

# Tips and Tricks to Revolutionise the Hidden Art of Intra-uterine Surgery

## İntrauterin Cerrahinin Gizli Sanatındaki Gelişimin İp Uçları ve Püf Noktaları

Yehia Osama SHAWKI,<sup>a</sup> Osama Ahmed SHAWKI<sup>a</sup>

Cairo University, Global Medical Academy, 10 Abol Magd Amer St. Heliopolis, Cairo, EGYPT

### ABSTRACT

First and foremost, it must be made clear that hysteroscopy is a form of surgery quite different to any other. Combining the difficulties of operating in a confined space, without any aid or assistants, managing scope and instruments simultaneously all whilst deliberating decisions in ultra speed. You do not have the luxury of assistants as in Laparoscopy; no camera man, additional instruments, nor do you have the time to spend on decision making. Your brain must be pre-programmed to manipulate all possible situations and outcomes subconsciously, freeing you to perform your surgery within the available time. The key to reaching this level is simply experience. You must perform a set number of cases and be exposed to different scenarios which implicitly prepare you for the future. To start with, the most important aspect of a good intra uterine surgeon is the ability to navigate and manoeuvre the scope. It must become second nature to access the uterine cavity and manipulate the scope to reach any designated point. Gaining this skill envelops changing the action from a conscious pyramidal action to an extra-pyramidal subconscious one. The same way we learn to move our arms while walking, drive a car or ride a bike. The scope must become an extension of your arm and its actions become second nature. The road is long and this chapter aims at shortening the course. A compilation of challenges and roadblocks met by all aspiring Hysteroscopic Surgeons, liable to halter their progress and discourage them from pursuing their career in the field.

**Keywords:** Hysteroscopy; intra-uterine surgery; infertility; endoscopy; uterine septum; congenital anomalies; office hysteroscopy; endometrial polyp

### ÖZET

İlk olarak, histeroskopinin diğerlerinden oldukça farklı bir cerrahi yöntem olduğu açıkça belirtilmelidir. Kapalı bir alanda, herhangi bir asistan yardımı almadan operasyon yaparken aynı zamanda hem aletleri ve kamerayı yönetmek hem de hızlı bir şekilde karar vermek gerekmektedir. Laparoskopide olduğu gibi kamerayı yönetecek bir asistan, ek olarak kullanılacak cerrahi aletler veya karar verme aşamasında yeterli zaman bulunmamaktadır. Cerrahi işlemi mevcut süre de bitirebilmek için öncesinde karşılaşılabileceğiniz bütün durumları ve bunların sonuçlarını bilinçaltınızda programlamanız gerekir. Bu seviyeye ulaşmanın anahtarı ise deneyimdir. Gelecek için sizi hazırlayacak yeterli sayıda ve farklı klinik senaryoları olan olguları öncesinde görmüş olmanız gerekmektedir. Başlangıç olarak, iyi bir intra uterin cerrahın en önemli yönü, histeroskopu yönlendirebilme ve manevra yapabilme kabiliyetidir. Uterin kaviteye giriş ve belirlenen herhangi bir noktaya histeroskopu ulaştırmak ikinci önemli noktadır. Bu beceriyi kazanmak bilinçli pramidal bir eylemden bilinçaltı olarak yapılabilen extra pramidal bir eyleme dönüşmektedir. Aynı şekilde yürürken kollarımızı hareket ettirmeyi, araba sürmeyi veya bisiklet sürmeyi öğreniriz. Histeroskop kolumuzun bir uzantısı gibi olmalı ve öyle hareket etmelidir. Derlemenin amacı uzun bir süreç alan bu yolda rotayı kısaltabilmektir. Karşılaşılan zorluklar histeroskopik cerrahların akademik gelişim ve ilerlemelerine engel olabilmektedir.

**Anahtar Kelimeler:** Histerescope; intrauterin cerrahi; infertilite; endoskopi; uterin septum; konjenital anomali; ofis histerescope; endometrial polip

TJRMS 2018;2(1):35-42

Geliş Tarihi/Received: 28.09.2017

Kabul Tarihi/Accepted: 18.12.2017

Yazışma Adresi/Correspondence:

Yehia Osama SHAWKI

Cairo University, Global Medical Academy,  
10 Abol Magd Amer St. Heliopolis, Cairo, EGYPT  
yehiashawki@hotmail.com

Copyright © 2018 by Üreme Tıbbi Cerrahi Eğitim Araştırma ve Uygulama Vakfı

TJRMS 2018;2(1)

## SET-UP & GENERAL CONSIDERATIONS

A systematic review shows that initial set up is crucial to success of the operation; Patient positioning is of utmost importance in hysteroscopy.

## PATIENT POSITION AND OR TABLE MANIPULATION

In cases of acute anteverted uterus, your entry through the cervical canal should be directly vertical, requiring you to lower your hands and have the sheath perpendicular to the patient's body.

This is only made feasible by having the patient's buttocks at the edge of the operating table allowing for hand lowering to negotiate the fixed uterus.

Adjustments of the operating table may also be of use during the procedure. In order to access the AVF uterus, the table must be high enough to allow the surgeon to lower his hands and not be in an awkward position.

Similarly, shifting the head down can also help straighten the axis of the uterus.

## EYES ON THE SCREEN

It is common human nature to have your eyes follow the direction of your commands. When surgeons ask for instruments, their eyes usually fall to the assistants tray, the instrument itself, or the stopcock and channel; through which the instrument will enter.

This is tumultuous to the results of the forthcoming procedure.

The narrow uterine cavity requires constant vigilance to avoid friction and unnecessary shreds which will obscure the view and prevent you from having a crystal clear field.

The remedy is simple, even if difficult to implement. Properly trained accessory staff (Be it an assistant doctor or a scrub nurse) should be aware of all the surgeon's needs. The surgeon's eyes lie steady on the monitor while the assistants introduce the instruments through the sheath.

Seeing as the key to intrauterine surgery success is visibility, this small adjustment is priceless when shifting from the diagnostic to the operative portion of the procedure.

## AVOID MULTIPLE ENTRIES

A famous saying in hysteroscopy is that the first entry is always the best.

Even with the most skilful of hands and application of non-touch technique of entry, the pressure of the distending media causes minute capillaries to rupture. This is not evident during the initial entry as the pressure also stops any bleeding.

However, removal of the scope will allow bleeding and obscure your landmarks for the forthcoming entry.

Continuous in and out motions are also dangerous during operative hysteroscopy.

They increase the risk of gas entry, which in the presence of open vascular channels could be problematic. The risk of air embolism is not large, but proper surgical technique could negate the risk all together.

## VAGINAL DISTENTION

Vaginoscopy has been a controversial topic in recent times.

For any organ to be examined, exposure and visualisation are a necessity. This has not been the case with vaginoscopy, as the introits allows easy escape of fluid and thus the vagina is never distended nor inspected.

This is easily remedied by having an assistant occlude the introits.

The assistant should stand behind the patients flexed, abducted hips and use the thumb and index finger on either side of the labia majora

This prevents escape of fluid and a beautifully distended vagina is achieved, allowing the surgeon to visualise vaginal walls, fornices and the external os clearly.

## CERVICAL CANAL

Negotiating the cervix can be one of the most difficult aspects of hysteroscopy.

A mere 2-3 cm can feel like an uncrossable canyon to those not willing to persevere and commit.

There are several clues which can help you on this path.

Firstly, follow the cervical mucosa. The crypts and glands form a railroad for you to follow towards the internal os.

Secondly, allow time for the distention media to enter the uterus and back flow down, dilating the canal. The tunnel view is seen and easy access can be achieved.

## DIAGNOSTIC PROCEDURES

For most diagnostic procedures, the most important aspect is vision. Ideally, you must avoid friction and shreds to maintain a clean view.

Understanding the simple fact that the sheath is a vertical oval whilst the internal os is a transverse oval enlightens the surgeon on how to enter the cavity seamlessly.

All trainers focus solely on the downwards movement of the hands which employs a view of the anterior wall or the semilunar appearance of the internal os.

This requires an additional plane of motion. A simple rotation will give you a cleaner entry and less shreds.

Additionally you may wish to employ a diagnostic procedure for the proximal fallopian tubes:

## SBT AND MB TEST

The Shawki Bubble Test is an easy and duplicable way to test the function and patency of the proximal salpinx (Figure 1).

The following steps are required to produce the best results:

1. Apply a syringe containing 5cc of air into the outflow channel



FIGURE 1: Demonstrating the Shawki Bubble Test.

2. Close the inflow channel to stop entering fluid

3. Direct the scope towards an ostium, very slowly inject the air

An important means to avoid a sudden rush of gas is to simultaneously include 2 cc of saline in the syringe hindering the progress of the gas

4. Stop to admire the air bubbles produced and slowly inspect if they are suctioned into the tubal ostium.

5. If the progress isn't seen, slowly open the inflow channel and attempt to guide the bubbles into the ostium.

The Methylene Blue Test is similar in steps to the SBT.

The main difference resides in the position of application.

To test both tubal ostia, the surgeon must position the scope cranial to the internal os and slowly begin the injection of concentrated methylene blue or indigo carmine dye.

A functioning tube will cause an arrow of dye to aim directly into the ostium.

As simple as it sounds, the key to a successful excision of any polyp is visualising the base and detecting the plane of cleavage between the mucosa and the pathology (Figure 2).

This may seem easy with fundal polyps or easily accessible polyps (Figure 3).

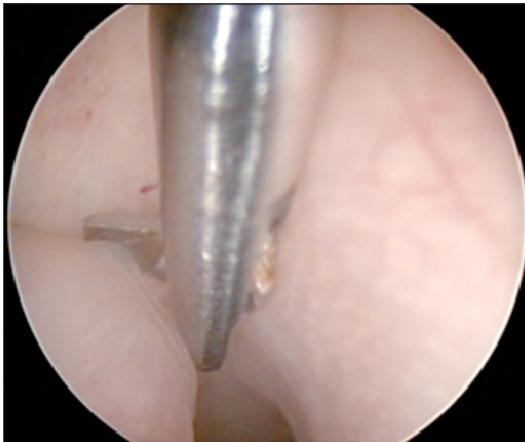


FIGURE 2: Hysteroscopic scissors cutting the base of the polyp.

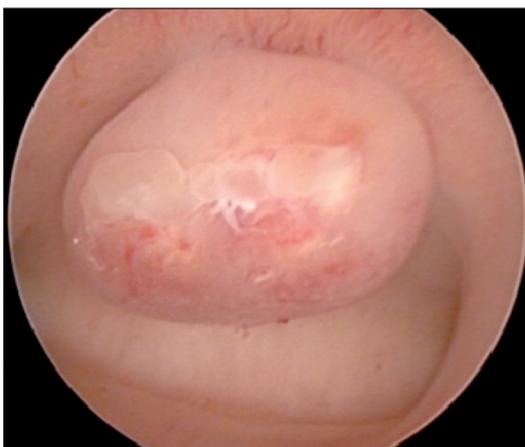


FIGURE 3: Endometrial polyp.

However when it comes to more difficult locations, the starting incision may require a semi-blind approach.

The first cut always provides the plane.

One must analyse the location of the cleavage point and then access it by manoeuvring both scope and scissors (Figure 4).

Endocervical Polyps are more challenging in the sense that their base is more difficult to identify (Figure 5).

The endocervical ridges can disorient the surgeon as to the whereabouts of the base extent. Careful inspection of the circumference of the entire cervical canal solves this issue (Figure 6).

Applying an angled volsellum to occlude the external os can also aid in further cervical distention and better visualisation.

The final point of reference is assessing the use of scissors vs resectoscope in Cervical polyps.

If the base shows extensive vascularity or is too large for the 5fr scissors, Loop resection is a safer and more hemostatic option; as you cannot depend on the pressure of distention media in the cervix due to the obvious leakage.

## SEPTAL METROPLASTY

In every essence of the word, correction of a uterine septum should be a near plastics procedure. It should not simple be a job done procedure. The surgeon must aim to restore the cavity to as close to a physiological state as possible.

The keys to achieving this is analysing the perfect site to incise the septum and the plane you wish to follow.

A few tricks to achieve this is:

1. In panoramic view, estimate the site exactly bisecting the septum (Figure 7).

2. Near the base of the septum, visualise the tubal ostium, and trace the line midway through the septum's anteroposterior thickness which cuts the tubal plane perpendicularly (Figure 8).

To utilise the resectoscope, there are a few tips which can ascend your practice to the next level:

1. Slightly angle the Collin's knife loop before assembling the resectoscope to allow access into the cornue

2. Knowledge of the size of the resectoscope will provide you with the dilatation required to insert the resectoscope. Storz resectoscopes come in 22 and 26 fr. Hegar dilators are calibrated in millimetres. The conversion is simple enough: 1 mm= 3fr. Using the 26 fr resectoscope requires dilation up to 8.5 or 9 Hegar. If the cervix is tough or shows rebound elasticity, it is more prudent to dilate higher (Figure 9-12).

Always use the tubal ostia to mark your plane.

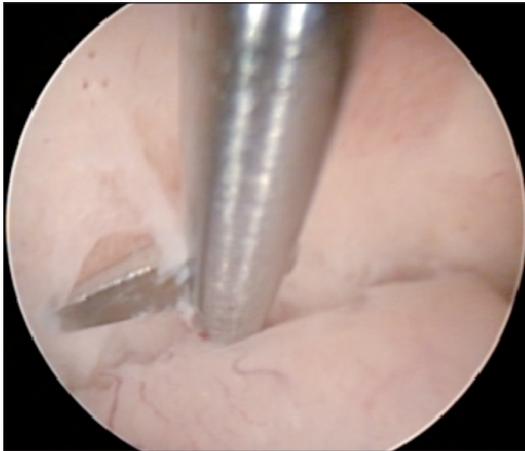


FIGURE 4: Excision of polyp from base.



FIGURE 5: Endocervical polyp.

## SUB-MUCOUS FIBROID

Fibroids can be amongst the most enjoyable procedures for intra-uterine surgeons. Their difficulty

lies within the plan of resection. Tactics have to be formulated on the spot once the cavity is entered. The following checklist should be met:

1. Assess the extent of the base; at the edge of the myoma base will be the easiest place to visualise normal myometrium. Following this plan will ensure complete resection of the myoma (Figure 13).
2. Manipulating pressure will allow descent of the intramyometrial portion of the fibroid (Figure 14)
3. Coagulation of bleeders will prevent any blurriness and loss of the viewing field
4. The closer you get to the base, the larger the vascular channels and thus absorption will increase. During this phase of the procedure the surgeon must aim to finish as quickly as possible (Figure 15)

At first, all surgeons tend to take very superficial cuts. This prolongs operative time and may lead to inability to complete the procedure.

The best method to optimise resection of chips is to combine movement of the entire scope and the working element simultaneously. The depth is achieved by the gross movement of the scope. You must accept that there will be temporary loss of visibility as the myopia chip is pressed against the lens, that is when movement of the working element comes in and as it is pulled back the field becomes clear and the end of the resected piece is reached.

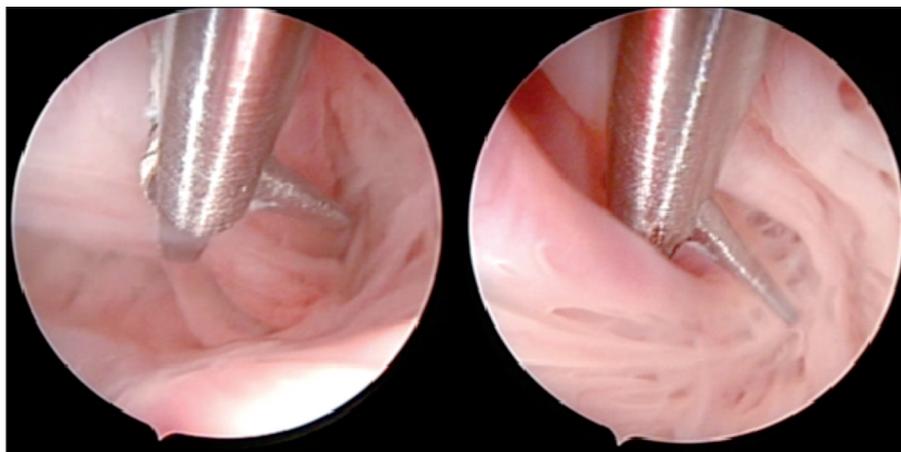


FIGURE 6: Endocervical polyp base excision.



FIGURE 7: Uterine septum.



FIGURE 8: Uterine septum release by hysteroscopic scissors.

Stopping prematurely means the chip is still connected to the fibroid and will hinder your progress, so always ensure that a complete cut is taken.

Push the chip away to restore a panoramic view and progress to the next chip

Your cut off limit is the appearance of myometrium which differs from fibroid tissue by:

Pinkish colour

No whorly appearance

## TCRE

The minimally invasive alternative to hysterectomy comes with its fair share of difficulty.

The main problem arises due to loss of orientation as endometrial chips accumulate and cloud the view.

To combat this, you need to provide landmarks for yourself;

1. Choose a starting point, usually a transverse line at the fundus, or a lateral vertical line extending from below the tubal ostium to the internal os.

2. Stop at the level of the white basal layer and shift to the next pink endometrial strip until you are left with a completely white cavity

3. Any remaining endometrial patches can be coagulated by the roller ball insert picture here



FIGURE 9: Calibration of depth using tubal ostium as reference point.



FIGURE 10: Monopolar resectoscope release of uterine septum.

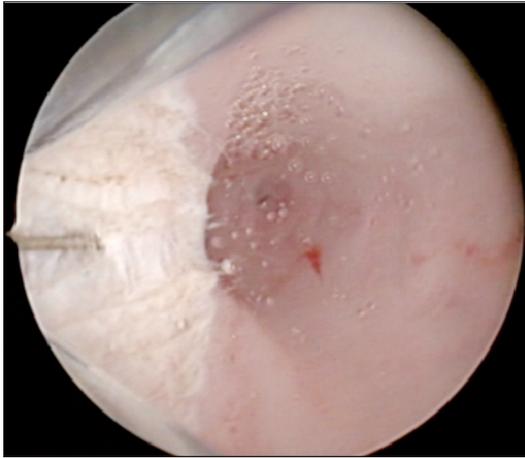


FIGURE 11: Using tubal ostium to calibrate level.

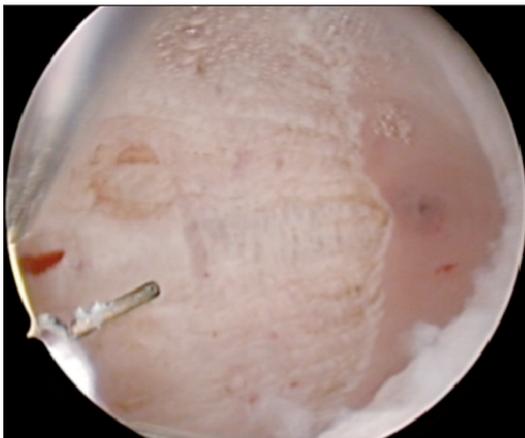


FIGURE 12: Complete correction of uterine septum by resectoscope.

## INTRA-UTERINE ADHESIONS

Grades of Asherman syndrome are paramount to the type of surgery to be performed (Figure 16).

The key to a successful surgery is a combination of HSG and Ultrasound to assess the extent of adhesions and the direction of the cavity.

Always follow the normal direction of the cavity and only use your scissors when necessary

Singular strands of adhesions are easily identified and cut, the true difficulty arises when half the cavity or more is obliterated (Figure 17).

For a hemi-cavity, the trick is to imagine the normal cavity by visualising the present tubal ostium and cut in the plane required to reach the invisible one.

For completely obliterated cavities with adhesions at the level of the internal os, use any clue as to the direction of the succeeding cavity:

1. Direction of Cervical mucosa
2. Pre-operative & Intra-operative ultrasound
3. Yielding of adhesions when cut and pushed with scissors
4. Identification of the adhesions and differentiating them from the firmer, pink, fasciculated muscle fibres.



FIGURE 13: Type I sub mucous fibroid .

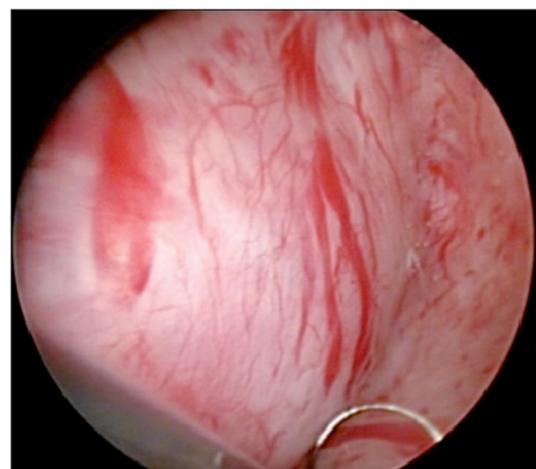


FIGURE 14: Loop resection of sub mucous fibroid.

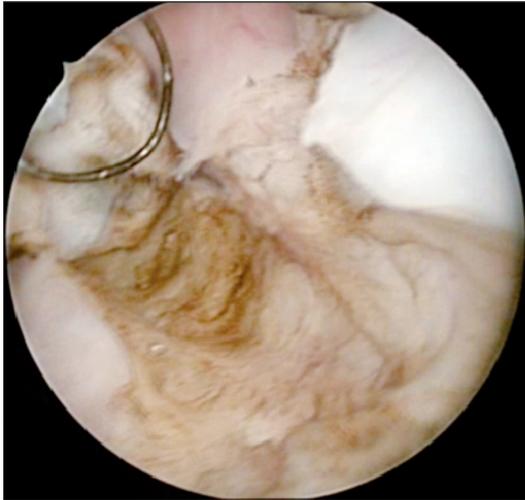


FIGURE 15: Myometrial appearance at base indicates endpoint.

### ADDITIONAL THOUGHTS

Hysteroscopy relies on your ability to differentiate the functions of each hand and work seamlessly and simultaneously together.

Try to remain calm and have very carefully structured and deliberate movements, no rash nor sudden movements.

Accept that this is a very fine skill and requires extensive practice and a case load far underestimated by most studies to achieve competence and later on.. Excellence

Determination and Perseverance are your keys to success and the fuel to the engine.

All you need is the proper guidance and experience with several cases.

The future is bright for aspiring Intra-uterine surgeons.

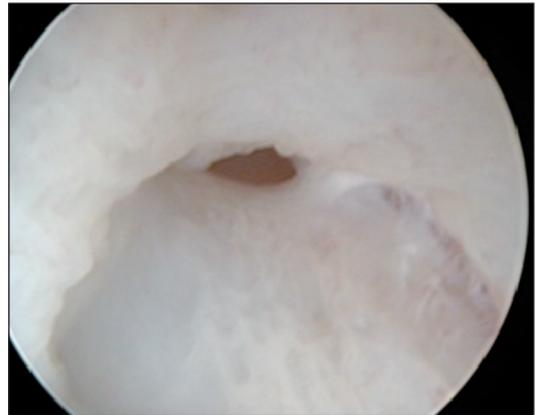


FIGURE 16: Intra uterine adhesions.



FIGURE 17: Dissection of adhesions by scissors.