

Full Length Research Paper**Impact of Caesarean Section on Subsequent Fertility****Wafaa Gaber***Obstetrics and Gynecology Department- General Hospital, Egypt.***Article history**

Received: 25-07-2017

Revised: 05-08-2017

Accepted: 10-08-2017

Corresponding Author:**Wafaa Gaber***Obstetrics and**Gynecology Department-**General Hospital, Egypt.***Abstract**

Infertility is a disease of the reproductive system defined by failure to achieve a clinical pregnancy after twelve months. Subfertility generally describes any form of reduced fertility with prolonged time of unwanted non-conception. This study was undertaken to study effect of caesarian section of subsequent fertility in the studied group. 50 infertile women after normal vaginal delivery (NVD) act as control group. 50 infertile women after caesarean section. The incidence of wound complication and tubo ovarian adhesions increased afer Cs than NVD with high statistically significant difference. Prophylactic antibiotics for cesarean delivery should be given to patients who have labor and/or rupture of the membranes prior to delivery. Prevention of adhesion formation following CS should be undertaken routinely.

Keywords: Infertility, CS, NVD**Introduction**

Infertility has several definitions; a clinical definition and an epidemiological definition. The clinical definition of infertility used by the WHO is a disease of the reproductive system defined by failure to achieve a clinical pregnancy after twelve months. Other associations may prefer to use the same definition but change the time of waiting till pregnancy to be two years and not one year to give more couples a chance to spontaneously get pregnant, like National health system (NHS) in England and the Women's Health Council in Ireland (Zegers-Hochschild, 2009). The epidemiological definition is women of reproductive age at risk of becoming pregnant or report unsuccessfully trying for a pregnancy for more than two years. There is a substantial number of patients which will conceive spontaneously (Gurunath et al., 2011). The origin of infertility is due to male or female factors; the causes are multiple. Female factors account for 40% of infertility. Also, male factors account for 40% of infertility. Male and female factors combined cause 10% of infertility. The etiology of infertility is unknown in 10 % of cases (Callister, 2005).

The underlying mechanism for an association between caesarean section and subsequent infertility are unclear and may relate to one of the following 1) infections, 2) adhesion formation and 3) placental bed disruption which in turn may be influenced by the indication of caesarean section, these mechanisms seems plausible in the light of association between subsequent ectopic pregnancy, placenta praevia and placental abruption (O'Neill, 2014).

Infertility in patients with history of one previous section may be caused by morbid anatomy secondary to adhesions, infection, inflammations, and or ischemia. Adhesions formation after one CS may be related to operative technique, genetic predisposition, inflammation, ischemia and/or infection (Tanimura et al., 2015). Adhesions formation after one CS may change not only uterine position and mobility but also functional anatomy leading to secondary infertility (Oats, 2016).

Materials and methods*Patients and methods*

This study included 100 patients had been selected from those whom attend the outpatient gynecological clinic. The patients divided into two groups; the first group contains infertile women after Cs , and the second group is infertile women after normal vaginal delivery. The study conducted for 6 months. All Cases are suffering from secondary infertility were enrolled in this study including complications of operation. Also, time of fertility, postoperative contraceptive methods and previous fertility investigations. All patient are subjected to, detailed history including personal history: age, parity, duration of marriage, frequency of intercourse/week, menstrual history. Complete clinical examination: included general and full gynecological examination. Investigations: Semen analysis for exclusion of male factor, hormonal profile, Hysterosalpingography, Pelvic ultrasound and diagnostic laparoscopy.

Statistical Analysis were performed by using statistical software SPSS version "21" categorical variations were compared using mean, standard deviation(SD) and student t-test. Statistical significance was defined as P value < 0.05.

Results**Table 1:** Comparison between both groups according to parity.

Parity	CS (n=50)	NVD (n=50)	P-value
P1	20	21	0.21
P2	15	23	0.30

P3	35	25	0.52
More than P3	30	31	0.31

Table 2: Comparison between both studied groups according to menstrual cycle, Contraceptive method and duration.

Variables	CS (n=50)					NVD (n=50)	Z-score	P-value
	Previous 1 CS	Previous 2 CS	Previous 3 CS	More than Previous 3 CS	Total CS groups			
Menstrual cycle	15	37	48	22	15	45		0.57
Regular	5	13	2	2	23	22		NS
Irregular							0.15	
Contraceptive methods	10	21	32	34	55	118		
No	30	23	16	10	48	60		
IUD	8	5	0	2	13	14	1.9	0.02
OCP	3	0	2	3	6	4	1.8	0.02
Injectable							0.19	0.6
							0.6	0.4

* indicate significant

Table 3: Comparison between both studied groups as regard past history.

Variables	CS (n=50)					NVD (n=200)	P-value
	Previous 1 CS	Previous 2 CS	Previous 3 CS	More than P3 CS	Total CS groups		
DM&HTN	0	1	0	3	4	2	0.4
HTN	1	2	1	1	5	1	0.1
DM	5	1	3	3	12	5	0.2
Epilepsy	2	1	1	0	3	0	0.8
Cholecystitis	0	1	0	0	1	4	0.17

Discussion

The decline of fertility with advancing age has been repeatedly documented. Many studies reported the association between declining fertility and advancing age (Iliodromiti et al., 2016). We also found that, there was a highly statistically significant difference in the infertile CS group according the timing of CS as most of cases was selective Cesarean delivery (p -value <0.001 HS). Bhattacharya et al. (2006) documented that, the childbirth experience was worse for women with emergency operative deliveries, and influenced the decision to avoid future pregnancies. However, subsequent absence of conception is mainly voluntary. Arulkumaran, and Singer (2013) reported that the most important predisposing factors of puerperal sepsis is DM, IAI (intra amniotic infection), prolonged labor, catheterization before labor, PID (pelvic inflammatory disease) and lower genital tract infection. Hurry et al. (1984) reported in 1984 that while post-Caesarean section endometritis or pelvic cellulitis did not have an adverse effect on subsequent reproductive outcomes, pelvic abscess was associated with a significant reduction in fertility. Lavy et al. (2004) reported that, Laparoscopy may be omitted in woman with normal HSG or suspected unilateral distal tubal pathology on HSG, since it was not shown to change the original treatment plan indicated by HSG in 95 % of patients. However, laparoscopy should be recommended in cases with suspected bilateral tubal occlusion on HSG, since it altered the original treatment plan in 20% of patients from IVF to induction of ovulation with IUI. Yasir et al. (2014) examined A series of 186 infertile women by diagnostic laparoscopy reported that, No laparoscopic abnormality was found in 51 (27.9%), while there were abnormal findings in 135 (72.6%) patients. The Commonest etiological factor was tubal blockade in both types of infertility. Other factors were endometriosis, pelvic adhesions and fibroids. Laparoscopy is minimally invasive yet a reliable procedure for visualization of internal architecture of the female pelvis. While some previous studies have shown decreased family size among women who deliver by Cesarean, our results suggest that the rate of infertility is not different after Cesarean compared with vaginal birth. Gurol-Urganci et al. (2013) documented that, patients who had undergone a Cesarean section had a 9% lower subsequent pregnancy rate [risk ratio (RR) 0.91,95% confidence interval (CI) (0.87, 0.95)] and 11% lower birth rate [RR 0.89,95%CI (0.87, 0.92)], compared with patients who had delivered vaginally. Gurol-Urganci et al. (2014) stated that, the rates of subsequent birth are lower among women who deliver by Cesarean section compared with those who had vaginal deliveries. The effect of elective Cesarean section on subsequent fertility is very small irrespective of age and was not significant for women younger than 30 years. This suggests that the impact of the Cesarean procedure itself on subsequent fertility is minimal. The two studies that compared fertility after a Cesarean section with spontaneous vaginal delivery, reported a small effect that was not statistically significant. The observed reduction in subsequent fertility after a Cesarean section may not be causal but a result of study limitations (Gurol-Urganci et al., 2013). There is a high complex relationship between factors influencing Cesarean section rates and subsequent fertility. Women who are sub fertile or who have had infertility treatment are more likely to have a

Caesarean section at index delivery (Pandian et al., 2001; Murphy et al., 2002).

References

- Arulkumaran, N., & Singer, M. (2013): Puerperal sepsis. *Best Practice & Research. Clin. Obst. & Gyn.*, 27(6): 893-902.
- Bhattacharya, S., Porter, M., Harrild, K., Naji, A., Mollison, J., Van Teijlingen, E. & Templeton, A. (2006): Absence of conception after caesarean section: voluntary or involuntary?. *BJOG: An International Journal of Obstetrics & Gynaecology*, 113(3): 268-275.
- Burnfield C.G., Hauth J. C. and Andrews W.W. (2000): puerperal infection after caesarean delivery: evaluation of standardized protocol *Am J obstet Gynecol.*, 182:1147-1148.
- Callister, L. C. (2005): The pain and the promise of unfilled dreams: infertile couples. *Handbook of families and health: interdisciplinary perspectives*. CA: SAGE publications, 96-112.
- Chowdhury, T. A., Ara, I., Gazi, M. L. K., & Biswas, B. (2016): Role of Diagnostic Laparoscopy in Evaluation of Infertile Women. *Bangladesh Journal of Obstetrics & Gynaecology*, 28(2): 88-91.
- Gurol-Urganci, I., Bou-Antoun, S., Lim, C. P., Cromwell, D. A., Mahmood, T. A., Templeton, A., & van der Meulen, J. H. (2013): Impact of Caesarean section on subsequent fertility: a systematic review and meta-analysis. *Human Reproduction*, det130.
- Gurol-Urganci, I., Cromwell, D. A., Mahmood, T. A., van der Meulen, J. H., & Templeton, A. (2014): A population-based cohort study of the effect of Caesarean section on subsequent fertility. *Human Reproduction*, 29(6): 1320-1326.
- Gurunath, S., Pandian, Z., Anderson, R. A., & Bhattacharya, S. (2011): Defining infertility—a systematic review of prevalence studies. *Human Reproduction Update*, 17(5): 575-588.
- Hurry, D.J., Larsen, B., Charles, D. (1984): Effects of post-cesarean section febrile morbidity on subsequent fertility. *Obstet Gynecol.*, 64:256–260.
- Iles, D. A., Ahmad, G., & Watson, A. (2015): Adhesions: Effects on Fertility and Prevention. In *Reproductive Surgery in Assisted Conception* (pp. 153-169). Springer London.
- Iliodromiti, S., Iglesias Sanchez, C., Messow, C. M., Cruz, M., Garcia Velasco, J., & Nelson, S. M. (2016): Excessive age-related decline in functional ovarian reserve in infertile women: prospective cohort of 15,500 women. *The Journal of Clinical Endocrinology & Metabolism*, 101(9): 3548-3554.
- Lavy, Y., Lev-Sagie, A., Holtzer, H., Revel, A., & Hurwitz, A. (2004): Should laparoscopy be a mandatory component of the infertility evaluation in infertile women with normal hysterosalpingogram or suspected unilateral distal tubal pathology?. *European Journal of Obstetrics & Gynecology and Reproductive Biology*, 114(1): 64-68.
- Marchino GL, Gigante V, Gennarelli G, Mazza O and Mencaglia L(2001): Salpingoscopic and laparoscopic investigations in relation to fertility outcome. *J Am Assoc Gynecol Laparosc* ; 8(2): 21-218.
- Oats, J. (2016): *Llewellyn-Jones fundamentals of obstetrics and gynaecology*. Elsevier Health Sciences.
- Murphy, D. J., Stirrat, G. M., Heron, J., & ALSPAC Study Team (2002): The relationship between Caesarean section and subfertility in a population-based sample of 14 541 pregnancies. *Human Reproduction*, 17(7): 1914-1917.
- O'Neill, S. M. (2014): Caesarean section and subsequent pregnancy outcome: a Danish register-based cohort study.
- Pal, L., & Santoro, N. (2003): Age-related decline in fertility. *Endocrinology and metabolism clinics of North America*, 32(3): 669-688.
- Pandian, Z., Bhattacharya, S. and Templeton, A. (2001): Review of unexplained infertility and obstetric outcome: a 10 year review. *Hum. Reprod.*, 16: 2593–2597
- Tanimura, S., Funamoto, H., Hosono, T., Shitano, Y., Nakashima, M., Ametani, Y., & Nakano, T. (2015): New diagnostic criteria and operative strategy for cesarean scar syndrome: Endoscopic repair for secondary infertility caused by cesarean scar defect. *Journal of Obstetrics and Gynaecology Research*, 41(9): 1363-1369.
- Yasir, N., Parveen, S., Tariq, H., & Fatima, A. (2014): Laparoscopic Findings Of Female Infertility—A Study Of 186 Cases At A Tertiary Care Hospital. *Tuberculosis (TB)*, 6: 3-2.
- Zegers-Hochschild, F., Adamson, G. D., de Mouzon, J., Ishihara, O., Mansour, R., Nygren, K. & Van der Poel, S. (2009): The international committee for monitoring assisted reproductive technology (ICMART) and the world health organization (WHO) revised glossary on ART terminology, 2009. *Human Reproduction*, 24:343.