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SALPINGECTOMY AT THE TIME OF CESAREAN DELIVERY: A SYSTEMATIC REVIEW

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Abstract

Candidates for tubal sterilisation include women who have finished having children and who are looking for a method of birth control that is both highly effective and permanent. It is possible for it to be carried out at any point during a woman's menstrual cycle, as well as right after a child is born or an abortion is performed. Hysteroscopy, laparoscopy, or even a mini-laparotomy might be performed instead. It is important to have a conversation about the danger of regret as well as the characteristics that increase the likelihood of regret, such as a young age at the time of sterilization (less than 30 years), a lower parity, sterilization administered in the immediate postpartum period, divorce or remarriage following sterilization, and being poor or of Hispanic origin. It would appear that being a young adult at the time of the sterilization is the most significant indicator of regret. It is extremely important to keep in mind that this does not provide full protection. According to the findings of the CREST study, the failure rate across all procedures was 18.5 out of every 1000 procedures over the course of a 10-year period. Even in the event that a cesarean birth is performed unexpectedly, a mother request for postpartum permanent contraception in the form of bilateral total salpingectomy during cesarean delivery may be a procedure that is both safe and practicable.

Keyword: *Cesarean delivery; Contraception; Reproductive; Salpingectomy*

INTRODUCTION

Women who have concluded childbearing and desire an effective and irreversible form of birth control are candidates for tubal sterilisation. It can be conducted at any time during a woman's menstrual cycle, as well as immediately after childbirth or an abortion. Laparoscopy, mini-laparotomy, or hysteroscopy may be utilized.[1,2] In addition to their contraceptive benefits, tubal ligation procedures are associated with a reduced incidence of epithelial ovarian cancers and pelvic inflammatory disease, according to a number of studies. Importantly essential is informed consent. It should be emphasized that this procedure is irreversible and cannot be undone.[3]

The risk of regret and risk factors for regret should be discussed, including young age at sterilization (less than 30 years), lower parity, sterilization administered in the immediate postpartum period, divorce or remarriage following sterilization, being poor or of Hispanic origin. Young age at the time of sterilization appears to be the most significant indicator of regret. It is essential to note that it does not offer complete protection. According to the CREST study, the failure rate over a 10-year period is 18.5 per 1000 procedures (across all procedures).[4,5]

The highest conception rates followed laparoscopic Hulka clip sterilization, while the lowest pregnancy rates followed monopolar coagulation and postpartum salpingectomy. Even bilateral salpingectomy carries the possibility of failure. There is an increased risk of ectopic pregnancy if tubal sterilization fails, with a ten-year probability of 7.3 ectopic pregnancies per 1000 procedures. The procedure with the greatest incidence of ectopic pregnancies is laparoscopic sterilization utilizing bipolar coagulation. Therefore, patients should be advised to present early if they suspect pregnancy.[2,6,7]

The most prevalent kind of sterilization procedure that is performed in conjunction with cesarean deliveries in the United States is tubal ligation; however, between the years of 2015 and 2018, there was a significant shift toward the use of bilateral salpingectomy as an alternative to tubal ligation. More research has to be done because this study found that the group who underwent bilateral salpingectomy had a greater rate of surgical morbidity than the group that underwent bilateral tubal ligation.[8] The purpose of this study is to investigate salpingectomy in conjunction with caesarean section birth.

METHODS

The author of this study ensured that it met the conditions by consulting the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) 2020 recommendations. This is done to ensure that the investigation's results are correct. This study discovered salpingectomy during cesarean delivery. This is performed by assessing or studying prior research on the subject. The goal of this article is to illustrate the importance of the topics raised.

Researchers had to show that they met the following standards before they could take part in the study: 1) The paper needs to be written in English and the main focus needs to be on salpingectomy at the time of cesarean delivery for it to be considered for publication. 2) This evaluation looks at works that came out after 2017, but before the time period being looked at. Research that can't be published includes editorials, applications without a DOI, review articles that have already been published, and entries that are almost the same as journal papers that have already been published.

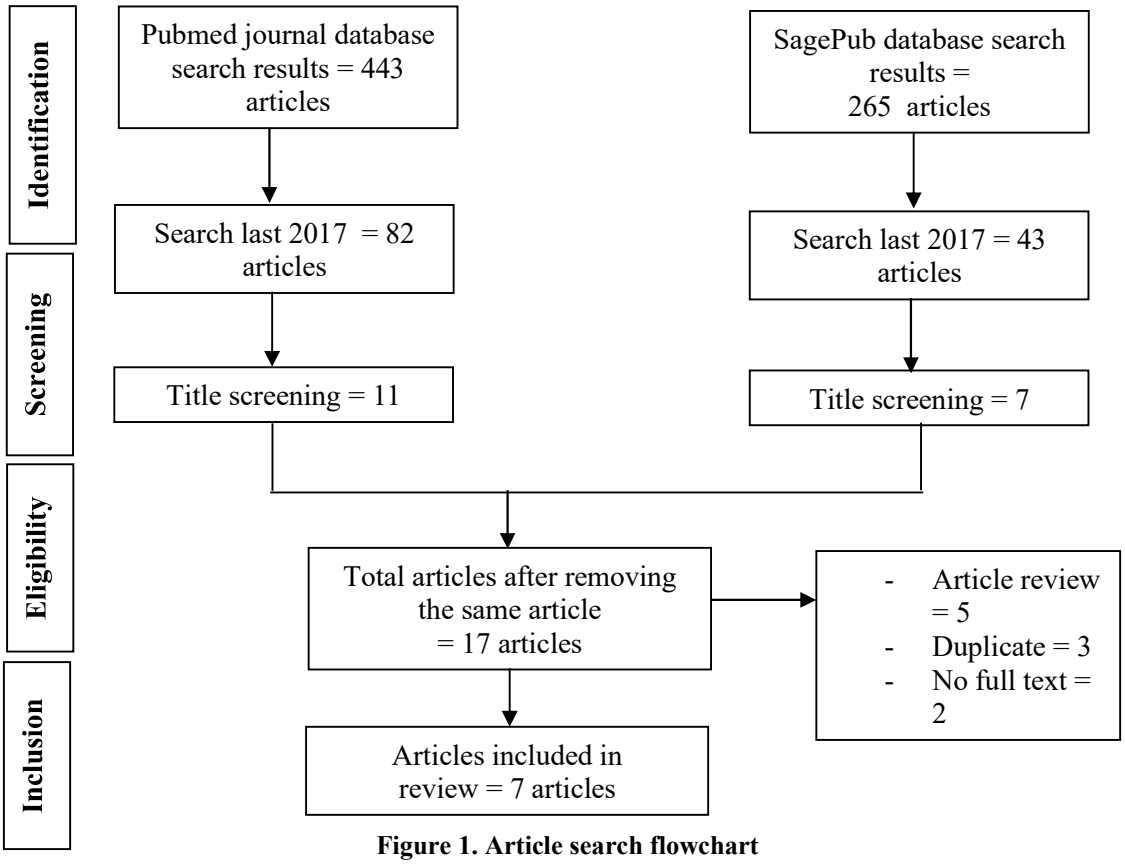

Figure 1. Article search flowchart

We used "Salpingectomy" and "Cesarean delivery" as keywords.The search for studies to be included in the systematic review was carried out from May, 24th 2023 using the PubMed and SagePub databases by inputting the words: *(("salpingectomy"[MeSH Terms] OR "salpingectomy"[All Fields] OR "salpingectomies"[All Fields]) AND ("cesarean section"[MeSH Terms] OR ("cesarean"[All Fields] AND "section"[All Fields]) OR "cesarean section"[All Fields] OR ("cesarean"[All Fields] AND "delivery"[All Fields]) OR "cesarean delivery"[All Fields])) AND (y_5[Filter])* used in searching the literature.

The eligibility of each study was determined based on its abstract and title. They then consulted historical documents. Numerous investigations employing the same methodology yielded this result. Unpublished contributions in English are required. The systematic review included only studies that met the inclusion criteria. This restricts search results. Insufficient research findings are not investigated. Analysis will follow afterward. The paper disclosed names, authors, publication dates, location, study activities, and parameters. Endnote eliminated duplicate results from search results. Two reviewers reviewed the titles and abstracts of pertinent papers.

First, their whole papers were read to see if they were eligible and to get data. There are review articles, studies on animals, meeting papers, and studies on GWG and other health problems. During their talk, the judges came to an agreement. Before deciding which papers to look into further, each author looked at the studies listed in the title and abstract of each publication. Then, we'll look at all the papers that meet the review's standards for inclusion and are good enough to be included. Then, we'll decide which papers to include in the review based on what we've learned. This is how the papers to be reviewed are chosen, and this is also how the papers to be looked at are chosen.

RESULT

Duncan, et al (2018)[9] conducted a study with 160 pregnancies. There were 41 patients in the salpingectomy group and 119 patients in the partial salpingectomy group. The salpingectomy group had a prolonged median total operative time (62 [IQR 54, 71] vs 60 [IQR 46, 72] minutes; P = 0.03). The overall incidence of surgical complications (19.5% vs. 12.6%; P = 0.28) did not differ substantially between the two study groups. Menstrual irregularities (P = 0.99), quality of life (P = 0.99), dyspareunia (P = 0.99), dysmenorrhea (P = 0.36), and regrets (P = 0.99) were not significantly different among groups.

Ganar, et al (2017)[10] showed 33 of 46 participants had repeat antimüllerian hormone levels after a follow-up visit. Salpingectomy patients were older (37.0 ± 3.9 vs 34.3 ± 4.1 years, P =.02). The groups had similar parity, BMI, and gestational ages. Pregnancy and postdelivery antimüllerian hormone levels were similar in the salpingectomy and tubal ligation groups, with an average rise of 0.58 ± 0.98 vs 0.39 ± 0.41 ng/mL (P =.45). Salpingectomy surgeries took 13 minutes longer (66.0 ± 20.5 vs 52.3 ± 15.8, P =.01). Surgical complications and hemoglobin drop were similar between groups.

Table 1. The litelature include in this study

Author	Origin	Method	Sample Size	Result
Duncan, 2018[9]	United State of America (USA)	Cross sectional study	160 pregnancies	Salpingectomy during a cesarean birth added two minutes to the average length of the surgery and may not be linked to a higher risk of complications.
Ganer, 2017[10]	Israel	Randomized controlled trial (RCT)	46 patients	It appears that sterilization with salpingectomy is just as safe as sterilization through tubal ligation in terms of the potential for surgical complications and the consequent loss of ovarian reserve. Because salpingectomy provides the benefit of lowering the likelihood of developing cancer, it is sometimes provided in the context of elective preplanned procedures.
Subramaniam, 2018[11]	USA	Randomized controlled trial (RCT)	221 women	In roughly two thirds of women who want permanent contraception in conjunction with cesarean delivery, salpingectomy can be effectively accomplished. This requires an additional 15 minutes of total operating time.
Garcia, 2018[12]	Israel	Randomized controlled trial (RCT)	180 patients	The time it took to do a salpingectomy during a cesarean delivery was almost the same as the time it took to perform a normal tubal ligation, with a difference of around 30 seconds on average. The completion rate for the salpingectomy was quite high (95%) and there was no discernible rise in the number of problems.
Ferrari, 2019[13]	Italy	Retrospective cohort study	Five hundred twenty-eight women	Even in the event that a cesarean birth is performed unexpectedly, a mother request for postpartum permanent contraception in the form of bilateral total salpingectomy during cesarean delivery may be a procedure that is both safe and practicable.

Lauterbach, 2022[14]	Israel	Randomized controlled trial (RCT)	26 women	In comparison to "bipolar" salpingectomy, "traditional" salpingectomy is linked with longer surgery and hospitalization times, more blood loss, and an increased likelihood of requiring a blood transfusion. It is recommended that "bipolar" salpingectomy be used whenever possible rather than the other types of salpingectomy that are available in medical settings.
Levy, 2021[15]	USA	Retrospective cohort study	363 patients	In comparison to tubal ligation, salpingectomy before to cesarean section lengthens the operating time but does not significantly increase the risk of perioperative morbidity. Even while doctors don't appear to have a prejudice against salpingectomy and acknowledge that they are aware of its reported advantages and hazards, it is still not the most common surgical method.

Other study evaluate the feasibility of salpingectomy compared with standard bilateral tubal ligation at the time of cesarean delivery in women with undesired fertility. They showed salpingectomies took 15 minutes longer (75.4 ± 29.1 vs. 60.0 ± 23.3 min, p = 0.004). Both groups had no sterilization-related complications. The salpingectomy group had higher EBL of the sterilization procedure (surgeon estimate) (median 10 [IQR 5–25] cc vs. 5 [IQR 5–10] cc, p<0.001), but both groups had equal overall EBL and safety results.[11]

Garcia, et al (2018)[12] conducted a study. They showed 19 woman had salpingectomy and 18 had tubal ligation. Adhesions prevented one of 20 salpingectomy procedures. Group demographics were similar. Salpingectomy sterilization time was 5.6 minutes, compared to 6.1 minutes for normal tubal ligation (P < 0.05, one-sided 95% CI upper bound 1.8 minutes). Salpingectomy did not affect median total operating time (60 vs 68 minutes, P = 0.34) or estimated blood loss (600 vs 700 mL, P = 0.09). Neither group needed reoperation or readmission.

Ferrari, et al (2019)[13] showed postpartum permanent contraception was unaffected by unscheduled cesarean birth (p = 0.22). 1 (0.4%) and 2 (0.9%) bilateral complete and partial salpingectomy patients experienced postpartum permanent contraception-related intraoperative hemorrhage (p = 0.23). Bilateral total and partial salpingectomy groups had 13 (5.3%) and 6 (2.5%) problems, respectively (p = 0.11). Subgroup analysis showed no intra- and postoperative problems with unscheduled cesarean birth. Multivariate analysis increased overall salpingectomy operational time by 4.3 min (p <0.01). Lauterbach, et al (2022)[14] showed the surgical time (16.16 ± 9.53 vs 5.19 ± 3.57 minutes; P <0.001), estimated blood loss (928.08 ± 414.66 mL vs 677.15 ± 380.42 mL; P = 0.029), and need for blood transfusion (20% vs 0%; P = 0.016) were significantly greater in the traditional salpingectomy than in the bipolar salpingectomy group. The cesarean delivery time was similar (88.92 ± 17.87 vs 88.23 ± 19.85 minutes; P = 0.89). Hospitalization time was significantly longer following traditional salpingectomy than bipolar salpingectomy (5.24 ± 2.27 vs 3.92 ± 2.01 days; P = 0.034).

Tubal occlusion patients exhibited greater postoperative symptomatic anemia (5.7% vs 0.9%) and infection (6.9% vs 1.7%) than salpingectomy patients. Logistic model found the primary surgeon most predictive of salpingectomy (p <.001). 23 (77%) of 30 doctors completed the survey and performed 80% of operations. Salpingectomies were not affected by gender, age, years of practice, solo vs group practice, or hospital-employed vs private practice. Salpingectomy reduced cancer risk (17 of 23, 74%). 65% thought salpingectomy was risky, but 70% thought surgery was worth it. 20 of 23 (87%) respondents said salpingectomy was cost-neutral and took no longer.[15]

DISCUSSION

The main thing we learned is that having a salpingectomy at the same time as a cesarean birth may add a little bit of time to the surgery, but it doesn't seem to increase the risk of complications. This work shows that total salpingectomy is a good way to prevent pregnancy for women who want to be permanently sterilized at the time of a cesarean delivery. From the reports we looked at, it seems that the total salpingectomy was successful most of the time. Barriers to success include adhesions that make it hard to reach the whole length of the fallopian tube, the patient's body type, worries about stopping bleeding in the mesosalpinx, and the provider's comfort with a total salpingectomy.[16,17]

A recent large retrospective evaluation of a California database indicated an increase in the use of salpingectomy for sterilization from 2011 to 2016 (including during cesarean delivery).[18] Despite this, only three randomised controlled trials have examined the safety of salpingectomy during cesarean delivery. In one study, Ganer et al.[10] did not detect an increased incidence of surgical complications in 46 women randomized to bilateral salpingectomy or partial salpingectomy for sterilization at the time of cesarean delivery. Their salpingectomy procedures took 13 minutes longer than their tubal ligation procedures, and their ovarian reserve was not significantly different between the two groups.[1,19]

The two additional trials were published in the same journal volume. One consisted of 40 participants in the salpingectomy group and 40 participants in the partial salpingectomy group from Alabama. The investigators did not discover an increased rate of complications, but it took them 15 minutes longer on average to perform a total salpingectomy compared

to their traditional method. Only two-thirds of their attempts were successful, and only 35% of the primary surgeons included in this study would perform a total salpingectomy during cesarean delivery as standard practice.[11]

In the last experiment, there were 19 women in the entire salpingectomy group and 20 women in the partial salpingectomy group; the salpingectomy group did not have a greater median total surgical time than the other group (68 vs. 60 minutes; P = 0.34) without an increase in the rate of complications. In all but one of the mothers assigned to the salpingectomy group, they performed a total salpingectomy using electrothermal bipolar tissue devices, and the surgeons attended training sessions prior to performing the procedure.[12]

Cost-benefit analyses have shown that doing an opportunistic salpingectomy at the time of a hysterectomy for benign illness can significantly lower the patient's lifetime chance of developing ovarian cancer.[20] Total salpingectomy at the time of a cesarean delivery is expected to be beneficial, despite the fact that cost analyses are constrained by unknowns like the incremental reduction in ovarian cancer and the complication rates between salpingectomy and tubal ligation. A study involving 80 women indicated that total salpingectomy was safe and possible following vaginal birth, with just a 12-minute increase in operating time and no increase in operative complications.[3]

CONCLUSION

The option of performing bilateral total salpingectomy as a form of permanent contraception during cesarean delivery, at the request of the mother, has been found to be a safe and practical approach, even in cases where the cesarean delivery was unscheduled.

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