

quantification and computerized planimetry. Eur. Urol. 2008;54:353-61.

19. Lunacek A, Schwentner C, Fritsch H, Bartsch G, Strasser H. Anatomical radical retropubic prostatectomy: "curtain dissection" of the neurovascular bundle. BJU Int 2005;95:1226-31.

20. Kaiho Y, Nakagawa H, Saito H, Ito A, Ishidoya S, Saito S, et al. Nerves at the Ventral Prostatic Capsule Contribute to Erectile Function:

Initial Electrophysiological Assessment in Humans. Eur. Urol. 2009;55:148-55.

21. Alsaid B, Bessedé T, Diallo D, Moszkowicz D, Karam I, Benoit G, et al. Division of Autonomic Nerves Within the Neurovascular Bundles Distally into Corpora Caverosa and Corpus Spongiosum Components: Immunohistochemical Confirmation with Three-Dimensional Reconstruction. Eur. Urol. 2011;59:902-9.

22. Schreiter F, Noll F. Mesh graft urethroplasty using split thickness skin graft or foreskin. J Urol. 1989;142:1223-6.

23. Barbagli G, Palminteri E, Rizzo M. Dorsal onlay graft urethroplasty using penile skin or buccal mucosa in adult bulbourethral strictures. J Urol. 1998;160:1307-9.

24. Andrich DE, Mundy AR. What is the best technique for urethroplasty? Eur. Urol. 2008;54:1031-41.

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CHOICE OF ORGAN PRESERVING TREATMENT OF SUBMUCOUS UTERINE MYOMA BASED ON RATIONAL DIAGNOSTIC CRITERIA

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ОРГАНСОХРАНЯЮЩЕЕ ОПЕРАТИВНОЕ ЛЕЧЕНИЕ СУБМУКОЗНОЙ МИОМЫ МАТКИ, ОСНОВАННОЕ НА РАЦИОНАЛЬНОМ ВЫБОРЕ ДИАГНОСТИЧЕСКИХ КРИТЕРИЕВ

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Субмукозная миома матки — вариант лейкомиомы матки, который отличается высокой частотой осложнений, среди них ведущую роль играют менометроррагии, бесплодие и невынашивание беременности.

Стремительное развитие малоинвазивной хирургии требует усовершенствования подходов диагностики доброкачественных процессов полости матки. Это касается и диагностического алгоритма у больных с субмукозной миомой матки.

Мы предлагаем расширить перечень обязательных критериев оценки субмукозных узлов. Это даст возможность хирургу иметь более четкое представление об особенностях оперативного лечения, а значит, повысить эффективность пред- и интраоперационных мероприятий, а также реабилитации в раннем и позднем послеоперационном периоде.

В основу созданных критериев закладывались такие анатомические особенности миоматозных узлов: степень пенетрации в миометрий, размеры узлов и их количество, высота расположения узла в полости матки, величина площади узла, которая непосредственно контактирует с миометрием, расположение относительно стенок матки, васкуляризация. Основываясь на субъективной оценке сложности гистероскопической миомэктомии для хирурга, в каждом из критериев мы выделили параметры в балах от 0 до 3.

Для анализа эффективности предложенной системы оценки субмукозной миомы матки (СОС) мы провели ретроспективное исследование 64 случаев гистероскопических миомэктомий.

Проанализировав полученные данные, мы пришли к выводу, что предложенная СОС представляет собой рациональную, эффективную и понятную оценку анатомических особенностей субмукозных миоматозных узлов, а также является простым и быстрым способом оценки сложности запланированного оперативного лечения.

Ключевые слова: субмукозная миома матки, гистероскопия, диагностические критерии.

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CHOICE OF ORGAN PRESERVING TREATMENT OF SUBMUCOUS UTERINE MYOMA BASED ON RATIONAL DIAGNOSTIC CRITERIA

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Submucous uterine myoma differs from the other types of myoma with a high rate of complications. Among them menorrhagia, infertility and loss of pregnancy.

Impetuous progress of minimal invasive surgery demands the improvement of the diagnostic algorithms for patient with uterine benign tumors especially submucous myoma.

Widen criteria for submucous nodules assessment using ultrasound were offered in this study. It may give surgeons the opportunity to have clearer view about features of the operative treatment and



as result to enhance the efficiency of pre- and intraoperative measures and of cause rehabilitation in early and late postoperative period.

We took several basic anatomical features of the submucous nodules: the penetration of the nodule into the myometrium, the size and the amount of nodules, the size of the surface that contacts with the myometrium, topography, vascularization. In each particular criteria we picked out the parameters of the complexity of hysteroscopic myomectomy for surgeon using balls from 0 to 3.

Analysis of the proposed system of submucous myoma assessment (SMAS) efficiency was made using retrospective study of randomly picked 64 hysteroscopic myomectomies.

The following conclusions were made. Proposed SMAS is rational, effective and understandable assessment of the anatomical features of the submucous nodules. SMAS is simple and quick way to evaluate the complexity of hysteroscopy and to choose the effective preoperative treatment when needed.

Key words: submucous uterine myoma, hysteroscopy, diagnostic criteria.

Introduction

Uterine myoma is the most common benign tumor in women's reproductive system. As many as 1 in 4 women may have fibroids during their childbearing years. Half of all women have fibroids by age 50.

Continuous growth of uterine myoma cases in women population widens the criteria for surgical treatment. By-turn we need to increase the amount of organ preserving gynaecological operations.

Submucous fibroids differ from the other myoma types with high level of complications among them pain, menorrhagia, infertility and miscarriage.

First of all it depends on anatomical defect, changes in blood circulation and biochemical property in uterine wall and adjacent endometrium affected by nodule.

For the time being hysterectomy still is the most effective and radical operative treatment but at the same time the most traumatic and noncompatible with future reproductive function.

Hysteroscopic myomectomy as contrasted to hysterectomy is organ preserving methodic for patients that want to retain reproductive potential and/or refuse to experience hysterectomy.

Rapid development of minimal invasive surgery requires an improvement of diagnostic approaches. It concerns the diagnostic algorithm in patient with submucous fibroids.

In our opinion today's surgeon using the existing classification of submucous myoma proposed by European Society for Gynaecological Endoscopy

(ESGE) doesn't have the clear view about the case before the hysteroscopy. That happens because of lack of information and appears to be a dangerous practice. ESGE scale (using Type 0, I, II) describes only one characteristic of fibroid its penetration into the uterine wall.

Sometimes hysteroscopic myomectomy is very complicated procedure and fails to be completed several times. That's why surgeon should use all the possible criteria to evaluate the complexity of the future operation and chose the rational complex of treatment activities.

We believe that the optimal characteristics of submucous myoma that has to be studied before the hysteroscopy are the quantity of fibroids, the size of fibroids, the level of penetration into the uterine cavity, the volume of fibroid that is in contact with myometrium, the level of the nodule localization, the topography (in which part of the uterine cavity fibroid placed), the intensity of fibroid vascularization. All this characteristics can be easily estimated by careful ultrasound investigation.

Using all this parameters we can estimate the complexity of the case and build the optimal individual program for surgical and non-surgical treatment. This can increase the effectiveness of hysteroscopic myomectomy and postoperative rehabilitation of patients.

Materials and Methods

The aim of the study is to build simple and efficient clinical classification of submucous myoma and program of treatment based on it.

On first stage we used the proposed ultrasound criteria to build the clinical classification of submucous fibroids using the 0 to 3 point scale for each parameter.

The quantity of fibroids:

- 0 p. — 1 nodule;
- 1 p. — 2 nodules;
- 2 p. — 3–4 nodules;
- 3 p. — > 5 nodules.

The size of fibroids:

- 0 p. — ≤ 20 mm;
- 1 p. — 21–30 mm;
- 2 p. — 31–40 mm;
- 3 p. — ≥ 40 mm.

The level of penetration into the uterine cavity (Fig. 1):

- 0 p. — 100% of the fibroid in the uterine cavity;
- 1 p. — > 50% of the fibroid in the uterine cavity;
- 3 p. — < 50% of the fibroid in the uterine cavity.

The volume of fibroid that is in contact with myometrium (Fig. 2):

- 0 p. — ≤ 1/3 of the fibroid volume;
- 2 p. — 1/3–2/3 of the fibroid volume;
- 3 p. — ≥ 2/3 of the fibroid volume.

The level of nodule localization (Fig. 3):

- 1 p. — lower floor;
- 0 p. — middle floor;
- 2 p. — upper floor.

The topography:

- 0 p. — posterior wall;
- 1 p. — side walls;
- 2 p. — anterior wall and fundus;
- 3 p. — uterine corners.

Vascularization:

- 0 p. — none visible vessels on dopplerography;
- 1 p. — small single vessels on dopplerography;
- 2 p. — wide system of blood vessels on dopplerography.



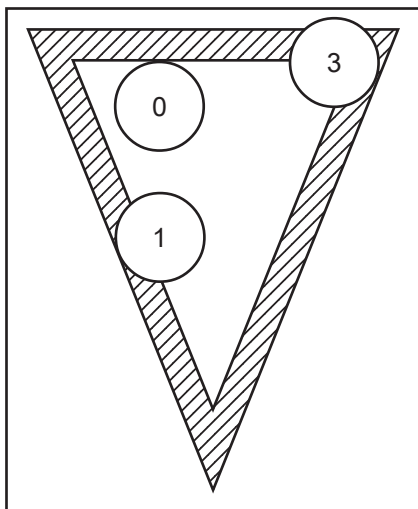


Fig. 1

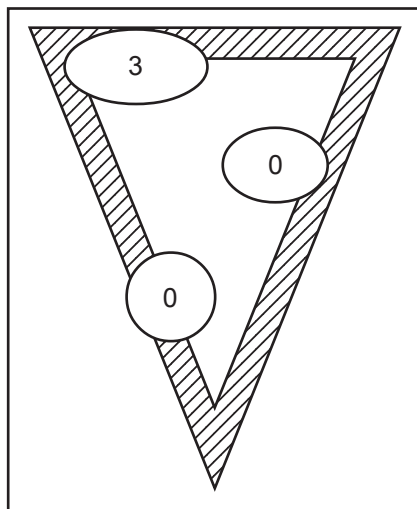


Fig. 2

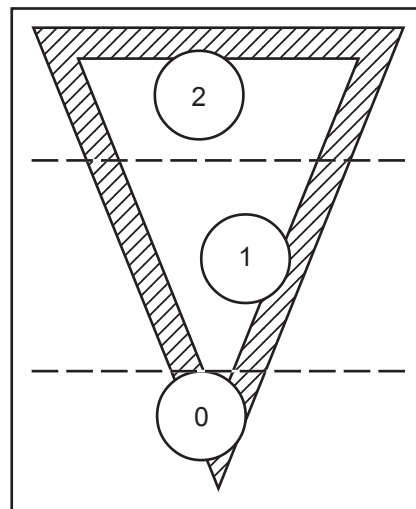


Fig. 3

Final calculation was made using the table 1.

The level of complexity of hysteroscopic myomectomy was calculated by total amount of points in each patient. Three classes of clinical cases were formed:

- Class I (0–6 points);
- Class II (7–10 points);
- Class III (≥ 11 points).

According to class of clinical case we propose next three types of action for surgeon:

In patients with **Class I** of submucous myoma — hysteroscopy can be performed without any preoperative treatment.

In patients with **Class II** of submucous myoma — preoperative treatment with GnRH-A should be made for a period of 2–3 months under control of ultrasound. Hysteroscopy should be recommended after the end of treatment.

In patients with **Class III** of submucous myoma — preoperative treatment with GnRH-A should be made for a period of 3–5 months under control of ultrasound. Hysteroscopy should be performed in case of conversion from Class III to Class II or I. Otherwise hysterectomy should be recommended because of high level of complexity of hysteroscopy.

To analyze the efficiency of proposed submucous myoma assessment system (SMAS) we

Table 1
Final Calculation of Fibroids' Parameters and Points

Parameter	Points			
	0	1	2	3
1. The quantity of fibroids	1 nodule	2 nodules	3–4 nodules	≥ 5 nodules
2. The size	≤ 20 mm	21–30 mm	31–40 mm	≥ 41 mm
3. The level of penetration into the uterine cavity	100%	$> 50\%$	—	$< 50\%$
4. The volume of fibroid that is in contact with myometrium	$\leq 1/3$ of the fibroid volume	—	$1/3$ – $2/3$ of the fibroid volume	$\geq 2/3$ of the fibroid volume
5. The level of nodule localization	middle flour	lower flour	upper flour	
6. The topography	posterior wall	side walls	anterior wall and fundus	uterine corners
7. Vascularization	none visible vessels on dopplero-graphy	small single vessels on dopplero-graphy	wide system of blood vessels on dopplero-graphy	—

studied 64 cases of hysteroscopic myomectomy performed in the Women's Health Center, Dnipropetrovsk Railway Hospital, Ukraine. All cases were randomly picked.

64 patients were divided in two groups based on year of operation and results of ultrasound investigation. Group I presents 34 hysteroscopies that were made in 2010–2011 using SMAS. Group II presents 30 hys-

teroscopies that were made in 2004–2006 based on submucous myoma classification by ESGE.

The average age in Group I was (38.0 ± 5.17) years.

The average age in Group II was (38.5 ± 5.74) years.

Before hysteroscopy transvaginal ultrasound investigation with empty bladder was performed in Group I and II in secretory phase of menstrual cycle.



When it was impossible to identify all needed parameters sonohysterography was made.

Standard physical examination was made along with laboratory analysis.

The results of ultrasound showed the next picture (Table 2, 3).

Results and Discussion

One-phase hysteroscopy was recommended for all patients with Class I myoma. Patients with Class II and III myoma underwent treatment with GnRH-A under ultrasound control. The final ultrasound investigation showed the next picture:

- **Class I** — 21 women;
- **Class II** — 12 women;
- **Class III** — 1 woman.

The table shows significant decrease of high complexity cases.

After conservative treatment all patient with Class I and II myoma underwent hysteroscopy. Successful one-stage operation was performed in 29 (85.3 %) cases. Complete two-stage hysteroscopy was performed in 4 (11.8%) cases. We recommended and successfully made Laparoscopic hysterectomy with tubes for 1 (2.9%) patient with Class III myoma.

Patients from Group II with myoma Type 0 and I underwent hysteroscopy without any preoperative medical treatment. Successful one-stage operation was performed in 17 (56.7%) cases. Complete two-stage hysteroscopy was performed in 6 (23.3%) cases. 2 (6.7%) hysteroscopies failed to be completed on stage two. Laparoscopic hysterectomy was recommended and performed in all 5 (16.7%) cases with Type II myoma and in 2 (6.7%) cases with incomplete hysteroscopy. 7 (23.3%) hysterectomies was made in total.

Presented data show significant difference in successful one-stage hysteroscopies and overall successful hysteroscopies in Group I comparing with Group II. In addition total amount of hysterectomies was significantly lower in Group I.

Average duration of hysteroscopy in Group I was 32.4 min.

Table 2

Group I — 34 Women (According to SMAS Scale)	
Class	Women
I	15
II	14
III	5

Average duration of hysteroscopy in Group II was 37.5 min.

Average blood loss in Group I was 81 cc. Average blood loss in Group II was 117 cc. This shows the significant difference between two Groups.

Fluid deficit in Group I was counted as 245 cc. Fluid deficit in Group II was counted as 314 cc.

3 (8,8%) patients from Group I experienced excessive bleeding in early postoperative period. That was stopped by additional administration of uterotonics and by placing the Folly catheter into uterine cavity for 1–4 hrs.

Episode of excessive bleeding was detected in 5 (16,7%) cases in Group II. The described earlier technique was performed to stop bleeding successfully.

No other complication was detected in two Groups.

Conclusions

Through the analysis of collected data we made a conclusion that proposed submucous myoma assessment system (SMAS) is rational, effective and understandable assessment of the anatomical features of the submucous nodules. SMAS is simple and quick way to evaluate the complexity of operative treatment assessment. We believe that SMAS gives the clear view on clinical situation to surgeon which helps to prepare for operation much better. Classifying submucous fibroids using the SMAS permits greater correlation with complete or incomplete removal of the myoma by hysteroscopic myomectomy.

Proposed SMAS helps to reduce complications and increases the effectiveness of hysteroscopy. And can be recommend-

Table 3

Group II – 30 Women (According to ESGE Scale)	
Type	Women
0	15
I	10
II	5

ed for practical use by gynaecological surgeons.

REFERENCES

1. Alborzi S, Parsanezhad ME, Mahmoodian N, Alborzi S, Alborzi M. Sonohysterography versus transvaginal sonography for screening of patients with abnormal uterine bleeding. *Int J Gynaecol Obstet.* 2007;96(1): 20-3.
2. Campo S, Campo V, Gambadauro P. Short-term and long-term results of resectoscopic myomectomy with and without pretreatment with GnRH analogs in premenopausal women. *Acta Obstet Gynecol Scand.* 2005;84:756-760.
3. Cravello L., Agostini A., Beerli M. et al. Results of hysteroscopic myomectomy *Gynecol Obstet.* 2004; 32: 825-828.
4. Farquhar C, Ekeroma A, Furness S, Arroll B. A systematic review of transvaginal ultrasonography, sonohysterography and hysteroscopy for the investigation of abnormal uterine bleeding in premenopausal women. *Acta Obstet Gynecol Scand.* 2003;82(6): 493-504.
5. Fiona R., Anthony R.S. Reducing the complications of minimal access pelvic surgery. *Recent advances in obstetrics and gynecology.* 2003;22: 145-158.
6. Lasmar RB, Xinmei Z, Indman PD, Celeste RK, Di Spiezio Sardo A. Feasibility of a new system of classification of submucous myomas: a multicenter study. *Fertil Steril.* 2011 May; 95(6):2073-7. Epub 2011 Feb 21.
7. Lefebvre G, Vilos G, Allaire C, Jeffrey J. The management of uterine leiomyomas. *J Obstet Gynaecol Can.* 2003;128:396-418.
8. Mavrelou D, Ben-Nagi J, Davies A, Lee C, Salim R, Jurkovic D. The value of pre-operative treatment with GnRH analogues in women with submucous fibroids: a double-blind, placebo-controlled randomized trial. *Hum Reprod.* 2010 Sep;25(9):2264-9. Epub 2010 Jul 27.

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