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Treatment of early pregnancy failure: Does induced abortion training affect later practices?

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Abstract

Objective—To examine the relationship between induced abortion training and views towards, and use of, office uterine evacuation and misoprostol in early pregnancy failure (EPF) care.

Study Design—We surveyed 308 obstetrician/gynecologists on their knowledge and attitudes toward treatment options for EPF, and previous training in office uterine evacuation.

Results—Sixty-seven percent of respondents reported training in office uterine evacuation and 20.3% reported induced abortion training. Induced abortion training was associated with strongly positive views towards both office-based uterine evacuation and misoprostol as treatment for EPF, as compared to those with office uterine evacuation training in other settings. (OR=2.64, $p<0.004$ and OR=3.22, $p<0.003$, respectively.) Further, induced abortion training was associated with use of office uterine evacuation for EPF treatment, as compared to those with office evacuation training in other settings (OR=2.90, $p=0.004$).

Conclusions—Training experiences, especially induced abortion training is associated with use of office uterine evacuation for EPF.

Key Words//Phrases

Early pregnancy failure; treatment patterns; induced abortion; training

Introduction

Early pregnancy failure (EPF) is one of the most common clinical scenarios encountered by practicing obstetrician/gynecologists. The term early pregnancy failure (EPF) refers to an

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embryonic or fetal demise of an intrauterine pregnancy in the first trimester, including anembryonic gestation. Evidence-based treatment options include expectant management, treatment with misoprostol, and surgical uterine evacuation in an office or an operating room setting¹, though expectant and operating room surgical management dominate practice in the United States.^{2, 3}

It appears that many women accept, and sometimes prefer, treatment with office uterine evacuation or misoprostol after EPF.^{4–8} Provider and/or health service related barriers may contribute to the fact that few health care providers appear to routinely offer these options.³ A lack of training is often cited by providers as a reason not to adopt new practices⁹ and may be an important modifiable barrier to offering office uterine evacuation for EPF.

Training to competency during residency is one way to ensure practicing physicians have specific skills. Office uterine evacuation and misoprostol are frequently used in induced abortion training but not often for other indications. The primary objective of this study was to examine the relationship between induced abortion training and views towards, and use of, office uterine evacuation and misoprostol in EPF care. We hypothesized that physicians with prior induced abortion training would be more likely to 1) have more favorable views towards office uterine evacuation and misoprostol as EPF treatment and 2) be more likely to use uterine evacuation and misoprostol for EPF treatment than those without induced abortion training.

Materials and Methods

We conducted a sub-analysis of data collected for a larger, national study of EPF treatment patterns.³ In that study, current EPF treatment practices were identified using a cross-sectional survey of providers in the United States. Potential participants were randomly selected from the membership list of the American College of Obstetricians and Gynecologists, the American College of Nurse Midwives, and the American Academy of Family Physicians. We mailed 3591 surveys in order to enroll 300 providers from each specialty. Details on our study methodology have been published previously.³ This analysis was limited to participating obstetrician/ gynecologists who provided information on previous training experiences and reported managing EPF in the six months prior to study enrollment. We obtained approval for this study from the University of Michigan Institutional Review Board.

Questionnaire items were developed by a literature review and consensus. We drew heavily from previous work on provider behavior change and adherence to evidence-based practices.^{9, 10} Survey items addressed several areas including: 1) provider and practice characteristics such as age, sex, and practice setting, 2) use of office procedures in general, 3) current treatment practices for EPF, 4) knowledge and attitudes about different EPF treatment options, 5) barriers to adopting office uterine evacuation and misoprostol, and 6) previous training.

Previous training in office-based uterine evacuation was ascertained from responses to a single item asking respondents to identify in what context, if any, they gained experience with office uterine evacuation. Possible answers included: none, during residency training, post-graduate courses, induced abortion training, or other experience. Multiple responses were allowed.

Respondent attitudes and beliefs towards office uterine evacuation and misoprostol as EPF treatment were measured using level of agreement with a series of statements. A summary score representing favorable views of office uterine evacuation was created from 7 items. (Cronbach's alpha of 0.81) Each item was measured on a 5-point scale, with 5 being the

“most favorable” and 1 being the “least favorable” view. The minimum and maximum possible scores were 7 and 35 respectively. Similarly, a summary score representing favorable views of misoprostol use for EPF was created from 6 items. (Cronbach’s alpha of 0.75) The minimum and maximum possible scores were 6 and 30 respectively. After examining the distribution of scores, participants scoring in the top 25%ile were defined as “strongly positive” toward treatment type.

Descriptive statistics were used to describe our sample population with regard to age, sex, and years of practice. Overall treatment patterns and attitudes towards office uterine evacuation and misoprostol as EPF treatment were compared among 1.) those reporting no prior office uterine evacuation training, 2.) those with any office uterine evacuation training and 3.) those specifically reporting induced abortion training. Using Pearson’s Chi-Square and t-tests, our initial analyses focused on testing for differences in knowledge, attitudes, barriers, and treatment patterns between these groups of respondents.

Logistic regression was used to examine the relationships between training and 1.) having strongly positive views towards office uterine evacuation or misoprostol for EPF and 2.) use of office uterine evacuation or misoprostol in the past 6 months. For each dependent variable, initially we examined its association with any type of training (versus no training) among all respondents. Next, in order to estimate the relative importance of induced abortion training versus office evacuation training in other settings, we limited our analysis to participants with any previous training. Prior to bivariate testing, we planned to include provider sex, years in practice, and practice type in the models. Additional covariates were identified during bivariate testing and were included if a significant relationship was identified. ($p < 0.05$) Data were analyzed with SPSS 17. (SPSS Inc, Chicago, IL)

Results

In total, 308 eligible obstetrician/gynecologists returned completed surveys for a response rate of 51.1%. 302 provided information of previous training experiences and reported managing EPF in the past six months. Sixty-seven percent of respondents reported training in office-based uterine evacuation, but only 61 (20.0%) of respondents reported previous training in induced abortion techniques. Respondent characteristics are presented in Table 1. Reported treatment practices for EPF differed between those with and without office uterine evacuation training. As shown in Table 2, those respondents with prior office uterine evacuation and/or induced abortion training more frequently reported using office uterine evacuation in the past 6 months than providers without any training. ($p < 0.001$) Respondents without induced abortion training used operating room uterine evacuation more frequently than those with training. ($p < 0.001$) The proportion of patients treated with misoprostol was infrequent in all groups.

Views towards various treatment options for EPF are presented in Table 3. As compared to those without training, obstetrician/gynecologists with prior office uterine evacuation training, especially induced abortion training, had more favorable views of both misoprostol and office uterine evacuation as treatment options for EPF. Respondents with prior induced abortion training were less likely to believe operating room procedures were safer than office procedures and most preferred by patients than respondents without induced abortion training.

After controlling for provider sex, years in practice, and practice type, any office uterine evacuation training was associated with strongly positive views towards office uterine evacuation ($OR = 6.00$, $p < 0.001$), but not misoprostol as treatment for EPF. When we examined whether types of training were related to treatment views, we found that induced

abortion training was associated with strongly positive views towards both office uterine evacuation and misoprostol for EPF, as compared to office uterine evacuation training in other settings. (OR=2.64, $p<0.004$ and OR=3.22, $p<0.003$, office uterine evacuation, misoprostol use respectively) Similarly, the odds of *using* office uterine evacuation in the past 6 months was greater among participants with any type of office uterine evacuation training, as compared to no training. (OR=30.0, $p<0.001$) Furthermore, those with induced abortion training were more likely to have used office uterine evacuation to treat EPF than those with office uterine evacuation training in other settings. (OR=2.90, $p=0.004$) We found no significant relationship between training type and misoprostol use in the past six months.

Comment

Our findings suggest that women may be treated differently for EPF depending on whether their obstetrician/gynecologist had prior training in office uterine evacuation, and in particular, induced abortion training. Participants with prior induced abortion training were more likely to use office uterine evacuation for EPF management than those with office uterine evacuation training in other settings. Induced abortion training was also associated with strongly positive views of misoprostol as EPF treatment but not use.

Although induced abortion and EPF treatment share an objective to safely evacuate the uterus, these clinical events are sharply distinguished from one another in both training and clinical practice.¹¹ Many studies demonstrated that misoprostol and office uterine evacuation can safely evacuate a uterus in the context of induced abortion.¹² Although some providers may be reluctant to apply this research to EPF, studies have demonstrated these treatment options are safe, effective, and acceptable among women experiencing EPF.⁴⁻⁸ Still, EPF treatment in the United States seems to be dominated by expectant management and operating room-based uterine evacuation.^{2, 3}

This study suggests that training experiences, especially in induced abortion, increase the likelihood of offering office-based uterine evacuation for EPF later in practice. Early clinical experiences and residency training in family planning are fundamental opportunities for students and physicians to comfortably gain knowledge, technical skills, and expertise. These training experiences affect subsequent abortion provision.^{13, 14} Little is known about how induced abortion training might affect other practices, such as provision of office procedures in general. One possible explanation for the apparent importance of induced abortion training is the volume of available cases: Those who participate in induced abortion training simply have more opportunities to use office uterine evacuation and misoprostol. Trainees who opt out of induced abortion training should be offered alternate skill building opportunities.

Although induced abortion training was associated with positive views towards misoprostol as EPF treatment, we did not find an association with actual use of misoprostol for EPF. Because of the age of our study cohort and the relatively recent studies demonstrating the efficacy of misoprostol, it is probably not surprising that misoprostol use is still infrequent. There is a well-documented delay between published literature and practice change.⁹ Positive attitudes towards misoprostol as EPF treatment may be an intermediate step between training and practice, and our findings may indicate early adoption of misoprostol use. Additionally, since the number of respondents reporting induced abortion training was relatively few, we may not have had sufficient power to detect a relationship between training and misoprostol use.

An important limitation of this study was our ascertainment of induced abortion training. It was limited to a single item and we made no attempt to assess the timing, quality or content of training. For instance, we did not ask respondents how office uterine evacuation or misoprostol use was incorporated into their induced abortion training experience. Therefore, the level of training may range from observing a few cases to hundreds of independently performed procedures and we cannot be certain that reported induced abortion training the main source of office uterine evacuation training.

Previous studies have reported that approximately half of graduating obstetrician/gynecologists have done at least one induced abortion in residency^{13, 15, 16} whereas in our study only 20% reported having training. This discrepancy may be due to underreporting of induced abortion training by our respondents. Alternatively, this may reflect differences in response patterns, in that the cited studies were focused on training in induced abortion and ours on early pregnancy failure management. Respondent age may also be a factor: Our population reported a mean of 18 years in practice, indicating an approximate mean residency graduation year of 1990. In 1991–92, about 12% of obstetrics and gynecology residency programs reported having integrated first-trimester abortion training.¹⁷ This percentage has since increased to 51%.¹⁸ Thus, it is possible that a large portion of our sample had less access to induced abortion training than those who finished residency later, but we would expect this limitation would have inhibited our ability to find differences. Finally, although our sample population was similar to the membership of the American Congress of Obstetricians and Gynecologists¹⁹, we may not be able to generalize our findings to non-responders. Specifically, we may not be representing the views and practices of more recent graduates who may be more likely to have had training with these techniques.

The relatively slow adaptation of office uterine evacuation and misoprostol in EPF care may in part be due to a lack of adequate training and experience with these methods of uterine evacuation. Trainees that opt out of induced abortion training or who enter a residency program with limited or no abortion training have fewer opportunities to learn these skills under supervision. Residency programs could lessen this training difference by including misoprostol and office uterine evacuation as options for EPF treatment.

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Table 1

Respondent Characteristics

CHARACTERISTIC	All respondents (n=302)	Any training in office uterine evacuation	Induced abortion training	P-value
Mean years in practice, (SD) *	18.7 (9.2)	Yes (n=204) 18.9 (9.1)	No (n=98) 18.1 (9.5)	NS
Provider sex, n (%)				
Male	158 (51.8)	115 (57.2)	43 (43.9)	0.04
Female	144 (47.2)	86 (42.8)	55 (56.1)	
Race/Ethnicity, n (%)				
White (%)	251 (82.3)	175 (85.8)	75 (76.5)	NS
County population, n (%)				
<50,000	23 (7.5)	17 (8.3)	6 (6.1)	NS
50,001–100,000	40 (13.1)	28 (13.7)	12 (12.2)	
100,001–250,000	55 (18.0)	35 (17.2)	19 (19.4)	
250,001–750,000	76 (24.9)	49 (24.0)	27 (27.6)	
750,000	108 (35.4)	74 (36.3)	32 (32.7)	
Practice type, n (%)				
University	52 (17.2)	33 (16.2)	19 (19.4)	NS
Multi-specialty	34 (11.3)	24 (11.8)	9 (9.2)	
Single specialty	191 (63.2)	126 (61.8)	63 (64.3)	
Other	25 (8.3)	21 (10.3)	7 (7.1)	
% Medicaid patients, n (%)				
0	51 (16.9)	39 (19.8)	12 (12.2)	NS
1–25%	149 (49.3)	106 (52.0)	43 (43.9)	
26–50	63 (20.9)	38 (18.6)	25 (25.5)	
51–75	31 (10.3)	17 (8.3)	14 (14.3)	
76–100	8 (2.6)	4 (2.0)	3 (3.1)	
Office procedures offered, n (%)				
none	23 (7.5)	13 (6.4)	10 (10.2)	NS
Intrauterine device placement	260 (85.2)	176 (86.3)	82 (83.7)	NS
				<0.009

CHARACTERISTIC	All respondents (n=302)	Any training in office uterine evacuation		Induced abortion training		P-value
		Yes (n=204)	No (n=98)	Yes (n=61)	No (n=241)	
Hysteroscopy/Essure	80 (26.2)	60 (29.4)	20 (20.4)	20 (32.8)	60 (24.9)	NS
Uterine evacuations/D&C	66 (21.6)	63 (30.9)	3 (3.1)	28 (45.9)	38 (15.8)	<0.001
Endometrial ablation	62 (20.3)	42 (20.6)	20 (20.4)	13 (21.3)	49 (20.3)	NS
LEEP	191 (62.6)	133 (65.2)	57 (58.2)	47 (77.0)	143 (59.3)	<0.006
Context of office uterine evacuation training						
None	98 (32.1)					
Residency	153 (50.2)					
Induced abortion	61 (20.0)					
Post-graduate course/experience	23 (7.5)					

* t-test was used to compare means and

** Pearson's Chi-Square test was used to compare categorical characteristics

SD= Standard deviation,

Numbers may not add up to 100% due to missing items, or more than one response

Table 2

EPF treatment patterns by training experience

Percentage of patients treated		Number of providers reporting, n(%)				
Treatment type		Any office uterine evacuation training (n=204)	No office uterine evacuation training (n=98)	P-value	Induced abortion training (n=61)	No induced abortion training (n=241)
Expectant management	0	20 (10.2)	11 (11.3)	NS	6 (10.2)	25 (10.6)
	1–25%	107 (54.3)	46 (47.4)		36 (61.0)	117 (49.8)
	26–50%	52 (26.4)	23 (23.7)		14 (23.7)	61 (26.0)
	51–100%	18 (9.1)	17 (17.5)		3 (5.1)	32 (13.6)
Misoprostol	0	99 (50.5)	56 (57.7)	NS	26 (43.1)	129 (55.1)
	1–25%	57 (29.1)	25 (25.8)		18 (30.5)	64 (27.4)
	26–50	30 (15.3)	12 (12.4)		10 (16.9)	32 (13.7)
	51–100%	10 (5.1)	4 (4.1)		5 (8.5)	9 (3.9)
Office uterine evacuation	0	149 (73.4)	95 (97.9)	<0.001	36 (57.1)	208 (87.0)
	1–25%	24 (11.8)	0 (0)		12 (19.7)	12 (5.0)
	26–50	11 (5.4)	1 (1.0)		6 (9.8)	6 (2.5)
	51–100%	12 (5.9)	0 (0)		5 (8.2)	7 (2.9)
Operating room uterine evacuation	0	32 (16.3)	5 (5.2)	NS	16 (27.1)	21 (9.0)
	1–25%	50 (25.5)	24 (24.7)		16 (27.1)	58 (24.8)
	26–50	39 (19.9)	28 (28.9)		9 (15.3)	58 (24.8)
	51–100%	74 (37.7)	40 (41.2)		17 (28.8)	97 (41.5)

Numbers may not add up to 100% due to missing items

Table 3

Provider attitudes and beliefs towards EPF treatment by training experience

	Number (%) of providers in agreement					
	Any office uterine evacuation training (n=204)	No office uterine evacuation training (n=98)	Unadjusted OR (95% CI)	Induced abortion training (n=61)	No induced abortion training (n=241)	Unadjusted OR (95% CI)
Provider attitudes and beliefs towards EPF treatment						
Best treatment is operating room D&C	97 (48.3)	43 (43.9)	1.19 (0.73–1.94)	19 (31.1)	121 (50.8)	0.43 (0.24–0.80)
Best treatment is D&C as soon as possible	47 (23.9)	22 (22.7)	1.07 (0.60–1.90)	9 (15.0)	60 (25.6)	0.51 (0.24–1.10)
Trial of expectant management is safe	152 (75.2)	80 (81.6)	0.68 (0.37–1.25)	46 (75.4)	186 (77.8)	0.87 (0.45–1.68)
Misoprostol treatment is safe	141 (70.9)	67 (69.1)	1.09 (0.64–1.85)	49 (80.3)	159 (67.7)	1.95 (0.98–3.88)
Office D&C is riskier than operating room D&C	56 (27.9)	35 (36.1)	0.68 (0.41–1.14)	10 (16.4)	81 (34.2)	0.38 (0.18–0.78)
Office D&C should not be offered	12 (6.0)	15 (15.3)	0.35 (0.16–0.78)	2 (3.3)	25 (10.5)	0.29 (0.06–1.26)
Most patients want D&C under general anesthesia	124 (61.7)	71 (72.4)	0.61 (0.36–1.04)	33 (54.1)	162 (68.1)	0.55 (0.31–0.98)
Barriers to misoprostol use in EPF						
Lack surgical or nursing back-up	11 (5.6)	10 (10.2)	0.15 (0.21–1.26)	5 (8.2)	16 (6.8)	1.22 (0.43–3.48)
Lack nursing support	32 (16.1)	22 (22.4)	0.66 (0.36–1.21)	12 (19.7)	42 (17.8)	1.13 (0.55–2.31)
Too little patient demand	35 (17.7)	19 (19.4)	0.89 (0.48–1.66)	11 (18.0)	43 (18.3)	0.98 (0.47–2.04)
Barriers to office uterine evacuations for EPF						
Office space limits	87 (42.9)	54 (55.1)	0.61 (0.38–0.99)	22 (36.1)	119 (49.6)	0.57 (0.32–1.03)
Reimbursement concerns	42 (20.9)	24 (24.7)	0.80 (0.43–1.43)	13 (21.7)	53 (22.3)	0.97 (0.48–1.92)
Nurses or office staff oppose	37 (18.4)	22 (22.4)	0.78 (0.43–1.41)	6 (10.0)	53 (22.3)	0.39 (0.16–0.97)
No support in the literature	3 (1.5)	6 (6.2)	0.23 (0.06–0.94)	0	9 (3.8)	

		Number (%) of providers in agreement					
		Any office uterine evacuation training (n=204)	No office uterine evacuation training (n=98)	Unadjusted OR (95% CI)	Induced abortion training (n=61)	No induced abortion training (n=241)	Unadjusted OR (95% CI)
Lack appropriate training		9 (4.5)	30 (30.6)	0.11 (0.05–0.24)	1 (1.7)	38 (15.9)	0.09 (0.01–0.67)
Too few patients prefer office uterine evacuations		44 (21.6)	25 (25.5)	0.81 (0.46–1.43)	6 (9.8)	63 (26.1)	0.31 (0.13–0.74)
Summary Attitude Scores		Any office uterine evacuation training (n=204)	No office uterine evacuation training (n=98)	P-value	Induced abortion training (n=61)	No induced abortion training (n=241)	P-value
Misoprostol favorability score							
Mean (SD)		22.4 (5.0)	22.1 (5.4)	NS	23.5 (5.5)	22.0 (5.0)	0.04
Range		9–30	7–30		9–30	7–30	
25%ile		27	27		28	26	
Office uterine evacuation favorability score							
Mean (SD)		27.2 (5.6)	23.6 (4.7)	<0.001	29.6 (4.5)	25.1 (5.4)	<0.001
Range		13–35	13–34		19–35	13–35	
75%ile		32	27		34	29	

95% CI= 95% confidence interval

OR=odds ratio

SD=standard deviation

Proportion of providers in agreement with each statement was compared using Pearson Chi-Square

Mean favorability scores were compared using t-tests

Numbers may not add up to 100% due to missing items