HYSTEROSCOPY NEWSLETTER

In my opinion, we cannot refer of hysteroscopy as a simple, isolated procedure to be performed after a first level ultrasound or other diagnostic procedure. Hysteroscopy must be included in a multi-tasking office approach, in which several instrumentations, including 3D-live ultrasonography, are available. Using this approach, we can improve the quality of in-office surgery and, obviously, both woman's and operator's satisfaction with the results.

Acquired and congenital uterine cavity abnormalities (i.e., Asherman syndrome, dysmorphic uterus or septate uterus), are also accessible surgeries for an outpatient approach which outcomes are boosted by an integrated and multidisciplinary approach.

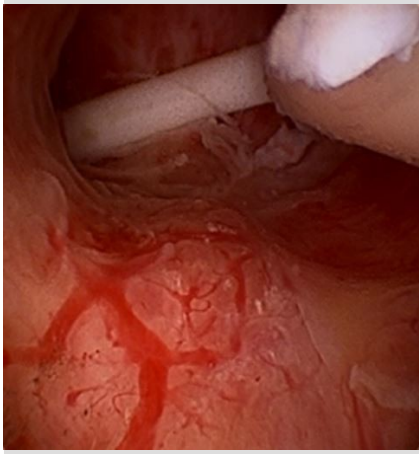
Another essential aspect to take into account is that hysteroscopy has become a marketing subject. If we stepped back at the beginnings, only a few industries invested in hysteroscopes and instrumentation. Nowadays, it is evident that all the world is producing advancements for office hysteroscopy. In this case, marketing competition is another advantageous milestone. A significant advantage that this marketization of our branch has created is the possibility of buying low-cost, all-in-one packages allowing the beginner to start its hysteroscopic outpatient clinic with an affordable investment.

Last but not least, in our mission of bringing hysteroscopy worldwide, there is something that we cannot forget: *continuous teaching*. Hysteroscopy is known to be an "easy-to-learn" surgery, with learning curves that are not difficult to achieve in a relatively short time. But what comes to my mind is that now a gynecologist can learn how to perform challenging procedures without touching a real instrument. However, "real" training in the surgical field is mandatory too. Over the last twenty years, virtual reality, virtual simulators, and practical demonstrations in full-immersion courses can help both the young and the old surgeon master the correct hysteroscopic technique. And what is interesting is that we can manage to use this approach also remotely. During the COVID-19 pandemic, large in person meeting are discouraged, but who needs to travel when you can quickly put on your 3D-glasses and perform a polypectomy in your living room? In my honest opinion, progress, continuous training, and, in a reasonable way, evolution is what is going to lead our future.

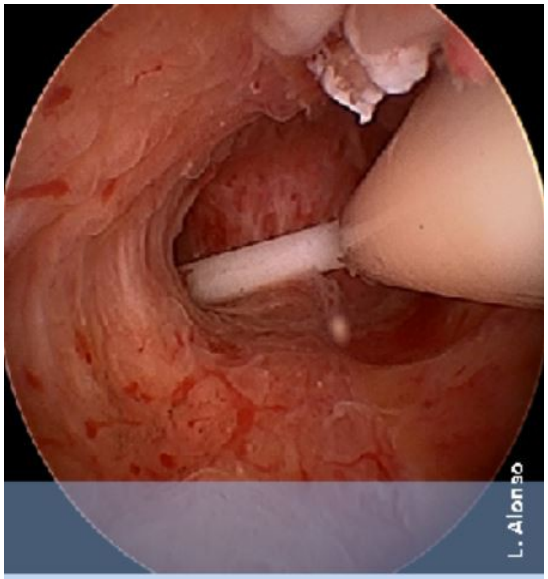
Today, hysteroscopy is a valid certainty, progresses in the field of technological innovations have made it easier to perform even the most challenging procedures. But all those advancements are useless if we forget what our primary objective is: "to treat woman's pathology", respecting her autonomy, minimizing pain and discomfort. That's what we should aim shortly, refine in-office hysteroscopy to eliminate every trace of discomfort.

Salvatore Giovanni Vitale
Italy

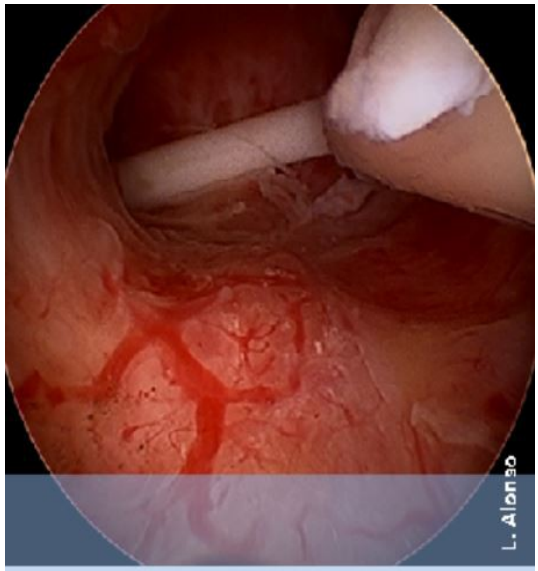
INSIDE THIS ISSUE



HYSTEROSCOPY PICTURES



Mirena placed in the uterus



Atrophy of the endometrial glands

Mirena® (levonorgestrel-releasing intrauterine system) consists of a T-shaped polyethylene frame (T-body) with a steroid reservoir (hormone elastomer core) around the vertical stem. The reservoir consists of a white or almost white cylinder, made of a mixture of levonorgestrel and silicone (polydimethylsiloxane), containing a total of 52 mg levonorgestrel. The reservoir is covered by a semi-opaque silicone (polydimethylsiloxane) membrane. The T-body is 32 mm in both the horizontal and vertical directions. The polyethylene of the T-body is compounded with barium sulfate, which makes it radiopaque. A monofilament brown polyethylene removal thread is attached to a loop at the end of the vertical stem of the T-body

Morphological features found in most of the endometria were decidualisation of stroma (72 of 75 cases), atrophy of endometrial glands (65 of 75 cases), a surface papillary pattern (38 of 75 cases), and a stromal inflammatory cell infiltrate (59 of 75 cases). Additional common histological features were the presence of foci of stromal myxoid change (29 of 75 cases) and stromal haemosiderin pigment (24 of 75 cases). Reactive atypia of surface glands, glandular metaplastic changes, stromal necrosis, and stromal calcifications were found in small numbers of cases. (doi: 10.1136/jcp.56.4.305)

If you are interested in sharing your cases or have a hysteroscopy image that you consider unique and want to share, send it to hysteronews@gmail.com

INTERVIEW WITH...

..."the best way to predict the future is to create it"

Dr.Bao-Liang Lin

Kawasaki Municipal Hospital

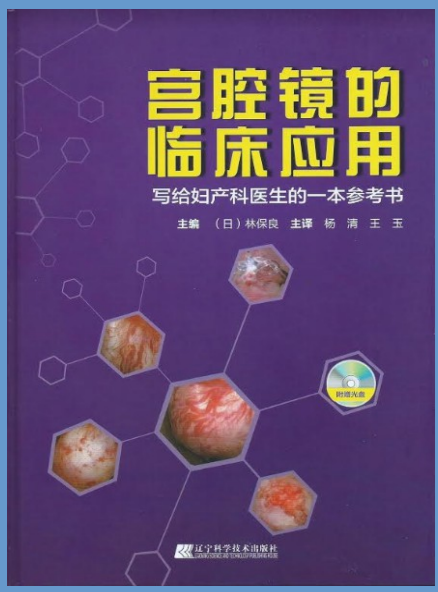
Do you most frequently use flexible or rigid hysteroscopes? In your opinion what is the best hysteroscope for office hysteroscopy?

Usually I use a 3.1 mm diagnostic flexible hysteroscope in the office without cervical dilation, anesthesia, analgesia, or using a tenaculum.

There are two different types of flexible endoscopes. There is the traditional flexible fiberoptic endoscope and the other one is a flexible electronic endoscope (video endoscope) in which an extremely small CCD is fit at the distal tip. About 90% of the flexible endoscopes used for either medical or industrial fields in the entire world are made by Japan. In 1971 Dr Takaaki Mohi and his wife Dr. Chie Mohri developed the first flexible hysteroscope. In 1985 with the help of Fuji photo optical company, we developed a partly soft and partly rigid (3.7mm outer diameter) diagnostic flexible hysteroscope (1) and a partly soft and partly rigid operating flexible hysteroscope (4.8mm outer diameter) (2) in 1987. Because of its unique structure, it is easy and safe to perform intrauterine diagnostic or therapeutic procedures. Unfortunately, due to the economic problem, the company discontinued producing these scopes several years ago. In 1998 with the support of Olympus optical we developed a 3.1mm diagnostic flexible hysteroscope with increasing consistency of the working part. Because the anatomical characteristics and flexion of the uterus, using the flexibility of the tip and its soft structure, it is easier to insert a flexible hysteroscope into the uterine cavity than using a rigid hysteroscope. Without cervical dilatation, anesthesia or analgesia, my insertion failure rate of using a 3.1 mm flexible hysteroscope is about 0.36%. Since 1985 I have performed nearly 22,000 cases of flexible hysteroscopy. Recently a small caliber diagnostic flexible electronic hysteroscope (3.8mm in diameter) was developed, in which a small CCD is fit at the distal tip. The advantages of this scope is that the resolution is as good as a rigid scope and its structure is soft with a flexible tip.

What kind of distending medium do you use for a hysteroscopy?

According to the results of my blood dilution test (3), glucose solution allows a clearer vision when it is compared to normal saline if intra-uterine bleeding is encountered. I use 10% glucose solution as the uterine distension medium in the past. However, I find that high osmolarity of 10% glucose may affect cell chromatin and disturbs intraoperative cytological diagnosis. I switch to 5% glucose solution for uterine distension instead. Because only a small amount of fluid was used, no influence to the patient's blood sugar was found. For Monopolar resectoscopic surgery, I follow our urologist recommendation to use 3% Sorbitol solution.



What kind of peripheral instruments did you have invented for flexible hysteroscopy?

Thank you for this question. I have invented many different instruments that can be used with flexible hysteroscopes.

1) The Lin giant biopsy and giant grasper forceps

Because the conventional biopsy forceps and grasping forceps are small, only a tiny specimen can be obtained. Removing lost IUDs also is difficult. In 1991 I developed the Lin giant biopsy forceps and the Lin giant grasper forceps (4) for use with the 4.9 mm operating flexible hysteroscope to perform targeted biopsies or to remove lost IUDs. Unfortunately, the company didn't launch it on the market.

2) The Lin soft outer sheath

The 3.1 mm diagnostic flexible hysteroscope didn't have continuous flow system. It is difficult to continue the examination when bleeding is encountered. In 1997, I invented the Lin soft outer sheath (5) that changed the scope into a continuous flow system. The visual field became clear even in the presence of intrauterine bleeding.

3) The Lin biopsy grasper (outer diameter 3mm)

In 2006 I developed the 3 mm small Lin biopsy grasper (6) for uterine targeted biopsy, removal of polyp or lost IUD in the office under ultrasound guidance. The grasper is not used together with hysteroscopy. Many IUDs in place for as long as 20 to 40 years were easily removed in the office using this forceps without anesthesia, analgesia or using a tenaculum.

4) The Lin polyp snare system

Usually small caliber scope is only for diagnosis. For subsequent therapeutic procedures, it is necessary to change to a bigger operating flexible hysteroscope or operating rigid hysteroscope. In 2011, I invented the Lin poly snare system (7) which can be used with a 3.1 mm diagnostic flexible hysteroscope or a 3.8 mm diagnostic electronic flexible hysteroscope to perform endometrial polypectomy, targeted biopsy or endometrial curettage (8) in the office. Tenaculum, cervical dilation and analgesia or anesthesia are not required.

Hysteroscopic myomectomy can be a challenging procedure. How do you manage submucous myomas?

I started to perform hysteroscopic myomectomy in 1985. To increase the safety of the procedure, I designed a Three-contrasts method of concomitant ultrasonography (9) for monitoring the TCR operation in 1987. During this period, I used a pediatric urologic resectoscpe (4.5mm outer sheath) without cervical dilatation. Because of the improvement of the ultrasound image resolution, this Three-contrasts method is no longer used. In 1988, I published the first paper of roller ball endometrial ablation (3) in Japanese language. Up to June 2020, I have performed a total of 6990 cases of resectoscopic operation including 5725 cases of myomectomy and 266 cases of metroplasty. I use the following protocol.

1. Preoperative management:

1) Diagnostic hysteroscopy is performed and is immediately followed by a vaginal ultrasonography (sono-hysterography) to evaluate the myoma size, location and its intrauterine protrusion rate (10).

2) If the size is larger than 4 cm, GnRH agonist or GnRH antagonist are used.

2. Operation:

The night before the operation, I insert Laminaria tents to soften the cervix. When I start the procedure I don't need do dilate the cervix if a 22F monopolar resectoscope will be used. All the procedure is performed under ultrasound guidance.

Which are the limits of the single step hysteroscopic myomectomy?

The limits are

1) The myoma must be approachable by resectoscopy.
2) The largest diameter of the myoma must be < 60 mm (if intrauterine protrusion >50%).
3) The largest diameter of the myoma ≦40 mm in diameter (if intrauterine protrusion ≦50%).
4) Symptomatic intramural myoma ≦30 mm in diameter.
5) Serosa-Myoma Thickness (SMT) ≧5 mm
6) Not a big calcified myoma (11)

Even in case of infertile patients with numerous submucous myomas, I removed all the myomas in one procedure. To prevent adhesions, a Japanese IUD (FD-1) is left in place and is removed one month later at the second look hysteroscopy.

You are a great surgeon and a great inventor. Can you give us some words about the Lin dissecting loop and the Lin myoma graspers?

For hysteroscopic surgery, I have invented the following instruments 1) The Lin myoma graspers (There are 15 types), 2) The Lin dissecting loop is a thick, slightly curved loop used for use with a 22F monopolar resectoscope 3) The Lin curved tenaculum, 4)The Lin self-retainer for holding the ultrasound probe in place 5) The Lin speculum 6) The Lin disinfected sleeve used for covering the video camera.

My operative technique is the same as performing an abdominal myomectomy or a laparoscopic myomectomy that promises a complete resection in one procedure (12)

The procedure is

1) A Lin dissecting loop is used to cut into the cleavage between the myoma and the myometrium (pseudocapsule).
2) The Submucous myoma is then dissected from the muscle layer using the loop and the tip of the hysteroscope.
3) The Lin myoma grasper is used to pull the myoma out of the muscle layer. 4) Then the myoma is cut and removed using the Lin myoma grasper.

The length of the procedure using the resectoscope is short, so the possibility of hyponatremia or fluid overload is low. Also, the thermal injury to the endometrium or myometrium which may cause intrauterine adhesions is minimal.

Do you have any advice for the young physician who is starting out in the world of minimally invasive gynecological surgery

Try to do the as many operations as possible and try to share your experiences with experts in the field.

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Original Article

Hysteroscopy Newsletter Vol 6 Issue 4

A Novel Method of Selective Chromopertubation at Office Hysteroscopy

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Introduction: Tubal dysfunction is diagnosed as an underlying cause of infertility in more than one third of cases. Laparoscopy dye is the gold standard procedure to detect tubal patency, but hysterosalpingography (HSG) and hystero-contrast-sonography (HyCoSy) is also used. Office hysteroscopy guided selective chromopertubation (OHSC-SPT) is a less invasive and reproducible method, which can be performed in an outpatient setting without anesthesia, therefore it can be carried out as an outpatient procedure.

Method: For the examination an office hysteroscope is used. A 1.7 mm diameter flexible plastic catheter is inserted through an inbuilt channel of the sheath. Normal saline is used for distention. The hysteroscope is introduced without grasping or dilatation of the cervix. First, diagnostic hysteroscopy is performed, then the catheter is inserted through the working channel and the tip of it is placed into the tubal orifice, through which methylene blue dye is injected slowly. If the tube is patent the blue dye does not appear in the uterine cavity and the normal color of the endometrium is seen. In case of tubal occlusion the distention media of the uterine cavity turns blue, due to the back-flow of the methylene blue.

Conclusion: After gathering additional experience the novel method of OHSC-SPT could be considered as an effective, minimally invasive method to investigate tubal patency, which can be performed in an office setting without anesthesia.

KEYWORDS:

Chromopertubation, Tubal patency, Hysteroscopy

INTRODUCTION

Tubal dysfunction is a leading factor in female infertility, diagnosed in 30-50% of infertile patients [1]. The assessment of the tubal patency is necessary prior to the therapy, to define the type of assisted reproductive technique or tubal reconstructive surgery. Laparoscopic chromohydrotubation is the gold standard [2], to detect tubal patency, but hysterosalpingography (HSG) and hystero-contrast-sonography (HyCoSy) is also widely accepted. For HSG X-ray examination is needed which can be harmful despite its low dosage. HSG and the HyCoSy are not accurate enough [3], due to their lower specificity and sensitivity. For laparoscopic surgery general anesthesia, hospitalization and an operating room is compulsory which increases the costs of the procedure and strain for the patient [4].

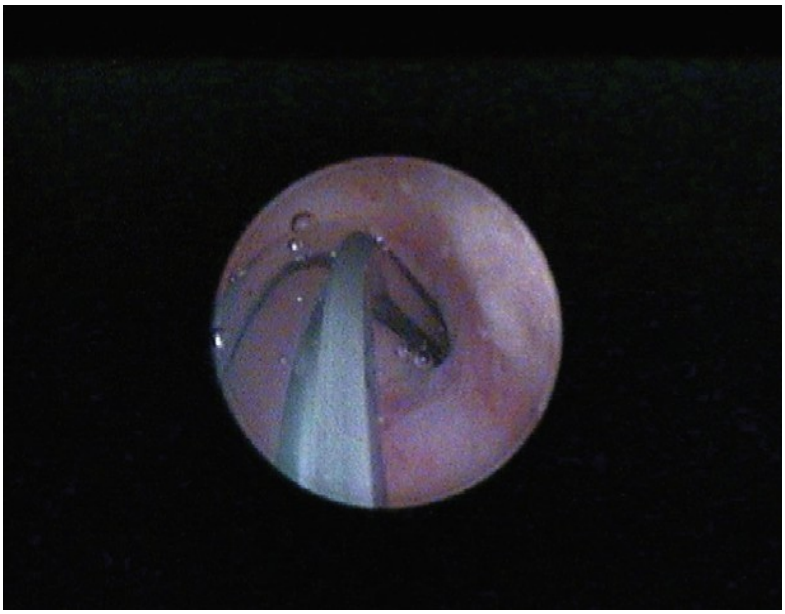


Figure 1: A 1.7 mm plastic catheter (Cavafix, B-Braun) is inserted through the working channel of the sheath and the tip is placed to the tubal ostium.

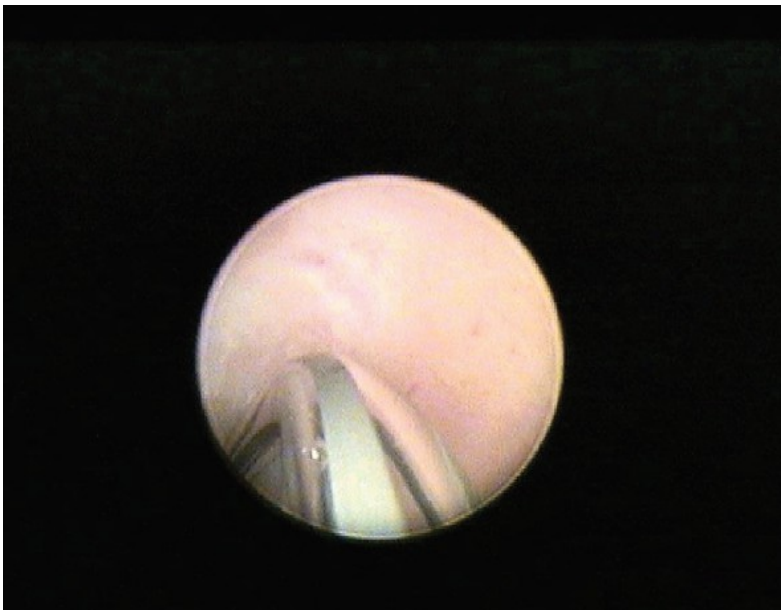


Figure 2: During selective pertubation, each Fallopian tube is considered as a diagnostic unit. By rotating the hysteroscope, the direction of the catheter can be modified toward the ostium

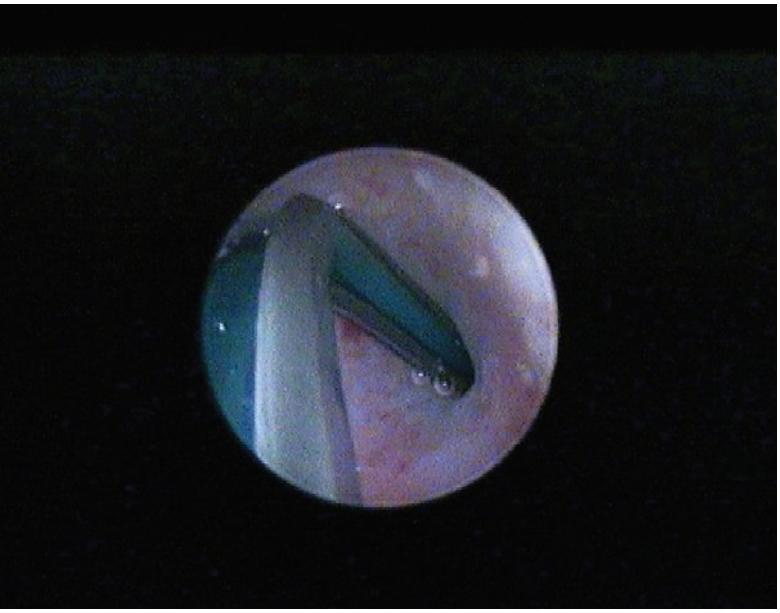


Figure 3: Normal color of the endometrium can be seen, while the transparent catheter turns blue, due to the methylene blue flowing inside the tube.

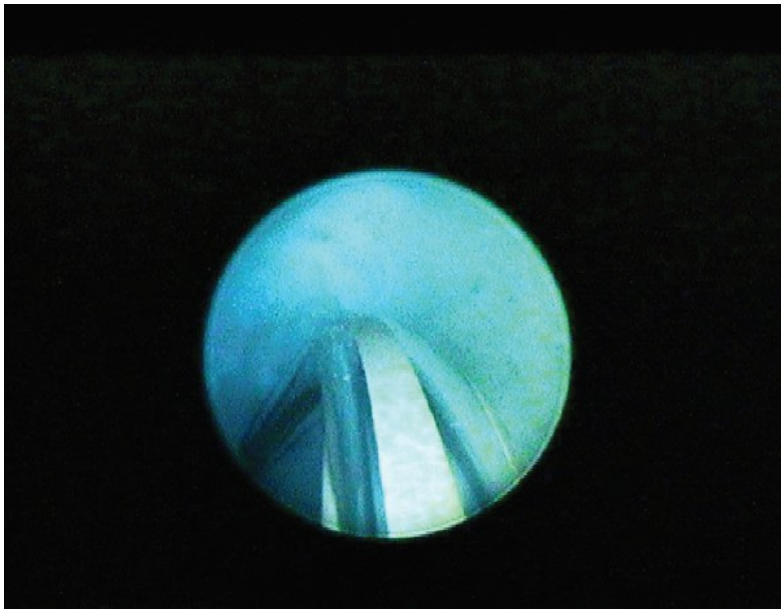


Figure 4: Occluded Fallopian tube changes the uterine cavity into blue, due to the back-flow of the methylene blue.

We developed a less invasive, nevertheless effective and reproducible method, which can be performed in an outpatient setting without anesthesia. Office hysteroscopy guided selective chromopertubation (OHSC-SPT) can be applied as an outpatient procedure. In case of negative results more invasive and expensive laparoscopic surgery is avoidable.

METHOD

The procedure is performed in an outpatient setting. Patient is in dorsal lithotomy position. Modified no-touch technique is performed using Cusco instrument and thorough disinfection of the vagina and the portio. Hysteroscope is inserted without grasping, or dilatation of the cervix. A 2.7 mm rigid optic is used for the examination, with a 5.5 mm sheath (EMD Endoscopy Technologies). Normal saline (0.9% sodium chloride) is used for the distention, at controlled intrauterine pressure of 80-100 Hgmm. A digital camera is connected to the optic, so the results can be objectively evaluated and documented. The examination begins with a routine office hysteroscopy, during which any deformity of the uterine cavity and the endometrium can be visualized.

TECHNIQUE OF PERTUBATION

In the second step a 1.7 mm plastic catheter (Cavafix, B-Braun) is inserted through the working channel of the sheath and the tip is placed to the tubal ostium (Figures 1,2). During selective pertubation, each Fallopian tube is considered as a diagnostic unit. By rotating the hysteroscope, the direction of the catheter can be modified toward the ostium. The cone shape of the tubal ostium will help in leading the tip of the flexible catheter into the ostium. The catheter should not to be inserted into the tube, only the tip should be placed at the entry of it. Through the catheter 2-10 ml of methylene blue dye (Patente Blue, 2 ml in 1000 ml saline) is injected slowly.

In case of a patent Fallopian tube no blue fluid will appear in the uterine cavity. Normal color of the endometrium can be seen, while the transparent catheter turns blue, due to the methylene blue flowing inside it (Figure 3). Occluded Fallopian tube changes the uterine cavity into blue, due to the back-flow of the methylene blue (Figure 4).

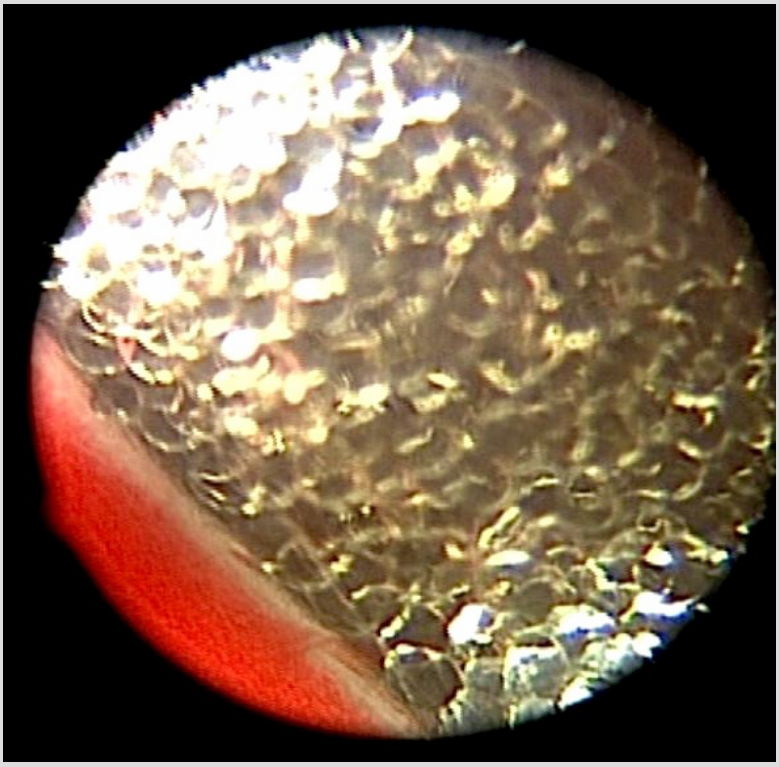
In case of cornual occlusion, blue dye will flow back immediately. If the blockage is at the distal part of the tube, the first fraction of the blue dye will disappear and after some time of the injection will the back-flow be detectable. After the evaluation of tubal patency, blue dye clears up within 5-10 seconds and the whole procedure can be repeated on the other side. To be more exact and precise, transvaginal ultrasound examination should be performed before and after the hysteroscopy. This examination can exclude any pathology of the tubes that can cause false negative results, for example hydrosalpinx. By detecting free fluid around the ovaries and in the pouch of Douglas, the result of the perturbation can be verified. Total examination time is 4-8 minutes. As usual after office hysteroscopy, there is no need for post-operative observation, and the procedure can be performed with a high patient compliance [5].

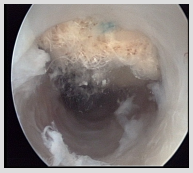
After the comparative study 65 analyzed examinations were performed. All examinations happened as a part of the infertility work-up. Following the protocols hysteroscopy was scheduled for the follicular phase, without anesthesia and having negative functional results. At least one tube was patent in 37 cases. There was no complication during or after the procedures. During an 18 months follow-up period, 8 patients conceived spontaneously.

CONCLUSION

During infertility work-up, evaluation of tubal patency is a cardinal point. Blockage of both tubes leads to either IVF treatment or consideration of tubal reconstructive surgery. Both therapeutic ways have high costs and risks of complications. Answering this question laparoscopic surgery should be chosen as a gold-standard method. Knowing the disadvantages of an abdominal surgery with general anesthesia, timing of the examination is questionable. The novel method of OHSC-SPT seems to be an effective, accurate, minimally invasive method to investigate tubal patency. Without using anesthesia and an operating room, costs can be reduced significantly. As an outpatient method, it has minimal strain for the patient. Performing more procedures and analyzing the results could lead to being accepted as effective, precise and reproducible as laparoscopy. To evaluate sensitivity and specificity of the new method a comparative study was performed and results show that it is precise and accurate compared to the laparoscopic examination that is used as the “golden standard” worldwide [6]. Laparoscopic surgery should be worth considering only in cases of blockage in both tubes.

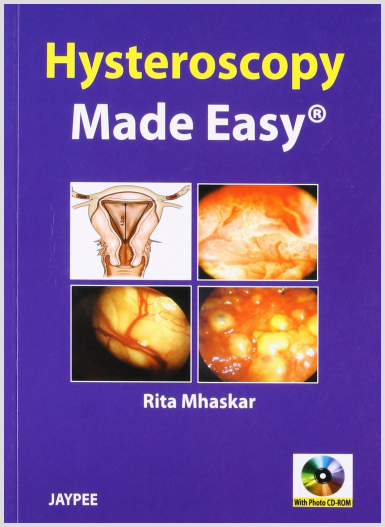
What's Your Diagnosis?





Answer to the previous issue

Surgial Gauze



Hysteroscopy Made Easy

Rita Mhaskar

Jaypee Brothers Medical Publishers 2010

Original Article

Hysteroscopy Newsletter Vol 6 Issue 4

In Office Operative Hysteroscopy. Patient pain perception based on the intervention and its characteristics

J Boned López, A Armijo Sánchez, B Ramírez Muñoz, IM Aguilar Gálvez, E Mantrana Bermejo, C García-Salmones, MD Lara Domínguez, RM Oña López.

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Objective: To assess pain perception of patients undergoing ambulatory operative hysteroscopy based on the type of pathology treated, its characteristics and the instruments used.

Material and methods: Observational descriptive study including 175 outpatient operative hysteroscopies. At the end of the procedure, patients were encouraged to rate the pain perceived during entry to the uterine cavity and during resection based on a visual analog scale with a score from 0 (no pain) to 10 (very severe pain). We considered that a patient has perceived intense pain when the score on the VAS scale is equal to or greater than 7. The rest of the variables were collected from the medical records after signing an informed consent.

Results: 175 outpatient hysteroscopies were included, of which 39 (22.4%) were myomectomies, 93 (43.4%) polypectomies, 38 (21.8%) endometrial biopsy, 3 (1.7%) septoplasty and 1 (0.6%) metroplasty. The mean VAS score in patients undergoing myomectomy was 3.59 (± 2.99) with 19.9% of the patients reporting having perceived severe pain. In the polypectomy group the mean VAS was 4.46 (± 2.71) with 18.9% of the patients with a score greater than or equal to 7. In endometrial biopsies, the mean value of the VAS scale was 3.29 (± 2.46) with 10.5% of the patients perceiving intense pain, while in septoplasty the mean VAS was 7 (± 2.64) with 33.3% of the patients reporting having perceived as intense pain during the intervention. The patient who underwent metroplasty scored the pain perceived during the intervention as a 2. The complication rate was 2.8%, with 5 complications, one of them severe and the rest minor complications.

Discussion and conclusion: Ambulatory surgical hysteroscopy is a safe and well-tolerated procedure for patients, with scores on the VAS scale similar to other gynecological procedures that are routinely performed in office setting.

INTRODUCTION

Currently, hysteroscopy is the gold standard for the diagnosis and treatment of the intrauterine pathology, both in premenopausal and postmenopausal patients (1,2). Thanks to technological advances, smaller diameter hysteroscopes have been developed that have made hysteroscopy a less painful procedure, increasing the number of interventions carried out in an office setting from the 1990s (2). In addition, the development of hysteroscopes with working channel that allows the insertion of instruments has made possible the development of the concept "see and treat" (1,3), which simplifies the distinction between diagnostic and surgical procedures, that is, it integrates into a single procedure diagnostic work with therapeutic intervention (3,4).

Even so, pain remains a limiting factor in the general acceptance of this procedure (5). A history of cesarean section, menopausal status, or history of chronic pelvic pain are factors that have been shown to associate an increased risk of experiencing pain during outpatient hysteroscopy (6). However, ambulatory hysteroscopy has not only been shown to be more cost-effective (7), but also has a lower complication rate (8) and a faster recovery of patients without being inferior in terms of satisfaction (9).

OBJECTIVE

The objective of this study is to assess pain perception of patients undergoing operative hysteroscopy in office setting based on the pathology treated, its characteristics and the instruments used.

MATERIAL AND METHODS

This is a descriptive observational study including 175 patients undergoing operative hysteroscopy, with the intervention being performed in office setting between August 2019 and January 2020. At the end of the intervention, patients were encouraged to rate the perceived pain during entry into the uterine cavity and during resection based on a Visual Analog Scale (VAS), printed, representing a continuous graduation with a score from 0 (no pain) to 10 (very severe pain). The rest of the variables were collected from the medical records after signing an informed consent. Patients undergoing only diagnostic evaluation were excluded.

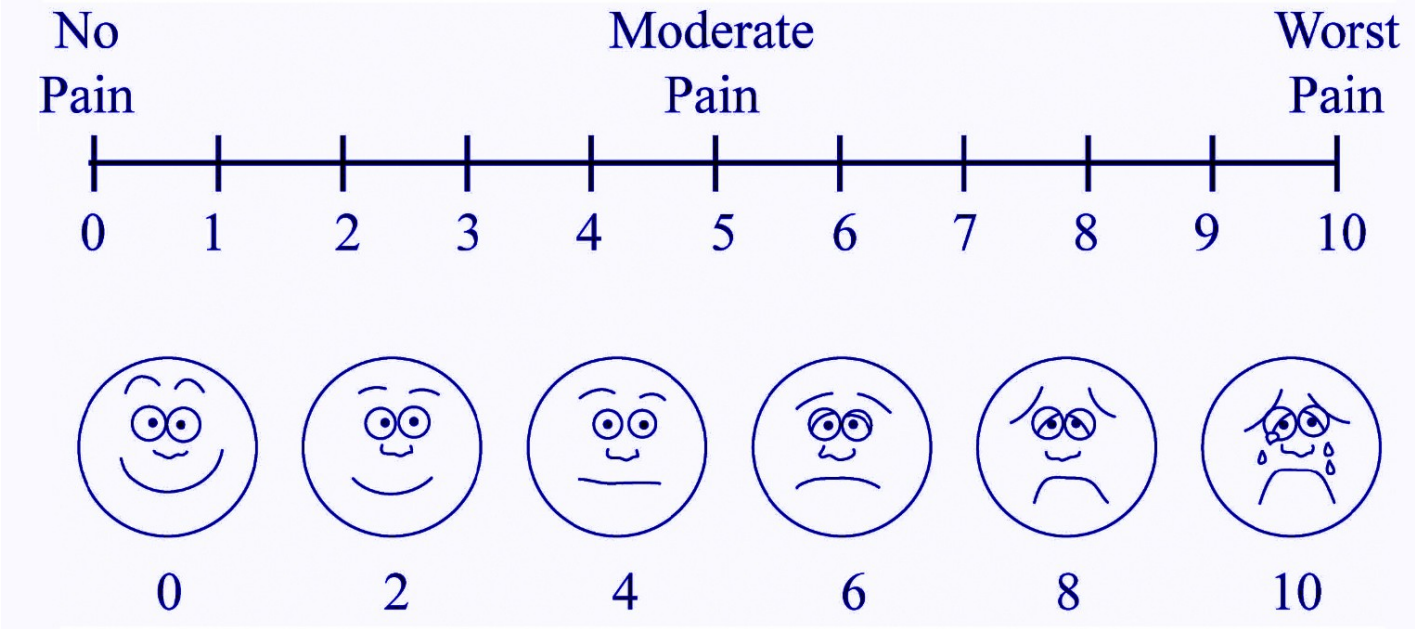
Patient preparation and hysteroscopic procedure

In preparation for hysteroscopy, the patient is given oral administration of one tablet of misoprostol 200 mcg the night before the intervention and one Ibuprofen 600 mg tablet one hour before the appointment. Once in the office, after informing the procedure in detail, we placed the patient in a lithotomy position and performed a paracervical block with two vials of 2% mepivacaine. The hysteroscopic approach is carried out by vaginoscopy, without previous cervical mechanical dilation. The distension medium used is normal saline in continuous flow with an irrigation system at a stable pressure between 90 and 105 mmHg. The selection of the hysteroscope is based on the preferences of the hysteroscopist, who decides based on the characteristics of the patient and the intervention to be performed.

The material at our disposal is:

- ►Bettocchi © hysteroscope (4.3 mm caliber) with mechanical instruments and bipolar electrode type Versapoint ©,
- ►Gubbini © Mini-Hystero-Resectoscope © (5.8 mm caliber)
- ►Myosure © morcellator (Caliber 6 mm).

All the interventions were carried out by 4 experts hysteroscopists. Antibiotics prophylaxis was not administered.



A total of 175 in office operative hysteroscopies were included. The mean age of the patients included in the study is 50.01 (± 12.98) years, 45.1% were in menopause. 18.3% of the patients had a history of caesarean section while 64% had had vaginal deliveries. Only 26.3% of the patients had no previous history of cesarean section or vaginal delivery. 55.4% of hysteroscopies were indicated as study or treatment of abnormal uterine bleeding in premenopausal or postmenopausal bleeding. 33.7% of hysteroscopies were indicated after incidental ultrasound finding in asymptomatic patients, while 10.3% were performed in the context of assisted reproduction protocols. The interventions carried out were polypectomies (53.4%), myomectomies (22.4%), endometrial biopsies (21.8%), septoplasty (1.7%), and a single case of metroplasty in a patient with a T shaped dysmorphic uterus (0.6%). The most used hysteroscope was the Gubbini © Mini-Hysteroscope (62.1%), followed by the Bettocchi © hysteroscope (33.9%) and the MyoSure © morcellator (4%).

The mean of the pain perceived by the patients during the entrance through the cervical canal according to the VAS scale is 3.27 (± 2.61) and a mean of 96.36 (± 99.92) seconds was used to reach the uterine cavity. During resection, the mean obtained on the VAS scale is 4.04 (± 2.77) and the mean duration of the intervention is 486.13 (± 374.33) seconds. We consider severe or intense pain when the score expressed on the VAS scale was equal to or greater than 7. Thus, 12.5% of patients during entry into the cavity and 17.8% during resection reported perceiving intense pain. 13.2% of the patients had a second hysteroscopic evaluation.

There were 39 patients (22.4%) in whom a myomectomy was performed. The mean VAS score during resection was 3.59 (± 2.99) with 19.9% of women reporting perceiving intense pain. The mean VAS is higher in those myomectomies performed with Gubbini © resectoscope (4.07 ± 2.91) compared to MyoSure © (3.14 ± 3.24) and Bettocchi © (0.33 ± 0.58) with a percentage of patients who perceived intense pain also greater (22.2% vs. 14.3% vs. 0%). However, only 25% of the patients in whom Gubbini© resectoscope was used required a second hysteroscopic evaluation compared to 42.6% and 100% who were treated with MyoSure © and Bettocchi © respectively.

Regarding the type of myoma based on the FIGO classification, the means on the VAS scale were 3.73 (± 3.87) in type O, 3.81 (± 2.71) in type 1 and 3.10 (± 2.58) in type 2. 27.3% of patients with a type O fibroid reported severe pain compared to 18.7% in patients with type 1 fibroids and 10% in fibroids type 2. However, 40% of the patients with type 2 fibroids needed 2 procedures, while this percentage was 23.5% in Type 1 and 16.7% in Type 0. Patients with fibroids with size ≤ 2 cm had an average on the VAS scale of 2.81 (± 2.74) and 12.5% of the patients perceived severe pain during fibroid resection, while fibroids 2-4 cm and those over 4 cm they reported an average of 4.64 (± 3.41) and 2.83 (± 2.23) and patient rates with intense pain perception of 14.3% and 7.2%, respectively.

Patient's characteristics	
Age	50,01 (±12,98)
Parity [N (%)]	
C-section	32 (18,3)
Vaginal delivery	112 (64)
Nulliparous	46 (26,3)
Menopause [N (%)]	79 (45,1)
Indication [N (%)]	
Infertility	18 (10,3)
Abnormal Uterine Bleeding	97 (55,4)
Incidental Findings	59 (33,7)
Others	1 (0,6)
Procedure [N (%)]	
Myomectomy	39 (22,4)
Polypectomy	93 (53,4)
Endometrial Biopsy	38 (21,8)
Septum Incision	3 (1,7)
Metroplasty	1 (0,6)
Material [N (%)]	
Bettocchi	59 (33,9)
Gubbini	108 (62,1)
MyoSure	7 (4)

The percentage of patients that required a second procedure was 11.1% in those with fibroids of less than 2 cm, 28.6% in those fibroids of 2 to 4 cm and 50% in fibroids larger than 4 cm. The mean value of the VAS scale based on the location of the myoma is 4.07 (± 3.43) with 35.75% of the patients referring to perceiving severe pain if the myoma is located on the lateral uterine walls. The average

VAS in the rest of the locations is 3.67 (± 2.95) on the anterior wall, 3.18 (± 2.99) on the posterior wall, and 2.69 (± 2.30) when located in the uterine fundus, with a percentage of patients with perception of intense pain of 16.7%, 9.15% and 12.42% respectively. The rate of patients who needed a second hysteroscopic evaluation was 0% in fibroids located in the uterine fundus, 16.7% in those located on the anterior uterine wall, 26.7% in those located on the lateral walls and 33.3% in those located on the posterior wall of the uterus.

53.4% of the interventions performed were polypectomies (93 patients). The mean VAS scale of pain perceived during polyp resection was 4.46 (± 2.71) with 18.9% of patients reporting having perceived severe pain. The mean values of the VAS scales were 4.42 (± 3.01) and 4.48 (± 2.52) in those interventions in which Bettocchi© and Gubbini© resectoscope were used, respectively, with 22.2% and 16.7% of the patients reporting having perceived intense pain during the resection. 8.1% of the patients using Bettocchi © and 10.7% of the patients using Gubbini © resectoscope needed a second hysteroscopic procedure. Myosure © was not used for polypectomies. Regarding size, patients with polyps of ≤ 2 cm had an average on the VAS scale of 4.06 (± 2.61), with 16.7% of the patients with an evaluation on the VAS scale equal to or greater than 7 and 10.7% needed a second hysteroscopic evaluation. On the other hand, patients with polyps with a size > 2 cm had an average on the VAS scale of 5.03 (± 2.81) with 22.9% of patients reporting pain perceived during resection as intense and 8, 3% of them needed a second procedure. The mean on the VAS scale was 5.42 (± 2.75) with 28.2% perceiving intense pain in those polyps located in the uterine fundus. The average VAS in the rest of the locations was 4.27 (± 2.60) on the lateral walls, 4 (± 2.74) on the anterior wall and 3.90 (± 2.72) on the posterior wall of the uterine cavity, with rates of perception of intense pain of 15.4%, 16.7% and 14.3% respectively. The rate of patients who were needed a second procedure was 16% if the polyp was located on the uterine fundus, 13.6% in the posterior uterine wall, 5.6% in the anterior uterine wall, and 3.7% if the polyp had its base on one of the lateral walls of the uterine cavity.

There were 38 patients (21.8%) who had “see and treat” endometrial biopsy. In these patients, the mean value of the VAS scale score during the biopsy was 3.29 (± 2.46), with 10.5% of the patients defining the pain perceived during the intervention as intense. The patients in whom the Bettocchi © hysteroscope was used had a mean in the VAS score of 3.69 (± 2.46), higher than those treated with Gubbini © resectoscope (3.13 ± 2.64), with a higher percentage of patients reporting perception of intense pain during the biopsy (15.4% vs. 8.3%).

There were 3 patients (1.7%) who underwent septoplasty. All of them were partial septa and were performed with a Bettocchi © hysteroscope. The mean value of the VAS score in these three patients was 7 (± 2.64), with one of the patients reporting having perceived intense pain during septum resection. All these patients had a second hysteroscopic evaluation. We also included in the study a single case of a patient with a T-shaped dysmorphic uterus in whom a hysteroscopic metroplasty was performed. The patient rated pain during the intervention as a 2 out of 10 on the VAS scale. As a curiosity, once the intervention was completed, a non-stick gel composed of methylcellulose and polyethylene was administered, initiating after administration severe pain and a vasovagal reaction that was self-limiting in a few minutes.

The complication rate in this study was 2.8%, represented by 5 cases of which 1 was a severe complication (uterine perforation) that required admission to the hospital for observation. The rest of the cases were mild complications: 3 vasovagal reactions that forced the intervention to be stopped early and 1 who had heavy bleeding in the days after the hysteroscopy that did not require any treatment.

Table 2. Results of the operatives hysteroscopies included in the study

Entrance	
VAS	3,27 (± 2,61)
VAS ≥ 7 *(%)*	12,5
Time (Seconds)	96,36 (± 99,92)
Resection	
VAS	4,04 (± 2,77)
VAS ≥ 7 *(%)*	17,8
Time (Seconds)	486,13 (±374,33)
Second Look (%)	13,2
Complications (%)	2,8

DISCUSSION

Since the 90s, many efforts have been made to make hysteroscopy increasingly more efficient, safer and less painful (3). Technological development is in constant search of instruments that are thinner but that maintain safety and efficacy (10), together with the improvement of the hysteroscopic technique (4), has favored the growth of in office hysteroscopy since it has demonstrated multiple advantages with respect to its performance in the operating room.

https://endoscopia.com/

In a meta-analysis carried out by Bennet et al (11) they concluded that there are no statistically differences between the operative hysteroscopy performed in the operating room and in office setting in terms of success rates and therapeutic efficacy, also proving to be more cost-effective (7,10). In office hysteroscopic polypectomy has been shown not to be inferior to that performed in the operating room for the treatment of abnormal uterine bleeding, with similar treatment effects at 12 and 24 months (12), and is also more cost-effective (13).

Wortman et al (9) published in their series of 305 ambulatory surgical hysteroscopies a success rate of 99%, while in the study by Mairos et al (8) it is somewhat lower (92-95%). Our data reflects that 13.2% of patients required a second hysteroscopic evaluation, which shows that at least 86.8% of patients are cured at the first visit.

In office operative hysteroscopy is a safe and well-tolerated procedure (8). Bennet et al (11), performed a meta-analysis in which the authors conclude that they have not found statistically significant difference in terms of the number of complications between operative hysteroscopy performed in the office and that performed in the operating room. However, in office hysteroscopy does not require hospital admission, avoiding the cost and inconvenience associated with hospitalization (8). Nor is general or locoregional anesthesia necessary, which makes an important contribution to patient safety (8). Wortman et al (9) describe a complication rate of 2.9%, with only one severe complication (uterine perforation). The remaining complications were mild, vasovagal reactions and infections after hysteroscopy. These figures are very similar to those obtained in our study, with a similar ratio between severe and mild complications.

The American College of Obstetricians and Gynecologists (ACOG) considers in office hysteroscopy as a feasible technique without the use of analgesia, although conditions such as a history of chronic pelvic pain, dysmenorrhea, or the presence of other risk factors may justify its use (14). The mean VAS score perceived by the patients in our study was 4.04, which is within the range reported in other publications (3.3 - 5.3)(5). However, our results show how this average score varies based on the intervention performed and other factors such as the type of hysteroscope used or the characteristics of the pathology treated. Marsh et al (15) published an average VAS score in office polypectomies of 2.37. 20% of patients perceived polypectomy as a non-painful intervention, 75% described mild or moderate pain, while only one patient reported severe pain. In our study, the average VAS score during polypectomies was 4.26 and 18.9% of the patients reported having perceived severe pain. Furthermore, the randomized trial of Marsh et al (15) concluded that there are significant differences in pain perception the same day of the intervention and the day after, with a higher percentage of asymptomatic patients in the group of patients who underwent the procedure in office (58% vs. 28% the same day, 74% vs. 41% the following day). In any case, the VAS scores obtained in the different interventions performed in patients undergoing in office operative hysteroscopy are comparable to other gynecological procedures that are routinely performed in the office, such as endometrial

aspiration with Cornier cannula (EVA 4.6-7.7) (16) or the insertion of an intrauterine device (EVA 4,9-5,8) (17).

Both the meta-analysis by Bennet et al (11) and the randomized trial by Kremer et al (18) conclude that there was no statistically significant differences in the satisfaction rate between patients who undergo in office hysteroscopy compared to patients who undergo hysteroscopy in the operating room. However, Marsh et al (15) reported that 90% of the patients who underwent an outpatient hysteroscopic polypectomy would agree to repeat the same procedure in the future if necessary. However, 82.4% of the patients in whom the same intervention was performed in the operating room would prefer to perform the intervention in an office setting, should it be necessary to repeat it in the future. Furthermore, both Marsh et al (15) and Kremer et al (18) agree in their respective randomized trials that the average time to recover the physical state prior to the intervention is shorter in the in-office hysteroscopy compared to that performed in the operating room (2 days vs. 3 days).

CONCLUSION

From the 90s to date, in office hysteroscopy have been more frequently performed. This is because it has not only been shown to be safe and effective, maintaining a success rate similar to the procedures performed in the operating room, but it is also supported by a better cost-effective ratio and the good tolerance of the patients that resembles other gynecologic procedures which are usually carried out in office setting. There is less evidence regarding pain perception of patients to more complex and longer-lasting procedures. However, with the technological development that seeks instruments of smaller caliber and less pain for patients and the improvement of hysteroscopic techniques and procedures, it is foreseeable that these interventions over time and progressively will also cover the path from the operating room to the office.

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Comment

Hysteroscopy Newsletter Vol 6 Issue 4

Foreign body or product of conception? The decisive details allowing distinction in hysteroscopy

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In response to the above "what's your diagnosis" test of the last Hysteroscopy Newsletter's issue, there was an extraordinary variety of answers by my colleagues (table1).

The two most prevailing diagnoses are thus identified: foreign body, mainly consisting of a gauze (49%) or pregnancy and derived products (36%). In addition, all participants identified isthmic localization, but only 16% paid attention to the blue color on top of the image.

Analyzing the hysteroscopic details leading the participants to the different diagnoses

The yellowish and whitish color was the main feature arousing suspicion of conception product and omentum. The presence of blue color in the upper part of the canal was related to surgical thread by all the colleagues who paid attention to it, which ascertained the post operative context of a Cesarean Section (CS). The filamentous patterns suggested a gauze, inadvertently left during a CS or a manual uterine cavity revision, but also chorionic villi, osseous metaplasia, prosthetic material and even mycelium fungi. The isthmic localization made no doubt, and this feature made the above differential diagnoses all plausible for the participants.

The decisive details that were less analyzed

The extraordinary regularity and similarity of the filaments is different from the way chorionic villi usually appear in hysteroscopy. In fact, they are very thin, with equal dimensions to one another (Fig 1). They are typical of the fibers a fabric is made of. This alone is enough to arouse suspicion of a foreign body: typically a surgical gauze.

In figure 2, we can see the avascular and vascular chorionic villi of type 1 and Type 2 RPOC, where the pattern is different from the above image.

Answers	Rate (%)
Gauze	24
Gauze in the cesarean section (CS) scar	16
Retained Products Of Conception in isthmocele	13
Osseous metaplasia	10
CS scar ectopic pregnancy	9
Foreign body/ fragment of wool	5
Mycelium filamentous fungi	5
Remnants of placenta accreta	4
Incarcerated omentum through a CS scar.	4
Prosthetic material	4
Surgicel	2
Necrotic polyp	2
Post polypectomy scar	2

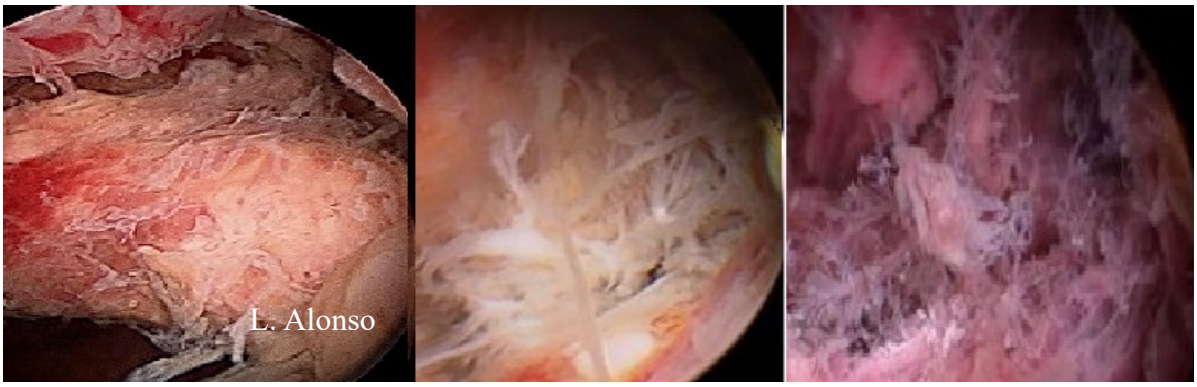

Figure 2

Furthermore, the blue color is not that of a surgical thread, but rather the radio-opaque thread incorporated in surgical gauzes, allowing X-Ray detection when necessary (fig 3). This type of material is not available in all countries, which is very likely the reason why no participant thought of it.

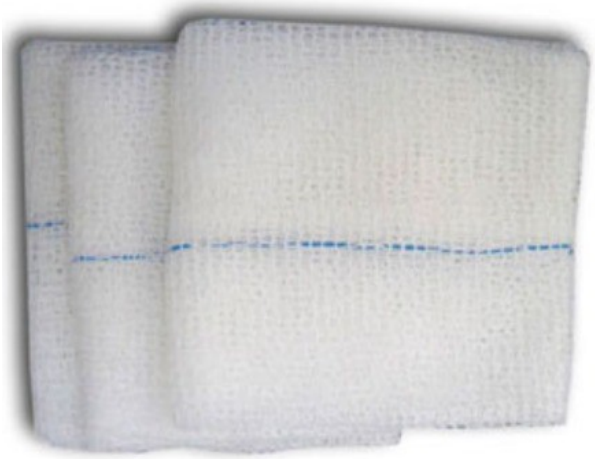
Figure 3

Two further details were not described by any participant either: the significant presence of whitish discharge, all around the “yellowish lesion” as well as on the side walls. The only site we don’t see them, is the posterior wall, where the surface-relief of the muscular fibers are visible instead. We can thus presume the flimsy adhesions and discharge that were obstructing the canal at the entry of the cavity, and that the operator had mechanically liberated.

Therefore: the answer to the test is: surgical gauze in the operative site of a CS scar.

Explaining the yellow color of a what is supposed to be a white gauze:

The inflammatory response to a foreign body consists of an activation of macrophages and derived cells, which surround the site in order to destroy the gauze via phagocytosis and release of toxic enzymes (1). However, this type of foreign body cannot be cleared by the immune system, unlike the environing cells, collaterally damaged by the inflammatory process. This results in a significant inflammatory and necrotic tissue forming around the foreign body, causing the yellowish color. Moreover, the frequent secondary bacterial infection exacerbates the immune reaction, which also explains the important discharge.

Intra-uterine foreign body in hysteroscopy.

Hysteroscopy has allowed the removal of a variety of intrauterine foreign bodies, as reported in the literature, most classically: fragment of intrauterine device, suturing thread (2) and surgical gauze (3). The latter are classically encountered in the context of post CS. However, more unusual hysteroscopic findings have also been described, especially in the context of criminal abortion, psychiatric disorders, certain sexual practices, including abuse: a wooden stick or a metallic starter of a tubelight for instance (4). The common symptoms in these cases consist of persistent malodorous discharge, chronic pelvic pain, dysmenorrhea, dyspareunia, abnormal uterine bleeding and infertility. Hysteroscopy allows identification of the foreign body as well as its atraumatic removal (3,4).

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Update

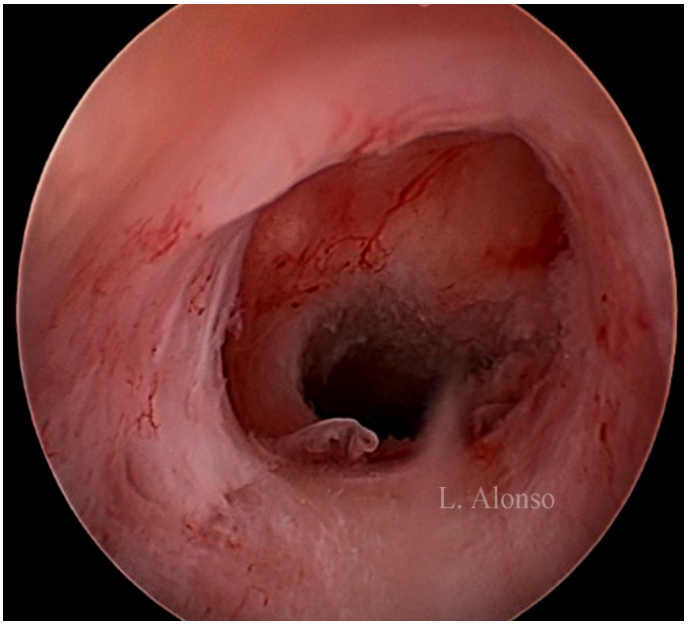
Hysteroscopy Newsletter Vol 6 Issue 4

Isthmocele: Definition, Prevalence And Main Risk Factors

Esmely Salazar MD

The defect caused by the cesarean section scar, also called isthmocele, niche, diverticulum, or pouch, was first described by Poidevin in 1961 as a wedge-shaped defect in the uterine wall. Due to the variety of names, this defect has been internationally known as Isthmocele, which gives a better idea of the anatomical defect described. (one)

Isthmocele can be defined as a hypoechoic area within the myometrium of the lower uterine segment, reflecting a disruption of the myometrium at the uterine scar site from a previous caesarean section. The isthmocele was defined as an anechoic defect at least 2.0 mm deep at the scar site (Fig. 1). It was defined as a large defect if the ratio between the thickness of the myometrial residue (MTR) and the thickness of the myometrium adjacent to the defect (MTA) is <0.50 (Fig. 1) (3)



Bij de Vaate et al, defined the isthmocele as an anechoic area at the site of the cesarean section with a depth of at least 1 mm. Isthmoceles can be asymptomatic. However, in many cases, they can lead to several gynecological symptoms, such as abnormal uterine bleeding, dysmenorrhea, chronic pelvic pain, dysmenorrhea, and infertility.

Figure 2 outlines the different shapes of the isthmocele on transvaginal ultrasound, which allows its classification: Triangle, Semicircle, Rectangle, Circle, drop and inclusion cyst. (3)

The objective of this review is to give a general, broad overview of the current literature, describing each aspect of this condition, analyzing in depth its risk factors, diagnosis and medical-surgical management.

PREVALENCE

Cesarean section is one of the most common surgical procedures. However, its percentage has increased dramatically in most developed countries in recent decades, which has given rise to great concern. According to the latest data from 150 countries, caesarean section rates range from 6 to 27.2%.

The World Health Organization (WHO) states that the optimal rate of Cesarean section is around 15%. Cesarean incisions generally heal without consequences, but there is always the possibility of complications.

Recently, the increasing rate of caesarean sections has increased interest given the long-term morbidity of cesarean section defect or

Isthmocele. Moreover, 6% of all ectopic pregnancies have been evidenced in women with at least one previous caesarean section. However, the incidence of isthmocele correlates with the number of previous caesarean sections.

The estimated incidence of Isthmocele is:

–1 in 1688 pregnancies

–1 in 3000 general obstetric population

–1 in 2000 of all previous caesarean sections (González N., J MinInvGynecol; 2017)

The prevalence of isthmocele is difficult to quantify, the reported prevalence in patients with a history of caesarean section ranges from 56% to 84%. Isthmocele can be observed when they are assessed by SHG between 6 and 12 months after the cesarean.

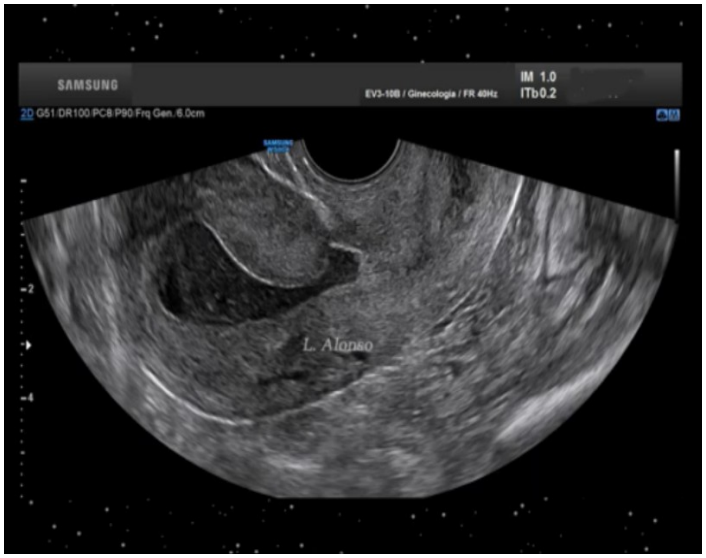
The prevalence varies depending on the detection method, the criteria used to define the isthmocele and the study population. It ranges between 24 and 70% with transvaginal ultrasound, and between 56 and 84% with Sonohysterography (SHG). Different risk factors associated with the presentation of isthmocele have been described, mainly the number of previous caesarean sections, location of the scar, labor before cesarean section, position of the uterus, among others. (4)

RISK FACTORS

The risk factors for the formation of an isthmocele depend on both the surgical technique and the patient.

Factors related to surgical technique.

Very low uterine incisions are reported to be an independent risk factor for the development of isthmocele. A higher prevalence of caesarean scar defects has been observed among patients with a C-section performed during active labor with cervical effacement. Vikhareva Osser et al, described a greater development of isthmocele when the cervical dilation was > 5 cm or the duration of labor greater than 5 hours. In addition, an isthmocele was observed in the upper two-thirds of the cervix in women with elective caesarean sections, while, in the case of caesarean sections performed after cervical dilation, the niche was found in the lower part of the cervical canal.



One explanation for this phenomenon could be that the lower incisions are made through cervical tissue, which contains mucus-producing glands, and could negatively interfere with the wound healing process. Another probable factor is the closure technique, that is, double layer versus single layer closure. These techniques vary between countries and have changed over the years. For example, in some European countries, such as Belgium and the Netherlands, the single hysterotomy closure technique is the most widely performed, while in the United Kingdom, double layer closure is the recommended technique. A review in 2014 by Roberge et al, found no difference in the development of scar defects between the techniques used. (5)

Recent research has shown that the incidence of scar formation in caesarean section scar and niche depth were independent of the hysterotomy closure technique used. In a recent meta-analysis, Di Spiezio Sardo et al, reported that women who underwent single layer closure had a similar incidence of uterine scar defects, as did women who underwent double layer closure. Ceci et al, however, observed that patients with hysterotomy with a single-layer continuous locked suture compared to the interrupted single-layer suture group showed a statistically larger defect area on ultrasound and hysteroscopy evaluation, probably due to an ischemic effect on uterine tissue. The hypothesis could be that the deeper muscle layer

does not close, leading to a disrupted myometrium and the development of an isthmocele. However, due to lack of data, a specific surgical technique for uterine closure cannot yet be recommended. (6)

Another hypothesis proposed is the surgery itself. Surgery is known to lead to the development of adhesions, and many factors can influence this process, including inflammation, tissue ischemia, tissue manipulation, and inadequate hemostasis. The formation of adhesions between the caesarean section scar and the abdominal wall can be a cause of the development of isthmocele. Vervoort et al, hypothesized that retraction of scar tissue could pull the uterine scar towards the abdominal wall, inducing the development of isthmocele. (7.8)

Patient factors

Patient factors may play a role in isthmocele formation and healing process of the caesarean section, due to individual differences. Some studies have observed the association between the development of scar defects and patient factors, such as retroflexed uterus, multiple cesarean incisions, body mass index (BMI) and hypertension, but its mechanism of action remains unclear. (9)

Among factors related to myometrial defects caused by previous caesarean sections, a history of curettage, adenomyosis, IVF, metroplasties, myomectomies, and manual placental extractions are the most comon. (5.10) Probably influences individual genetic predisposition along with other unknown causes.

The above mentioned or some additional factors could be the key to this phenomenon, but additional studies are required to answer this question.

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