

## Outcomes of Hysteroscopic Myomectomy in Ain Shams University Maternity Hospital – a retrospective analysis

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**Abstract: Objective:** The aim of the current work is to study the outcomes of hysteroscopic myomectomy at Early Cancer Detection Unit at Ain Shams University Maternity Hospital over a 12-year period between 1996 and 2007. **Patients and Methods:** The current study is a retrospective analysis of outcomes of hysteroscopic myomectomy procedures performed at Early Cancer Detection Unit at Ain Shams University Maternity Hospital over a 12-year period between 1996 and 2007. Data were retrieved from patients' case records available at the Early Cancer Detection Unit. Operative procedure details and notes were obtained from patients' case records. Patients were contacted directly, through mail and/or phone calls to complete follow-up data, procedure outcomes as well as missing data. **Results:** A total of 78 women, who underwent hysteroscopic myomectomy during the period between 1996 and 2007, were included in the study. Of the included 78 women, 34 (43.59%) had menorrhagia, 34 (43.59%) had primary infertility, 8 (10.26%) had secondary infertility, 1 (1.28%) had recurrent miscarriage and 1 (1.28%) had amenorrhea. Uterine perforation occurred in 2 (2.57%) cases; both were managed conservatively, with no need for exploration. Cervical lacerations occurred in 2 (2.57%) cases. Excessive bleeding (> 500 ml estimated blood loss) occurred in 1 (1.28%) case. Of the included 78 women, only 25 (32.05%) were accessible for follow-up. Of the accessible 25 women, 10 (40%) had hysteroscopic myomectomy performed for menorrhagia. Of the 10 women who had menorrhagia, 9 (90%) had it resolved. Of the accessible 25 women, 15 (60%) had hysteroscopic myomectomy performed for infertility; of them 7 (46.67%) women got pregnant, while 8 (53.33%) remained infertile. Of the 7 women who got pregnant, 2 had term delivery, 2 had preterm delivery, while 3 had first trimester spontaneous abortion. **Conclusion:** In conclusion, hysteroscopic myomectomy for either abnormal uterine bleeding or infertility seems to have promising success rates with much low complications rates, and should be offered to all women who have the diagnosis of symptomatic submucous myoma and choose to preserve their fertility as the first line of surgical treatment.

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### 1. Introduction

Submucous myomas have been implicated in the etiology of menorrhagia, irregular vaginal bleeding, infertility, failed *in vitro* fertilization and embryo transfer (IVF/ET) outcomes and recurrent miscarriage [1]. Submucous myomas are classified according to the European Society of Gynecologic Endoscopic Classification into: type 0 (pedunculated), type I (sessile, with an intramural part of < 50% of its size), type II (sessile, with an intramural part of ≥ 50% of its size) [2]. Options for management of symptomatic submucous myomas include medical treatment (including hemostatics and GnRH agonists) and surgical removal (either by conventional open myomectomy, laparoscopically or hysteroscopically). Hemostatic drugs are often effective for controlling menorrhagia in relatively small myomas, but are usually of much less benefit in large myomas and for long-term therapy. GnRH agonists have been restricted to be used as a

preoperative preparation for minimizing the size and blood supply of the myoma prior to myomectomy to allow for complete resection and decrease intraoperative blood loss, but not for a radical treatment of symptomatic myomas [3-4]. The conventional surgical management, open myomectomy, is associated with many drawbacks including intraoperative complications (intraoperative blood loss and bowel or urinary tract injuries), postoperative intraperitoneal adhesions, as well as the risks in future pregnancies associated with opening of the uterine cavity [5]. Hysteroscopic removal of submucous myomas has been developed over the last 2 decades, as an alternative minimally-invasive approach compared to the conventional open myomectomy [6]. Hysteroscopic approach has its noticeable benefit in having a significantly lower impact on future fertility when compared to the conventional open myomectomy. It has been reported that even in myomas, with wide bases that resulted in

ablation of a large surface area, the reproductive benefit is maintained [7]. Moreover, hysteroscopic approach is known to be associated with much lower complication and morbidity rates when compared to open myomectomy [5]. The aim of the current work was to retrospectively revise the outcomes of a 12-year experience of hysteroscopic myomectomy at the Early Cancer Detection Unit at Ain Shams University Maternity Hospital.

## 2. Patients and Methods

The current study is a retrospective analysis of outcomes of hysteroscopic myomectomy procedures performed at Early Cancer Detection Unit at Ain Shams University Maternity Hospital over a 12-year period between 1996 and 2007. Data were retrieved from patients' case records available at the Early Cancer Detection Unit. Operative procedure details and notes were obtained from patients' case records. Patients were contacted directly, through mail and/or phone calls to complete follow-up data, procedure outcomes as well as missing data. The surgeons were one of the three authors entitled above with supervision of all details of the technique.

### Procedure of hysteroscopic myomectomy:

#### Instrumentation:

- Hamou endomat infusion [model 26 33 10 20] at an infusion rate of 300 ml/min, pressure of 120 mm Hg and suction 0.2.
- Fibroptic light: Xenon nova [model 20 13 15 20] (Karl Storz®, Tuttlingen, Germany).
- Hysteroscope: rigid telescope, 30°, Hamou II hysteroscopy [model 25157 BT] Karl (Karl Storz®, Tuttlingen, Germany), with a Hopkins II lens system. The sheath had an outer diameter of 5 mm, with an operative channel for instruments [model 26 163 V] with 2.9 mm rod lens.
- Camera: Karl Storz® endoscope, telecom DXpal [model 20 23 20 20].
- Semi-flexible instruments: scissors, grasping forceps, unipolar and bipolar electrode.
- Monitor: TVCR Goldstar [model No. KKV-9050, 50/60 Hz, AC, 100-270 V] to display the videotape and hysteroscopic procedure events.
- Collin's speculum, tenaculum and uterine sound were ready to be used when needed.

#### Hysteroscopy Procedure:

The patient was placed in a dorsal lithotomy position. The thighs were positioned at 90° angle to the pelvis and perineum was positioned just past the edge of the table to create enough space for the surgeon to manipulate the hysteroscope. Vulva, perineum and vagina were prepared with a non-irritating Povidone iodine solution (Bedatine® antiseptic solution). The hysteroscope was introduced into the cervical canal either via *conventional*

*technique* (where vaginal speculum was inserted and the anterior lip of the cervix was grasped by a single-toothed vulsellum) or via *vaginoscopic technique* (where no speculum was inserted, the tip of the hysteroscope was positioned on vaginal introitus, labia were gently separated by fingers of the other hand, vagina was distended with saline, the hysteroscope was driven to the posterior fornix to visualize the portio and slowly withdrawn backwards to identify the external cervical os, then the hysteroscope is gently introduced through the cervical canal to the internal os). Saline was the standard distension medium used. Glycine was used as distension medium in cases where unipolar electrosurgery was needed, while saline was used when bipolar electrosurgery was used. Once uterine cavity was entered, it was symmetrically explored by rotating the fore-oblique scope in order to identify any abnormalities in the uterine walls and to visualize both tubal ostiae.

#### Hysteroscopic Myomectomy Procedure:

Via a blended current, the resectoscope was used after application of a wire loop electrode. Glycine was used as a distension medium. Unipolar electricity was used for tissue morcellation commenced with the loop of the resectoscope being repeatedly drawn towards the surgeon. Hemostasis was generally acceptable. In a few cases, intrauterine Foley's catheter filled with 30-50 ml of normal saline was inserted postoperatively for 12-24 hours to achieve hemostasis. Prophylactic antibiotics were given in such cases in the form of ampicillin/sulbactam 1.5 g/12 hours for 3 days.

## 3. Results

A total of 78 women, who underwent hysteroscopic myomectomy during the period between 1996 and 2007, were included in the study. The mean age of included women was  $35.2 \pm 5.9$  years (range: 21 – 49 years). The median parity was 1 (range: 0 – 5). The mean duration of illness was  $11.4 \pm 7.9$  months (range: 1 – 30 months). Of the included 78 women, 34 (43.59%) had menorrhagia, 42 (54.84%) had infertility and 2 (2.57%) had recurrent miscarriage. Of the included 78 women, the size of myoma was  $\leq 3$  cm in 27 (34.62%) women, 4-5 cm in 38 (48.72%) women and  $> 5$  cm in 13 (16.66%) women. Conventional technique was performed in 39 (50%) women, while vaginoscopic technique was performed in 39 (50%) women. General anesthesia was needed in 75 (96.15%) women, paracervical block was adequate in 2 (2.57%) cases while no anesthesia was needed in 1 (1.28%) woman. Unipolar electrosurgery was used in 70 (89.74%) cases while bipolar surgery was needed in 8 (10.26%) cases. Loop electrode was used in 74 (94.87%) women,

knife electrode in 3 (3.85%) women, and needle electrode was used in 1 (1.28%) woman. The distension medium used was glycine in 70 (89.74%) cases and saline in 8 (10.28%) cases. Laparoscopic assistance was used in 2 (2.57%) cases. The mean operative time was  $33.8 \pm 22.9$  min (range: 20 – 120 min). The procedure passed uncomplicated in 73 (93.58%) cases. Uterine perforation occurred in 2 (2.57%) cases; both were managed conservatively, with no need for exploration. Cervical lacerations occurred in 2 (2.57%) cases; both due to grasping the anterior lip of the cervix with volsellum in the conventional technique. Excessive bleeding (> 500 ml estimated blood loss) occurred in 1 (1.28%) case. No blood transfusion was needed. Intrauterine Foley's catheter filled to 50 ml was inserted and hemostasis was achieved.

**Table-1: Characteristics of Women who underwent Hysteroscopic Myomectomy**

<b>Age (Years)</b>	
Range:	21 – 49
Mean $\pm$ SD:	$35.2 \pm 5.9$
<b>Parity</b>	
Range:	0 – 5
Median (IQR):	1 (1 – 3)
<b>Duration of Illness (months)</b>	
Range:	1 – 30
Mean $\pm$ SD:	$11.4 \pm 7.9$
<b>Presenting Complaint [No. (%)]</b>	
Menorrhagia	34 (43.59%)
Infertility	42 (54.84%)
Recurrent miscarriage	2 (1.57%)
<b>Hysteroscopy Technique [No. (%)]</b>	
Conventional:	39 (50%)
Vaginoscopic:	39 (50%)
<b>Need for Anesthesia [No. (%)]</b>	
No:	1 (1.28%)
General:	75 (96.15%)
Paracervical block:	2 (2.57%)
<b>Type of Electricity [No. (%)]</b>	
Unipolar:	70 (89.74%)
Bipolar:	8 (10.26%)
<b>Electrode [No. (%)]</b>	
Knife:	3 (3.85%)
Loop:	74 (94.87%)
Needle:	1 (1.28%)
<b>Distension Medium [No. (%)]</b>	
CO <sub>2</sub> :	0 (0%)
Glycine:	70 (89.74%)
Saline:	8 (10.26%)
<b>Size of Myoma [No. (%)]</b>	
$\leq 3$ cm:	27 (34.61%)
4 – 5 cm:	38 (48.72%)
$> 5$ cm:	13 (16.67%)
<b>Laparoscopic Assistance [No. (%)]:</b>	2 (2.57%)
<b>Operative Time (min)</b>	
Range:	20 – 120
Mean $\pm$ SD:	$33.8 \pm 22.9$
<b>Complications [No. (%)]</b>	
Perforation:	2 (2.57%)
Cervical lacerations:	2 (2.57%)
Bleeding:	1 (1.28%)

Of the included 78 women, only 25 (32.05%) were accessible for follow-up; of them 23 cases responded to phone calls while 2 responded to mail. The remaining 53 (67.95%) women were inaccessible either due to lack of channel of contact or lack of response to mail or phone calls.

Of the accessible 25 women, 10 (40%) had hysteroscopic myomectomy performed for menorrhagia. Of the 10 women who had menorrhagia, 9 (90%) had it resolved. Of the accessible 25 women, 15 (60%) had hysteroscopic myomectomy performed for infertility; of them 7 (46.67%) women got pregnant, while 8 (53.33%) remained infertile. Of the 7 women who got pregnant, 2 had term delivery, 2 had preterm delivery, while 3 had first trimester spontaneous abortion (Table-2).

**Table-2: Follow-up of Women who underwent Hysteroscopic Myomectomy**

<b>Follow-up of Women [No. (%)]</b>	
<b>Accessible</b>	25/78 (30.05%)
<b>Inaccessible</b>	53/78 (76.95%)
Lack of channel of contact	25/53 (47.17%)
Lack of response to mail	4/53 (7.54%)
Lack of response to phone calls:	24/53 (45.29%)
<b>Accessible Women [No. (%)]</b>	
<b>Menorrhagia:</b>	
Resolved:	10/25 (40%)
Not resolved:	9/10 (90%)
1/10 (10%)	
<b>Infertility:</b>	
Remained infertile	15/25 (60%)
Got pregnant:	8/15 (53.33%)
Term delivery	7/15 (46.67%)
Preterm delivery	2/7 (28.57%)
Abortion	2/7 (28.57%)
3/7 (42.86%)	

#### 4. Discussion:

Hysteroscopic myomectomy is considered the first line fertility-preservative surgical therapy for management of symptomatic submucous myomas [8]. Yet, insufficient evidence exists as regard to selection criteria, optimal surgical technique, long-term outcomes [9]. In spite of the relatively low proportion of accessible women for follow-up, the results of the current retrospective analysis of a total of 78 women who underwent hysteroscopic myomectomy over a 12-year period in the Early Cancer Detection Unit at Ain Shams University Maternity Hospital is obviously promising. The size of myomata removed was  $\leq 3$  cm in 34.61% of cases, and was  $> 3$  cm in 65.39% of cases. The recurrence rate of menorrhagia was 10%. The pregnancy rate in women who had infertility was 46.67%, of them 28.57% had term deliveries, 28.57% had preterm deliveries and 42.86% had spontaneous abortion. The overall complications rate is relatively low (6.42%) including perforation (2.57%), cervical lacerations (2.57%) and excessive bleeding (1.28%).

Table-3 summarizes the outcomes of relevant studies on hysteroscopic myomectomy in comparison to the current study. Procedure-related complications were nullified when bipolar electrosurgery and saline as a distension medium were used<sup>[10]</sup>. This enforces the opinion that bipolar electrosurgery is associated with lower risk of perforation and excessive bleeding. The bipolar electrosurgery, however, seems to be associated with lower resolution and higher recurrence rates. In the study conducted by Markis *et al.* who used bipolar electrosurgery, the resolution rate of menorrhagia was only 62.5%<sup>[10]</sup>. General anesthesia was preferable in most studies. The cause was probably a better patient compliance<sup>[11]</sup>. Laparoscopic assistance was needed in 2.5% of cases in the current study. Although extensively and, sometimes, routinely, used in some studies<sup>[12]</sup>, it has been shown not to significantly decrease the incidence of intraoperative complications. Our practice is not to routinely use laparoscopic assistance in hysteroscopic myomectomy. An important factor in decreasing operative time and intraoperative bleeding is the proper selection of cases. Polena *et al.* advised routine transvaginal assessment of the pelvis

preoperatively for measuring no. and size of myomas, intramural extension, distance-to-serosa and presence of contiguous myomas<sup>[2]</sup>. They considered hysteroscopic myomectomy is better avoided if the myoma exceeds 5 cm in size or when the distance-to-serosa is less than 5 mm. They also stated that operative time should not exceed 45 minutes and that the infusion pressure should not be greater than 80 mm Hg<sup>[2]</sup>.

In women who had hysteroscopic myomectomy performed for improving reproductive outcome, the pregnancy rates ranged between 42.2% and 42.7%. The results of the study conducted by Polena *et al.* was extremely low (a pregnancy rate of 20%)<sup>[2]</sup>. The follow-up period in this study was for only 3 months postoperatively, making that figure misleading. On the other hand, results of the study conducted by Shokier was outstandingly high (72.4%). Moreover, all women who got pregnant in the latter study delivered a viable neonate (abortion rate was 0%)<sup>[13]</sup>. This relatively high pregnancy rate may be explained by the setting where the study was performed (University Tertiary Infertility Center), in addition to proper selection of patients (in whom submucous myoma was the sole cause of infertility).

**Table-3: Summary of Outcomes of Relevant Studies on Hysteroscopic Myomectomy**

Presenting Complaint	Study	Unipolar/ Bipolar	Distension Medium	Complications	Outcome
Menorrhagia	Markis et al., 2007 (n=32) <sup>[10]</sup>	Bipolar	Saline	No	62.5% resolution
	Polena et al., 2007 (n=200) <sup>[2]</sup>	Bipolar	Saline	No	98% resolution
	The current study (n=11)	Unipolar Bipolar	Glycine Saline	6.42% (perforation, lacerations and bleeding)	90% resolution
Infertility	Bernard et al., 2000 (n=31) <sup>[12]</sup>	Bipolar	Saline	6.51% (perforation and bleeding)	45.2% got pregnant
	Shokier, 2005 (n=29) <sup>[13]</sup>	Bipolar	Saline	No	72.4% got pregnant (62% term, 38% preterm)
	Markis et al., 2007 (n=56) <sup>[10]</sup>	Bipolar	Saline	No	42.4% got pregnant (56% term, 8% preterm, 36% abortion)
	Polena et al., 2007 (n=11) <sup>[2]</sup>	Bipolar	Saline	No	20% got pregnant (100% term)
	The current study (n=15)	Unipolar Bipolar	Glycine Saline	6.42% (perforation, lacerations and bleeding)	47% got pregnant (28.5% term, 28.5% preterm, 43% abortion)

In conclusion, hysteroscopic myomectomy for either abnormal uterine bleeding or infertility seems to have promising success rates with much low complications rates. All women who have the diagnosis of symptomatic submucous myoma and choose to preserve fertility should be offered

hysteroscopic approach as the first line of surgical treatment with comparable success rates and much lower complications and morbidity rates when compared to the conventional open approach.

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