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The feasibility and uptake of the etonogestrel implant and the intra-uterine device at the time of uterine evacuation in women managed with incomplete miscarriage

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Abstract
Background: Unintended pregnancies account for an estimated 44% of all pregnancies worldwide and 75% of pregnancies in South Africa. The use of effective contraception decreases the incidence of unintended pregnancies and the subsequent termination of unwanted pregnancies. Professional counselling on contraception and the methods available should be offered at every patient contact. This has been shown to increase contraceptive uptake.
Objective: To investigate the feasibility and uptake of offering a choice of immediate etonogestrel implant (EI) or intra uterine device (IUD) insertion at the time of evacuation in women managed with incomplete miscarriage. Alternative contraceptive options chosen by participants who declined long acting reversible contraceptives (LARCs) and their motivation was also assessed.
Methods: This was a prospective study conducted at the Department of Obstetrics and Gynaecology, Kalafong Provincial Tertiary Hospital, Pretoria, South Africa over a six-month period. All women older than eighteen years who were able and willing to provide informed consent, diagnosed with and managed for first or second trimester incomplete miscarriages were eligible for recruitment into the study. All participants were managed according to standard protocol for patients presenting with incomplete miscarriage, counselled on all the contraceptive methods available to them and then allowed the opportunity to choose their preferred contraceptive.
Results: A total of 155 patients were enrolled. One hundred and thirty-two women (85.16%) opted to use contraception. Of these, 67 women (43.22%) opted for LARCs, of which 32 (20.65%) had an IUD inserted and 35 (22.58%) had an EI inserted. Sixty-five (41.93%) women accepted other methods of contraception. The most common reason for declining LARCs was that the participant was comfortable with other forms of contraception. Twenty-three (14.84%) women declined any form of contraception, with the most common reason being the desire for another pregnancy.
Conclusion: The uptake of all forms of contraception was very high amongst a population of women presenting with incomplete miscarriage. This finding emphasises the importance of offering all these women contraception at the time of managing their miscarriages.

Introduction

Unintended pregnancies account for an estimated 44% of all pregnancies worldwide in 2010 to 2014.[1] South African data from 2012 show that 75% of pregnancies are unintended. One in eight pregnancies ends up in termination. During 2012 and 2013, 260 000 terminations of pregnancy (TOP) were performed in South Africa (SA).[2] According to the Saving Mothers Report in 2016, unsafe TOP is an avoidable factor in 24.8% of maternal deaths due to miscarriage.[3]

The use of contraception has significantly increased throughout the world, but in sub-Saharan Africa this increase has been much slower.[4] In SA, according to the Demographic and Health Survey of 2003, contraceptive use is reported at 64.7%.[5] However, the continuing increase in the TOP rate implies that large gaps remain in the accessibility to family planning.[6] This was confirmed in a study by Chersich et al in 2017, utilising a 2012 South African household survey, which assessed the contraceptive use in 6 296 women aged 15 - 49 years. Only half (50.6%) of the pregnant women that were assessed had a planned pregnancy, 66% had an unintended pregnancy in the preceding 5 years, 25% due to contraceptive failure. Injectable contraceptives were the best known in this study (92%), followed by oral contraceptives (89%); while knowledge of the IUD (56.1%) and emergency contraception (47.3%) lacked behind.[7]

Two large studies investigating IUD placement after miscarriage were conducted as part of the World Health Organisation (WHO) Human Reproduction Program. The first study investigated IUD insertion after surgical TOP, and the second following evacuation for incomplete miscarriage. The expulsion rates at 24 months varied from 4.4% to 13.2% and continuation rates at 12 months from 54% to 63%.[8] A large Cochrane review of studies investigating immediate post-abortion IUD, which included all major IUD types, confirmed that immediate insertion is safe and effective, but with a greater risk of expulsion as compared to delayed insertion.[9] The expulsion risk also increases with gestational age.[10]

One retrospective cohort study examined the incidence of repeat TOP following immediate insertion of copper IUD, supply of COC's, injection

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of depot-medroxyprogesterone acetate (DMPA), or condom use in 1700 women. The one-year repeat abortion rate was between 2,8% and 4.3% for all methods, but the five-year repeat TOP rate was lower for IUD (9.4%) than for other forms of contraception, except for condom use (6.3%) for condom-use. IUD insertion was also less costly and satisfaction rates (80.6%) and continuation rates were excellent (80.5%).[12]

The most prevalent contraceptives in SA are injectable progestogens, ascribed to low price, convenience and ease of administration, but failure and discontinuation rates are high.[13-15] The SA introduction of etonorgestrel inplant (EI) in 2014 was conducted with considerable publicity, promising initial uptake and close to 800 000 EI were placed that year. However, inadequate adverse event surveillance, high reported side effects and drug interaction concerns have dampened initial enthusiasm.[16,17]

To our knowledge there is no South African data available on the feasibility and uptake of either immediate EI or IUD insertion at the time of uterine evacuation after incomplete abortion. We aimed to investigate the uptake and acceptability of two different LARC's in women with incomplete abortions, at the time of evacuation of the uterus. We also assessed the alternative contraceptive options chosen by women who decline LARCs and their motivation behind declining LARCs.

Materials and Methods

This was a prospective study conducted at the Kalafong Provincial Tertiary Hospital (KPTH) Gynaecology Department, in Atteridgeville, Pretoria, over a six-month period. All women 18 years and older who were able and willing to provide written informed consent, diagnosed with and managed for first or second trimester incomplete miscarriages, were eligible for recruitment into the study. Women who were unable or unwilling to provide informed consent, who were haemodynamically unstable, had signs of intra-uterine infection, had contra-indications for insertion of a copper containing IUD or with contra-indications for insertion of the EI were excluded from participation in the study.

Management of patients with incomplete miscarriage was performed according to current institutional guidelines. This included amongst others either a side-room manual vacuum aspiration using sedation and local anaesthesia, or evacuation of the uterus in theatre under general anaesthesia.

At recruitment, written informed consent was obtained and a questionnaire was completed that included demographic information. Participants were counselled by the health care worker on-call on all the contraceptive methods available. These included IUD insertion, EI, DMPA, COCs and male condoms. The participants indicated their preferred contraceptive and if there were no contra-indications to the preferred method, they received the contraceptive of their choice. If there was a contra-indication to that option, alternative contraceptive methods were offered to and decided on by the participant. Thereafter all women underwent the indicated procedures, at which point the etonogestrel implant or IUD was inserted.

At discharge all patients received a follow up appointment scheduled for six weeks after discharge, at which the women's satisfaction with, complications and side-effects of the chosen contraceptive would be assessed. If an IUD had been placed, the position was also to be checked using trans-vaginal ultrasound examination.

The data collected for each participant included: age, marital status, education, income, parity, gestational age at the time of miscarriage, previous pregnancy loss, previous TOP, previous contraception used, current choice of contraception and the open-ended reason for this choice.

Data was analysed using SPSS Statistics. In the case of continuous data, means and standard deviations are reported, and in the case of categorical data, frequencies and percentages are reported. Comparisons between groups (IUD, EI, alternative contraception) were made by means of one-way analysis of variance (ANOVA) and Chi-squared tests where appropriate. The women's responses regarding the reasons for their particular choice were assessed and categorised according to emerging themes.

Written informed consent was obtained from all patients prior to enrolment in this study. This study, with Protocol number 363/2018, was approved by the University of Pretoria Health Sciences Research Ethics Committee.

Results

During the study period, 182 women meeting eligibility criteria had incomplete miscarriages requiring uterine evacuation. Twenty-seven women (14.84%) declined to participate in the study, as they were not prepared to complete the questionnaire. Data for 155 participants was available for analysis.

The mean age of the study population was 28.4 years. The demographic data of the study population is shown in Table 1. There was no statistically significant difference in the demographic data between women with first

Figure 1. The reasons of 88 participants declining LARCs

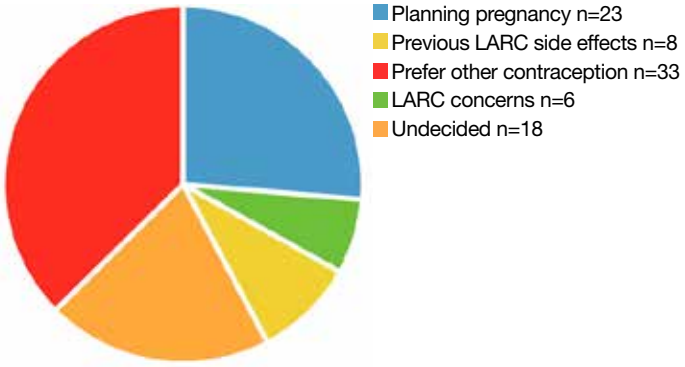

Table 1. Demographic data of the study population

Variable	Values
Age (years) (range, standard deviation)	28.4 (18-43, 6.81)
Parity (range, standard deviation)	1.4 (0-6, 1.17)
Gestational age at time of miscarriage (weeks) (range, standard deviation)	10.6 1- 21, 3.98
First trimester miscarriage (n, %)	123 (79.35)
Second trimester miscarriage (n, %)	32 (20.65)
Prior miscarriage (n, %)	83 (53.55)
Previous termination of pregnancy (n, %)	98 (63.23)
Previous contraception use (n, %)	26 (16.77)
COC	59 (38.06)
Progestogen	3 (1.93)
IUD	5 (3.23)
EI	7 (4.52)
Condoms	55 (35.48)
None	
Marital status (n, %)	
Single	91 (58.71)
Married/Stable relationship	64 (41.29)
Education (n, %)	
Primary/Secondary	94 (60.65)
≥Matric	61 (39.35)

Table 2. Comparison of patients with first and second trimester miscarriages

Variable	First trimester miscarriage (n=123)	Second trimester miscarriage (n=32)	p
Age (years) (mean, CI)	28.4 (27.08-29.73)	28.3 (26.32-30.27)	0.9319
Parity (mean, CI)	1.4 (1.20-1.63)	1.3 (0.96-1.66)	0.6616
Gestational age at time of miscarriage (weeks) (mean, CI)	8.8 (8.22-9.36)	15.6 (14.81-16.44)	<0.0001
Previous contraception (n, %)			
COC	18 (14.63%)	8 (25.00%)	0.162
Progestogen	45 (36.59%)	14 (43.75%)	0.457
IUD	2 (1.63%)	1 (3.13%)	0.583
EI	4 (3.25%)	1 (3.13%)	0.971
Condoms	7 (5.79%)	0	0.167
None	47 (38.21%)	8 (25%)	0.164
Marital status (n, %)			
Single	52 (42.28%)	12 (37.50%)	0.625
Married/Stable relationship	71 (57.72%)	20 (62.50%)	
Education (n, %)			
Primary	7 (5.69%)	1 (3.13%)	0.095
Secondary	43 (35.00%)	18 (56.25%)	
≥Matric	72 (58.54%)	13 (40.63%)	

and second trimester miscarriages, with the comparison shown in Table 2.

All women were offered contraception and 132 women (85.16%) desired contraception, of which 67 (43.22%) preferred a LARC option. Of the group preferring LARC as an option, 32 (20.64%) had an IUD inserted and 35 (22.58%) had an EI inserted. Twenty-three women (14.84%) declined any form of contraception. The most common reason given for declining any contraception, was desired future pregnancy.

Among the 67 women preferring LARC, parity was significantly greater compared to those preferring other options (Table 3). All 67 women choosing LARC reported a previous pregnancy loss and 64 (95.52%) had a previous TOP. The most common reason for declining LARC, was that the women were comfortable with other forms of contraception (Figure 1). The uptake rate of contraception in the group declining LARC was 37.50%.

The alternative forms of contraception that were preferred instead of LARC were 46 (29.71%) women who opted for progestogen injectable contraceptives, 12 (7.74%) women who elected to use condoms and 7 (4.52%) indicating they prefer to use COCs.

No participants presented for the follow up appointment on the date they received. A minimum of three attempts were made by telephone to contact each woman and schedule another appointment. Phone calls were placed during the daytime and evenings. No women were successfully contacted, with 77 (50.32%) not answering any of the telephone calls, 44 (28.39%) had a disconnected telephone and 34 (21.94%) had provided incorrect telephone numbers.

Discussion

Offering contraception to women being treated for incomplete miscarriage is an important strategy in reproductive women's healthcare in South Africa, where women have inadequate access to contraceptive services with high termination of pregnancy rates. In this study the uptake of contraception amongst this group of women was 85%. This is in stark contrast to the 7.5% uptake reported in a study done by Moss et al, in Staffordshire, United Kingdom.[17] A possible explanation for the difference is lower rates of unintended pregnancy.

The finding that 43% of women in this study opted for LARC, is similar to the findings of a study at the same institution offering IUD only to these women, where the uptake was 48%.[19] In another study performed at our institution amongst women undergoing elective caesarean section, the uptake of IUD insertion at the time of caesarean section was 24% (unpublished data). The 85% uptake of contraception in this group is an extremely important finding, and it is reasonable to infer that a substantial proportion of women in this group presented at our institution after having had a TOP that was initiated elsewhere.

In South Africa, an estimated 12.50% of pregnancies end up in termination.[2] Sixty three percent of women in this study reported a previous TOP. Of the women accepting LARCs, all had a previous pregnancy loss and almost 96% had a previous TOP. The parity of these women was also significantly higher. In comparison, only 53.34% of the women declining LARCs had a previous pregnancy loss. This is an interesting finding, as with a previous loss one would expect a wish for a further pregnancy. It is possible that some of the previous losses were as a result of TOP as well.

The continuing increase in the South African TOP rate indicates that large gaps remain in in the accessibility of family planning [6]. With this high rate of TOP and the women's young age, one can also consider that these current pregnancies may have been unintended. Possible unsafe TOP may have been attempted. Better counselling and easier access to contraception and termination of pregnancy services could decrease the rates of evacuation and its possible complications.

The most recent 2003 Demographic and Health Survey, showed that 64.7% of women use contraceptives, which is comparable to the 64.52% prevalence of previous contraceptive use by the participants in this study.[5] Of these women, 38.07% had previously used progestogen injectable contraceptives, with only 5.17% having ever used EIs or IUDs. Following their miscarriage, when not choosing the EI or IUD, 29.71% women opted for progestogen injectable contraceptives. This correlates well with the studies showing the widespread prevalence of injectable progestin use in SA.[13] However, with progestin injectable contraception, incorrect timing of follow-on injections, discontinuation and switching of methods, are the main contributors to contraception failures in SA.[15]

Almost 21% of women in this study were undecided about contraception and 7% reported they were afraid of LARCs. The most common reason for declining LARCs was that the women was comfortable with other forms of

Table 3. Comparison of women accepting and declining LARC

Variable	LARC (n=67)	Declined LARC (n=88)	p
Age (years) (mean, CI)	29.0 (27.35-30.75)	27.9 (26.40-29.39)	0.3125
Parity (mean, CI)	1.7 (1.41-2.00)	1.2 (0.93-1.39)	0.0039
Gestational age at time of miscarriage (weeks) mean, CI)	11.0 (9.79-12.17)	10.3 (9.38-11.16)	0.3287
Previous TOP (n, %)	64 (95.52%)	34 (38.64%)	0.040
Previous contraception (n, %)			
COC	13 (19.40)	13 (14.77%)	0.445
Progestogen	23 (34.33)	36 (40.91%)	0.403
IUD	0	3 (3.41%)	0.127
EI	2 (2.96%)	3 (3.41%)	0.882
Condoms	4 (5.97%)	3 (3.41%)	0.447
None	25 (37.31%)	30 (34.09%)	0.678
Marital status (n, %)			
Single	28 (41.79%)	36 (40.91%)	0.912
Married/Stable relationship	39 (58.21%)	52 (59.09%)	
Education (n, %)			
Primary	3 (4.48%)	5 (5.68%)	0.861
Secondary	25 (37.31%)	36 (40.91%)	
≥Matric	38 (56.71%)	47 (53.41%)	
Stable income (n, %)			
Yes	24 (35.82%)	21 (23.86%)	0.104
No	43 (64.18%)	67 (76.14%)	

contraception.

Loss of participants to intended follow-up limited this study, with none attending their scheduled appointments and telephonic rebooking also being unsuccessful. Poor follow-up rates in women has been reported before. McNicholas et al also showed a high rate of 66% loss to follow up in women using IUD.[12]

Conclusion

The use of effective contraception has far-reaching benefits for women and their communities. Effective contraception is a very powerful tool in the empowerment of women, allowing them to reach the goals and full potential.

Miscarriage and treatment of women with incomplete miscarriage is a wonderful opportunity to counsel and provide effective contraception, especially LARC options to women in settings with less adequate contraceptive services. The high uptake of any form of contraception in this study highlights the serious contraceptive needs of this group of women, many of whom had an incomplete miscarriage that probably started as a TOP outside of the available safe TOP service available to some women.

Contraception is an essential service; a range of options which includes long acting methods should be discussed and offered as part of the routine management of all women presenting with a diagnosis of incomplete miscarriage.

References

1. *Bearak J, Popinchalk A, Alkema L, Sedgh G. Global, regional, and subregional trends in unintended pregnancy and its outcomes from 1990 to 2014: estimates from a Bayesian hierarchical model. Lancet Glob Health 2018; 6: e380–89. DOI:https://doi.org/10.1016/S2214-109X(18)30029-9*
2. *Health Systems Trust and SA Department of Health 2012*
3. *Saving Mothers Report 2014-2016, SA Department of Health*
4. *Cleland J, Harbison S, Shah IH. Unmet need for contraception: Issues and challenges. Stud Fam Plann 2014;45(2):105-122. https://doi.org/10.1111/j.1728-4465.2014.00380.x*
5. *National Department of Health. South Africa Demographic and Health Survey. Pretoria: NDoH, 2003.*
6. *Massyn N, Day C, Peer N, et al. District Health Barometer 2013/14. Durban: Health Systems Trust, 2014. https://health-e.org.za/wp-content/uploads/2014/10/DHB_2013-14.pdf*
7. *Chersich, M F, Wabiri, N, Risher, K, Shisana, O, Celentano, D, Rehle, T, Evans, M, & Rees, H. (2017). Contraception coverage and methods used among women in South Africa: A national household survey. SAMJ: South African Medical Journal, 107(4), 307-314.*
8. *World Health Organization Task Force on Intrauterine Devices for Fertility Regulation IUD insertion following termination of pregnancy: a clinical trial of the TCu 220C, Lippes loop D, and copper 7. Stud Fam Plann. 1983;14:99–114.*
9. *Grimes DA, Lopez LM, Schulz KF, Stanwood NL. Immediate postabortal insertion of intrauterine devices. Cochrane database syst. Rev 2010;6.*
10. *Wildemeersch D, Batar I, Affandi B, Andrade A, Shangchun W, Jing H, Xiaoming C. The 'frameless' intrauterine system for long-term, reversible contraception: A Rev. of 15 yrs of clinical experience. J. Obstet.Gynaecol. Research. Vol.29. 2003;3:164-173.*
11. *Ames CM, Norman WV. Preventing repeat abortion in Canada: is the immediate insertion of IUD post- abortion a cost-effective option associated with fewer repeat abortions? Contraception 2012;85:51-55.*
12. *McNicholas C, Hotchkiss T, Madden T, Zhao Q, Allsworth, Piepert J. Immediate postabortal intrauterine device insertion: continuation and satisfaction. WHI 2012;365-369*
13. *Darroch JE, Singh S. Trends in contraceptive need and use in developing countries in 2003, 2008, and 2012: An analysis of national surveys. Lancet 2013;381(9879):1756-1762. https://doi.org/10.1016/s0140-6736(13)60597-8*
14. *Michalow J, Chola L, McGee S, et al Triple return on investment: The cost and impact of 13 interventions that could prevent stillbirths and save the lives of mothers and babies in South Africa. BMC Preg Child 2015;15(1):456. https://doi.org/10.1186/s12884-015-0456-9*
15. *Baumgartner JN, Morroni C, Mlobeli RD, et al. Timeliness of contraceptive reinjections in South Africa and its relation to unintentional discontinuation. Int Fam Plan Perspect 2007;33(2):66-74. https://doi.org/10.1363/ifpp.33.066.07*
16. *Parliamentary Monitoring Group. Minister of Health, Dr Aaron Motsoaledi, gave his budget vote speech on 23 July 2014. 2014. http://pmg.org.za/briefing/20140723-minister-health-budget-vote-speech*
17. *National Department of Health. National Perspective: Subdermal Implant Roll-out Statistics. The Contraceptive Implant in South Africa. Pretoria: NDoH, 2015.*
18. *Moss E, Reynolds T, Kundu A. Emergency contraception: Patterns of use in community sexual health clinics. Journal of Obstetrics and Gynaecology 2009;4:337-339.*
19. *Moagi ME, Snyman LC, Makin JD. Feasibility and uptake of intrauterine contraceptive device at the time of uterine evacuation in women presenting with incomplete miscarriage at Kalafong Provincial Tertiary Hospital. O&G Forum 2019; 29: 24 – 26.*