THE OBSTETRIC OUTCOME OF WOMEN WHO HAD SUCCESSFUL EXTERNAL CEPHALIC VERSION FOR BREECH PRESENTATION AT TERM

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DECLARATION

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ABSTRACT

AIM: Review outcome of pregnancies following successful external cephalic version (ECV) for breech presentation at term, particularly the caesarian section (CS) rate.

ECV is a safe procedure with a minimal cost implication that can reduce non-cephalic presentation at onset of labour at term. The outcome of pregnancies following successful ECV is certainly of interest. A meta analysis of studies done between 1997 and 2004, found that pregnancies after successful ECV at term were not the same as those with spontaneous cephalic presentations and was associated with a CS rate twice that in pregnancies with spontaneous cephalic presentations. The conclusion was that pregnancies after successful ECV should not be considered the same as normal pregnancies. In a matched retrospective analysis of CS risk after successful ECV, done in the USA, it was concluded that CS delivery and operative vaginal delivery rates following successful ECV, were not increased. To date there are no such studies in South Africa.

METHODOLGY: A retrospective descriptive study was done to audit all successful ECV's done at the Fetal Evaluation Clinic (FEC) of Tygerberg Academic Hospital. The electronic data from the FEC was searched for successful ECV patients. The facilities where these patients delivered were identified. The outcome of the pregnancies was determined from patient files and/or the labor registers. The relevant information of each patient was captured. All file reviews and data capturing was done by the principal investigator.

RESULTS: A total of 78 patients were included in the study. The median age was 28.7 years with a range from 17 to 40 years, the median parity 1 and the range 0 to 6 and the median body mass index 27.2 and the range 18.2 to 45.0. The method of determining gestational age is known in 71 (91%) patients of whom 37 (52%) had an early ultrasound examination. The median gestational age at ECV was 37 weeks with the inter quartile range 36 to 38 weeks. The median ECV to delivery time was 2 weeks with the inter quartile range 1 to 4 weeks. Higher

levels of care were required at time of delivery by 47 (60.3%) patients. Vaginal deliveries occurred in 49 patients and 29 (37.2%) had CS. The most common indications for CS were cephalo pelvic disproportion 8, fetal distress 6, reversion back to breech presentations 4 and other abnormal presentations 4 (2 face presentations and 2 transverse lies). The mean birth weight of the babies was 3360g and the range 2100 to 4655g. On comparing the groups that had vaginal deliveries and CS, only nulliparous patients had a significantly ($p=0.02$) higher risk for CS.

CONCLUSIONS: Following successful ECV all patients need to be carefully followed up for possible reversion to breech presentation or transverse lie. Nulliparous and gravid 2 para 1 patients with a previous CS need to be delivered in hospitals with CS facilities. Further studies are required to assess whether successful ECV results in more face presentations.

OPSOMMING

DOELWIT: Om die uitkoms van swangerskappe na suksesvolle eksterne kefaliese kerings (EKK) vir stuit presentasies op voltyd, spesifiek die keisersnit (KS) insidensie te bepaal.

EKK is 'n veilige prosedure wat teen minimale koste die nie-kefaliese presentasies op voltyd kan verminder. Die uitkoms van swangerskappe na suksesvolle EKK is van belang. 'n Meta-analise van studies gedoen tussen 1997 en 2004 vind dat swangerskappe na suksesvolle EKK op voltyd nie dieselfde is vergeleke met spontane kefaliese presentasies nie en gepaard gaan met 'n KS koers tweekeer hoër as dié met spontane kefaliese presentasies op voltyd. Die gevolgtrekking was dat swangerskappe na suksesvolle EKK nie as normale swangerskappe beskou moet word nie. In 'n gepaarde retrospektiewe ontleding van die KS risiko wat in die VSA gedoen is, word gevind dat die KS en operatiewe vaginale verlossing koerse na suksesvolle EKK, nie verhoog is nie. Tot op hede is daar geen studies hieroor in Suid-Afrika gedoen nie.

METODE: 'n Retrospektiewe beskrywende studie is gedoen om all suksesvolle EKK wat by die Fetale Evaluasie Kliniek (FEK) gedoen is te oudit. 'n Elektroniese data soektog van suksesvolle EKK by die FEK is gedoen. Die instellings waar die pasiënte verlos is, is vasgestel. Die uitkoms van die swangerskappe is bepaal deur pasiënt lêers en/of die kraamregisters na te gaan. Die relevant inligting oor elke pasiënt is versamel.

RESULTATE: 'n Totaal van 78 pasiënte is by die studie ingesluit. Die mediane ouderdom was 28.7 jaar met 'n reikwydte van 17 tot 40 jaar, die mediane pariteit was 1 met 'n reikwydte van 0 tot 6 en die mediane liggaamsmassa indeks 27.2 met 'n reikwydte van 18.2 tot 45.0. Die metode waavolgens swangerskapsduurte bepaal is, was bekend in 71 (91%) van pasiënte, waarvan 37 (52%) vroeë ultraklank ondersoeke gehad het. Die mediane swangerskapsduurte tydens die EKK was 37 weke met die interkwartiele interval 36 tot 38 weke. Die mediane EKK tot verlossing tydsverloop was 2 weke met die interkwartiele interval 1 tot 4 weke. Hoër vlakke van sorg was nodig ten tye van die verlossing by 47 (60.3%) van pasiënte. Van die pasiënte het

49 vaginale verlossings en 29 (37.2%) KS gehad. Die mees algemene indikasies vir KS was skedel-bekken disproporsie 8, fetale nood 6, terugkeer na stuitpresentasie 4 en abnormale presentasies 4 (2 aangesigsliggings en 2 transversliggings). Die gemiddelde geboorte gewig van die babas was 3360g en die reikwydte 2100 tot 4655g. Wanneer die groep wat vaginale verlossing en KS gehad het vergelyk word, het slegs nullipareuse pasiënte 'n betekenisvolle (p=0.02) hoër risiko vir KS gehad.

GEVOLTREKKING: Na suksesvolle EKK moet alle pasiënte noukeurig opgevolg word vir terugkeer na 'n stuit presentasie of transversligging. Nullipareuse en gravida 2 para 1 pasiënte met 'n vorige KS moet in hospitale met KS fasiliteite verlos word. Verdere studies is nodig om te bepaal of suksesvolle EKK meer aangesig presentasies tot gevolg het.

INTRODUCTION:

Breech presentation at term occurs in approximately 3-4% of pregnancies. External cephalic version (ECV) is used during pregnancy to turn a breech fetus to cephalic by externally applying pressure to maneuver the fetus through the maternal abdominal wall. ECV can be considered in all cases with singleton pregnancies in non-cephalic presentation at 37 weeks. Women with contraindications to ECV or unsuccessful ECV need to be counseled for assisted vaginal delivery or elective caesarian section (CS).[1,2,3,4,5] In some hospitals breech presentation is managed exclusively by CS, this practice may be in part due to the results of the Term Breech Trial published in 2000. This study recommended that breech presentations should be delivered by CS. This measure resulted in less neonatal mortality and short term morbidity compared to vaginal breech delivery. Maternal outcomes were similar for both modes of delivery in this study.[6] The Cochrane review revealed that planned caesarian section compared with planned vaginal birth decreased the composite poor perinatal outcome including perinatal mortality, neonatal death and serious neonatal morbidity.[7] This occurs at the expense of an increased short term maternal morbidity. At 2 years, no difference was found in combined death or neuro-developmental delay.[8] Maternal outcomes at 2 years were similar.

In 2006, the ACOG (American college of Obstetricians and Gynecologists) , issued practice guidelines that recommended that the decisions regarding the mode of delivery for breech presentation at term are dependent on health care provider's expertise and experience. ACOG also suggests that CS delivery is preferred over vaginal deliveries.[1,5] The desire to decrease the number of caesarian sections and the incremental associated costs and complications has renewed interest in ECVs. ACOG recommends ECV to decrease the number of breech presentations at term.[4]

With the introduction of ultrasonography, tocolysis and electronic fetal monitoring, ECV is considered safe and is used more frequently for management of breech presentation at term.[9,10,11] ECV trial is cost effective when compared to scheduled CS for breech presentation provided the probability of successful ECV is more than 32%.[12,13,14] At Tygerberg Academic

Hospital a success rate of 52,9% was reported when ECV was performed by registrars.[15] Repeat ECV increased number of cephalic presentations at birth and should be considered after an unsuccessful ECV.[16] Tocolytics reduce the failure rate of ECV at term [RR 0.74%, 95% confidence interval(CI) 0.64 to 0.87].[9] ECV is indicated and carried out for women presenting with confirmed singleton breech fetuses equal to or more than 37 completed weeks with no contraindication to vaginal delivery.[7]

At Tygerberg Academic Hospital ECV is offered from 36 weeks onwards. This is a practical policy ruling out a visit one week later that has time and cost implications. The obstetric care policy for patients in the Metro-East area of Cape Town, from all primary and level 1 facilities, is to refer patients to the Fetal Evaluation Clinic (FEC) at 37 weeks to be assessed for ECV. This entails evaluating the fetal condition, presentation, liquor volume and placental location including confirming a singleton pregnancy.

According to Early ECV 2 trial, ECV at 34-35 weeks versus 37 weeks increased likelihood of cephalic presentation at birth but does not reduce the rate of caesarian section and may increase the rate of preterm birth.[16,17] In the Early ECV 2 trial 37 (4%) of women that were randomized to the delayed arm had spontaneous version to cephalic. A policy of ECV at term is therefore based on scientific evidence. The incidence of spontaneous version after failed ECV at term was 6% in another study.[18]

Quantifying the effectiveness of ECV for breech presentation is complicated because ECV does not always result in cephalic presentation and subsequent vaginal delivery. Whilst the probability of success is approximately 53% at Tygerberg Academic Hospital, the fetus may spontaneously revert back to breech before delivery.[15] Following successful ECV all women must be followed up within one week to confirm the presence of a cephalic presentation. Despite population differences in ECV success rates, the ratio of successful ECV to spontaneous version in reported randomized controlled trials is consistent at about 3:1.[19] In addition, cephalic presentation at term does not automatically translate to vaginal delivery and CS may

still be performed for other reasons.[20,21,22] ECV is a safe procedure with a minimal cost implication that can reduce non-cephalic presentation at onset of labour at term. The outcome of pregnancies following successful ECV is certainly of interest.

Chung et al conducted a meta analysis from studies done between 1997 to 2004. The authors found that pregnancies after successful ECV at term were not the same as those with spontaneous cephalic presentations and was associated with a CS rate twice that in pregnancies with spontaneous cephalic presentations and concluded that pregnancies after successful ECV should not be considered the same as normal pregnancies.[22] In a case control study of CS risk after successful ECV, conducted in USA, between 1998-2006, it was concluded that CS delivery and operative vaginal delivery rates following successful ECV in the data set, were not increased.[23]

To date there are no studies reporting the outcome of pregnancies following successful ECV in South Africa. Considering the conflicting outcomes from the available studies it is imperative to do a South African study. Considering the possible outcomes the results of the study could change our local policy of referring the successful ECVs to primary level care to be delivered by midwives in Midwife Obstetric Units. Alternatively the patients may require delivery in a level 1 hospital with the ability to do caesarian section if required.

AIM:

To review the outcome of pregnancies following successful ECV for breech presentation at term, particularly the CS rate after successful ECV.

METHODS:

A retrospective descriptive study was done to audit all successful ECVs done at the Fetal Evaluation Clinic (FEC) at Tygerberg Hospital. The electronic data from the FEC was searched for successful ECV patients. The facilities where these patients delivered were identified. The outcome of the pregnancies was determined from patient files and/or the labour registers. The

relevant information of each patient was captured on a data sheet- (data capturing document attached as Appendix A).

Statistical analysis: Normally distributed continuous descriptive data are presented using means and 95% confidence intervals and non-normally distributed data using medians, ranges and quartiles. Nominal data are presented using frequency distributions (n and %). Nominal variables are compared with Chi-square tests and the significance level was set at 0.05 (for all analyses) as well as risk ratios and 95% confidence intervals for binary proportions. T-tests were used to compare binary predictor and normally distributed outcome variables and Mann-Whitney U tests for non-normally distributed variables.

Ethical approval was obtained from the Human Research Ethics committee of the Faculty of Health Sciences, Stellenbosch University, prior to collection of data. Further permission to access files was obtained from Tygerberg Academic Hospital management and Department of Health in the Western Cape.

Ethics approval number: S11/10/009

RESULTS:

Data was collected over a 7 year period from April 2005 to April 2012. 106 successful ECVs were extracted from the electronic data. Ninety files could be located, 12 of which had insufficient information, the study was confined to the 78 (73.6%) files that had sufficient information.

The median age was 28.7 years with a range from 17 to 40 years, the median parity 1 and range 0 to 6 and the median body mass index 27.2 and the range 18.2 to 45.0 (Table I). The mean gestational age (GA) at booking was 21.4 week with inter quartile range 16 to 28 weeks. The method of determining gestational age is known in 71 (91.0%) patients of whom 43 (55.1%) had an early ultrasound examination (Table II). The median gestational age at ECV is 37 weeks with the inter quartile range 36 to 38 weeks. The mean gestational age at delivery was 40.1 weeks with inter quartile range 39 -41 weeks (Table I).

Table I: Descriptive statistics

Descriptive Statistics (Data in Analysis - 06Dec2012.stw)												
Variable	**Valid N**	**Mean**	**Confidence - - 95.000%**	**Confidence - 95.0%**	**Median**	**Min**	**Max**	**Lower - Quartile**	**Upper - Quartile**	**Percentile - 10.0**	**Percentile - 90.0**	**Std. Dev.**
Age (years)	78	28.8	27.2	30.3	28.5	17.0	43.000	23.0	34.0	19.0	39.0	6.9
Height (cm)	57	1.6	1.6	1.6	1.6	1.4	1.8	1.6	1.6	1.5	1.7	0.1
Weight (Kg)	57	71.9	67.9	75.9	70.7	45.0	110.0	58.9	85.0	52.4	90.0	15.1
BMI	64	28.5	26.8	30.1	27.2	18.2	45.0	23.6	33.2	20.5	36.4	6.8
Birth weight (g)	76	3345.9	3231.4	3460.4	3360.0	2100.0	4655.0	3000.0	3675.0	2680.0	3970.0	500.9
G	78	2.6	2.2	2.9	2.0	0.0	7.0	1.0	3.0	1.0	5.0	1.7
P	78	1.4	1.08	1.7	1.0	0.0	6.0	0.0	2.0	0.0	3.0	1.4
M	78	0.24	0.10	0.4	0.0	0.0	3.0	0.0	0.0	0.0	1.0	0.6
E	78	0.01	-0.01	0.04	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.1
T	78	0.01	-0.01	0.04	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.1
GA at booking (weeks)	78	21.4	19.5	23.2	20.0	2.0	36.0	16.0	28.0	12.0	34.0	8.1
GA at diag of Breech (weeks)	78	35.8	35.0	36.6	36.0	21.0	43.0	35.0	37.0	32.0	39.0	3.4
GA at ECV (weeks)	78	37.3	36.9	37.8	37.0	34.0	43.0	36.0	38.0	35.0	41.0	2.0
Duration of Hospital Stay (days)	76	2.2	1.7	2.6	1.0	0.3	15.0	1.0	3.0	1.0	3.0	2.1
GA at Delivery	78	40.1	39.7	40.5	40.0	36.0	44.0	39.0	41.0	37.0	43.0	1.8
Apgar 5min	76	8.8	8.4	9.1	9.0	0.0	10.0	9.0	9.0	8.0	10.0	1.4
Apgar 10 min	76	9.4	9.0	9.8	10.0	0.0	10.0	9.0	10.0	9.0	10.0	1.7

E ectopic pregnancies
GA gestational age
G gravidity
P parity
M miscarriages
T terminations of pregnancy

Table II: Gestational age at booking

Method **Frequency table:** GA at booking Method (Data in Analysis - 06Dec2012.stw)

Category	Count	Percent
Booking SF	19	24.3
sure date	9	11.5
EUS	28	35.8
Sure Dates/Booking SF	4	5.1
LUS	2	2.5
Sure date/EUS	8	10.2
Sure Dates/Booking SF/EUS	1	1.2
Booking SF/EUS	6	7.6
Booking SF/LUS	1	1.2
Missing	0	0.0

The median ECV to delivery time was 2 weeks with the inter quartile range of 1 to 4 weeks (Table I and Figure 1). Higher levels of care were required at time of delivery by 47 (60.3%) patients. Reasons for referral to higher levels of care included: increased BMI (13), advanced maternal age (5), anemia (4), fetal anomaly (2), hypertension (12), previous caesarian section (7) and poor obstetric history (2). Vaginal deliveries occurred in 49 patients and 29 (37.2%) had caesarian sections. On comparing CS rates between nulliparous patients and multiparas (Table III) no statistically significant differences could be found (p=0,10). The most common indications for caesarian sections were cephalo pelvic disproportion 8, fetal distress 6, reversion to breech presentations 4 and other abnormal presentations 4 (2 face presentations, 2 transverse lies) (Table V). The median birth weight of the babies was 3360g and the range 2100g to 4655g (Fig 2). Comparing parametric (Table VI) and non parametric (Table VII) variables only nulliparous patients had a significantly (p=0.02) higher risk for CS. There were 9 patients who had 1 previous CS in the study, of these patients 6 were delivered by CS. Five out of these 7 repeat CS were G2P1 and 1 was a G3P2. Most common indications for repeat CS in

this group was cephalo-pelvic disproportion 4 and reversion to breech 2. The incidence of repeat CS in this group was 66.7% (6 out of 9).

Table III: Caesarean section rate in primigravidas versus multiparous patients

	P0 (%)	≥P1* (%)
NVD	13	36
C/S	13 (50)	16 (30.8)

P=0,10

RR 0,59(95% CI 0,32 – 1,1)

**6 = 1 Previous Caesar (9 previous Caesar x 1 in total, 3 had NVD's)*

Table IV: Vaginal deliveries versus caesarean sections in nulliparas and multiparas excluding patients with previous caesarian section

	P0 (%)	MULTIGRAVIDAS*(%)
NVD	13	33
C/S	13 (50)	10 (23.3)

P = 0,02

RR 0,50(95% CI 0,28-0,90)

**10 Excluding 9 patients with previous CS*

Figure 1: ECV to delivery interval

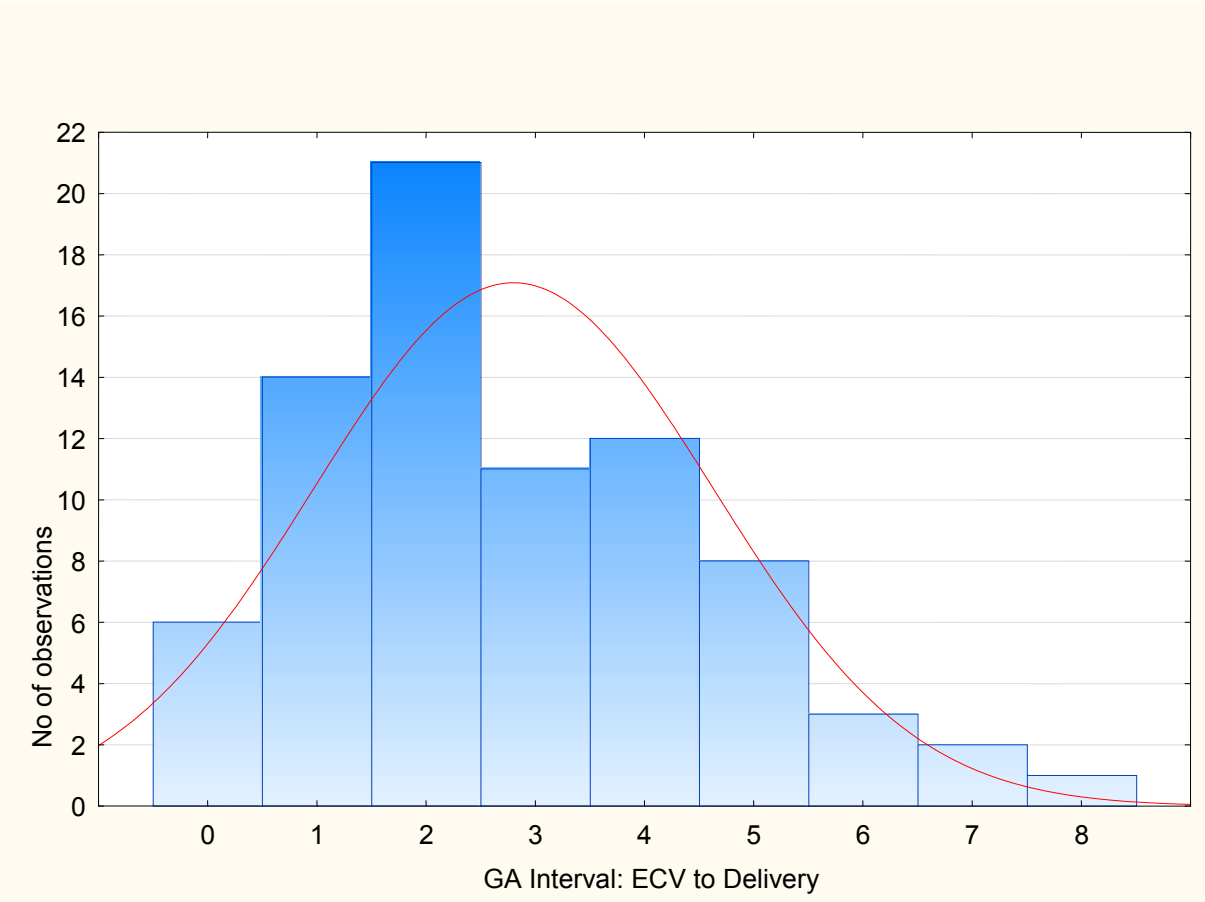
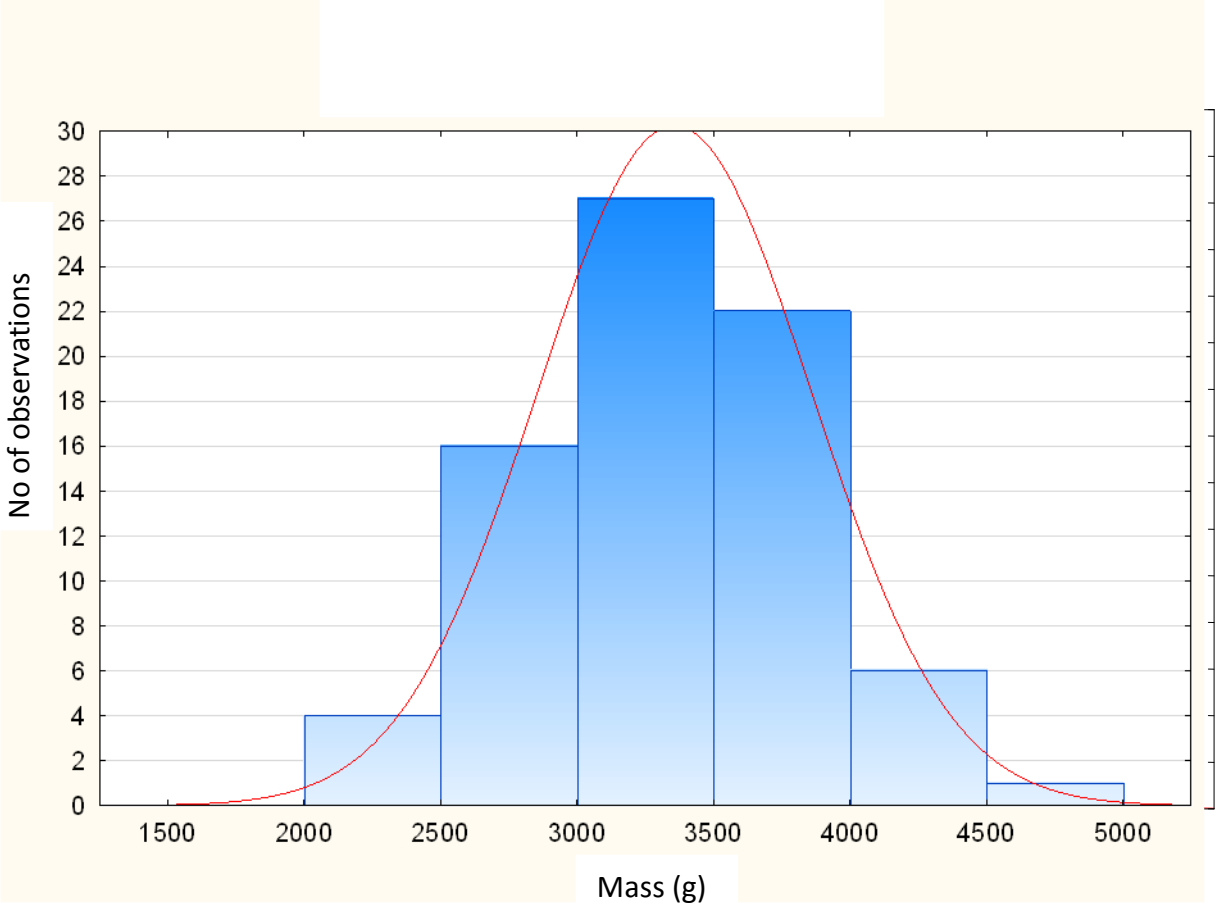


Table V: Indications for caesarian sections

	n
Cephalo pelvic disproportion / poor progress	8
Fetal distress	6
Reversion : breech	4
transverse	2
Failed induction of labour	2
Abruptio placentae	2
Face presentation	2
Unknown	3

Figure 2: Birth weight of babies



Most patients (90%) had an uneventful postnatal course (Figure 3) with average hospital stay of 2.2 days and 96% of babies were born with good Apgar scores and discharged with their mothers (Figures 4 and 5). The median 5 and 10 minute Apgar scores was 8 and 9 (Table I, Figures 4 and 5). Three babies were born with 5 minute Apgar scores less than 7.

Figure 3: Postnatal course

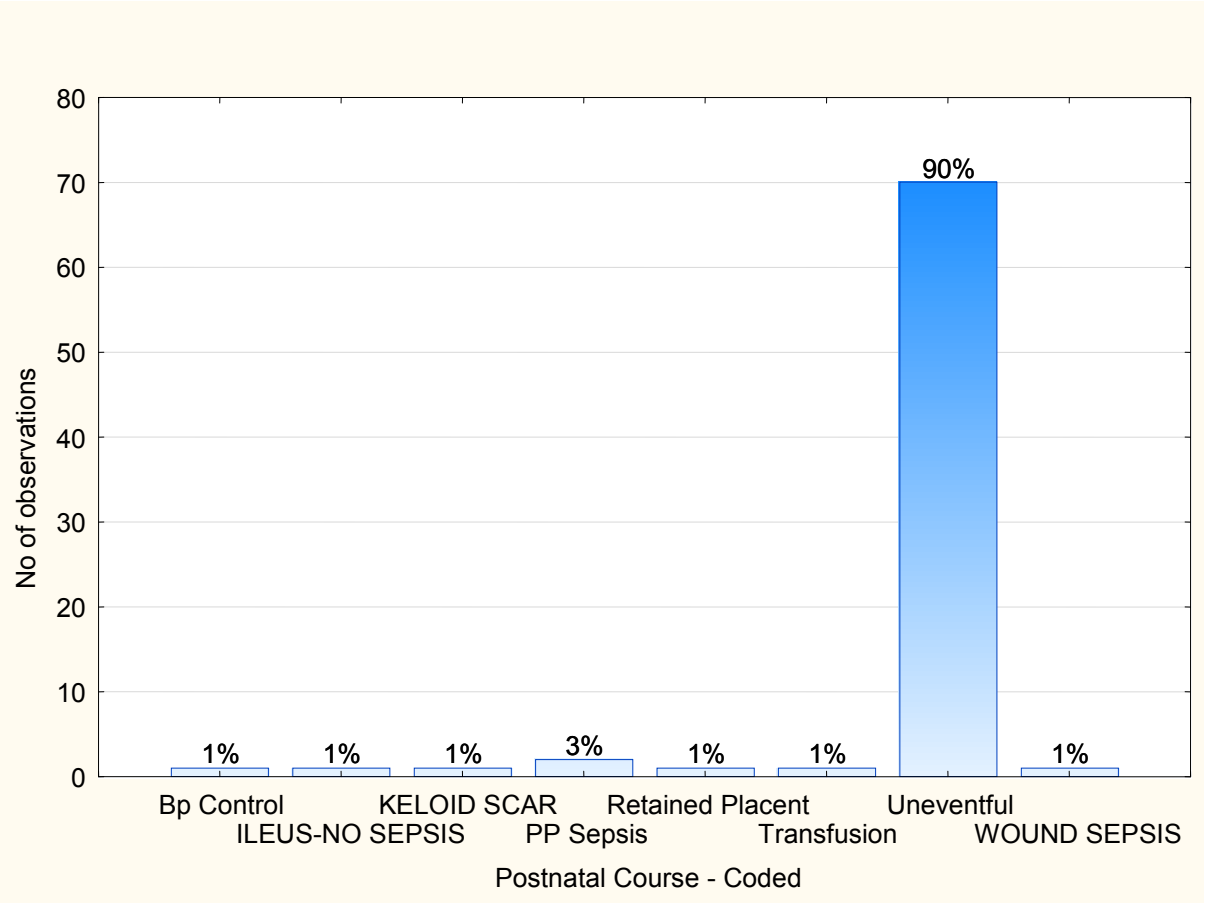


Figure 4: Apgar scores at 5 minutes

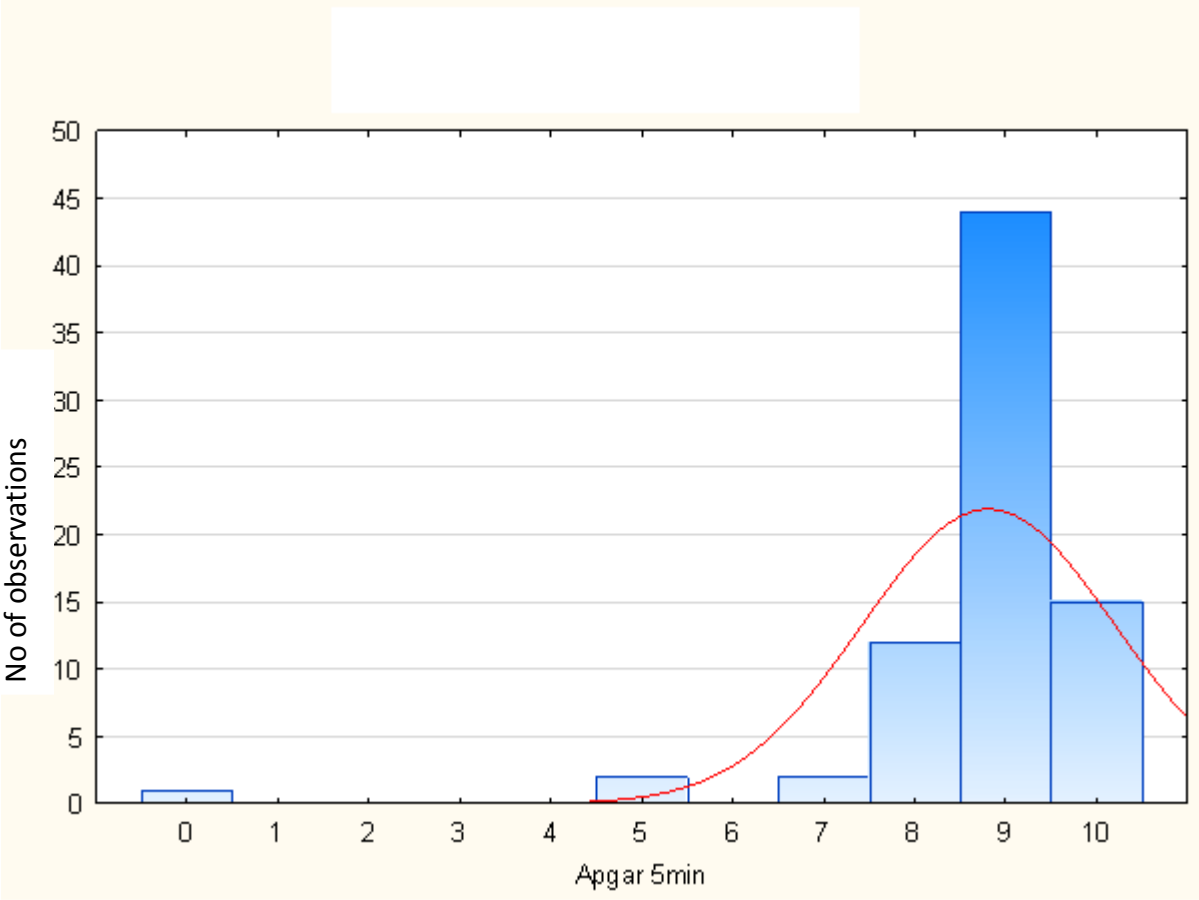


Figure 5: Apgar scores at 10 minutes

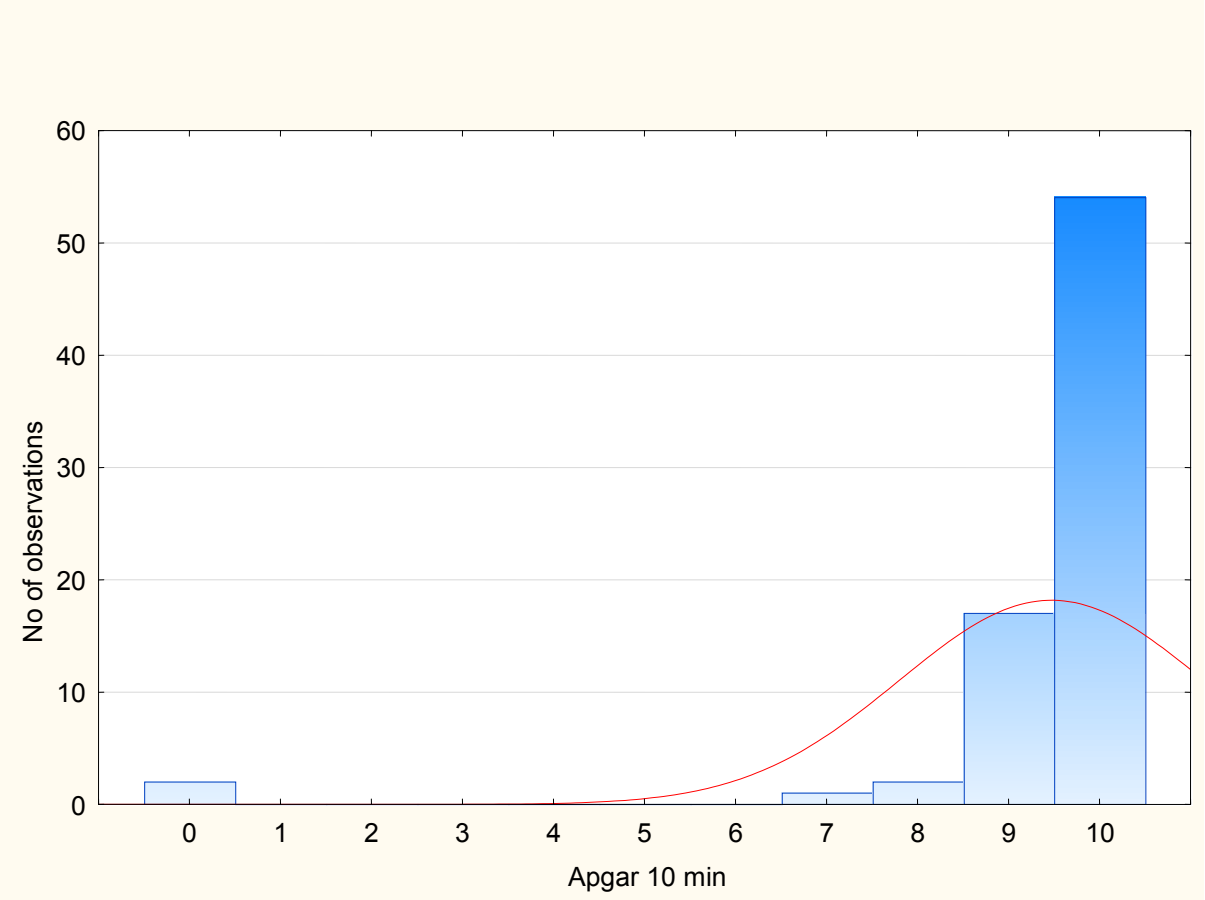


Table VI: Parametric variables and their association with delivery by caesarian section

Variable	Mean – NO	Mean - YES	t-value	df	P	Valid N - NO	Valid N - YES	Std.Dev. – NO	Std.Dev. - YES	p – Variances
Age(yrs)	29.3	27.6	1.1	76	0.3	52	26	6.9	7.1	0.8
Height (m)	1.6	1.6	0.4	55	0.7	39	18	0.1	0.1	0.4
Weight(kg)	70.9	73.9	-0.7	55	0.5	39	18	16.4	12.0	0.2
BMI	28.3	28.9	-0.3	62	0.7	44	20	6.9	6.4	0.7
Mass(g)	3305.8	3423.1	-0.9	74	0.3	50	26	522.8	455.7	0.5

BMI body mass index

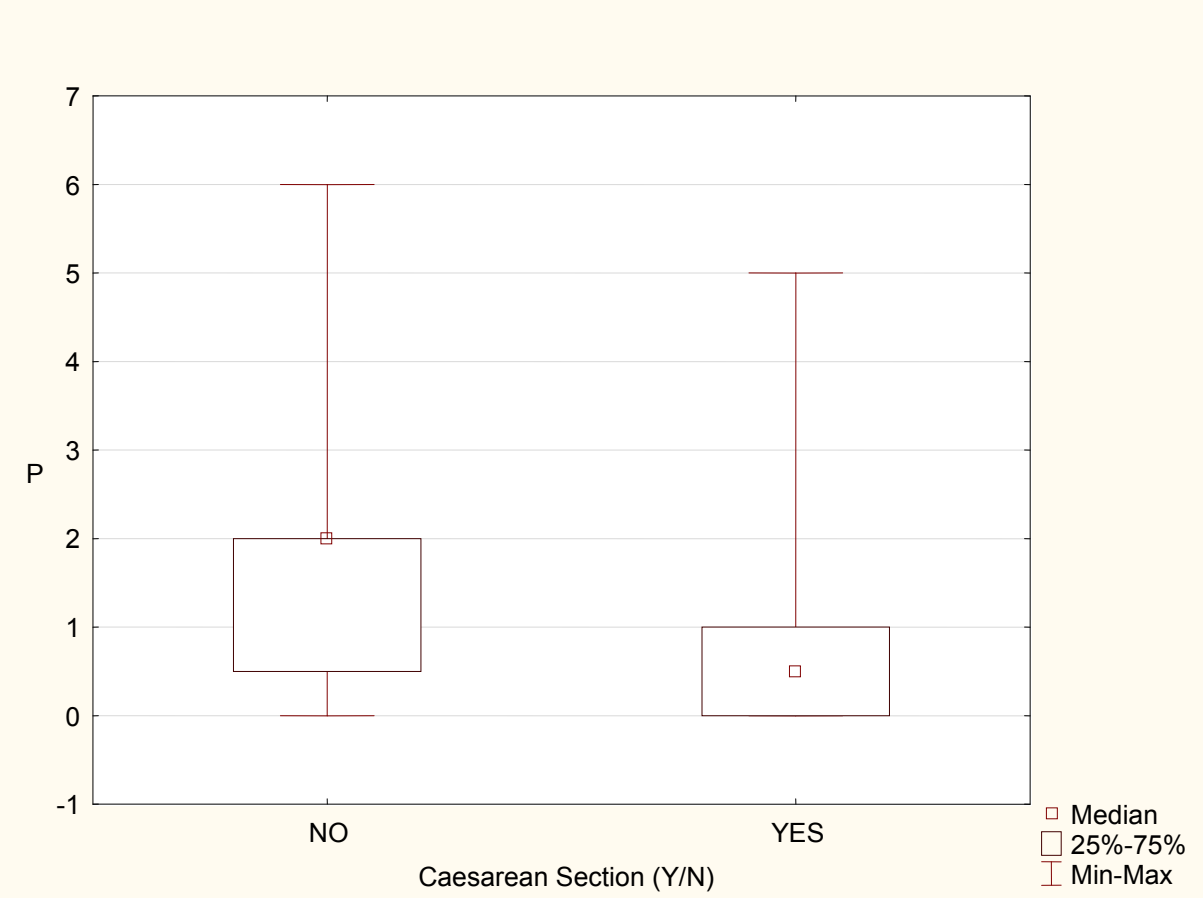
Table VII: Non parametric variables and the association with delivery by caesarian section

Mann-Whitney U Test
By variable Caesarean Section (Y/N)
Marked tests are significant at p <.05000

Variable	Rank Sum - NO	Rank Sum - YES	U	Z	p-value
G	2182.5	898.5	547.5	1.4	0.17
P	2274.5	806.5	455.5	2.3	0.02

G gravidity
P parity

Figure 6: Nulliparity contributes significantly as a risk factor for caesarean section



P = parity

There were 2 patients that had abruptio placentae. The first was a 27 year old G3P2 who booked at 23 weeks, uneventful antenatal care and normal booking bloods. The abruption occurred 8 days after the ECV with no associated risk factors for an abruption. The baby was 3160g, delivered via emergency CS, with apgars of 8/10 and 9/10 and was discharged with the mother. The second case was an 18 year old G1 P0 who booked at 16 weeks with uneventful antenatal care and normal booking bloods. She was a smoker. This abruption occurred 4 weeks after ECV during an induction of labour for post dates. A 3700 g baby was delivered via caesarian section with good apgars of 9/10 and 10/10 and discharged with the mother.

There was 1 intrauterine death. This occurred in a 20 year old G2P1 who booked late at approximately 32 weeks gestational age according to available notes. She had 1 previous caesarian section. The intrauterine death occurred 30 days after ECV. She delivered a 4.1 kg baby via caesarean section for poor progress. The most likely primary cause of death using all information available including histology of the placenta was acute chorioamnitis with placental hypoperfusion. The cause of death was unrelated to the ECV.

DISCUSSION:

A total of 106 patients had successful ECVs during a 7 year period. Some successful ECVs may not have been added the data base at the FEC during the periods when the regular registered nurse was on leave and was replaced by another staff member. The Fetal Evaluation Clinic at Tygerberg Hospital serves the whole of the Metro East, patients are then delivered elsewhere and this partly explains our inability to locate all files.

Although the policy of the department is to offer ECV to patients with singleton pregnancies with non cephalic presentations at term the number of ECVs attempted over the 7 years was about 200 with 106 (53%) successful.[15] When providing for under reporting, the total number of deliveries in Metro-East was 29746 in 2010, about 900 to 1200 breech presentations should have been seen by term (Department of Health, Western Cape. Annual delivery data. S Gebhardt – personal communication, gsgeb@sun.ac.za). The conclusion that ECV is often overlooked by clinicians as a possible management option if women present at term with an abnormal lie and or presentation, appears to be valid.

The 78 patients with known outcome reflect a group of patients with normal age, BMI and parity distribution (Table I). All patients were HIV negative which is a relative contraindication to ECV. All patients were rhesus positive except one who had received Anti-D post ECV. There were no operative vaginal deliveries. Tocolytics were used in all patients and nifedipine was the most often used tocolytic (73%). During the first number of years hexoprenaline, a beta

two stimulant, was used. The drug was replaced with nefidipine, a calcium channel blocker, when hexoprenaline was taken off the market. Although beta two stimulants are superior to calcium channel blockers, the ease of administration and less side effects established the latter drug as the tocolytic method of choice prior to ECV.[9, 31]

Sixty percent of study patients required referral to higher levels of care. Prior to 1 July 2008, Tygerberg Hospital served as a level 1 hospital to a portion of Metro East and as a level 2 and 3 hospital to the whole of Metro East. Following July 2008 Tygerberg Hospital only functions as a level 2 and 3 hospital for Metro East. Presently the baseline percentage of the pregnant women requiring level 2 and 3 care in Metro East is about 20% (Department of Health, Western Cape. Annual delivery data. S. Gebhardt - personal communication, gsgeb@sun.ac.za). The 31 (29%) patients requiring CS was the single most common reason why higher levels of care were required. The time interval between ECVs and delivery was 2 weeks, as to be expected, taking the median gestational age of ECV and time if delivery in account. The abruptio placentaes occurred far (8 days and 4 weeks) from the dates of ECV and is unlikely related to the ECV. The patient with the 8 day interval had no risk factors, where as the second case with the 4 weeks interval was a smoker and the complication occurred during induction of labour (IOL) for a post term pregnancy. Smoking is a known risk factor for abrutio placentae, but not IOL.[30] The safety of ECV has been proven by many studies.[7] The index study was not undertaken to proof safety, but the determine outcome following successful ECV. The high proportion of mothers that eventually required level 2 and 3 care is a new finding that requires further research. It is therefore advised that ECV should only be delivered in a hospital setting where there are facilities for immediate caesarian section if needed. No babies from the index study were admitted to the neonatal intensive care unit (NICU). Majority of babies had good Apgar scores and were discharged with their mothers.

One previous CS is not a contraindication to ECV provided the previous incision was a lower segment transverse incision. There is, however, a general perception that previous CS is an absolute contra-indication for ECV. This may be due to older text books used in South Africa

listing previous CS as a contraindication.[27] A later edition of the same text book listed only a scar in the fundus of the uterus as a contra-indication and the very latest edition lists a previous CS as a relative contra-indication.[28, 29] There is a paucity if literature on patients with previous CS that had successful ECVs. Lau et al reported 3 patients with previous CS that all had a subsequent normal vaginal deliveries and Clock et al reported 9 patients with only one patient requiring a repeat CS. [21, 23] Further studies are required to assess the value of ECV for this selected group. Taking the 12 reported cases and the 9 in the index study, a total of 21 patients with previous CS with successful ECV revealed no complications during or immediately following the procedure.

Patients with cephalo pelvic disproportion tend to have post term pregnancies.[22,30] Thirty nine percent of patients in the index study proceeded to beyond 41 weeks of pregnancy which could explain the high incidence of cephalo pelvic disproportion with 8 out of the 29 CS done for this indication. Additionally nulliparous mothers with term breech presentation might have a smaller pelvis, which not only predisposes the fetus to breech presentation but also to a higher risk of cephalo pelvic disproportion following successful ECV. This may also explain why women who had term breech pregnancies before are at a higher risk of recurrent breech presentation in future pregnancies.[22] Direct evidence for this statement, however, is lacking and further studies are required to answer this question.

The relatively high incidence of fetal distress (6 out of 29) could reflect a possible biologic difference among fetuses in breech presentation at term or a highly unlikely delayed effect of ECV. Irrespective of the cause, following successful ECV all nulliparous women and gravida 2 with a previous CS should still be considered high risk, with appropriate monitoring of the fetus intrapartum.

Although congenital uterine malformations may increase the risk of breech presentation and poor progress during labour, none of the patients in our study had a clinically detectable abnormality at the time of physical examination and antenatal ultrasonagraphy nor at the time

of caesarian section.[30] It is possible that subtle uterine abnormalities could have escaped clinical detection in some cases, predisposing to dysfunctional uterine contractions during labour and malpresentation. Further research is needed to elucidate this possibility.

Five (7%) patients had second attempt at ECV and went on to deliver via normal vaginal delivery. ECV does reduce rate of non cephalic presentation at term, 90% of patients in our study had a cephalic presentation at term although only 63% of patients went onto normal vaginal delivery. The CS rate in the study group was 37.2% which is more than the base line CS rate of 18.6 to 20.1% in Metro East (Table VII) (Department of Health, Western Cape. Annual delivery data. S Gebhardt -personal communication gsgeb@sun.ac.za). Metro East is the drainage area from which patients are referred for ECVs to the FEC.

Table VIII: The background caesarian section rate in Metro East

	Metro East	
	2009	2010
Deliveries	26900	27126
C/S rate	18.6%	20.1%

Fifty percent of the nulliparous patients had normal vaginal deliveries and 69.2% of multiparous patients (Table III). This difference was not significant {P=0.10, OR 0.59 (95% CI 0.32 – 1.10)}. Excluding the patients with one previous CS from the analysis (Table IV) increased the normal delivery rate in the multiparous group to 76.7% and difference was significant {p=0.02, OR 0.50 (95% CI 0.28 – 0.90)}. If gravida 2 patients with one previous CS were regarded as nulliparous patients with regards to vaginal delivery and added to the nulliparous group, the difference would have been more significant and the odds ratio increased. The paper by Lau et al provided a table with the delivery outcome comparing primigravid to multiparous women. [21] A statistical analysis comparing the two groups was, however, not done. A comparison of these

two groups were made (Table IX) and the CS rate amongst the primigravid women was significantly higher compared to the multiparous women {p=0.001 (OR 4.06, CI 1.55 – 10.88)}. The CS rate in multiparous women (10.9%) compared favourably with the CS rate of the control group (7.5%).

Table IX: Lau et al comparing the caesarian section rate between primigravid the multiparous women

	Para 0 (%)	≥ Para 1 (%)
NVD	49	82
C/S	23 (31.9)	10 (10.9)
Total 164	72 (43.9)	92 (56.1)

Chi^2 p = 0.001

RR 0.48 (95% CI 0.28 - 0.83)

The non parametric and parametric variables of BMI, age, birth weight, height, weight and parity were assessed for risk for caesarian section post ECV. The only significant variable was nulliparity (p=0.02). There were 2 (2.6%) patients found to have face presentations in the study group, which is much higher than the 0.1 to 0.2% reported in the literature. [29] The possibility that ECV predisposes fetuses to face presentations as a result of the manipulation requires further research.

CONCLUSION:

From the study it is evident that following successful ECV patients need to be carefully followed up for possible reversion to breech presentation or transverse lie. Nulliparous patients and secundi gravidas with previous CS need to be delivered in hospitals with CS facilities. Further studies are required to assess the outcome of ECV with one previous CS and whether successful ECVs results in more face presentations.

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DATA SHEET 1: APPENDIX A

DEMOGRAPHICS	
PT NO	
AGE	
RACE	
G: P: M: E: T:	
BMI: HEIGHT	
WEIGHT	
RPR	NEG / POS
Rhesus	NEG / POS
HIV	NEG / POS CD4

ANC	
GA at first visit	
GA determined by	Sure Dates
	Booking SF
	EUS
	LUS
	Other
Ultrasound < 24 weeks	YES / NO
GA at diagnosis of Breech presentation	

NEONATAL INFO		
Mass		
Sex	F	M
Apgars	5min	10min
Discharged with mom		Yes No Other
Ref To Higher Care	YES	NO
NICU	YES	NO
HIGH CARE	YES	NO
REASON		
OTHER		

ECV DETAILS	
GA at ECV	
2nd Attempt at ECV	YES / NO
Use of Tocolytics	None
	Nifedipine
	Beta 2 Stimulant
Pregnancy Complications	Prior to ECV
	Following ECV
Postnatal Course	
Duration Of Hospital Stay	
Postpartum Complications	
Referral To Higher Level Of Care	YES / NO
Reason	

DELIVERY			
GA at delivery			
Type of Delivery	Induction of labour	YES	NO
	REASON		
	Breech NVD	YES	NO
	Cephalic NVD	YES	NO
	Forceps	YES	NO
	Ventouse	YES	NO
	Caeasarian Section – Indication		
Place of Delivery	Primary Level		
	Level 1 / Level2 / Level 3		