PICO Search Assignment Worksheet **Name: Jay Kolasinac**

Brief description of patient problem/setting (summarize the case very briefly)

25F, G3P3003, s/p NSVD PPD#1 is in stable condition. During routine PP care, the patient is offered contraception. Patient is open to contraception usage however, quickly declined any IUD stating her sister had a difficult time trying to become pregnant after IUD removal.

Search Question: Is there a concern for prolonged infertility in patients following IUD removal?

Question Type: What kind of question is this? (boxes now checkable in Word)

☐Prevalence	☐Screening	☐Diagnosis
☐Prognosis	☐Treatment	☒Harms

Assuming that the highest level of evidence to answer your question will be meta-analysis or systematic review, what other types of study might you include if these are not available (or if there is a much more current study of another type)? Please explain your choices.

Along with meta-analyses and systemic reviews, I would consider studies such as Cohort Studies. Cohort studies are prospective studies that follow individuals over time where data is collected as circumstances change. RCT would better suited if my PICO question had more to do with treatment outcomes.

PICO search terms:

P	I	C	O
Female patients	IUD	No IUD	Infertility
Pregnant patients		Oral contraceptives	No effect on fertility
		Injectable contraceptives	

Search tools and strategy used:
Please indicate what data bases/tools you used, provide a list of the terms you searched together in each tool, and how many articles were returned using those

terms and filters.
Explain how you narrow your choices to the few selected articles.

PubMed –

"IUD Infertility" – 1266 results → Filtered to MEDLINE Journals – 864 results → Filtered to 5 years – 416 results

Google Scholar –

"IUD Infertility" – 20,700 results → Filtered to 5 years → 6,770 results

Results found:

Article 1

Citation

Yland JJ, Bresnick KA, Hatch EE, et al. Pregravid contraceptive use and fecundability: prospective cohort study. *BMJ*. 2020;371:m3966. Published 2020 Nov 11. doi:10.1136/bmj.m3966

https://sci-hub.se/https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7656314/

Article Type

Prospective Cohort Study

Abstract

OBJECTIVE

To evaluate the association between pregravid use of a variety of contraceptive methods and subsequent fecundability. DESIGN Prospective cohort study.

SETTING Denmark and North America, 2007-19.

PARTICIPANTS 17954 women who had tried to conceive for up to six menstrual cycles at study entry. At baseline, participants reported their contraceptive histories, and personal, medical, and lifestyle characteristics.

MAIN OUTCOME MEASURES Pregnancy, determined by bimonthly follow-up questionnaires for up to 12 months.

RESULTS Approximately 38% (n=6735) of participants had recently used oral contraceptives, 13% (n=2398) had used long acting reversible contraceptive methods, and 31% (n=5497) had used barrier methods. Women who had recently stopped using oral contraceptives, the contraceptive ring, and some long acting reversible contraceptive methods experienced short term delays in return of fertility compared with users of barrier methods. Use of injectable contraceptives was associated with decreased fecundability compared with use of barrier methods (fecundability ratio 0.65; 95% confidence interval 0.47 to 0.89). Users of injectable contraceptives had the longest delay in return of normal fertility (five to eight menstrual cycles), followed by users of patch contraceptives (four cycles), users of oral and ring contraceptives (three cycles), and users of hormonal and copper

intrauterine devices and implant contraceptives (two cycles). Lifetime length of use of hormonal contraceptive methods was not associated with fecundability.

CONCLUSIONS Use of some hormonal contraceptive methods was associated with delays in return of fertility, with injectable contraceptives showing the longest delay. The findings indicated little or no lasting effect of long term use of these methods on fecundability.

Key Points

- Long acting reversible contraceptive method users encountered some delays in return to fertility
- Users of injectable contraceptives had longest delay in return to normal fertility
- IUD users experienced lowest return to fertility ~ 2 menstrual cycles
- Results showed little or no lasting effect on long term infertility issues

Reason for choosing:

- I really liked how this article was quite recent and published in 2020 only a few months ago. The study used a massive sample size of almost ~18,000 women participants and followed them for ~12 years. The study also compared the return to fertility of IUD usage to other means of contraception which is always good to get a comparison. This study answered my question directly and used a prospective cohort study to follow these patients for a long period of time collecting data.

Article 2

Citation

Stoddard, A. M., Xu, H., Madden, T., Allsworth, J. E., & Peipert, J. F. (2015). Fertility after Intrauterine Device Removal: A Pilot Study. The European Journal of Contraception & Reproductive Health Care, 20(3), 223–230. doi:10.3109/13625187.2015.1010639

https://sci-hub.se/10.3109/13625187.2015.1010639

Article Type

Prospective Cohort Study

Abstract

Background Despite high efficacy, only 7.7% of women in the United States currently using contraception use an IUD. There is little published contemporary data about fertility rates after IUD use, especially in nulliparous women and women using the hormonal IUD.

Study Design We recruited sexually active women 18 to 35 years of age enrolled in the Contraceptive CHOICE Project who had discontinued a contraceptive method and desired pregnancy.

Results In this pilot project, we enrolled 69 former IUD users (19 copper and 50 levonorgestrel) and 42 former non-IUD users. Pregnancy rates at 12 months were similar between the two groups; 81% of IUD users became pregnant compared to 70% of non-IUD users (p 0.18). In the Cox model, there was no difference in the time to pregnancy in IUD users compared to non-IUD users (HR adj 1.19, 95% CI

0.74 – 1.92). African American race was the only variable associated with reduced fertility (HR adj 0.40, 95% CI 0.24 – 0.67).

Conclusions We found no difference in 12-month pregnancy rates or time to pregnancy between former IUD users and users of other contraceptive methods. However, there was a clinically and statistically significant reduction in fertility in African American women.

Key Points

- The study compared two groups of women: Previous IUD users and non-IUD users and tracked pregnancy rates within a 12 month period
- Those with prior IUD usage received greater pregnancy rates compared to non-IUD users.
- No difference in time to pregnancy observed in IUD users compared to non-IUD users.

Reason for choosing:

Article was published in 2015 which is within the last 5 years so it is still relatively recent. I like the study design as it followed this women over the course of 1 year to determine the effects of pregnancy rates and time to pregnancy in women who recently stopped contraception and desired pregnancy. This directly answered my PICO question.

Article 3

Citation

Dinehart E, Lathi RB, Aghajanova L. Levonorgestrel IUD: is there a long-lasting effect on return to fertility?. *J Assist Reprod Genet*. 2020;37(1):45-52. doi:10.1007/s10815-019-01624-5

https://sci-hub.se/https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7000571/#

Article Type

Systematic review

Abstract

Intrauterine devices (IUDs) are effective and safe long-acting reversible contraceptive methods for preventing unplanned pregnancies. While extensive studies were conducted to evaluate return to fertility after removal of IUDs, majority of them were focused on multiparous women using copper IUDs. Current trends indicate increased use of levonorgestrel (LNG) IUDs in nulliparous women for very long periods of time, with both nulliparity and long duration of LNG-IUD use being potentially associated with trends towards longer time to conception post removal. Understanding the effects that LNG-IUDs may have on endometrial morphology and gene expression has important implications to further understanding their mechanism of action. Studies examining endometrial gene expression show persistent changes in receptivity markers up to 1 year after removal of an inert IUD, and no similar studies have been performed after removal of LNG-IUDs. Given the current gap in the literature and trends in LNG-IUD use in nulliparous young women, studies are needed that specifically look at the interaction of nulliparity, long-term use of LNG-IUD, and return to normal fertility. Herein,

we review the available literature on the mechanism of action of IUDs with a specific focus on the effect on endometrial gene expression profile changes associated with IUDs.

Conclusions Herein, we describe the state of the current literature on endometrial effects of different types of IUD use, with particular emphasis on LNG-IUD, and identify a clinical necessity to evaluate the long-lasting effects of the LNG-IUD on endometrial function and its potential impact on subsequent fertility. While the current literature on return to fertility after use of LNG-IUD shows that 70–75% of women conceive within 1 year of removal, it also indicates that the rate of infertility after IUD removal may be double the commonly quoted rate of infertility in the general population of 15%. Naturally, other factors such as age, semen parameters, history of PID, parity, and reproductive history play a significant role in fertility potential as well as initial indication for IUD insertion including pelvic pain/chronic gynecologic disease management, with some of these factors being controlled for in the studies mentioned in this review. Studies examining return to fertility after IUD removal do not adequately examine nulliparous women or women with prolonged use of the LNG-IUD to reflect the current growing patient population. While it is of paramount importance to provide our patients with reliable and safe long acting and easy to use contraception, we have to be aware of any possible long-lasting side effects, such as persistent endometrial atrophy and dysfunction or lack thereof. This review highlights the state of the literature, in which studies examining return to normal endometrial function after removal of IUDs are currently insufficient or lacking

Key Points

- 70-75% of women after removal of the IUD, conceive within 1 year
- Rate of infertility 2x after removal compared to gen population
- According to current evidence, it may not seem that IUDs can cause long lasting infertility issues, however, need to be wary of other side effects i.e. endometrial atrophy and dysfunction or lack thereof.
- More studies should be done on nulliparous women

Reason for choosing:

This article was a systematic review which is at the top of the EBM pyramid in regards to the highest level of evidence. I also like that the article was published very recently in 2020. It focuses specifically on my PICO question and has very interesting conclusions and statement regarding the IUD and infertility after removal.

What is the clinical "bottom line" derived from these articles in answer to your question?

The clinical bottom line here is that majority of women who have removed an IUD can expect to conceive within 1 year of removal and there is very little to no evidence suggesting long term infertility issues. However, not every patient is the same and some patients may need longer than 1 year to conceive. These studies were conducted with the participation of women who were previously pregnant. There are little to no studies involving nulliparous women and this is just something to keep in mind. Based on evidence, clinicians should reassure previously pregnant patients that fertility issues are very unlikely and they should expect to conceive within 1 year after IUD removal.