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RESEARCH ARTICLE

FERTILITY AND ABORTION RATES FOLLOWING HYSTEROSCOPIC RESECTION OF UTERINE SEPTA

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Abstract

Objectives: the presented work studied the effect of uterine septum resection in patients with short and long septa on obstetric outcomes specially the abortion rates and preterm deliveries

Subjects and methods: 100 hundred patients known to have uterine septum had been recruited to a private clinic in Benha city –Egypt and classified into two groups according to the length of septum, group A with short septum <2.5cm and group B with long septum >2.5 cm, all patients subjected to hysteroscopic resection of septa after counseling and signed informed consent.

Results: The infertility rate was significantly lower in group b after surgery (39.47% vs 10.53%, P=.006). However, no significant difference was observed in the infertility rate between groups A and B. There were no significant differences in pregnancy rate, and preterm live births rate among the 2 groups (P>.05 for all). In Group A the change is only in the rate of term and preterm which was significant but abortion rate didn't differ, this was the group of the small septum <2.5cm. Significant change occurred in the rate of abortion in group b (25 before resection dropped to 10 after with p value of 0.001 a high significant difference also there were a significant change in all other items including the pregnancy rate and term pregnancy (pregnancy rate elevated from 35 cases to 40 cases with p value 0.01 also the rate of term pregnancy highly increased from 25 cases before septum resection to 38 cases after resection with p value 0.007

Conclusion: large uterine septum >2.5cm resection associated with increase in fertility and decreased rates of abortions.

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Introduction:-

Uterine septum is an anomaly characterized by the defective incomplete resorption of the fused paramesonephric ducts during the early intrauterine life.

Uterine septum associated with poor reproductive outcomes, including miscarriage, recurrent pregnancy loss, and intrauterine growth retardation resulting from poor blood supply of the septum and defective decidualization.

The actual prevalence of the uterine septum is difficult to assay as many uterine septal defects are asymptomatic but appear to range from 1 to 2 per 1000 (1)

The mean prevalence of uterine congenital abnormalities in the general population of fertile women is about 4.3% and about 3.5% in infertile patients, in cases with recurrent pregnancy loss is 5 to 25%, with septate uteri being the most frequent, at an incidence of 5.3%.**(2-3)**

Over decades, several classification systems have been postulated to classify female genital local anatomical abnormalities. European Society of Human Reproduction and Embryology–European Society for Gynaecological Endoscopy classification system stated that any uterus with a normal outline and an internal fundal midline indentation exceeding 50% of the uterine wall thickness is defined as septum uteri.**(3-5)**

Uterine septum may be complete to the cervix that also may be divided by the septum into two halves, may be restricted to the uterine corpus, or may also extend through vagina.

The effect of the septum upon obstetric outcomes may be related to the length of the septum particularly those who reach more than 2.5 cm also the length of the residual cavity is at utmost importance as septa encroaching more than the half of the uterine cavity length are associated with poor obstetric outcomes.

Uterine Doppler analysis used to assess the vascularity of the septum with defective blood supply and flow in the septal network of blood vessels associated also with poor obstetric outcomes .**(5-9)**

Provisional assessment of uterine septa by three D ultrasound gained a great popularity in the recent times allowing complete vision of the uterus ,septum length and also the volume of the uterine cavity also the inter-osteal line makes a clear line below which any uterine downward growth considered as septum ,also the position of the tubal ostia assessed, recent classification systems substituted the term bicornuate uterus with bicorporeal ones .**(10-14)**

Aseptate uterus is diagnosed by hysterolaparoscopy, hysteroscopy combined with laparoscopy is the best and gold standard tool for the diagnosis of uterine septa.

Hysteroscopic septum resection is the first-line therapy for restoring the uterine cavity, and followed by good obstetric outcomes.

Septum resection using hysteroscopic loop has a significant positive effect on women's fertility. Old data revealed that Division of the cervical portion of the septum has been associated with cervical incompetence. But the latest evidence suggests that resection of cervical septum associated with good obstetrical outcomes.

The current study aimed to evaluate and verify improvement in reproductive outcomes of patients who undergo hysteroscopicmetroplasty to correct septate uterus and restore the normal uterine architecture and volume for embryo growth and development with the primary outcome of pregnancy continuation and enhancing live birth rate.

Subjects And Methods:-

Hundred patients recruited from a private clinic in Benha city –Egypt and examined by three dimension ultrasound and those with uterine septum recruited for participation of this work cases categorized into two groups according to the length of uterine septum

Group a (50) cases with short septum <2.5 cm

GroupB (50) with long septum >2.5 cm

Patients aged between 21 and 37 years referred to the outpatient infertility clinics.

Small and large partial uterine septa were defined as those with a length of ≤ 2.5 cm, and not complete, with a length of ≥ 2.5 cm, respectively.



Long septum



Short septum



Intermediate septum

Exclusion criteria

pelvic pathologies other than septum , as endometriosis; oligo- or anovulation and menstrual irregularities; husbands with abnormal semen qualities, pregnant cases ,adnexal masses ,and pelvic infections like tubo-ovarian abscess

Inclusion criteria

The first and most important inclusion criterion is the diagnosed uterine septumcases confirmed with three dimensional ultrasound, and patients with a history of pregnancy loss or infertility. A cohort of 100 women, operated between July 2018and January 2020, fulfilled these requirements.

Follow up of cases after surgery done by the clinic and pregnancies recorded in cards also follow up of pregnant cases for abortion and preterm labourrecorded to be assessed statistically and added to the results.

Operative intervention**Hysteroscopic Septum resection**

All cases were perfectly counseled about the hystrosopic resection and an informed consent signed from all patients.

The surgery of hysteroscopicmetroplasty was performed in the proliferative phase under general anesthesia,proliferative phase chosen to exclude pregnancy . After the cervix was dilated to 10mm, a 7mm rigid hysteroscope (Karl Storz, Tuttlingen, Germany) was introduced into the cervix.

Operative procedure began with uterine distention with five percent dextrose or glycine with pressure was set at about 150mm Hg. The septum was dissected using a resectoscope (Karl Storz).

Resectoscopic loop was used to cut the uterine septum was made equidistantly between the anterior and posterior uterine walls and went up high into the uterine fundus until the visualization of the two ostia at the same field no further resection to maintain myometrial integrity and prevent future rupture.

After resection, an intrauterine device was inserted into the in patients after the procedure, and the patients were treated with cyclic estrogen therapy for 3 months to reduce adhesions and ensure rapid epithelialization and better healing to enhance endometrial receptivity for the coming embryo.

Patients were advised to have an ultrasonographic and hysteroscopic examination after 3 months to confirm surgical outcomes and evaluate the presence of residual uterine septa or intrauterine adhesions.

The intrauterine device was removed three-month after the operation and re-hysteroscopy was performed to evaluate the residualsepta and uterine cavity of the procedure. Patients with a residual notch larger than 1 cm were corrected by hysteroscopy.

All patients given an appointment for the follow up of the potential of residual septum after three month using three dimensional trans-vaginal ultrasound at the time of intrauterine device removal.

Reproductive outcome of each patient were evaluated by telephone or mail during a follow-up period of 24 months. If the patient was pregnant at the end of follow-up, the obstetric outcome was still followed up.

Follow-up was performed through arranged through obstetric private clinic in Benha city –EGYPT case followed chemically by quantitative HCG and then confirmed by ultrasound examination to detect gestational age and viability.

Statistical analysis

Pre- and post-operative reproductive outcomes were compared using McNemar test. Z-testing was used to make 2 comparisons between the 2 groups in terms of reproductive outcomes before and after surgery, respectively. $P < .05$ was considered to be statistically significant.

Results:-

The infertility rate was significantly lower in group b after surgery (39.47% vs 10.53%, $P = .006$). However, no significant difference was observed in the infertility rate between groups A and B. There were no significant differences in pregnancy rate, and preterm live births rate among the 2 groups ($P > .05$ for all).

In Group A the change is only in the rate of term and preterm which was significant but abortion rate didn't differ, this was the group of the smalls septum < 2.5 cm

Significant change occurred in the rate of abortion in group b (25 before resection dropped to 10 after with p value of 0.001 a high significant difference also there were a significant change in all other items including the pregnancy rate and term pregnancy (pregnancy rate elevated from 35 cases to 40 cases with p value 0.01 also the rate of term pregnancy highly increased from 25 cases before septum resection to 38 cases after resection with p value 0.007

Group a (short septum 2.5 cm) table one

	abortions	infertile	Pregnancy	term	preterm
Before resection	15(42.8%)	15(30%)	35	25	10
After resection	12(34.2%)	11	38	36	2
P value	0.4 (ns)	0.3 (ns)	0.4	0.02	0.01

Group b table two

	Abortion	infertile	Pregnancy	Term	preterm
Before	25	10 (20%)	35 (70%)	25(50%)	10

resection					
After resection	10	5(10%)	40 (80%)	38(76%)	2
P value	0.001	0.01	0.01	0.007	0.01



In conclusion, our findings suggest that uterine septum resection is an effective procedure that improves obstetrical outcomes; therefore, it should be recommended to women with a septate uterus who have undergone an abortion.

After surgery, the infertility rate was significantly higher in women with a long uterine septum >2.5 cm than in those with a small uterine septum, and the pregnancy rate in patients with a complete uterine septum was lower than that in the patients with a small partial uterine septum.

Discussion:-

Uterine septum still a big problem particularly in infertility if large and in recurrent abortions and recurrent preterm labor, recent advances in surgical practice and 4 dimensional ultrasound allowed gynecologists perfect detection and management of uterine septa.

Our study shows an excellent prognosis for a successful pregnancy after hysteroscopic septa resection because it highly improved reproductive performance in patients.

Uterine septum is a common uterine anatomical malformation with adverse reproductive outcomes; hysteroscopic septum resection improves the pregnancy outcomes and also reduces the infertility rate particularly in cases with long or complete ones. [9, 11]

Sensitivity of the endometrium receptivity in the septum is lower than that in the normal uterine tissue so resecting the septum is rational to improve pregnancy rate and pregnancy outcomes specially abortions and preterm deliveries [12]

Raga F et al reported that the number of vascular endothelial growth factor (VEGF) receptors reduced in the septum endometrium, compared with that of the normal uterus.[13]

In the present study, the reproductive history and performance before and after septum resection were analyzed in the 2 groups of patients. The abortion rate of the groups decreased significantly ($P < .05$) and term deliveries rate increased significantly after the surgery.

The infertility rate was significantly lower in group b after surgery (39.47% vs 10.53%, $P = .006$). However, no significant difference was observed in the infertility rate between groups A and B. There were no significant differences in pregnancy rate, and preterm live births rate among the 2 groups ($P > .05$ for all).

Significant change occurred in the rate of abortion in group b (25 before resection dropped to 10 after with p value of 0.001 a high significant difference also there were a significant change in all other items including the pregnancy rate and term pregnancy (pregnancy rate elevated from 35 cases to 40 cases with p value 0.01 also the rate of term pregnancy highly increased from 25 cases before septum resection to 38 cases after resection with p value 0.007.

Many criteria set for perfect diagnosis and management of uterine septa and there is a difference in the classification system of septa between ASRM and ESHRE .

Several studies reported an increase in pregnancy rate after metroplasty in groups of infertile patients, ranging from 23% to 80.6%. 16-19

Several retrospective articles shown that septum increases the risk of spontaneous abortions particularly when the septum is more than the half of the residual uterine cavity

Recent study by Frangez compared women with a normal uterus with those associated with uterine septum, the abortion rate per pregnancy after IVF or ICSI before hysteroscopicmetroplasty was significantly higher in both women with a large and women with a small septa. Ban-Frangez H, et al(19)

Following the septum resection with hysteroscopy the miscarriage rate decreased and was comparable to the abortion rate after IVF or ICSI in women with a normal uterus.

No significant difference was observed in the infertility rate between patients with a long and small partial uterine septum in our study. (20)

Data from IVF labs have also provided different information. In a retrospective matched control study comparing 289 embryo transfers before and 538 transfers following hysteroscopic resection of a uterine septum ,*Tomazevic et al* found that pregnancy rates after embryo transfer and before hysteroscopicmetroplasty were significantly lower, both in women with sub-septate and septate uteri .(9-27)

Ono et al published a retrospective study including 31 patients with a history of at least 2 miscarriages due to a uterine septum who underwent a hysteroscopic resection. the postoperative pregnancy rate was 83.9%, and at 1 year postoperatively, 5 women remained persistent infertile. (7)

The most important outcome of our study is that the obstetric outcomes in the form of live birth rate before and after hysteroscopicmetroplasty were influenced by septum size, a criterion not studied well before.

Paradisi R, evaluated patients with small and large partial uterine septum with before and after surgery and their results to some extent is consistent with the presented work, uterine septum especially more than 2.5 cm length was adversely associated with poor obstetric outcomes and septum resection augmented the outcomes so increased pregnancy rates and decreased abortion rates (11)

Retrospective studies showed that a small partial septum increases the risk of spontaneous abortions. After surgery, the infertility rate was significantly higher in women with long uterine septum than in those with a small uterine septum. (20-26)

Findings suggest that uterine septum resection is an effective procedure that improves obstetrical outcomes so it should be recommended to women with a septate uterus who have undergone an abortion.

The infertility rate was significantly higher in women with long uterine septum than in those with the small uterine septum, and the pregnancy rate in patients with a long uterine septum was lower than that in the patients with a small partial uterine septum.

The clinical effectiveness of hysteroscopicmetroplasty varies depending on the situation. We found that the cumulative probability of pregnancy and that of live-birth pregnancy for the one year follow-up were significantly different between the study groups.

In conclusion, hysteroscopic uterine metroplasty would improve the obstetric outcomes, and it may be considered and highly recommended in clinical practice.

Declaration of conflicting interest

No conflict of interest.

References:-

- 1.Valle RF, EkpoGE.Hysteroscopicmetroplasty for the septate uterus: review and meta-analysis. J Min InvasGynecol 2013;20:22–42. [PubMed] [Google Scholar]
- 2.Acien P. Incidence of Mullerian defects in fertile and infertile women. Hum Reprod 1997;12:1372–6. [PubMed] [Google Scholar]
- 3.Pellicer A. Shall we operate on Mullerian defects? An introductionto the debate. Hum Reprod 1997;12:1371–2. [PubMed] [Google Scholar]
- 4.Grimbizis GF, Camus M, Tarlatzis BC, et al. Clinical implications of uterine malformations and hysteroscopic treatment results. Human Reprod Update 2001;7:161–74. [PubMed] [Google Scholar]
- 5.Chan YY, Jayaprakasan K, Zamora J, et al. The prevalence of congenital uterine anomalies in unselected and high-risk populations: a systematic review. Hum Reprod 2011;17:761–71. [PMC free article] [PubMed] [Google Scholar]
6. The American Fertility Society. The American Fertility Society Classifications of Adnexal Adhesions, distal tubal occlusion, tubal occlusion secondary to tubal ligation, tubal pregnancies, Müllerian anomalies and intrauterine adhesions. FertilSteril 1988; 49:944–55. [PubMed] [Google Scholar]
7. Ono S, Yonezawa M, Watanabe K, et al. Retrospective cohort study of the risk factors for secondary infertility following hysteroscopicmetroplasty of the uterine septum in women with recurrent pregnancy loss. Reprod Med Biol 2017;17:77–81. [PMC free article] [PubMed] [Google Scholar]
- 8.Mollo A, De Franciscis P, Colacurci N, et al. Hysteroscopic resection of the septum improves the pregnancy rate of women with unexplained infertility: a prospective controlled trial. FertilSteril 2009;91:2628–31. [PubMed] [Google Scholar]
- 9.Tomazevic T, Ban-Frangez H, Virant-Klun I, et al. Septate, subseptate and arcuate uterus decrease pregnancy and live birth rates in IVF/ICSI. Reprod Biomed Online 2010;21:700–5.
- 10.Merz E, Miric-Tesanic D, Bahlmann F, et al. Sonographic size of uterus and ovaries in pre- and postmenopausal women. Ultrasound ObstetGynecol 1996;7:38–42.
- 11.Paradisi R, Barzanti R, Natali F, et al. Hysteroscopicmetroplasty: reproductive outcome in relation to septum size. Arch GynecolObstet 2014;289:671–6.
- 12.Fedele L, Bianchi S, Marchini M, et al. Ultrastructural aspects of endometrium in infertile women with septate uterus. FertilSteril 1996;65:750–2.

- 13.Raga F, Casan EM, Bonilla-Musoles F. Expression of vascular endometrium of septate uterus. *FertilSteril* 2009;92:1085–90.
- 14.Rikken JF, Kowalik CR, Emanuel MH, et al. Septum resection for women of reproductive age with a septate uterus. *Cochrane Database Syst Rev* 2017;11:CD008576.
- 15.Fayez JA. Comparison between abdominal and hysteroscopicmetroplasty. *ObstetGynecol* 1986;68:399–403.
- 16.ShahrokhTehraninejad E, Ghaffari F, Jahangiri N, et al. Reproductive outcome following hysteroscopicmonopolarmetroplasty: an analysis of 203 cases. *Int J FertilSteril* 2013;7:175–80.
- 17.Salim R, Regan L, Woelfer B, et al. A comparative study of the morphology of congenital uterine anomalies in women with and without a history of recurrent first trimester miscarriage. *Hum Reprod* 2003;18:162–6.
- 18.Woelfer B, Salim R, Banerjee S, et al. Reproductive outcomes in women with congenital uterine anomalies detected by three dimensional ultrasound screening. *ObstetGynecol* 2001;98:1099–103.
- 19.Makino T, Hara T, Oka C, et al. Survey of 1120 Japanese women with a history of recurrent spontaneous abortions. *Eur J ObstetGynecolReprodBiol* 1992;44:123–30.
- 20.Ban-Frangez H, Tomazevic T, Virant-Klun I, et al. The outcome of singleton pregnancies after IVF/ICSI in women before and after hysteroscopic resection of a uterine septum compared to normal controls. *Eur J ObstetGynecolReprodBiol* 2009;146:184–7.
- 21.Marcus S, al-Shawaf T, Brinsden P. The obstetric outcome of in vitrofertilization and embryo transfer in women with congenital uterine malformation. *Am J ObstetGynecol* 1996;175:85–9.
- 22.Patton, PE, Novy, MJ, Lee, DMet al. The diagnosis and reproductive outcome after surgical treatment of the complete septate uterus, duplicated cervix and vaginal septum. *Am J ObstetGynecol* 2004; 190: 1669–1678.
- 23.Tomazevic, T, Ban-Frangez, H, Virant-Klun, Iet al. Septate, subseptate and arcuate uterus decrease pregnancy and live birth rates in IVF/ICSI. *Reprod Biomed Online* 2010; 21: 700–705.
- 24.Tonguc, EA, Var, T, Batioglu, S. Hysteroscopicmetroplasty in patients with a uterine septum and otherwise unexplained infertility. *Int J GynaecolObstet* 2011; 113: 128–130.
- 25.Rikken, JFW, Kowalik, CR, Emanuel, MHet al. The randomised uterine septum transection trial (TRUST): design and protocol. *BMC Womens Health* 2018; 18: 163.
- 26.Venetis, CA, Papadopoulos, SP, Campo, Ret al. Clinical implications of congenital uterine anomalies: a meta-analysis of comparative studies. *Reprod Biomed Online* 2014; 29: 665–683.
- 27.Shokeir, T, Abdelshaheed, M, El-Shafie, Met al. Determinants of fertility and reproductive success after hysteroscopicseptoplasty for women with unexplained primary infertility: a prospective analysis of 88 cases. *Eur J ObstetGynecolReprodBiol* 2011; 155: 54–57.
- 28.Grimbizis, GF, Gordts, S, Di, SSAet al. The ESHRE/ESGE consensus on the classification of female genital tract congenital anomalies. *Hum Reprod* 2013; 28: 2032–2044.