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SPECIFIC FEATURES OF ORGAN PRESERVING OPERATIONS FOR UTERINE FIBROIDS

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Abstract.

Background. Type 0, 1 and 2 are the submucosal fibroids. Submucous myomas represent one of the main indications for operative hysteroscopy. Hysteroscopic resection of submucous fibroids should be a simple, well-tolerated procedure and ideally finished in a single surgical step. Hysteroscopic myomectomy is an effective procedure. Fertility outcome and menorrhagia are improved by this procedure. However, for menorrhagia, a recurrence can occur mainly during the first year following the surgery. For bleeding outcome, a success rate from 70 to 99% has been reported by different studies

The latest classification from the Fédération Internationale de Gynécologie et d'Obstétrique (FIGO) has reclassified type 3 myomas, changing their classification from intramural to submucosal. While hysteroscopic myomectomy is considered the gold standard treatment for patients experiencing symptoms from submucosal myomas, there are currently no specific guidelines available for managing type 3 myomas, and the optimal surgical approach remains uncertain. **Methods**: The search for suitable articles published in English was carried out using the following databases (PROSPERO ID CRD42023418602): MEDLINE, EMBASE, Global Health, The Cochrane Library (Cochrane Database of Systematic Reviews, Cochrane Central Register of Controlled Trials, Cochrane Methodology Register), Health Technology Assessment Database, Web of Science and search register. Only original studies reporting data on hysteroscopic myomectomy of type 3 myoma were considered eligible. The main outcomes investigated were the effectiveness and feasibility of hysteroscopic myomectomy and reproductive outcomes after surgical treatment. **Results**: 261 studies were screened and 19 of these were read for eligibility. Three studies encompassing 56 patients in total were included. Among the overall population studied, 3 patients needed an additional procedure to completely remove the myoma and five cases of post-surgical synechiae were recorded. No complications were reported. Of 42 patients wishing for pregnancy, the cumulative live birth rates before and after the hysteroscopic myomectomy were 14.3% and 42.9%, respectively.

Conclusions: Hysteroscopic myomectomy appears to be a safe and feasible approach. Nevertheless, data reported in the literature are extremely scarce and based on studies with few patients enrolled.

New evidence is needed to assess the safety and effectiveness of hysteroscopic treatment for FIGO type 3 myomas.

Keywords: myoma type 3; uterine fibroids; hysteroscopy; myomectomy; female infertility

BACHADON FIBROMIYASIDA A'ZONI SAQLAB QOLISH JARROXLIGINING O'ZIGA XOS XUSUSIYATLARI

Sh.Sh. Saparbayeva, K.A.Sattarova

Fon. 0, 1 va 2-toifa submukozal miomalardir. Submukoz miomalar operativ histeroskopiya uchun asosiy ko'rsatkichlardan biridir. Shilliq osti miomasining histeroskopik rezektsiyasi oddiy, yaxshi muhosaba qilinadigan va bir jarrohlik bosqichida ideal tarzda yakunlanishi kerak. Histeroskopik miyomektomiya samarali protsedura hisoblanadi. Ushbu protsedura bilan tug'ilish natijasi va menorragiya yaxshilanadi. Biroq, menorragiya uchun relaps asosan operatsiyadan keyingi birinchi yil davomida sodir bo'lishi mumkin. Turli tadqiqotlarda qon ketishining natijasi 70 dan 99% gacha bo'lgan muvaffaqiyat darajasi haqida xabar berilgan

Xalqaro ginekologiya va obstetrik federatsiyasining (FIGO) so'nggi tasnifi 3-toifa miomalarni qayta tasniflab, ularning tasnifini intramuraldan submukozalga o'zgartirdi. Histeroskopik miyomektomiya submukozal miomalarning alomatlari bo'lgan bemorlar uchun oltin standart davolash deb hisoblansa-da, hozirda 3-toifa miomalarni davolash uchun maxsus ko'rsatmalar mavjud emas va optimal jarrohlik yondashuv noaniqligicha qolmoqda. **Metodlar:** Ingliz tilida chop etilgan mos maqolalarni qidirish quyidagi ma'lumotlar bazalari (PROSPERO ID CRD42023418602) yordamida amalga oshirildi: MEDLINE,

EMBASE, Global Health, The Cochrane Library (Cochrane Database of Systematic Reviews, Cochrane Central Register of Controlled Trials, Cochrane Health Data Technology and Register Ass), ro'yxatdan o'tish. Faqatgina 3-toifa miomaning histeroskopik miyomektomiyasi to'g'risidagi ma'lumotlarni taqdim etuvchi original tadqiqotlar tegishli deb topildi. O'rganilgan asosiy natijalar histeroskopik miyomektomiyaning samaradorligi va maqsadga muvofiqligi va jarrohlik davolashdan keyingi reproduktiv natijalar edi. **Natijalar**: 261 ta tadqiqot tekshirildi va ulardan 19 tasi muvofiqlik uchun o'qildi. Hammasi bo'lib 56 bemorni qamrab olgan uchta tadqiqot kiritilgan. O'rganilgan umumiy aholi orasida 3 bemorga miomani to'liq olib tashlash uchun qo'shimcha protsedura kerak bo'lgan va jarrohlikdan keyingi sinexiyaning beshta holati qayd etilgan. Hech qanday asoratlar haqida xabar berilmagan. Homilador bo'lishni istagan 42 bemorning histeroskopik miyomektomiyadan oldin va keyin jami tirik tug'ilish darajasi mos ravishda 14,3% va 42,9% ni tashkil etdi.
Xulosa: Histeroskopik miyomektomiya xavfsiz va mumkin bo'lgan yondashuv bo'lib ko'rinadi. Shunga qaramay, adabiyotda keltirilgan ma'lumotlar juda kam va kam sonli bemorlar ishtirok etgan tadqiqotlarga asoslangan. FIGO 3-toifa miomalari uchun histeroskopik davolashning xavfsizligi va samaradorligini baholash uchun yangi dalillar kerak.
Kalit so‘zlar:mioma; bachadon miomasi; histeroskopiya; miyomektomiya; ayollarning bepushtligi

ОСОБЕННОСТИ ОРГАНОСОХРАНИТЕЛЬНЫХ ОПЕРАЦИЙ ПРИ ФИБРОМЕ МАТКИ

Ш.Ш. Сапарбаева, К.А. Саттарова

Аннотация.

Предыстория. Типы 0, 1 и 2 — это субмукозные фибромиомы. Субмукозные миомы представляют собой одно из основных показаний для оперативной гистероскопии. Гистероскопическая резекция субмукозных фибром должна быть простой, хорошо переносимой процедурой и в идеале завершаться за один хирургический этап. Гистероскопическая миомэктомия — эффективная процедура. Результат фертильности и менорргии улучшается с помощью этой процедуры. Однако рецидив менорргии может произойти в основном в течение первого года после операции. Что касается исхода кровотечения, то в различных исследованиях сообщалось о частоте успеха от 70 до 99%

Последняя классификация Международной федерации гинекологии и акушерства (FIGO) реклассифицировала миомы типа 3, изменив их классификацию с интрамуральной на субмукозную. Хотя гистероскопическая миомэктомия считается золотым стандартом лечения для пациентов с симптомами субмукозных миом, в настоящее время нет конкретных рекомендаций по лечению миом 3-го типа, а оптимальный хирургический подход остается неопределенным. **Методы**: Поиск подходящих статей, опубликованных на английском языке, проводился с использованием следующих баз данных (PROSPERO ID CRD42023418602): MEDLINE, EMBASE, Global Health, The Cochrane Library (Cochrane Database of Systematic Reviews, Cochrane Central Register of Controlled Trials, Cochrane Methodology Register), Health Technology Assessment Database, Web of Science и поисковый регистр. Приемлемыми считались только оригинальные исследования, в которых сообщались данные о гистероскопической миомэктомии миомы 3-го типа. Основными исследованными результатами были эффективность и осуществимость гистероскопической миомэктомии и репродуктивные результаты после хирургического лечения. **Результаты**: Было проверено 261 исследование, и 19 из них были прочитаны на предмет соответствия требованиям. Было включено три исследования, охватывающих в общей сложности 56 пациентов. Среди всей изученной популяции 3 пациенткам потребовалась дополнительная процедура для полного удаления миомы, и было зарегистрировано пять случаев послеоперационных синехий. Осложнений не было. Из 42 пациенток, желающих забеременеть, совокупные показатели живорождения до и после гистероскопической миомэктомии составили 14,3% и 42,9% соответственно.

Выводы: Гистероскопическая миомэктомия, по-видимому, является безопасным и осуществимым подходом. Тем не менее, данные, представленные в литературе, крайне скудны и основаны на исследованиях с небольшим количеством включенных пациенток.

Необходимы новые доказательства для оценки безопасности и эффективности гистероскопического лечения миом FIGO типа 3.

Ключевые слова: миома типа 3; миома матки; гистероскопия; миомэктомия; женское бесплодие

1.Introduction. According to the World Health Organization, approximately 25% of women over the age of 35 have uterine fibroids, and most of them are asymptomatic. The main symptoms are menstrual irregularities,pressure and abdominal pain, and infertility. Submucosal fibroids or intramural fibroids cause damage to the inner lining of the uterus, which can lead to miscarriage or infertility. The latest classification of the Federation of Gynecology and Obsterics clearly defines the type of fibroids and has develop organ preserving operations based on their location, number, and size.

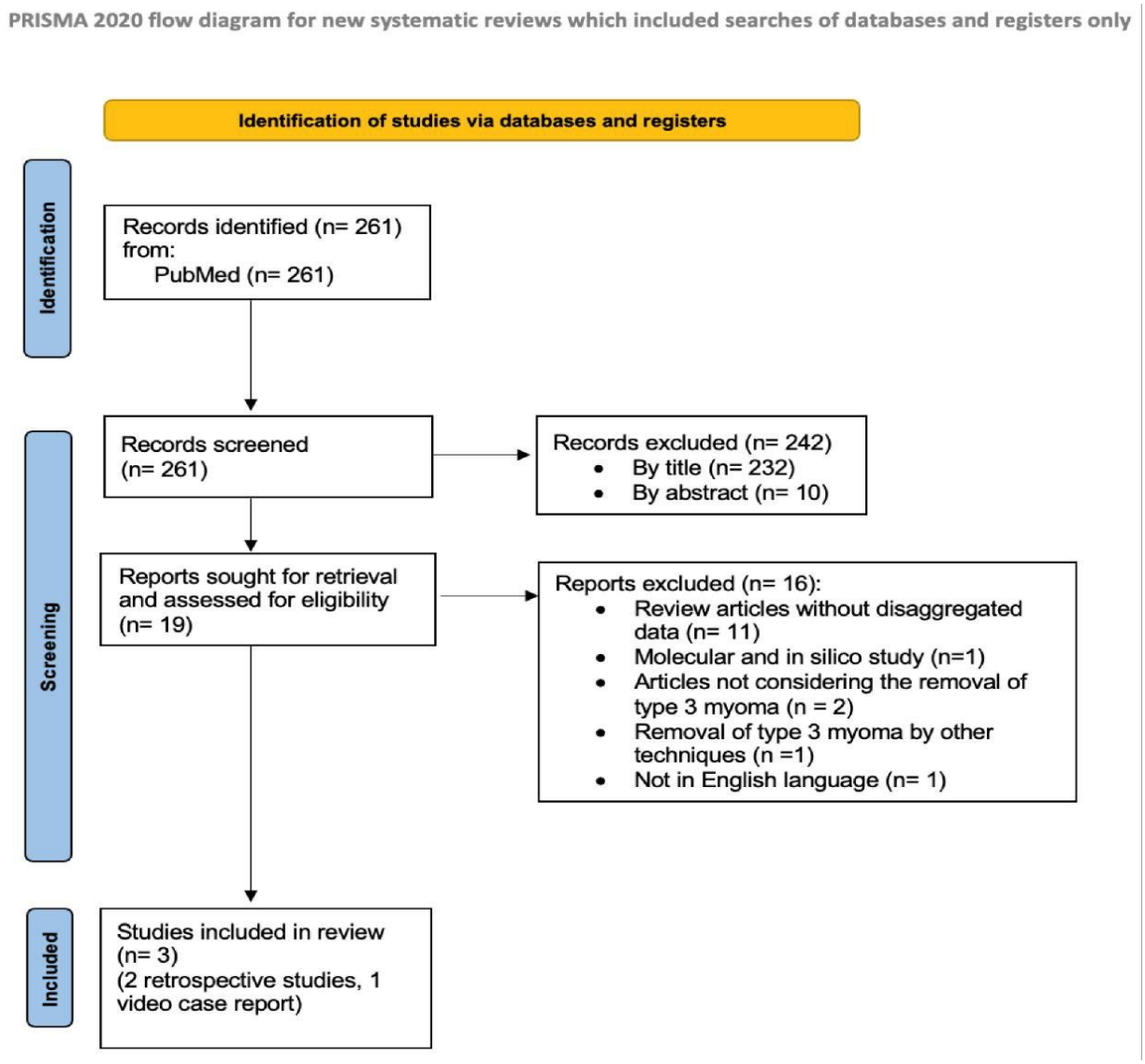
Various classifications of myomas can be found in the literature. In 2011 the FIGO classification was published describing eight types of fibroids. This classification shows a more representative and understandable scheme of fibroid distribution and is already being used for creating new algorithms. Types 0, 1 and 2 are the intracavitary fibroids. Type 0 is completely intracavitary, type 1 has its largest diameter in the uterine cavity and type 2 has its largest diameter in the myometrium.

Hysteroscopic resection of submucous fibroids should be a simple, effective, well-tolerated procedure. The number and the size of myomas may influence the final outcome. In order to relieve fibroid symptoms, such as menorrhagia, complete resection of fibroids is desirable. Hysteroscopic myomectomy should be ideally performed in a single surgical step.

2.Materials and metods.

A systematic review was conducted through a search on the following databases: MEDLINE, EMBASE, Global Health, The Cochrane Library (Cochrane Database of Systematic Reviews, Cochrane Central Register of Controlled Trials, Cochrane Methodology Register), Health Technology Assessment Database and Web of Science research registers. The systematic review was registered in PROSPERO (ID: CRD42023418602) before starting the search and followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guideline [12], validated by the Enhancing the Quality and Transparency of Health Research (EQUATOR) network, and the Cochrane Handbook for Systematic Reviews [13].

We used the medical subject heading (MeSH) term “Leiomyoma” (MeSH Unique ID: D007889) in combination with “Hysteroscopy” (MeSH Unique ID: D015907) and “Uterine Myomectomy” (MeSH Unique ID: D063186) and “Myoma” (MeSH Unique ID: D009214), and “Type 3”. Weselected papers written in English, since the inception of each database until



30 April 2023. **3.Results**

3.1. Study Selection

The literature search based on our pre-defined key search items identified 261 publications, after removing duplicates. The title and abstract of manuscripts were screened, resulting in 19 studies considered potentially eligible to be included in the review. After the evaluation of the full text, 16 studies were excluded: 11 manuscripts were articles without disaggregated data; 1 molecular and in silico study ; 2 articles not considering the removal of type 3 myoma ; 1 study where type 3 myoma removal was performed by other techniques ; 1 additional study was not in the English language . Finally, a total number of three

Table 2. Baseline characteristics and hysteroscopic myomectomy outcomes of the included studies.

	Campas et al. [30]	Han et al. [31]	Vorona et al. [32]
Characteristics of the surgeons			
Surgeon (n)	2	1	1
Years of experience (n)	>2	>10	\
Operative HSC [1] achieved per year (n)	>100	>500	\
Patients (n)	13	42	1
Mean age (years)	42.62	33.41 ± 4.24	35
Symptoms			
Irregular bleeding (n)	10	0	1
Infertility (n)	2	42	1
Pain (n)	1	0	0
Symptoms' durations (y)	\	4.21 ± 2.55	\
Characteristics of myoma			
Size of myoma (mean)	3.08 cm	2.45 cm	3
More than 4 cm	31%	0	0
Multiple myoma (n)	0	3	0
Surgery items			
Ultrasound guided procedures (n)	3	42	0
Mean operative time (min)	50.38	\	\
Post-operative complications (n)	0	0	0
Need for two surgeries (n)	4	0	0
Surgery outcomes			
Irregular bleeding after first surgery (n)	10	0	0
Pain after first surgery (n)	1	0	0
Live birth rate before surgery	\	14.3%	0%
Live birth rate after surgery	\	42.9%	100%
Clinical pregnancy rate before surgery	\	28.6%	0%
Clinical pregnancy rate after surgery	\	42.9%	100%
Incomplete resection (n)	3	0	0
Complications	Synechiae (n = 3)	Synechiae (n = 2)	0
Recurrences (n)	3	0	0
Post-operative hysteroscopy	Recommended for all the participants	Recommended for all the participants	Recommended
Post-operative hysteroscopy (n)	8	42	1
Additional procedures (n)	4	2	0
Months of follow-up (mean)	48	18	\

[1] HSC: hysteroscopy.

studies that met the abovementioned inclusion criteria were included in the present systematic review.

Analysis of the Reports

In two articles, the main outcome was to assess the effectiveness and feasibility of hysteroscopic myomectomy ,whereas one

retrospective case-control study aimed to evaluate surgical outcomes and the effect of hysteroscopic resection of type 3 fibroids luded are listed on the pregnancy outcomes in infertile women . The baseline characteristics of the patients included are listed.

In chronological order, the first study was a retrospective analysis conducted by Capmas et al. on 13 women affected by type 3 myoma who underwent hysteroscopic myomectomy. Among these patients, ten were suffering from AUB, two from infertility and one from pelvic pain. The mean size of the resected myomas was 3.08 cm and 31% of patients presented multiple myomas. The surgery was performed by two experienced surgeons. The procedure started with the incision of the endometrium with a twizzle electrode by a Bettocchi hysteroscope and then by a 26 Fr resectoscope with a Collins loop. Successively, myomas were resected by classical slicing. For three patients, it was not possible to obtain a total resection in a single surgical time, and for this reason they had to undergo a second operative hysteroscopy. An additional procedure was required in four out of eight women wishing for pregnancy in order to obtain a normal uterine cavity. In three patients (23%), the presence of synechiae was found at the diagnostic hysteroscopy follow-up (two cases of type I and one case of type II according to March classification)and required hysteroscopic adhesiolysis. No post-operative complications were reported. Bleeding control was obtained in seven women out of nine. The study did not mention the fertility outcomes of the two patients who wished for pregnancy.

The second study included was a video case report illustrating the technique to be used to perform a hysteroscopic myomectomy in a 35-year-old patient with a history of primary infertility affected by a 3 cm type 3 myoma of the posterior uterine wall. Hysteroscopic surgery was performed according to the classic slicing technique with pseudocapsule sparing. No post-operative complications were recorded. The patient underwent a diagnostic hysteroscopy follow-up 8 weeks after the surgery in which an intact endometrium was found. The woman then underwent in vitro fertilization (IVF) successfully.The last study included was a retrospective case-control study conducted by Han et al. with the aim of evaluating the effect of type 3 myomas on IVF cycle outcomes and whether these were modified by hysteroscopic myomectomy. In total, 101 patients with type 3 fibroid were divided into two groups: 59 non-surgical (among them, 5 had a combination of SSs with type 3 myoma and 2 a combination of SSs with multiple type 3 myomas) and 42 surgical (6 suffering from multiple type 3 myomas). These were matched to a control group of 61 patients with a normal uterus (1:1 match ratio). The myomectomy was performed by a single experienced surgeon (>10 years of experience and >500 achieved operative hysteroscopies per year) using a 26 Fr bipolar hysteroscope equipped with a 30-degree lens. In order to facilitate the myoma dislocation toward the uterine cavity, distension media pressure was gradually reduced and an intravenous infusion of 10 UI of oxytocin in 500 mL of saline solution (0.9%) at a rate of 120 mL/h was administrated during the procedure. No complications were recorded. The mean size of the resected myomas was 2.45 cm and six patients were treated for multiple myomas. All procedures were performed under ultrasound control. No residual fibroids, abnormal uterine bleeding or infection were reported at the
ultrasound and diagnostic hysteroscopy follow-up performed 6–8 weeks after the surgery. Mild intrauterine adhesions were diagnosed in two patients who needed hysteroscopic adhesiolysis. Regarding the reproductive outcomes, no significant differences in terms of cumulative clinical pregnancy rate and cumulative live birth rate were reported between the control and surgery groups.

4.Discussion.

The FIGO subclassification system for uterine myomas has allowed us to overcome the limits of the old classification, which has proved to be inadequate to obtain solid evidence, and probably contributed (at least in part) to shedding light on the grey area regarding the effects and management of uterine fibroids. Nevertheless, the novelties introduced by such a new classification have offered a new point of view for clinicians and researchers, but also new clinical dilemmas.

For a long time, before the advent of the FIGO subclassification system, type 3 myomas were considered as IM ones, and therefore the effects exerted in terms of AUB and fertility have been lost and generalized among fibroids lying within the uterine wall.

Recent findings suggest that type 3 myomas may negatively impact fertility, raising questions about the effectiveness of treatment options and the best approach to addressing these lesions . A pharmacological treatment would allow for the avoidance of treatment causing undesirable scars to the uterus, but no solid evidence is available in this regard . Unfortunately, robust evidence and guidelines are still lacking about surgical treatments as well.

During pregnancy, especially in the first trimester and early second trimester, fibroids tend to grow extensively . Due to this extensive growth, the fibroid may excessively increase the blood supply, leading to inadequate oxygenation and, consequently, necrosis. There is evidence that inflammation triggered by fibroid necrosis can increase the risk of pre-term delivery . For type 3 myomas and SMs in general, given their extreme proximity to the uterine cavity, the risk of pre-term delivery may be further increased. Management of these types of myomas should therefore be considered in women with a history of subfertility and/or pre-term delivery and repeated pregnancy losses.

5.Conclusions

To the best of our knowledge, this is the first systematic review on hysteroscopic myomectomy for type 3 myomas.

The absence of established guidelines on the treatment of type 3 myoma leaves a challenging dilemma about the best approach with which to treat this population. This gap gains more importance considering the detrimental effect that type 3 myomas could exert in of fertility.

To date, despite the fact that hysteroscopic myomectomy appears to be a safe and feasible approach, data reported in the literature are extremely poor and based on studies with few patients enrolled. In light of these findings, this treatment should be confined to experienced surgeons, as surgical technical skills are needed to adequately
perform the procedure and avoid potential complications.

Further studies should focus on verifying the safety and effectiveness of hysteroscopic myomectomy for type 3 myomas, determining the optimal technique to use and exploring whether reproductive outcomes can be improved for patients who undergo this procedure.

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