

6. Dudevа D, Georgieva L. Sources of stress among residents of social institutions. Varna Medical Forum, 2014; 3:126-129

7. Georgieva L. Changes in medical and social care needs with progression of age. Varna Medical Forum, 2017; 6:455-460

8. Georgieva L. Global health. Varna: MU-Varna: STENO, 2018

9. Georgieva L. Health and role functioning in advanced age, 2017; 6:15-20

10. Haralanova G., Georgieva L. Life before entering a home for the elderly as a reason for institutionalization, Knowledge International Journal, 2020; Vol. 42(4):797-801

11. Haralanova G., Georgieva L., Kostadinova T. Problems in the socialization of persons aged 65 and over using social institutional services, Management and Education, 2020; 16 (5), 27-30

12. McPhee J. S., French D. P., Jackson D., Nazroo J., Pendleton N., & Degens H. Physical activity in older age: perspectives for healthy ageing and frailty. Biogerontology, 2016; 17, 567-580

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### TREATMENT OF OVARIAN ENDOMETRIOMA ACCORDING TO THE CLINICAL STAGE

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### ӨНДГӨВЧНИЙ ЭНДОМЕТРИОМЫН ЭМНЭЛЗҮЙН ҮЕ ШАТЫГ ТОГТООЖ ЭМЧИЛСЭН НЬ

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#### Background

Endometriosis is a chronic disease in which the glandular and connective tissues in the lining of the uterus migrate to tissues and organs other than the uterus, causing inflammatory infiltration and adhesions in the area, leading to chronic pelvic pain, infertility and disability to work. The aim of this study is diagnosing and treating ovarian endometrioma depending on its clinical stage and conducting a comparative study of the treatment results.

#### Materials and method

129 women aged 20-45 years were included in the study whom ovarian endometriosis diagnosed in the gynecology department of the Obstetrics and Gynecology Hospital, National Center for Maternal and Child Health, in 2018-2019. A prospective hospital-based clinical case-control study was conducted.

#### Results

The average age of women was  $31.6 \pm 6.8$ . Clinical symptoms: 126 (97.7%) women with endometriosis experienced pain during menstruation, 106 (82.2%) experienced pain during intercourse, 117

(90.6%) experienced lower abdominal pain for over 6 months, and 48 (37.2%) experienced pain during urination, 76 (58.9%) had pain during defecation, 123 (95.3%) had recurrent abdominal pain, and most women had an overlap of 3-4 symptoms. A comparative study was performed between 2 groups of whether women received and did not receive progestin before surgery. The women (group 4) who received progestin blood loss was up to 100ml ( $p=0.002$ ) during laparoscopic surgery, and the number of stationary follicles after surgery were 2 and above ( $p=0.021$ ). There were a little trouble to remove endometrioma for 23 (74.2%) of the women in group 4 ( $p=0.05$ ) during surgery. However, 14 (43.8%) women in group 3 had difficulty having their endometrioma removed. This shows a statistically significant difference.

#### Conclusion

1. Clinically, ultrasound diagnosis is a non-invasive type of diagnostic method of the ovarian endometriosis and its stages (average score 30). However, a laparoscopy is more effective in determining the stages of endometriosis infiltrating the ovarian surface, intestinal wall, posterior fossa,

fallopian tubes, and peritoneum (average score 47.2). Therefore, ultrasound can only diagnose ovarian endometriosis and has limited significance in diagnosing endometriosis of pelvic peritoneum and determining the stages.

2. Treating mild endometriosis with synthetic progestin is more effective than treating with non-steroidal anti-inflammatory drugs ( $p=0.001$ ). The use of synthetic progestin before surgical removal of moderate and severe endometriosis by abdominal laparoscopy decreases the blood loss during surgery ( $p=0.002$ ) and facilitate the removal of the endometrioma.

### Background

Endometriosis is a chronic disease in which the glandular and connective tissues in the lining of the uterus migrate to tissues and organs other than the uterus, causing inflammatory infiltration and adhesions in the area, leading to chronic pelvic pain, infertility and disability to work.<sup>1-4</sup>

Prevalence of endometriosis is increasing intensively last years. 176 million women aged 19-45 years are suffering from endometriosis and 44% of them have ovarian endometrioma.<sup>5</sup> Endometrioma was diagnosed in 59% of ovarian cysts treated by abdominal laparoscopy in our country.<sup>6</sup> Differential diagnostics of the endometriosis from pelvic inflammatory diseases and other masses of pelvic organs clinically has some difficulties.

There are some difficulties in clinical differential diagnostics of the endometriosis from pelvic inflammatory diseases and other masses of pelvic organs.

Although abdominal laparoscopy is considered as a golden standard of diagnostics, this method is introduced recently into gynecological practice of our country. It is essential to determine restore of ovarian function in result of treatment when endometriosis has led to infertility. Ovarian tissue can be damaged by deep penetrating of ovarian endometrioma into it, as well as during surgical intervention on ovaries. Amount of ovarian damage or ovarian reserve can be evaluated by level of serum anti-müllerian hormone (AMH).<sup>7, 8</sup> Treatment of endometriosis still debatable because of it is a chronic disease and is not possible completely treat surgically and has recurrences. Choice of treatment depends on clinical stages of the disease. Modern methods of treatment include using synthetic progestagens, agonists of gonadotropin releasing hormone, combined estrogen-gestagen preparations, non-steroid anti-inflammatory drugs, and open and laparoscopic surgeries.<sup>7,8</sup> The aim of this study is diagnosing and treating ovarian endometrioma depending on its clinical stage and conducting a comparative study of the treatment results. We aimed to determine clinical stages of endometriosis and to study results of different treatment methods according to stages.

### Goal

The goal of this study is diagnosing ovarian endometrioma and treating it depending on its clinical stages and conducting a comparative study of the treatment results

### Objectives

To diagnose ovarian endometrioma and to determine its clinical stages

To conduct conservative or surgical treatment depending on clinical stages of ovarian endometrioma and to compare results of the treatment

### Materials and Methods

The study protocol (№2018/3-06) was approved by the Scientists Council of Medical School, Mongolian National University of Medical Sciences on 16 Jan 2018. The study was performed after getting permission from the Research Ethics Committee at Mongolian National University of Medical Sciences on 23 Feb 2018. A prospective hospital-based case-control study was conducted. 129 women aged 20-45 years were included in the study whom ovarian endometriosis was diagnosed in the gynecology department of the Obstetrics and Gynecology Hospital, National Center for Maternal and Child Health, in 2018-2019. All participants who met inclusion criteria were informed about the study and provided voluntary written informed consent. All women were seen by obstetricians/gynecologists, and they completed a specific questionnaire with 117 questions. Pain intensity was measured using internationally accepted Wong Baker's visual analogy score (VAS score) during objective examination.<sup>9</sup> Transvaginal ultrasonography (NeuEcho-10, 7.5 MHz, Neusoft Medical Systems, China) was performed between the 3-5th day of the menstrual cycle. 5B and 5M international classification principles were used to differentiate the stages of endometrioma. Rock J. A classification, which is a criteria for stages of endometrioma in USA, was used to determine stages.<sup>10</sup> Data were processed with SPSS 22 software and analyzed in review and details. Depending on type of study data and prevalence of digital information of continued indices, t-test was used to compare the variables between groups, MannWhitney U test was used in determining statistical difference between two variables, the paired t-test was used to evaluate results before and after treatment, and Chi-square test was used for qualitative indices.

### Results

Average age of 129 women involved in the study was  $31.6 \pm 6.8$  years (the youngest 20 years, the oldest 46 years). Women aged between 25 and 29 years were prevailed. Average height of women was  $159.3 \pm 18.6$ cm, and weight was  $60.6 \pm 9.8$ kg. 103 (79.8%) of them had normal weight according to their body-mass index. The average age of menarche was  $14.1 \pm 1.2$  years. 86.4% of them had menarche at 10-15 years and 13.6% had it after 16. One hundred fourteen (88.4%) of participants had regular menstrual cycles and 15 (11.6%) had an irregular menstrual cycle when they involved in the study. The most number of pregnancies was 6 and of childbirth were 5. 73,5% (97) of women had history of obstetric complications, 13.6% (18) had abortion, 2.3% (3) had missed abortion, and 5.3% (7) had miscarriage. Subjective symptoms: 126 (97.7%) of women with endometriosis had pain during menstruation, 106 (82.2%) had pain during intercourse, 117 (90.6%) had lower abdominal pain

more than 6 months, 48 (37.2%) had pain during urination, 76 (58.9%) had pain during defecation, and 123 (95.3%) had abdominal-sacral pain. Most of women had 3-4 symptoms in combination. Primary infertility was diagnosed for 41 (30.4%) of women and secondary one was for 47 (34.8%). Participants were

divided into groups according to mild, moderate, and severe endometriosis and clinical 6 syndromes. Presence of pain during menstruation and chronic pelvic pain were not related to the clinical stages of the disease. Pain during defecation and severe abdominal pain were more intensive for severe disease (Figure 1).

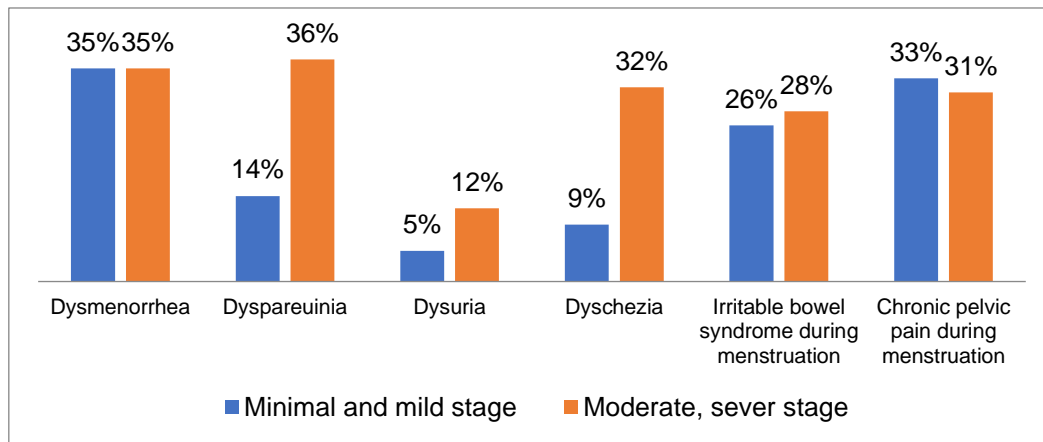


Figure 1. Pain during menstruation, by Wong Baker classification (before treatment)

Ultrasound examination: 36 (27.9%) of participants had mass in the right ovary, 22 (17.1%) had in left side and 71 (55.0%) had it in both ovaries. Patients with mild stage were treated with non-operative treatment and those with moderate and severe endometriosis had both conservative and surgical treatment. One sided ovariectomy due to endometriosis has been performed in three cases before involvement in the study. Out of 66 women who underwent laparoscopic surgery, two was excluded due to dermoid cyst and one had interrupted medical treatment. Laparoscopic diagnostics and treatment were performed for 63 cases of moderate and severe endometrioma that were classified according to

ultrasound findings developed by Reproductive Health Study Society, USA (Rock J.A, 1996). Patients were divided into two groups and findings at treatment and that three months after surgery were analyzed. 50 (79.3%) of 63 women had superficial peritoneal adhesions and 32 (50.7%) had endometriosis with deep peritoneal adhesions. 49 (77.7%) of patients had ascites and 85.7% of them was bloody one (Table 9). Endometrioma was located in the left ovary for 12 (19.0%) of cases, in the right ovary for 15 (23.8%), in both ovary for 32 (50.7%) and 4 (6.3%) of them had ovarian adhesion syndrome. 45 (71.4%) of endometrioma was located at the lower pole of the ovary (Table 1).

Table 1.

#### Ovarian endometrioma (by laparoscopy)

Indicators		Number (%)
Location of ovarian endometrioma	Left side	12 (19.4%)
	Right side	15 (23.8%)
	Both sides	32 (50.6%)
	Both ovaries with adhesion	4 (6.3%)
Average size of right ovarian endometrioma (cm)	3.2±2.27	
Average size of left ovarian endometrioma (cm)	3.0±2.6	
Average size of the ovarian endometrioma (cm)	3.1±2.7	
Number of ovarian endometriomas	1-2	
Location on the pole of the ovary	Upper	10 (15.8%)
	Lower	45 (71.4%)
	Both	8 (12.7%)

Results of treatment of mild ovarian endometrioma with synthetic progestin and non-steroid anti-inflammatory drug

66 women with minimal and mild ovarian endometrioma by Rock J.A classification were treated with synthetic progesterone (dienogest) or a non-steroidal anti-inflammatory drug (ibuprofen) for 3 months and results were evaluated by clinical subjective and objective signs. Dienogest was prescribed 2 mg orally daily for 42 women of group 1

and ibuprofen 400 mg orally every 12 hours was started for 5 days during menstruation for 21 women of group 2. Treatment had been lasted for three months and results were marked at treatment sheet. Pain during menstruation reduced in women of group 1 who had synthetic progesterone for 12 weeks. Their pain score by Wong Baker was decreased from 8.3 (before treatment) to 4.0 (after treatment). It had a statistical significance ( $p=0.001$ ). Also pain during intercourse ( $p=0.021$ ) and lower abdominal pain ( $p=0.001$ ) were

reduced after treatment with statistical significance. For 21 women who had ibuprofen pain during menstruation decreased from 8.8 (before treatment) to 4.0 (after treatment) with statistical significance. Also, reduction

of pain during intercourse ( $p=0.001$ ) and lower abdominal pain ( $p=0.016$ ) after treatment had statistical significance (Table 2).

Table 2.

#### Outcome of conservative treatment (by pain VAS score)

Indicators		Group 1		P value	Group 2		P value
		Before treatment	After treatment		Before treatment	After treatment	
Dysmenorrhea	1-10	8.3±2.1	4.0±0.3	0.007	8.8±1.2	4.0±0.1	0.001*
Pain during intercourse	1-10	7.7±2.8	2.0±0.1	0.021	8.0±2.8	2.0±0.1	0.001*
Pain during urination	1-10	5.1±2.8	-		4.0±2.5	-	
Pain during defecation	1-10	6.4±2.0	-		6.3±2.3	-	
Abdominal pain before menstruation (periodic pain)	1-10	7.4±2.5	-		8.3±2.3	-	
Chronic pelvic pain for over 6 months	1-10	7.7±2.3	-		7.8±2.9	-	
Tenderness in lower abdomen	1-10	2.7±0.7	1.0±0.1	0.001	2.0±0.9	1.0±0.4	0.016**

\* Paired T Test

For women of group 1 abdominal tenderness during palpation ( $p=0.001$ ), pain during specific gynecological examination ( $p=0.022$ ), positive pain score ( $p=0.004$ ) and posterior fornix tenderness were significantly reduced after treatment. Also pain during

specific gynecological examination ( $p=0.022$ ), positive pain score ( $p=0.001$ ), posterior fornix tenderness ( $p=0.008$ ) and abdominal tenderness ( $p=0.061$ ) decreased significantly (Table 3).

Table 3.

#### Results of conservative treatment (by special examination)

Indicators		Dienogest N=42	P-value	Ibuprofen N=21	P- value
Abdominal tenderness	Mild	40(95.2%)	$p=0.001^{**}$	13(61.9%)	$p=0.061$
	Moderate	2(4.8%)		8(39.1%)	
Pain during vaginal exam	Mild	41(97.6%)	$p=0.001^{**}$	12(57.1%)	$p=0.022^*$
	Moderate	1(2.4%)		8(38.0%)	
	Severe	-		1(4.7%)	
Pain assessment test	Mild	42(100%)	$p=0.004^{**}$	15(71.4%)	$p=0.001^{**}$
	Moderate	-		6(28.6%)	
Posterior fornix pain	Mild	42(100%)	$p=0.022^*$	19(90.4%)	$p=0.008^{***}$
	Moderate	-		2(9.6%)	

\* $p<0.05$ ; \*\* $p<0.01$ ; \*\*\* $p<0.001$

Ultrasound examination: Length of the both ovaries decreased from 5.01 cm to 3.68 cm in group 1 as it was before treatment ( $p=0.001$ ). The average size of the endometrioma decreased from 3.5 cm to 2.61 cm with a statistically significance ( $p = 0.048$ ), but there were not statistically significant difference in wall thickness ( $p=0.372$ ), thick content ( $p=0.45$ ), and number of antral follicles (2-3). In group 2, the mean

ovarian length decreased from 5.01 cm to 4.17 cm, with little change ( $p = 0.111$ ), there was no reduction in ovarian endometriosis ( $p=0.017$ ), and there were no changes in endometrial wall thickness ( $p=0.391$ ), and thick content ( $p=0.661$ ). During this period, the number of antral follicles remained on average 3-4, and no pathological vascularization was identified (Table 4).

Table 4.

Results of conservative treatment (by ultrasound examination)					
Indicators	Before treatment	After treatment			
		Group 1 (dienogest) n=42	p-value	Group 2 (ibuprofen) n=21	p-value
Right ovary:					
Length	4.91±2.0	3.72±0.8	p=0.001*	4.54±1.2	p=0.111
Width	3.7±1.6	2.82±0.8	p=0.372	2.56±0.9	p=0.459
Antral follicle		2-3		2-3	
Left ovary:					
Length	5.2±2.1	3.65±0.8	p=0.001*	3.81±1.2	p=0.410
Width	4.1±1.6	2.76±0.8	p=0.059	2.95±1.1	p=0.281
Antral follicle		3-4		3-4	
Size of endometrioma	3.5±2.0	2.16±1.2	p=0.048	3.58±1.5	p=0.017
Thickness of the endometrioma wall	0.2-0.4	0.19±0.01	p=0.005*	0.22±0.01	p=0.391
Hyperechogenic mass in the endometrioma	Yes	42(100%)	p=0.45	21(100%)	p=0.661

\*Paired T Test

### Results of abdominal laparoscopic surgery for moderate and severe ovarian endometriosis

In order to study treatment results of 63 cases in which endometrioma was diagnosed by ultrasound, synthetic progestin was prescribed orally during 12 weeks after removal of the endometrioma for 32 women of group 3, while in group 4, 31 women were treated with progestin 12 weeks before endoscopic surgery. The results were calculated. Endometriomas

were removed abdominal laparoscopy from both ovaries in 36 cases, from the right ovary in 15 cases and from the left ovary in 17 cases, and hemostasis in their basis was performed with bipolar coagulator. Average size of endometrioma removed from the right ovary was 3.2±2.27cm, that of removed from the left ovary was 3.0±2.6cm, and average size of ovarian endometrioma was 3.1±2.7cm. Number of endometrioma was 1 or 2 (Table 5).

Table 5.

### Laparoscopic interventions for endometrioma in groups used progestin before or after the surgery

Position	Groups		Total
	Progestin after the surgery (group 3)	Progestin before the surgery (group 4)	
Removed from left ovary	10(15.9%)	2(3.2%)	12(19.0%)
Removed from right ovary	5(7.9%)	10(15.9%)	15(23.8%)
Removed from both ovaries	15(23.8%)	17(27.0%)	32(50.8%)
Removed from 2 adhered ovaries	2(3.2%)	2(3.2%)	4(6.3%)
Total	32(50.8%)	31(49.2%)	63(100%)

A comparative study of the surgical progress of two groups of progestins and non-progestins before surgery, women who received progestin before laparoscopic surgery (Group 4) had up to 100 ml of bleeding during surgery (p = 0.002), and the number of

antral follicles after surgery was > 2 (p = 0.021). Endometriosis was easily removed in 23 (74.2%) women in group 4 (p = 0.05). However, 14 (43.8%) of the women in group 3 had complicated removal, which had a statistically significant difference (Table 6).

Table 6.

### Results of laparoscopic surgery

Surgery results	Groups		P-value
	Group 3	Group 4	
	Progestin after the surgery (n=32)	Progestin after the surgery (n=31)	
Amount of blood loss 51-100 ml ≥101 ml	15(46.8%) 17(53.2%)	26(83.8%) 5(16.2%)	0.002**
Number of remaining antral follicles ≤2.0 >2.0	17(53.2%) 15(46.8%)	8(25.8%) 23(74.2%)	0.034*
The content of endometriosis which has hardened spots: • a significant number	3(9.4%) 21(65.6%) 8(2.5%)	2(6.4%) 15(48.4%) 14(45.1%)	0.045*

• 1-2 pieces • No hardened spots			
When removing endometriosis from ovaries: Easy Difficult Very difficult	9(28.1%) 14(43.8%) 9(28.1%)	23(74.2%) 6(19.4%) 2(6.4%)	0.05*

\*p<0.05; \*\*p<0.01; \*\*\*p<0.001

When the clinical manifestations 1 month after laparoscopic surgery were compared to those before treatment, the incidence of dysmenorrhea was significantly reduced in both groups, with a statistically significant difference. Lower abdominal pain on

palpation was reduced by a statistically significant difference (p = 0.023) in group 3, while there was no difference in pain intensity reduction (p = 0.423) in group 4 (Table 7).

Table 7.

#### Clinical condition of the patients (3 months after the laparoscopic surgery)

Indicators (1-10 points)	Group 3		p indicator	Group 4		p indicator	
	Before treatment	After treatment		Before treatment	After treatment		
Dysmenorrhea	7.8±2.6	3.0±0.2	0.029*	7.5±2.4	3.0±0.2	0.001**	
Pain during intercourse	7.1±3.1	1.0±0.2	0.035*	7.0±2.4	1.0±0.1	0.001**	
Pain during urination	5.4±3.9			4.0±2.7			
Pain during defecation	5.7±2.0			5.0±2.3			
Abdominal pain before menstruation (periodic pain)	7.1±2.7			6.3±2.7			
Pelvic pain for over 6 months	7.8±2.7			6.9±2.7			
Tenderness in lower abdomen	2.0±0.9		1.1±0.5	0.023*	1.9±0.7	1.1±0.3	0.423

\*p<0.05; \*\*p<0.01; \*\*\*p<0.001 Paired T Test

Ultrasound examination: In both groups, ovarian size was reduced, in 2 cases of group 3, recurrent endometriosis with thick content was determined in the

ovaries (p = 0.002), and the average number of antral follicles was 1-2. Pathological vascularization was not identified (Table 8).

Table 8.

#### Results of the laparoscopic surgery (by ultrasound)

Indicator	Before treatment	After surgery			
		Group 3 Dienogest after the surgery n=32	P- value	Group 4 Dienogest before the surgery n=31	P- value
Right ovary:					
Average length	4.91±2.0	2.48±0.6	0.010*	2.54±1.2	0.001
Antral follicle		1-2		1-2	
Left ovary:					
Average length	5.2±2.1	2.65±1.1	0.033*	2.81±1.2	0.009
Antral follicle		1-2		1-2	
Size of the recurrent endometrioma	3.5±2.0	2.51±1.8	0.791	-	-
Thickness of the endometrioma wall	0.2-0.4	0.27±0.14	0.005*	-	-
Hyperechogenic mass in the endometrioma	Yes	2	0.002	-	-

\*p<0.05; \*\*p<0.01; \*\*\*p<0.001 Paired T Test

#### Discussion

Management of endometriosis remains controversial and depends on symptoms, age, desire to have children, cancer risk, preoperative ovarian reserve, preoperative treatment, and the nature of the cyst (size, location, predominance, etc.). There are many conservative treatments available, such as cyst suction (under ultrasound control or during laparoscopic surgery), drainage of the cyst, ablation

with electrocoagulation or laser ablation, and cyst removal.<sup>7,8</sup>

Recurrences are possible after any procedures, and the physician encounters a requirement to maintain an appropriate balance between maintaining normal ovarian tissue and removing abnormal tissue. The significance of conservative and surgical treatment for endometriosis remains controversial.

Ultrasound-controlled aspiration of the endometrioma has a high risk of recurrence (up to 90 percent within 1 month). Therefore, this method is not widely used and is used to relieve pain and improve reproductive capacity in certain patients.<sup>12</sup>

Leaving a drain at the base of the endometrium after the cyst wall has been removed relieves pelvic pain, but there is still a significant risk of recurrence. Laparoscopic removal of endometriosis is the first conservative treatment of choice.<sup>8,13</sup> It has the following benefits: reducing recurrence (ranging from 9.6 to 45% after one operation), increasing the likelihood of spontaneous pregnancy (14-54%), and reducing pelvic pain.<sup>14, 15,16</sup> However, the main disadvantage is that it damages the healthy basal tissue of the ovaries and reduces ovarian reserves. There are also reports of ovarian failure after removal of the bilateral ovarian endometriosis.<sup>8,17</sup> Removal of the cyst is difficult because of the tight attachment of the cyst wall to the ovarian tissue. This can lead to incomplete removal and relapse of the endometrioma. Hemostasis is performed by burning or suturing the hemorrhagic field after removal of the cyst. Thermocoagulation can damage tissue and leads to reduction of the ovarian reserve and adhesions formation.

The importance of hormone therapy before and after surgery remains questionable. According to Brown's Cochrane study, postoperative heat therapy was insignificant and there was no evidence that hormone therapy increased pregnancy rates in clinical practice.<sup>18</sup>

#### Conclusions:

1. In clinical practice, the diagnosis of ovarian endometrioma and determining its stages by ultrasound is considered to be a non-invasive, high diagnostic capacity method compared with laparoscopy (Rock.J.A 1996). Laparoscopy is more important in determining the stages of endometrioma that infiltrates the surface of the ovaries, peritoneum, and intestinal wall.

2. Treatment of mild endometrioma with synthetic progestin is more effective than treatment with nonsteroidal anti-inflammatory drugs ( $p = 0.001$ ). The use of synthetic progestin before surgical removal of moderate and severe endometrioma with laparoscopy reduces bleeding during surgery ( $p = 0.002$ ) and makes it easy to remove the endometrioma from the ovary.

#### REFERENCES

- 1.Arne Vanhie TMDH. Endometriosis. Berek&Novak's Gynecology. 2020:34.
- 2.Главные редакторы Савельева Г.М СВН, Серов В.Е. Гинекология. ОХУ-ын үндэсний удирдамж хуудас. 2017:35.
- 3.Shaltout MF, Elsheikhah A, Maged AM, Elsherbini MM, Zaki SS, Dahab S and Elkomy RO. A randomized controlled trial of a new technique for laparoscopic management of ovarian endometriosis

preventing recurrence and keeping ovarian reserve. J Ovarian Res. 2019;12:66.

4.Simone Ferrero PLV, 2 Nicola Ragni,1 Giovanni Camerini3 and Remorgida aV. Pharmacological Treatment of Endometriosis:Experience with Aromatase Inhibitors. 2009.

5.Bulun SE. Endometriosis. The New England journal of medicine. 2009;360:268-79.

6.Өнөржаргалбабусад. “Эмэгтэйчүүдийн практикт дурангийн мэс заслыг хөгжүүлэх нь”. Олон улсын онол практикийн бага хурлын илтгэлүүдийн хураангуй 2012:10-20.

7.Muzii L, Di Tucci C, Di Feliciano M, Galati G, Verrelli L, Donato VD, Marchetti C and Panici PB. Management of Endometriomas. Seminars in reproductive medicine. 2017;35:25-30.

8.Urman B. Pearls and pitfalls in surgery for endometrioma. Women's health (London, England). 2015;11:677-83.

9.<https://wongbakerfaces.org/>.

10.Steril F. Fertility and sterility. 1997;67:817-21.

11.John David Gordon JC, Jan T.Rydfors. Gynecology. Obstetrics Gynecology and Infertility 2017:60.

12.Zhu W, Tan Z, Fu Z, Li X, Chen X and Zhou Y. Repeat transvaginal ultrasound-guided aspiration of ovarian endometrioma in infertile women with endometriosis. American journal of obstetrics and gynecology. 2011;204:61.e1-6.

13. Unlu C and Yildirim G. Ovarian cystectomy in endometriomas: Combined approach. J Turk Ger Gynecol Assoc. 2014;15:177-89.

14. Carmona F, Martinez-Zamora MA, Rabanal A, Martinez-Roman S and Balasch J. Ovarian cystectomy versus laser vaporization in the treatment of ovarian endometriomas: a randomized clinical trial with a five-year follow-up. Fertil Steril. 2011;96:251-4.

15. Hayasaka S, Ugajin T, Fujii O, Nabeshima H, Utsunomiya H, Yokomizo R, Yuki H, Terada Y, Murakami T and Yaegashi N. Risk factors for recurrence and re-recurrence of ovarian endometriomas after laparoscopic excision. The journal of obstetrics and gynaecology research. 2011;37:581-5.

16. Porpora MG, Pallante D, Ferro A, Crisafi B, Bellati F and Benedetti Panici P. Pain and ovarian endometrioma recurrence after laparoscopic treatment of endometriosis: a long-term prospective study. Fertil Steril. 2010;93:716-21.

17. Busacca M, Riparini J, Somigliana E, Oggioni G, Izzo S, Vignali M and Candiani M. Postsurgical ovarian failure after laparoscopic excision of bilateral endometriomas. American journal of obstetrics and gynecology. 2006;195:421-5.

18. Brown J and Farquhar C. Endometriosis: an overview of Cochrane Reviews. The Cochrane database of systematic reviews. 2014:Cd009590.