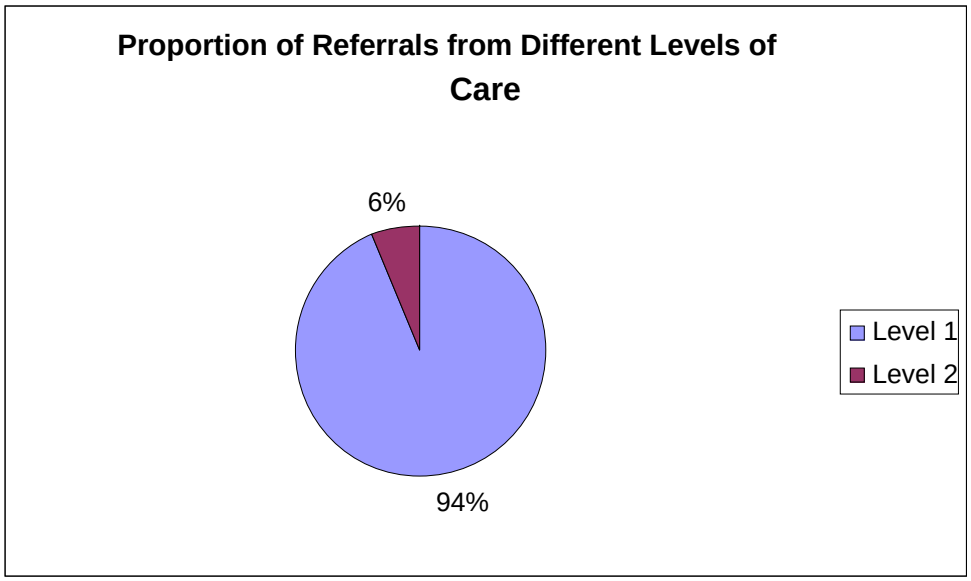


PROPORTION OF REFERRALS FROM THE DIFFERENT LEVELS OF CARE

Figure 11 shows the proportion of patients from the two levels of care in the study. 155 (94%) of women booked at the MOUs (level 1 health facilities) initially and were later referred to

either MMH or NSH (level 2 health facilities), and 10 (6%) booked at and had their antenatal care at either MMH OR NSH i.e. a level 2 health facility.

FIGURE 11- PROPORTION OF REFERRALS FROM THE DIFFERENT LEVELS OF CARE



SUB-GROUP ANALYSIS

TABLE 3 – SUB-GROUP ANALYSES

		ECV ATTEMPTED		ECV NOT ATTEMPTED			
variable		n	%	n	%	t-test	p-value
DIAGNOSIS OF BREECH	Antenatal	21	22	75	78	9.492	0
	Intrapartum	0	0	69	100		
DETAILED USS	No	140	100	0	0	2.1246	0.0351
	Yes	21	84	4	16		
LEVEL OF CARE	1	6	5.6	100	94	1.913	0.0575
	2	15	26	43	74		

Women in whom the diagnosis of breech presentation was made in the antenatal period were more likely to have had an ECV attempted than those in whom the diagnosis was made intrapartum / in labour (t-statistic =9.49, p = 0)

Women who had a detailed USS assessment were more likely than those that did not have a detailed USS to have had ECV attempted (t-statistic =2.12, p = 0.0351)

There was no statistically significant difference between patients who booked at and had their antenatal care at level 1 health facilities; compared with those from level 2 health facilities with regards to the likelihood that ECV was attempted (t-statistic =1.91, p = 0.0575).

ASSOCIATION BETWEEN LEVEL OF HEALTH FACILITY AND TIMING OF DIAGNOSIS OF BREECH PRESENTATION.

In the whole group of women that had emergency CS, women that came from a level 2 health facility at the time of caesarean section were more likely than those from level 1 to have their breech presentation diagnosed in the antenatal period rather than for the first time in labour (t-statistic =3.83, p = 0.0001), (Table 4). However, there was no statistically significant difference between patients from level 1 health facilities and level 2 facilities in the proportion of patients in whom a diagnosis of breech was missed at the antenatal visit preceding their intrapartum diagnosis of breech presentation. (Pearson Chi^2 2.99, pr=0.08), (Table 5).

TABLE 4 – ASSOCIATION BETWEEN LEVEL OF HEALTH FACILITY AND TIMING OF DIAGNOSIS OF BREECH PRESENTATION, p = 0.05.

	TIMING OF DIAGNOSIS		
	Intrapartum	Antenatal	**TOTAL**
LEVEL OF CARE			
1	48	58	106
2	9	50	59
TOTAL	57	108	165
t-statistic		3.83	
p		0.0001	

TABLE 5 – ASSOCIATION BETWEEN LEVEL OF HEALTH FACILITY AND BREECH PRESENTATION BEING MISSED, p = 0.05.

LEVEL OF CARE	**NUMBER MISSED**
1	36
2	9
Pearson Chi2 (1)	2.99
Pr	0.08

DISCUSSION

Our study found that, amongst the study population that was potentially eligible for ECV, ECV was not offered or done in 68.5% of women, indicating a missed opportunity for ECV. The prevalence of HIV in our study was 13%. As per protocol at both MMH and NSH, none of the women who were HIV positive were offered ECV or had it attempted. In only 31.5% of the women that had caesarean section for breech presentation at term, had ECV been discussed or offered to them. A study in Auckland estimated that 26% of women with term breech presentation had an ECV attempt, with 74% missed opportunities (36). The findings of this study correlate with the findings of our study, and confirm that there is limited use of ECV in our setting.

Similarly the results of a patient attitude survey of term breech deliveries at a university teaching hospital in the UK showed that half of respondents were not offered ECV and that two-thirds of these women were not eligible for ECV, either having had a previous caesarean or breech presentation diagnosed in labour. One-third of women, potentially suitable for ECV, were not made aware of their options. The majority were offered elective caesarean section with a small minority (10%) opting for planned vaginal breech delivery (28). In the Netherlands, the number of women that were potentially suitable for ECV who were not offered an attempt ranged from 4% to 33% (24-25).

Johanson reported that out of a group of 323 pregnant women with a fetus in breech presentation, 65% opted for external cephalic version after they were informed (27). They also demonstrated an association between the gynaecologists who provided information and the level of uptake by the women i.e. the more senior or more experienced the attending gynaecologist was, the higher the level of uptake of ECV.

It is possible that in our study, clinicians did discuss or offer some of these women ECV but without adequate documentation, one cannot make an assumption. It may also be that the

missed opportunities are so high because some of the registrars may not feel confident and competent enough to attempt the ECV due to lack of experience or lack of training and / or supervision from consultants. In addition, not all senior clinicians may be interested in doing the procedure, and some may still lack the experience to do so. Because of the reasons mentioned above, there may be a void as to who will teach the juniors. MMH has a dedicated breech clinic where an experienced medical officer performs ECVs. However the ECVs are done whilst registrars are assigned to perform other duties either in labour ward, theatre or antenatal clinics, hence miss an opportunity to be taught or practice the skill of ECVs.

A study carried out at Mowbray Maternity Hospital, which is one of the hospitals at which our study was carried out showed that the caesarean section rate for this hospital and its catchment area was 20.7%. Using Robson's classification system for caesarean sections, it found a combined caesarean section rate of 87.9% among nulliparous and multiparous women with breech presentation. Caesarean sections for breech presentation in this study contributed less than 2% to the overall CS rates, and this was regardless of gestational age (37). This was similar to our findings of a 3.1% CS rate for breech presentation as the sole indication for CS. The author however points out that there was no data regarding the practice of external cephalic version for this time period.

An Australian study of decision making for Caesarean Section included 62 women with a breech presentation. Of these, 39 women were offered ECV and 12 (31%) "decided against it". Further, 37 women were offered vaginal breech birth but 14 (38%) women chose Caesarean Section (29). Similarly, the results of our study show that 37% (19) of the women that were offered ECV declined the procedure and opted for caesarean section. Fifty seven women (50%) out of 113 women who had not been offered ECV had the diagnosis of breech presentation made for the first time in labour hence could not be offered the ECV. An additional 12 women (39%) who were offered ECV did not have the ECV attempted because they presented in labour before the ECV could be done. This is a potentially missed opportunity and could have been avoided if the ECV was performed on the same day that the

decision to perform ECV was made rather than scheduling the ECV for another day. In 45 (79%) of the women in whom the diagnosis of breech presentation was made in labour, the diagnoisis of breech was either missed at their last ANC visit or the fetus turned to a breech presentation since their last visit. Therefore, one of the contributors to missed opportunities for ECV could be that the diagnosis is actually being missed antenatally. The number of missed diagnoses could be overestimated as it is possible that some of them had unstable lie and could actually have been cephalic presentations at the last antenatal visits. One can however only make this assumption if more information on these pregnancies was available e.g amniotic fluid index, as spontaneous version and reversion is much more likely with polyhydramnios.

A structured interview survey was carried out in 150 women in a university hospital in Hong Kong. Their opinions and perceptions of fetal and maternal safety for different modes of delivery for both cephalic and breech presentation, and external cephalic version (ECV) were surveyed. About 82% chose ECV as the first choice of managing breech presentation, mainly because a successful version allowed a natural way of delivery. Only 2% of women considered ECV ineffective, and 13.3% and 18.7% considered it not safe for mothers and fetuses respectively (38). This study demonstrated that there was high level of acceptance of ECV if adequate counselling is provided to women. However although this study showed a high level of acceptance, preference would not necessarily translate into same numbers or rates of success or uptake of ECV.

ECV can be carried out in early labour, in carefully selected women, provided women do not have ruptured membranes or any other contraindications to ECV. In our study, 42% of the women had emergency CS for breech presentation in labour. This included women in early/ latent and advanced / active labour. Unfortunately, we did not separate them into those in advanced and early labour. This information would have been useful as those in early / latent

labour may have contributed to the relatively high rate of caesarean section for breech, as well as the high rate of missed opportunities for ECV. Since ECV is not contraindicated in early labour, it would have given us an idea as to how many CS for breech in early or latent labour contributed to the missed opportunities.

There was no statistically significant difference between patients from level 1 health facilities and level 2 facilities in the proportion of patients in whom a diagnosis of breech was missed at the antenatal visit preceding their intrapartum diagnosis of breech presentation. (Pearson Chi^2 2.99, pr = 0.08). However, in the whole group of women that had emergency CS, women that came from a level 2 health facility at the time of caesarean section were more likely than those from level 1 to have their breech presentation diagnosed in the antenatal period rather than for the first time in labour (t-statistic =3.83, p = 0.0001), (Table 4). This finding may also contribute to the large proportion of missed opportunities for ECV, and may reflect the lack of available ultrasound scanning facilities to confirm the presentation in level 1 health facilities / MOUs where midwives are in doubt, but also may be due to midwives not referring patients with breech presentation early enough to secondary level health facilities.

At our primary level health facilities, once the diagnosis of breech presentation is made, women are usually booked for an appointment to see a clinician at a secondary level hospital. They are usually referred at a gestational age of 36 weeks or sometimes later. Once at the secondary level hospitals, they are counseled about and offered ECV at the same visit if eligible. The uptake at this point may be low because women have not been given ample time and opportunity to read around the subject or think about it. They are 'caught off-guard' and are expected to decide there and then whether they would like the ECV or not. As a result, women may just opt for an option they are more familiar with, i.e caesarean section. Midwives may also not be well equipped with medical knowledge to be able to counsel these women on ECVs once a diagnosis of breech presentation is made. A recommendation would be that for those women that are found to have a breech presentation before but close to term,

midwives should already start to engage in conversations about the possible options for ECV in the event that the breech presentation persisted to term. This would help prepare the women, and give them an opportunity to research about the subject and think or ask about any questions or doubts they may have.

Decision aids could be provided in the form of leaflets or posters that the woman could take away and read at home. Decision aids could be designed to assist patients and their doctors in making informed decisions using information that is unbiased and based on high quality research evidence. Decision aids are non-directive in the sense that they do not aim to steer the user towards any one option, but rather to support decision making which is informed and consistent with personal values (34).

A study by Vlemmix et al studied patient's values placed on various aspect of ECV. They found that pain was the most important factor that contributed to their unwillingness to opt for ECV, and that the risk of an emergency CS during ECV did not influence the willingness to opt for ECV (OR 0.83 (95% CI 0.59-1.18). The authors concluded that expected pain during treatment and the success rate are the most important factors influencing the willingness to undergo ECV (39). Taking this information into account when counseling for ECV, women should be reassured that unbearable pain is always a reason to stop ECV, and that the vast majority of women report that the experienced pain of ECV is bearable. This might improve the uptake of ECV and decrease the number of CS due to breech presentation. In our study, for 84% of the patients that were offered ECV, the reasons for declining the procedure were unknown / not documented, and only one woman declined due to pain and two declined due to the risks. These numbers were too small to test any statistical significance. This underlines the importance of adequate documentation as this information would have provided us with better information and understanding as to why women decline ECVs; and guided us as to how we can improve our quality of counseling about ECV.

Our study showed that of, the 21 patients that had ECV offered and attempted, 19 (90%) had caesarean sections because the procedure failed. Only one patient (2.4.%) from this group had a caesarean section because the procedure was abandoned due to pain. Our finding of a very low incidence of unbearable pain correlates with those of a study which evaluated womens' self-experience of pain. This study found that women reported a median pain score of 5.7 and just over 25% had pain score below 3 (40). This confirms that in general, ECV is well tolerated by a majority of women. None of the patients that had the ECV attempted had caesarean sections due to complications of ECV such as fetal cardiotocograph (CTG) abnormalities, fetal death, pre-labour rupture of membranes, placental abruption. This infrequent percentage of ECV procedure related complications echoes data from literature that report that the incidence of ECV complications is very low. However our numbers are too small to be definitive. A systematic review of studies of ECV performed after 36 weeks (84 studies and 12,955 women) concluded that serious adverse maternal and foetal outcomes after ECV were infrequent. These complications included: transient fetal heart rate changes 4.7%, fetomaternal transfusion 0.9%, emergency cesarean delivery 0.4%, vaginal bleeding 0.3%, prelabour rupture of membranes 0.2%, fetal death 0.2%, placental abruption 0.2%, and cord prolapse 0.2%. The overall risk of complications was 6.1% (17). Because of these rare but possible complications, it is therefore recommended that it should be performed where ultrasound, CTGs and theatre facilities are available in case urgent delivery is required. Both secondary level hospitals at which this study took place have CTG and theatre facilities yet it appears the procedure in not offered as often as it should be.

Figure 8 shows that 85% of the women did not have a detailed Ultrasound assessment after the diagnosis of breech presentation was made, and were booked for caesarean section i.e. women had ultrasound scans to confirm the breech presentation but not a detailed scan showing AFI, fetal weight estimation placental location, exclusion of fetal anomalies, in order to assess suitability for ECV. Fifty seven women had the diagnosis of breech made for the

first time in labour, and so would have had an informal or less detailed USS in that situation. This may explain why a large proportion of the women did not have detailed USS. There was a statistically significant association between having had a detailed ultrasound assessment for amniotic fluid index measurement, and fetal weight estimation and the likelihood of having an ECV attempted (Table 2). In the whole group, women that had a detailed ultrasound assessment for AFI and EFW were more likely to have an ECV offered to them than those that did not have the USS assessment (t-statistic = 2.125, p = 0.035). This finding of inadequate ultrasound assessments reflects possible apathy at a thorough assessment of women's suitability for ECV, which results in missed opportunity for a potential caesarean section saving intervention. Because patients were not fully assessed for their suitability for ECV using ultrasound, clinicians were not in a position to offer or attempt ECV on these women in the absence of this information. This underlines the importance of doing USS not only to make the diagnosis of breech but to use it to assess women for suitability for ECV, hence increasing the utilization of ECV as a measure to reduce CS rates for breech presentation. Performing detailed ultrasound assessment would also provide information on uterine anomalies or fetal anomalies and thus prevent inappropriate ECVs for breech.

The prevalence of a positive HIV status amongst women who had an HIV test done in our study was 13%. As per protocol at both MMH and NSH, none of the women who were HIV positive were offered ECV or had it attempted. This reflects clinicians' hesitancy to carry out the procedure due to the theoretical risk of mother to child transmission. At MMH and NSH, the protocol for ECV lists HIV positive status as a contraindication to ECV, hence the finding that none of the women that were HIV positive in the study were offered ECV. Although there are no studies of the risk of mother-to-child transmission of HIV from ECV, indirect evidence suggests that any increased risk is likely to be very small (16). A study by Holmes and Hofmyer (16) which aimed to provide recommendations for the management of breech presentation in areas of high prevalence of human immunodeficiency virus (HIV) infection, recommends that where CS is available and safe, HIV-positive women, or women

who might be at risk of HIV, with a fetus at term with breech presentation, should be offered elective CS to reduce the risks of both vaginal breech delivery and mother-to-child HIV infection. HIV-negative women can be offered ECV at term to try to avoid CS. The authors also recommend that where women do not have access to a safe CS, or prefer vaginal delivery, the benefit for both mother and child of attempting ECV at term is likely to outweigh the theoretical, very small, risk of facilitating HIV transmission. In our setting, most of the women do have access to safe caesarean sections.

STRENGTHS OF THE STUDY

The strengths of this study are that no such study has been undertaken in our setting and it has helped fill a gap in knowledge in our institutions about the extent of utilization of ECVs, and given us an idea about the reasons why ECV is not being offered or performed. It has confirmed that there were missed opportunities for ECV in our secondary level hospitals. It has also informed us about the inadequate documentation by clinicians, which has made it impossible for us to be well informed about the reasons why women decline ECVs. This study has also enabled us to suggest ways in which the uptake of ECV by women can be increased.

LIMITATIONS

- This study was retrospective; therefore we had no control over missing information in the folders. The proportion of women that did not have detailed ultrasound assessment may have been overestimated, because some ultrasound reports may have gone missing. This is because in most cases, the ultrasound report is a loose piece of paper on its own and not part of the antenatal record book, and could have easily been lost.

- This study only looked at those women that had caesarean sections and did not include those women who did have successful ECVs, as this would have given us a

better picture about the uptake of ECVs, and would have informed us of the success rates of ECV in our setting.

- The percentage of missed diagnoses of breech presentation for those women in whom a diagnosis was made intrapartum is likely to be overestimated as it is possible that some of the fetuses had unstable lie or changed presentation between their last antenatal visit and the day they presented in labour.

- Our study is limited in that it did not separate those women that were in labour into latent or active labour. Since ECV is not absolutely contraindicated in early labour, it would have given us an idea as to how much CS for breech in early or latent labour contributed to the missed opportunities.

- There is still a wide gap in knowledge on reasons why women decline ECV because for 84% of women that declined ECV, no reason was documented. This data would be better collected if the study was prospective or collected through administering a questionnaire to the women.

RECOMMENDATIONS

- ECV should be an available option in all obstetric units.

- There is need for a more structured training in ECV for junior doctors and registrars. We recommend that on each breech or ECV clinic day, a registrar should be assigned to this clinic in order to practice this skill.

- Adequate counselling and explanation should be provided by clinicians and midwives to women with breech presentation in order improve the acceptance of ECV. It is recommended that the hospitals should provide decision aids to all patients with a breech presentation at or near term.

- We recommend that for those women that are found to have a breech presentation before but close to term, midwives should already start to engage in conversations about the possible options for ECV in the event that the breech presentation persisted to term. This would help prepare the women, and give them an opportunity to research about the subject and think or ask about any questions or doubts they may have.

- Considering that most of the intrapartum diagnoses of breech presentation were from level 1 facilities, we recommend that midwives be trained to be able to do a basic scan to confirm presentation so that they can then refer the patients earlier for assessment for ECV, seeing that in some of these level 1 facilities, there is not always a sonographer available to do a scan and confirm the presentation where a breech presentation is suspected.

- We recommend women that present in early / latent labour with a breech presentation at term, with no contraindication to ECV should have an ECV offered and attempted.

- Women who are suspected to have a breech presentation should have a detailed ultrasound assessment to eligibility for ECV, and not just a scan to confirm the presentation, which seems to have been the case with the women in this study.

- Since there was a potential missed opportunity for 39% patients that were actually offered ECVs antenatally but went into labour before the ECV was scheduled to be done, we recommend that ECVs should be performed on the same day that the decision to perform ECV is made rather than scheduling the ECV for another day.

- Because this study has failed to answer why women decline ECVs due to lack of information in the patients' notes, we recommend a structured interview survey that would look at women's opinions and perceptions on ECV.

CONCLUSION

Based on the findings from our study, we conclude the following:

- There are missed opportunities of external cephalic version at the two level 2 hospitals where the study took place. The reasons for these missed opportunities for ECV include: missed diagnoses antenatally, clinicians not discussing or offering ECVs to eligible women, the theoretical or unknown risk of mother to child HIV transmission, women being seen already in labour at the time the diagnosis of breech is made, and women declining the procedure.

- There is inadequate ultrasound assessment of women for eligibility for ECV, hence contributing to the high numbers of women missing out on an opportunity for ECV.

- There were no complications of ECV necessitating emergency or urgent delivery by caesarean section; however the overall numbers of ECV attempts were too small to be conclusive on this aspect.

- There is inadequate documentation about why women who are eligible for ECV decline the procedure, leading to a wide gap in knowledge on why women decline ECV.

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APPENDIX A – DATA COLLECTION SHEET

STUDY NUMBER	AGE	GRAVIDIT	PARIT	GESTAGED	CAESAR0=EMERGENCY1=ELECTIVE	DIAG0=INTRAPARTUM1=ANTENATAL	INTRAPARTUM1=UNBOOKED 2=MISSED3=NOFOLLOWUP 4=BOOKEDCS 5 = UNKNOWN	ECV DISCUSSEDOROFFERED 0=YES 1=NO	ECV 1=YES 2=NO 3=INTRAPARTUM	NOECVREASO 99=NA1=NOT ELLIGIBLE2=NOT OFFERED3=DECLINED4=NOT DONE	YESECV1=FAILED3=ABANDONED4=UNKNOW	BOOKINGGESTATION	NO.ANCVISITS	REASON ECV DECLINED1= NOREASON 2=PAIN3=RISKS	WHEREREFERREDFROM	HIV0=NEG1=POS	RHESUS0 =NEG1=POS	USS0=YES1=NO

APPENDIX B – UCT HUMAN RESEARCH ETHICS COMMITTEE APPROVAL

UNIVERSITY OF CAPE TOWN

Faculty of Health Sciences
Human Research Ethics Committee
Room E52-24 Groote Schuur Hospital Old Main Building
Observatory 7925
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14 September 2012

HREC REF: 462/2012

Dr G Membe
c/o Prof S Fawcus
Obstetrics & Gynaecology
OMB, H-Floor

Dear Dr Membe

PROJECT TITLE: EXTERNAL CEPHALIC VERSION FOR BREECH PRESENTATION AT TERM-MISSED OPPORTUNITIES

Thank you for submitting your request to the Faculty of Health Sciences Human Research Ethics Committee for review.

It is a pleasure to inform you that the HREC has **formally approved** the above-mentioned study.

Approval is granted for one year till the 30th September 2013

Please submit a progress form, using the standardised Annual Report Form if the study continues beyond the approval period. Please submit a Standard Closure form if the study is completed within the approval period.
(Forms can be found on our website: www.health.uct.ac.za/research/humanethics/forms)

Please note that the ongoing ethical conduct of the study remains the responsibility of the principal investigator.

Please quote the HREC. REF in all your correspondence.

Yours sincerely

PROFESSOR M BLOCKMAN
CHAIRPERSON, FHS HUMAN ETHICS
Federal Wide Assurance Number: FWA00001637.

Institutional Review Board (IRB) number: IRB00001938
This serves to confirm that the University of Cape Town Human Research Ethics Committee complies to the Ethics Standards for Clinical Research with a new drug in patients, based on the Medical Research Council (MRC-SA), Food and Drug Administration (FDA-USA), International Convention on Harmonisation Good Clinical Practice (ICH GCP) and Declaration of Helsinki guidelines.

The Human Research Ethics Committee granting this approval is in compliance with the ICH Harmonised Tripartite Guidelines E6: Note for Guidance on Good Clinical Practice (CPMP/ICH/135/95) and FDA Code Federal Regulation Part 50, 56 and 312.

s.thomas