

## Endoscopic Characteristics of Fallopian Tubes State in Kazakhstan Women with Natural Sterility Combined with Reproductive Diseases

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**Abstract:** Determination of level of fallopian tube affect and assessment of fallopian tube state in women with natural sterility combined with reproductive diseases. The analysis of endoscopic surgery results was presented by sampling in 200 patients, of which 98 patients with natural sterility, 102 with secondary sterility. The patients with natural sterility were distributed by three groups group was made up with patients with natural sterility combined with endometriosis ( $n = 33$ ), 2 made up with patients with natural sterility combined with uterine fibroid ( $n = 26$ ), 3 are patients with natural sterility combined with chronic salpingitis. All patients have passed the standard examination. According to data of sonographic hydrotubation in 1 group the double-sided uterine tubes patency was observed in 28% ( $84.85 \pm 6.24$ ) in 2 group in 20% ( $76.92 \pm 8.26$ ) in 3 group 29% ( $74.36 \pm 6.99$ ) of cases. Under laparoscopic examination of fallopian tube the changes were observed in 1 group in 10% ( $30.30 \pm 8.00$ ) of cases. In 2 group the changes are observed in 20 % ( $76.92 \pm 8.26$ ) of cases. In 3 group the changes are observed in 32% ( $82.05 \pm 6.15$ ) of cases. Here by in view of the presence of patients with natural sterility the frequency of fallopian tube abnormality in three groups was equal from 30- 82.05%, despite its double-sided patency 74.36-84.85%. Therefore the endoscopic interventions shall be performed not with the purpose of diagnosis verification but with medical purpose.

**Key words:** Female sterility, endometriosis, uterine fibroid, chronic salpingitis, fallopian tube, purpose

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### INTRODUCTION

The problem of female sterility currently remains one of the most pressing challenges in contemporary gynecological practice at the present stage of development (Kulakova, 2005; Makhotina, 2010).

The leading cause of female sterility is tube-peritoneal which rate does not have a downward trend. It primarily related to increase of inflammatory diseases of uterine annexes. However, fallopian tube affect due to prior diseases of reproductive bodies is quite possible.

Therefore, the development of effective methods for diagnosis and management of female sterility are among the major tasks in contemporary gynecology. The progress achieved in various areas of science has enabled to take a medical aid to the patients with female sterility to a whole new level. This has become possible by using the latest techniques of examination, namely endoscopic methods using state-of-the-art technical aid (Aziev, 1993; Kuzemina, 1999; Kvitsiani, 2010).

In this regard the issues of fallopian tube diagnostics have a special consideration in development of endoscopic methods in infertile women (Lundberg *et al.*, 1998; Job-Spira *et al.*, 1999). During endoscopy, namely the abdominoscopy the state of alvus, ovarian and fallopian tube, evidence of acute and chronic inflammation of endometriosis, uterine fibroid which require the establishment of necessary treatment were assessed.

**Objective of research:** determination of level of fallopian tube affect and assessment of fallopian tube state in women with natural sterility combined with reproductive diseases.

### MATERIALS AND METHODS

This research was performed in gynecology department of the Perinatal Center No.1 of Astana city (Kazakhstan) over a period from 2014-2016. About 200 patients of which 98 with natural sterility, 102 with secondary sterility were examined by us. The patients with natural sterility were distributed for three groups:

Table 1: Average age of offensive menstrual functions

Parameter	Group 1 M±m n = 33 (years)	Group 2 M±m n = 26 (years)	Group 3 M±m n = 39
Age (years)			
12-14	13.2±0.93	13.13±0.69	13.12±0.72
15-16	15.6±0.47	15.75±0.43	16±0.0
16 and more	-	-	-

Group was made up with the patients with natural sterility combined with endometriosis (n = 33), 2 made up with the patients with natural fertility combined with uterine fibroid (n = 26), 3 with natural sterility combined with chronic salpingitis.

- The age of examined patients in 1 group has ranged within 24-41 years, average age was equal to  $32.39 \pm 4.81$  years
- The age of examined patients in 2 group has ranged within 24-46 years and older, average age was equal to  $35.8 \pm 4.75$  years
- The age of examined patients in 3 group has ranged within 24-45 and older, average age was equal to  $31.97 \pm 4.89$  years
- All patients have passed the routine examination, exclusionary criteria consist of the presence of OPS (polycystic ovarian syndrome) and male factor infertility

The obtained data were statistically processed on individual computer using the "Microsoft Excel" spreadsheets and "SPSS Statistics" application program package.

**Outcome:** Age of onset of menarche in 1 group was ranged within 12-16 and older (Table 1). According to Table 1, the average menarche age was equal to  $13.57 \pm 1.30$  years. Age of onset of menarche in 2 group was ranged within 12-16 years. The average menarche age was equal to  $13.53 \pm 1.15$  years. Age of onset of menarche in 3 group was ranged within 12-16 years and older, average age  $-13.56 \pm 1.23$  years.

The timely menarche (at the age from 12-16 years) was observed in majority of women in all groups. The duration of menstrual bleeding from 3-7 days in three groups and on average were equal in 1 group to  $5.39 \pm 0.88$  days in 2 group  $5.39 \pm 0.89$  days in 3 group  $4.82 \pm 1.15$  days. The duration of menstrual cycle was equal in 1 group to  $28.4 \pm 2.79$  days, 2 group  $28.42 \pm 2.7$  days in 3 group  $29.48 \pm 5.23$  days.

With characteristics of menstrual disorders of women examined in 1 group the menstrual abnormality was observed in 16% ( $48.48 \pm 8.70$ ) at that by hyperpolymenorrhea type in 2 ( $6.06 \pm 4.15\%$ ) of cases by

dysmenorrhea type 6% ( $18.18 \pm 6.71$ ) by type of pre and postmenstrual bloody flux in 3% ( $9.09 \pm 5.00$ ) by opsomenorrhea type in 2% ( $6.06 \pm 4.15$ ).

In 2 group the menstrual abnormality was observed in 10% ( $38.46 \pm 9.54$ ) of patients, at that by hyperpolymenorrhea type in 4% ( $15.38 \pm 7.08$ ) by dysmenorrhea type 4% ( $15.38 \pm 7.08$ ) by type of pre and postmenstrual bloody flux in 3% ( $9.09 \pm 5.00$ ) by opsomenorrhea type in 2% ( $7.69 \pm 5.23$ ). In 3 group the menstrual abnormality was observed in 4% ( $10.26 \pm 4.86$ ) of patients, at that by dysmenorrhea type 2% ( $5.13 \pm 3.53$ ) by opsomenorrhea type in 2% ( $5.13 \pm 3.53$ ).

The data analysis has shown that the distinctions between the groups are statistically valid by Fisher's exact test ( $p = 0.10$ ) at ( $p < 0.05$ ) by this attribute the groups appeared to be comparable.

## RESULTS AND DISCUSSION

### Genital function:

- The sex life in 1 group of examined women from 16-27 years
- The sex life on average was equal to  $20.69 \pm 2.90$  years
- The sex life in 2 group of examined women from 17-37 years
- The sex life on average was equal to  $23.07 \pm 5.06$  years
- The sex life in 3 group of examined women from 17-27 years
- The sex life on average was equal to  $20.56 \pm 2.73$  years

**Reproductive function:** The patients of 1 group have noted the absence of pregnancy within 1.0-16 years with regular sex life. The natural sterility has taken place in 33 women. The duration of natural sterility was equal on average to  $3.5 \pm 2.3$  years. The patients of 2 group have noted the absence of pregnancy within 1.0-14 years with regular sex life. The natural sterility has taken place in 26 women. The duration of natural sterility was equal on average to  $4.28 \pm 3.3$  years.

The patients of 3 group have noted the absence of pregnancy within 1.0-17 years with regular sex life. The natural sterility has taken place in 39 women. The duration of natural sterility was equal on average to  $5.12 \pm 3.76$  years.

By frequency of extragenital diseases at examined women of 1 group the diseases of respiratory system was in 2% ( $6.06 \pm 4.15$ ), digestive apparatus in 3% ( $9.09 \pm 5.00$ ) of cases, urinary system in 1% ( $3.03 \pm 2.98$ ), diseases of endocrine system in 3% ( $9.09 \pm 5.00$ ), adiposis in 1% ( $3.03 \pm 2.98$ ). In 2 group diseases of respiratory system was in 1% ( $3.85 \pm 3.77$ ) of cases, digestive apparatus in 1%

(3.85±3.77), cardiovascular system in 1% (3.85±3.77), diseases of endocrine system in 2% (7.69±5.23), adiposis in 1% (3.85±3.77). In 3 group the diseases of respiratory system was in 1% (2.56±2.53), digestive apparatus in 2% (5.13±3.53), urinary system in 2% (5.13±3.53), diseases of endocrine system in 6% (15.38±5.78), adiposis in 2% (5.13±3.53) of cases.

The analysis of frequency of associated extragenital abnormality in examined groups has shown that the most frequently detectable abnormality in patients with natural sterility combined with chronic salpingitis are the diseases of endocrine system (thyroid disorders -15.38%). By other attributes there were no statistical discrepancy in Fisher ( $p = 0.42$ ) at ( $p < 0.05$ ).

In the pattern of associated gynecological abnormality in 1 group 5% have an endometrium abnormality (15.15±6.24), oothecoma 6% (18.18±6.71), endometriosis 5% (15.15±6.24), fallopian tube abnormality in 5% (15.15±6.24), cervical ectropion was in 4% (12.12±5.68), adhesive process in 3% (9.09±5.00) as well as sexually-transmitted infections in 5% (15.15±6.24) of patients.

In 2 group there are endometrium abnormality 1% (3.85±3.77), oothecoma 2% (7.69±5.23), endometriosis 1% (3.85±3.77), fallopian tube abnormality in 6% (23.08±8.26), cervical ectropion was in 3% (11.54±6.27), adhesive process in 2% (7.69±5.23) as well as sexually-transmitted infections in 1% (3.85±3.77) of patients.

In 3 there are endometrium abnormality 3% (7.69±4.27), oothecoma 3% (7.69±4.27), endometriosis 1% (2.56±2.53), hydrosalpinx 4% (10.26±4.86), cervical ectropion was in 3% (10.26±4.86), adhesive process in 8% (20.51±6.47) as well as sexually-transmitted infections in 13% (33.33±7.55) of patients. The analysis of associated gynecological disorders has shown that in Fisher  $p = 0.13$  at ( $p < 0.05$ ). The cystectomy in 1% (3.85±3.77), abdominoscopy, salpingoneostomy in 1% (3.03±2.98), hysteroscopy, polypectomy in 3% (9.09±5.00) of cases were among the surgical service in anamnesis of 1 group. The appendectomy in 5% (15±6.24), cystectomy in 4% (12±5.68), abdominoscopy, salpingoneostomy in 2% (7.69±5.23), tubectomy in 2 (7.69±5.23), ovariectomy in 1% (3.85±3.77), cholecystectomy in 1% (3.85±3.77) of cases was in 2 group.

The appendectomy in 4% (10.26±4.86), cystectomy in 6% (15±5.78), abdominoscopy, salpingoneostomy in 1% (2.56±2.53), hysteroscopy, polypectomy in 1% (2.56±2.53), tubectomy in 3% (7.69±4.27), ovariectomy in 1% (2.56±2.53), cholecystectomy in 1% (2.56±2.53) of cases was in 3 group. In such a manner by attributes of surgical service the statistical analysis has shown that according to Fisher  $p = 0.30$  at ( $p < 0.05$ ).

During carrying out of ultrasound investigation of lower pelvis we have detected in 1 group the oothecoma in 17% (51.52±8.70), adenomyosis in 1% (3.03±2.98),

hydrosalpinx 1% (3.03±2.98), uterine fibroid in 1% (3.03±2.98), chronic salpingitis in 3% (9.09±5.00), endometrium abnormality in 2% (6.06±4.15), adhesive process in 1% (3.85±3.77) of cases.

In 2 group the oothecoma in 2% (7.69±5.23), adenomyosis in 1% (3.85±3.77), uterine fibroid in 6% (23.08±8.26), chronic salpingitis in 3% (3.85±3.77), endometrium abnormality in 3% (11.54±6.27) of cases. In 3 group the oothecoma in 4% (10.26±4.86), adenomyosis in 2% (5.13±3.53), chronic salpingitis in 7% (17.95±6.15), endometrium abnormality in 5% (12±5.35), adhesive process in 4% (10.26±4.86) of cases. The analysis of obtained data has shown that according to Fisher  $p = 0.82$  at ( $p < 0.05$ ). According to data the uterotubography is presented in women examined in compared groups (Fig. 1). The data analysis has shown that according to Fisher at  $p = 0.22$  at ( $p < 0.05$ ) there were no any statistical discrepancy. According to data of sonographic hydrotubation in examined women in compared groups is presented in Fig.2.

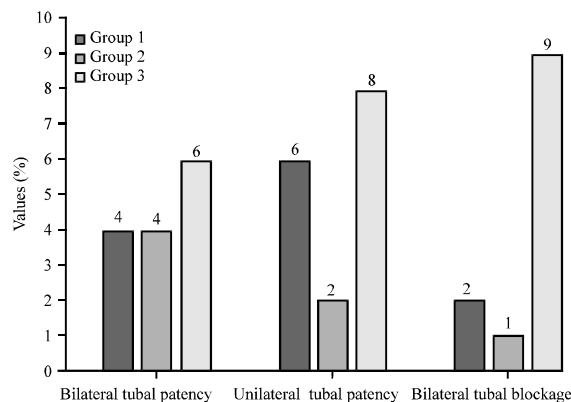


Fig. 1: Characteristics of tubal patency according to the data of the examined women's Hystero Salpingo Graphy (HSG)

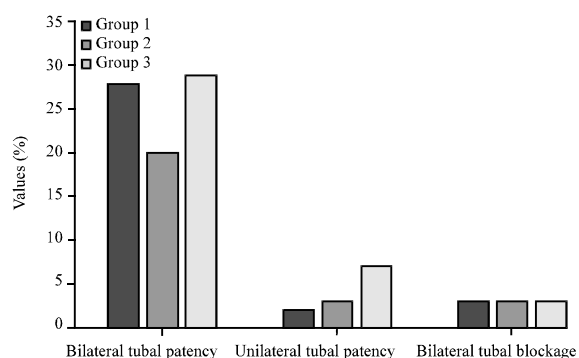


Fig. 2: Characteristics of tubal patency on the basis of the data of sonographic hydrotubation of the examined women

According to data of three groups during comparison by one-way ANOVA was equal by Bonferroni  $p = 1.0$  by Scheffe  $p = 0.97$  by Tukey  $p = 0.97$ , at ( $p < 0.05$ ) that has shown that there are no significant differences between the groups.

In 1 group the ampular section of tube was in 2% ( $6.06 \pm 4.15$ ) of cases under one-sided tubal obstruction and distribution of obstruction, the isthmic section of pipe was an obstruction location under double-sided tubal obstruction in 1% ( $3.03 \pm 2.98$ ) and ampular section in 2% ( $6.06 \pm 4.15$ ) of cases.

In 2 group the isthmic section of tube was an obstruction place under one-sided tubal obstruction in 2% ( $7.69 \pm 5.23$ ) and ampular section in 3% ( $11.54 \pm 6.27$ ) of cases, under double-sided tubal obstruction the isthmic section of pipe was an obstruction location in 1% ( $3.85 \pm 3.77$ ) and ampular section in 2% ( $7.69 \pm 5.23$ ) of cases.

In 3 group under one-sided tubal obstruction the isthmic section of pipe was an obstruction location in 3% ( $7.69 \pm 4.27$ ) and ampular section in 4% ( $10.26 \pm 4.86$ ) of cases, under double-sided tubal obstruction the isthmic section of pipe was an obstruction location. In 1% ( $2.56 \pm 2.53$ ) and ampular section in 2% ( $5.13 \pm 3.53$ ) of cases. The detected abnormality of pelvic organs during abdominoscopy in examined patients:

**1 group:** endometriotic heterotropy in uterovesical spatium were in 3% ( $9.09 \pm 5.00$ ), endometriotic heterotropy on sacro-uterine ligament in 5% ( $15.15 \pm 6.24$ ), endometriotic heterotropy on lower pelvis serosa in 4% ( $12.12 \pm 5.68$ ), endometriotic heterotropy in retrouterine

spatium in 3% ( $9.09 \pm 5.00$ ), endometriotic foci on ovarian surface in 4% ( $12.12 \pm 5.68$ ), endometriotic cystic lesion in 18% ( $54.55 \pm 8.67$ ), adenomyosis in 5% ( $15.15 \pm 6.24$ ), uterine fibroid in 1% ( $3.03 \pm 2.98$ ), hydrosalpinx in 1% ( $3.03 \pm 2.98$ ), chronic salpingitis in 1% ( $3.03 \pm 2.98$ ), agenesis of fallopian tube and ootheca in 1% ( $3.03 \pm 2.98$ ), adhesive process in 4% ( $12.12 \pm 5.68$ ) of cases.

**2 group:** endometriotic heterotropy on sacro-uterine ligament in 1% ( $3.85 \pm 3.77$ ), oothecoma in 3% ( $11.54 \pm 6.27$ ), hydrosalpinx in 3% ( $11.54 \pm 6.27$ ), bicomuate uterus in 1% ( $3.85 \pm 3.77$ ), adhesive process in 3% ( $11.54 \pm 6.27$ ) of cases.

**3 group:** endometriotic heterotropy on sacro-uterine ligament in 2% ( $5.13 \pm 3.53$ ), oothecoma in 2% ( $5.13 \pm 3.53$ ), hydrosalpinx in 3% ( $7.69 \pm 4.27$ ), bicomuate uterus in 1% ( $3.85 \pm 3.77$ ) adhesive process in 8% ( $20.51 \pm 6.47$ ) of cases. The scope of surgical intervention during diagnostic and treatment abdominoscopy conducted in examined patients is shown in the Table 2. The analysis of obtained data has shown that according to data of three groups during comparison by one-way ANOVA was equal by Bonferroni  $p = 1.0$ ; Scheffe  $p = 0.93$ ; Tukey  $p = 0.92$ , at ( $p < 0.05$ ) that demonstrates that there are no significant differences between the groups.

During the laparoscopic examination of fallopian tube the changes in 1 group are observed in 10% ( $30.30 \pm 8.00$ ) of patients. The peritubal adhesions in 5% ( $15.15 \pm 6.24$ ), changes of tube by hydrosalpinx and beading type in 1% ( $3.03 \pm 2.98$ ) were visible the most

Table 2: Surgical measures volume when perform diagnostic and treatment laparoscopy of the examined patients

Medical procedure name	Group 1 M±m n = 33	Group 2 M±m n = 26	Group 3 M±m n = 39
Laser photocoagulation of focus of endometrioid heterotopia of peritoneum	4% ( $12.12 \pm 5.68$ )	-	-
Laser photocoagulation of focus of posterior Cul-de-Sac	3% ( $9.09 \pm 5.00$ )	-	-
Laser photocoagulation of focus of endometrioid heterotopia of vesicouterine pouch	3% ( $9.09 \pm 5.00$ )	-	1% ( $2.56 \pm 2.53$ )
Laser photocoagulation of focus of endometrioid heterotopia of sacrouterine ligaments	5% ( $15.15 \pm 6.24$ )	1% ( $3.85 \pm 3.77$ )	1% ( $2.56 \pm 2.53$ )
Excision of endometrioid heterotopia on ovarian surface	4% ( $12.12 \pm 5.68$ )	-	-
Conservative myomectomy	1% ( $3.03 \pm 2.98$ )	24% ( $92.31 \pm 5.23$ )	-
Abstaining from conservative myomectomy	-	2% ( $7.69 \pm 5.23$ )	-
Cystectomy	18%	1% ( $3.85 \pm 3.77$ )	2% ( $5.13 \pm 3.53$ )
Adhesiolysis	3% ( $9.09 \pm 5.00$ )	3% ( $11.54 \pm 6.27$ )	3% ( $7.69 \pm 4.27$ )
Salpingoovariolysis	2% ( $6.06 \pm 4.15$ )	3% ( $11.54 \pm 6.27$ )	10% ( $25.64 \pm 6.99$ )
Salpingoneostomy	2% ( $6.06 \pm 4.15$ )	2% ( $7.69 \pm 5.23$ )	5% ( $12.82 \pm 5.35$ )
Fimbrioplasty	1% ( $3.03 \pm 2.98$ )	1% ( $3.85 \pm 3.77$ )	1% ( $2.56 \pm 2.53$ )
Unilateral tubectomy	-	2% ( $7.69 \pm 5.23$ )	4% ( $10.26 \pm 4.86$ )
Bilateral tubectomy	1% ( $3.03 \pm 2.98$ )	3% ( $11.54 \pm 6.27$ )	-

frequently, attributes tube in endometriotic heterotopy are observed in 2% ( $6.06 \pm 4.15$ ), tube change by "beading" type+peritubal adhesions in 1% ( $3.03 \pm 2.98$ ).

In 2 group the changes are observed in 20% ( $76.92 \pm 8.26$ ) of cases. The most frequently the tube changes were visible by hydrosalpinx type and "beading" type in 5% ( $19.23 \pm 7.73$ ), tube change by "nodose salpingitis" type in 4% ( $15.38 \pm 7.08$ ), tube change by peritubal adhesions type in 3% ( $11.54 \pm 6.27$ ). The similar tube change has occurred by nodose salpingitis+hydrosalpinx tube type by "beading"+peritubal adhesions and tube peritubal adhesions+hydrosalpinx tube type in 1% ( $3.03 \pm 2.98$ ) of cases.

In 3 group the changes are observed in 32% ( $82.05 \pm 6.15$ ) of cases. The peritubal adhesions in 14% ( $35.90 \pm 7.68$ ) were visible the most frequently, tube changes by hydrosalpinx type and "nodose salpingitis" type equally in 4% ( $10.26 \pm 4.86$ ) injected tube attributes and by "beading" type in 3% ( $7.69 \pm 4.27$ ).

Also the similar tube change was occurred by type tube nodose salpingitis+tube hydrosalpinx and tube peritubal adhesions+tube hydrosalpinx in 2% ( $5.13 \pm 3.53$ ), tube changes by "beading" type+tube by peritubal adhesions 3% ( $7.69 \pm 4.27$ ) of cases.

During comparison of three groups for change of fallopian tube it was detected that in 3 group the peritubal adhesions are in 14% ( $35.90 \pm 7.68$ ) cases larger than in other groups despite the double-sided uterine tubes patency (74.36 %).

In such a manner in all three analyzable groups the majority of cases have turned to be comparable. In view of the presence of patients with natural sterility combined with reproductive diseases the frequency of fallopian tube abnormality in three groups was equal from 30% to 82.05%, despite its double-sided uterine tubes patency from 74.36-84.85%.

Therefore, the precise diagnosis establishing is possible with correct observation of algorithm for examination of patients with natural sterility combined with reproductive diseases including the careful examination of complaints, anamnesis, data of special pelvic examination, ultrasound investigation and HSG.

## CONCLUSION

In particular in first stage we recommend the uterotubography since the indolence, swiftness, simplicity and low cost are undeniable advantages of this method. Thus according to results of own clinical study we deduce that the application of ultrasound investigation combined with HSG ensures 95-100% of accuracy in determination of nature of fallopian tube affect in sterility. Therefore the endoscopic interventions shall be performed not with the purpose of diagnosis verification but with medical purpose.

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