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Clinical and Laparoscopic Findings in Infertile Couples with a Normal Hysterosalpingogram

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OBJECTIVE: The aim of this study was to evaluate retrospectively the clinical course of infertile couples with a normal hysterosalpingogram (HSG) to assess the diagnostic value of subsequent laparoscopy (L/S).

STUDY DESIGN : Retrospective evaluation of laparoscopic findings of 527 patients after a normal hysterosalpingogram.

RESULTS : The infertile couples (N: 527) were aged 27±5,0 SD years, with 4,3±2.8 years of infertility. All patients were required laparoscopy because of failure to conceive or suspected pelvic pathology based on symptoms or the results of a pelvic examination. Among the 527 patients receiving L/S, pelvic pathology was found in 314 (59.6%). Corrective surgery performed in 37 (7.2%) patients.

CONCLUSION: In our study we conclude that clinical risk factors were not predict laparoscopically proven abnormalities. In some pathologies encountered during laparoscopy we do not generally perform corrective surgery. In surgically corrected cases monthly fecunditiy rates were not as high as normal fertile women. It is still unclear to declare to performe laparoscopy in order to detect, correct and enhance fertility after a normal HSG.

Key Words: Hysterosalpingography, Laparoscopy, Infertility

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Introduction

Infertility secondary to tubal pathology accounts for 35-40 % of infertile couples.[1] The hysterosalpingogram (HSG) is a valuable diagnostic tool in assessing the tubal patency, endometrial cavity but is limited in its ability to evaluate other pelvic pathology, such as peritubal adhesions and endometriosis. Laparoscopy and subsequent hysteroscopy will achieve all these goals effectively but this approach has the disadvantages because of high costs and invasive technic. Numerous studies have documented this discordance between the findings discovered by L/S and HSG in the same patients.[2-5] This fact has led some clinicians to perform L/S as an initial modalities for assessing tubal and peritoneal factors. Almost all clinicians agree that abnormalities detected by an HSG should be followed by L/S if needed. In case of a normal HSG what should we do? The literature is deficient in reports addressing the necessity of L/S after a normal HSG.

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We retrospectively evaluated the laparoscopic findings after a normal HSG in 527 infertile couples and the association of historical data that help to predict pelvic pathology at L/S.

Material and Method

This study was a retrospective analysis of laparoscopic findings in 527 patients with a normal HSG evaluated at the Zekai Tahir Burak Women's Health and Research Hospital Infertility clinic between 1997-2003. The criteria for inclusion in the study were a normal HSG during the course of an infertility evaluation after a period of at least one years of infertility duration. Infertility evaluation began after at least of one year of a unprotected intercourse period. Both primary and secondary infertile couples were enrolled in to the study group. HSG results were evaluated with a single experienced radiologist. The normal HSG were concluded if the endometrial cavity was normal, bilateral tubal patency and tubal mucosal linings were normal. Laparoscopic results were especially evaluated due to peritubal adhesions, PCOS, anovulation, pelvic congestion and unilateral or bilateral tubal occlusion. We also enrolled infertile couples due to male factor in to the study group.

HSG's were performed during the proliferative phase of the menstrual cycle using a lipid soluble contrast medium (Lipiodol). The procedure were performed using a classical tenaculum- cannula technique under fluoroscopy without se-

dation. Infertility evaluation included D3 basal hormone levels, serum progesterone determinations to document ovulation during luteal phase, spermiogram with Kruger strict criteria for morphologic assessment. All of the 527 patients underwent diagnostic L/S because of failure to conceive or suspected pelvic pathology. Laparoscopy was performed under general anesthesia with facilitation of pelvic inspection with secondary ancillary trocars to allow manipulation . Chromotubation at L/S with a dilute solution of methylene blue dye allowed assessment of tubal patency.

Statistical Analysis

Statistics were assessed with SPSS 1.5 programme. Data on variables over time were evaluated with linear trend X square analysis, Fischer's Exact Test and Mann Whitney U test for the group comparisons. If the result p ‹0.005 it is accepted as statistically significant.

Results

The infertile couples (N: 527) were aged 27±5,0 SD years, with 4,3±2.8 years of infertility. The demographic data of 527 patients were given in the table I. Of 527 patients 443 were suffering primary infertility (% 84.1) and 84 patients were secondary infertility (% 15.9) (table II). Between these groups there were statistically significant variations according to their age, infertility duration, sperm parameters, and serum basal estradiol and prolactin levels.

Results of clinical risk factors of 527 patients were prior pelvic inflammatory disease in 5, prior pelvic surgery in 39, previous C/S in 13, dysmenorrhea in 97, disparonia in 35, prior ectopic pregnancy in 6 patients (table III).

If dyspareunia and previous PID were encountered the probability of assessing pelvic pathology at L/S were higher but not statistically significant (table IV).

213 patients were evaluated as normal at L/S (% 40.4), 314 had pathologic findings (%59.6). Corrective operative surgery were performed in only 37 patients. 23 had endometriotic lesion excision, 14 had adhesion releasing (table V).

Due to demographic findings laparoscopy normal patients were younger (27 versus 28 years of age), their infertility duration were shorter (3 versus 4 years), basal estradiol, FSH, LH levels were more decreased and had higher prolactin levels (table VI).

In 5 patients with a history of pelvic inflammatory disease all had abnormal L/S finding. But because of small sample size we can not conclude as an important risk factor (p›0.05). Also abnormal laparoscopic findings were encountered in 28 of 39 patients with a history of prior pelvic surgery it was statistically insignificant.

Table I: Demographic values of infertile couples

AGE	527	27,60	5,137	28,00	17	46
Gravide	527	,24	,658	,00	0	4
Mariage Duration (year)	527	5,85	3,873	5,00	0	22
INFERTİLİTY	527	4,13	2,756	4,00	0	18
DURATION (year)	527	51,83	14,016	54,00	7	85
Sperm motility (A+B)	527	79,15	36,803	76,00	6	210
(%)	527	9,63	4,780	9,00	2	37
SPERM	527	6,189	2,1557	6,300	1,5	14,0
COUNT	527	8,504	29,4809	4,600	1,5	342,0
(million/ ml)						
KRUGER	527	15,37	7,111	12,70	4	55
morphology (%)	527	1,403	,8904	1,200	,3	4,8
FSH (nlU/ml)	527	341,51	79,174	349,00	167	592
LH (mlU/ml)	527	13,137	1,2709	13,000	110	17,6
PROLACTIN	527	27,08	3,600	27,00	20	43
(ng/ml)	527	267,47	71,940	266,00	125	508
TSH (mlU/ml)						
FIBRINOGEN						
PTZ						
APTT						
TROMBOCYTE count						

Table II: Comparison of demographic and laboratory values of primary and secondary infertile couples

	Mann-Whitney U	Wilcoxon W	Z	Asymp. Sig. (2.tailed)
AGE	11160,000	109506,000	-5,831	,000
MARIAGE	8279,500	106625,500	-8,118	,000
(years)	13958,500	17582,500	-3,688	,000
INFERTILITY	14850,000	113196,000	-2,940	,003
(years)	16806,500	115152,500	--1,407	,159
SPERM	16775,000	115121,000	-1,442	,149
MOTILITY	17808,500	21378,500	-623	,533
SPERM COUNT	17820,000	21390,000	-614	,539
KRUGER	15453,000	19023,000	-2,409	,016
FSH	15122,500	18692,500	-2,723	,006
LH	18482,500	116828,500	-097	,923
E2	18216,500	21786,500	-304	,761
PROLACTIN	18030,500	21600,500	-450	,653
TSH	17197,500	20767,500	-1,101	,271
FIBRINOGEN	18358,000	116704,000	-194	,846
PTZ				
APTT				
TROMBOCYTE				

Table III: Clinical risk factors due to laparoscopy results

	Normal L/S		Abnormal L/S	
Risk factors	Patient	(%)	Patient	(%)
Dysmenorrhea	40	18,9	57	18,2
Dyspareunia	8	3,8	27	8,6
Dyspareuia+dysmenorrhea	12	5,7	21	6,7
Previous PID	0	0	5	1,6
Previous C/S	9	4,2	4	1,3
Previous EX-U	2	0,3	4	0,8
Previous pelvic surgery	11	5,2	28	8,9

Table IV: Predictive values of clinical risk factors to assess laparoscopic abnormalities

Risk Factors	Sensitivity	Specifiticy	NPD	PPD	P
Primary infertility	84	17	57	60	0,61
Secondary infertility	15	83	60	57	0,61
Symptoms	33	71	57	63	0,156
Previous C/S	1	95	60	30	0,063
Previous D&C	8	94	58	71	0,146
Previous PID	1	100	59	2	0,74

Table V: Laparoscopic Findings

L/S results	Patient number	(%)
Endometriosis	Total 146	Total % 27,8
Minimal	130	% 24,7
Mild	13	% 2,5
Moderate	3	% 0,6
Severe	0	% 0
Adhesion	29	% 5,5
PID	48	% 9,1
Unilateral tubal dysfunction	52	% 9,9
Bilateral tubal dysfunction	36	% 6,8
Others	Total 122	Total % 23,1
PCO/anov.	105	% 19,9
LUF	8	% 1,5
Pelvic congestion	9	% 1,7

Table VI: Demographic values of L / S results

	L/S ANORMAL	N	Mean	Std. Deviation	Median	Minimum	Maximum
AGE	0	213	27,76	5,064	27,00	17	46
	1	314	27,50	5,190	28,00	18	42
	Total	527	27,60	5,137	28,00	17	46
INFERTILITY DURATION	0	213	4,14	2,741	3,00	0	18
	1	314	4,13	2,770	4,00	0	15
	Total	527	4,13	2,756	4,00	0	18
MARIAGE DURATION	0	213	6,06	3,886	5,00	0	18
	1	314	5,72	3,865	5,00	0	22
	Total	527	5,85	3,873	5,00	0	22
SPERM MOTILITY(a+b)	0	213	53,99	12,446	54,00	14	85
	1	314	50,37	14,829	54,00	7	85
	Total	527	51,83	14,016	54,00	7	85
SPERM COUNT	0	213	82,36	37,020	80,00	10	210
	1	314	76,97	36,553	68,00	6	210
	Total	527	79,15	36,803	76,00	6	210
KRUGER MORPHOLOGY	0	213	9,87	4,877	9,00	2	37
	1	314	9,47	4,714	9,00	2	37
	Total	527	9,63	4,780	9,00	2	37

FSH	0	213	6,158	1,9683	6,200	1,5	12,4
	1	314	6,209	2,2769	6,300	1,5	14,0
	Total	527	6,189	2,1557	6,300	1,5	14,0
LH	0	213	10,424	39,9445	4,400	1,5	342,0
	1	314	7,202	19,3820	4,800	1,6	342,0
	Total	527	8,504	29,4809	4,600	1,5	342,0
E2	0	212	56,2896	44,45505	44,4000	4,20	234,00
	1	313	64,4000	53,90851	46,0000	19,00	356,00
	Total	525	61,1250	50,41838	45,0000	4,20	356,00
PROLACTIN	0	213	15,90	7,825	14,60	5	55
	1	314	15,01	6,571	12,50	4	37
	Total	527	15,37	7,111	12,70	4	55

P.S:
0: Normal laparascopy
1: Anormal laparascopy

Discussion

Our main aim in this study was to determine whether HSG has a high predictive value to detect pelvic pathology comparing laparoscopy. We include male factor infertility patients to increase the sample size. Our study supports the hypothesis that women failing to conceive within one year after a normal HSG have a reasonably high incidence of pelvic pathology at laparoscopy. We found pelvic pathology in 314 patients (%59.6). Both HSG and L/S has a high efficiency to evaluate tubal patency. HSG also has the advantage of showing müllerian anomalies and uterine pathologies.[6] If HSG shows no problems there is sufficient data that L/S should be done to assess peritubal adhesions and endometriosis.[6-8] With routine use of L/S unexplained infertility incidence lessens from %10 to % 3.5 .[9] There are sufficient data in literature that shows us L/S has the advantage over HSG to determine extra tubal pathologies.[10-12] Jhonson et al revealed the sensitivity of HSG to detect endometriosis as %40, specificity as %83 and positive predictive value as %21.[13]

In our study %24 of pelvic pathology was related with endometriosis. Especially in endometriosis cases due to low predictive value of HSG we recommend to perform L/S . In literature there are some data that because of high cost benefit ratio L/S is not recommended for diagnostic purposes.[14]

Portuendo et al reported that risk assessment due to history, pelvic examination and infertility duration as high or low is reasonable.[15] In high risk group it was recommended to perform L/S earlier in their follow up due to high prevalence of pelvic pathologies. In our study we could not show any statistically significant value due to previous pelvic surgery, PID history, infertility duration. We conclude that clinical risk factors were not enough to decide L/S.

Goldenberg in a study of L/S in infertile women noted a %58 pathology rate with prior normal HSG. They reported %47 to have a chance in management based on laparoscopic findings.[16] Although we found similar rates of pelvic pathology, our operative changes was %2.7 for endometriosis and %4.4 for peritubal adhesiolysis is lower than their %47 change value. The management changes in the study actually improved the fertility rates is difficult to establish because of study was retrospective and has a relatively small sample size. Wood found pelvic pathology at laparoscopy after a normal HSG in a population of 50 patients and also had a high pregnancy ate of %50 in patients who underwent corrective surgery but study size was to small to predict such conclusion.

There are conflicting data in literature about effectivity of surgical therapy in mild or moderate endometriosis cases.[17- 19] After ablative endometriotic foci of endometriosis fecundity may increase but this is below than monthly fecundity of fertile women (%20 vs % 6.1). ART has advantages of higher fertility rates than corrective surgery. It is a better approach to use ART in endometrisis patients.[18]

In previous studies laparoscopically detected pelvic pathology rates after a normal HSG were between %33-% 58 .In our study this rate show a concordance with those results as the value of %59.6. In Opsahl study of 327 cases the neg-

ative predictive value was high as %96.6.[11] This high value was due to the exclusion criteria that unless fimbria motility and over surface were not effected with endometriotic implants mild and moderate endometriosis accepted as normal. In our study endometriotic lesions were accepted as abnormal. As a conclusion due to this variations it is still not clear to access the predictive value of laparoscopy after a normal HSG currently.

In our study we conclude that clinical risk factors were not predict laparoscopically proven abnormalities. In some pathologies encountered during laparoscopy we do not generally perform corrective surgery. In surgically corrected cases monthly fecundity rates were not as high as normal fertile women. It is still unclear to declare to perform laparoscopy in order to detect, correct and enhance fertility after a normal HSG

Normal Histerosalpingografisi Olan İnfertil Çiftlerde Klinik ve Laparoskopik Bulgular

AMAÇ : Normal histerosalpingografisi olan infertil çiftlerin retrospektif olarak incelenmesi ile Takiben yapılan laparoskopinin diagnostik etkinliğinin tespit edilmesi.

GEREÇ ve YÖNTEM: Bu çalışmada retrospektif olarak normal histerosalpingografisi olan 527 hastanın laparoskopi sonuçları değerlendirilmiştir.

BULGULAR: 527 infertil hastanın ortalama yaşları 27.0± 5.0; infertilite süreleri 4,3±2.8 idi. Tüm hastalara semptomları veya muayene bulguları nedeniyle şüpheli pelvik patolojilerinin olması veya gebelik elde edilememesi üzerine laparoskopi yapılmıştır. 527 vakanın 314'ünde (%59.6) pelvik patoloji tespit edildi. 37 hastaya operatif laparoskopi uygulandı (%7.2).

SONUÇ: Çalışmamız sonucunda klinik risk faktörlerinin laparoskopik anormallikleri predikti etmediğini gösterdik. Laparoskopide karşılaşılan bir çok patolojide de düzeltici cerrahi yapılmamaktadır. Cerrahi uygulanan grupta aylık fekundite normal fertil kadınlar kadar yüksek değildir. Halen normal HSG sonrasi fertilite problemlerini araştırma, düzeltme ve arttırma amacıyla laparoskopi uygulanmasının gerekliliği açıkça ortaya konamamaktadır.

Anahtar Kelimeler: Histerosalpingografi, Laparoskopi, İnfertilite

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