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Program/*Programm*

Petek, 14. januarja, 2005/Friday, January 14th, 2005

8.30 - 12.00 Registracija/*Registration*

Prva sekcija/*First Session*

Moderatorja/Chairmen: Y. Van Belle, M. Reljič

9.30 - 9.45	Pozdravni nagovor/Opening and welcome.
9.45 - 10.15	**Y. Van Belle:** Modern hysteroscopy - possibilities, limits and challenges.
10.15 - 10.30	**B. Žegura:** Our experience with outpatient hysteroscopy.
10.30 - 11.00	**M. H. Emanuel:** Long-term results of hysteroscopic myomectomy, a 10 year survey of risk-factors for recurrence.
11.00 - 11.30	**M. H. Emanuel:** Hysteroscopic morcellation, a new technique to remove endometrial polyps and submucous myomas.
11.30 - 11.45	**X. Liebold:** Transcervical resection in saline.
11.45 - 12.00	Diskusija/*Discussion.*
12.00 - 12.30	Odmor/*Break*

Druga sekcija/Second Session

Moderatorja/Chairmen: M.H. Emanuel, M. Ribič-Pucelj

12.30 – 13.00	**M. Ribič-Pucelj:** *Which uterine anomaly should be treated?*
13.00 – 13.30	**T. Tomaževič:** *Does small uterine septum really behave benignly?*
13.30 – 14.00	**M. Reljič:** *Reproductive outcome before and after hysteroscopic metroplasty in women with septate uterus.*
14.00 – 14.15	Diskusija/*Discusion.*
14.30	Svečan zaključek simpozija s kosilom in kulturnim programom v hotelu Habakuk/ *Lunch and cultural program at Habakuk hotel.*

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Welcome message

I wish to express a very warm welcome to everyone attending this, our first symposium with international participation on the topic of diagnostic and therapeutic perspectives of hysteroscopy.

We all are grateful and would like to express our thanks to all invited speakers who came to Maribor to share your precious experience in hysteroscopy with us.

The local organising committee of University Hospital Maribor has made wonderful arrangements for all of us to experience true hospitality and obtain a lot of new knowledge.

Our program is outstanding and I hope that everyone will learn from the sessions, incorporate new learnings into their thinking and practice and benefit from the efforts of our organising committee lead by Branka Žegura, MD, MSc. She and her colleagues have put together a program which promises to encompass the spectrum of current state of the art in diagnostic and therapeutic hysteroscopy, and cross the boundaries of specific modality oriented hysteroscopic procedures.

I am optimistic that this program will both intrigue you and meet your educational expectations.

No matter from where you come I hope you will find new knowledge, new friendships and new collaborations which will assist in dispelling inequities and delivering better care to our patients through hysteroscopic technique.

Since the last year, Maribor has also had a Medical faculty. It is a great honor and challenge for us to provide our students with the best knowledge possible, including practical skills in different fields of gynecological practice. And as we all are aware that hysteroscopy is a cornerstone in the management of variety of gynecological disorders, such meetings will assist in delivering as much experience as possible by leaders in the field to our students.

I hope you will feel at home here and find some time to relax and enjoy the attractions of our beautiful city, which has just celebrated the 750 year anniversary of being mentioned in written documents.

Wishing you a warm welcome!

Ass. Prof. Iztok Takač, MD, PhD
President of the
Scientific Committee
Symposium with international participation »Diagnostic and therapeutic perspectives of hysteroscopy«
Gynecology and Perinatology Service
University Hospital Maribor
Slovenia

Kazalo

MODERN HYSTEROSCOPY

Yves R. M. Van Belle

From the very first attempts at hysteroscopic diagnosis and treatment, starting with the examination by Commander Pantaleoni in 1869, it was obvious that the inspection of the uterine cavity was not a simple technique. Problems with light transmission, bleeding from trauma to the very fragile endometrium and the inability to distend the organ properly because the virtual uterine cavity is surrounded by a thick muscular wall, slowed the development of hysteroscopy. Physicians - convinced of the value of hysteroscopy – had to focus on improving technical aspect and reducing instrument-related problems. Without ignoring the tremendous efforts made by pioneers of this technique, we have to acknowledge the fact that it was only in the last decennia that gynaecologists, scientists and engineers have joined forces to develop instruments as well as electronic and optical devices that permit the diagnosis and treatment of intra-uterine pathology through endoscopy, using a safe, atraumatic and minimally invasive technique.

These efforts led to the manufacturing of small but **high-performance instruments**, with a diameter that has been reduced to 1/3 or even less of the original size. Optics underwent the same process of "miniaturization", thanks to physical adjustments. The use of these instruments enables the physician to perform intra-uterine diagnostic procedures on an out-patient basis and without any form of anaesthesia and gives the surgeon the possibility to significantly reduce the need for dilation of the cervical canal. This advantage is most appreciated in the case of nulliparous women where traumatic lacerations of the cervix could endanger the outcome of a subsequent pregnancy and postmenopausal women where these traumata can provoke major bleeding.

Furthermore, the endoscopic approach has, compared with blind intra-uterine manipulations, the advantage of selective treatment of the lesions without any risk of damage to the

surrounding endometrium. This is a crucial point, for instance, in the treatment of infertile patients where it is of utmost importance to preserve maximal chances for normal implantation and development of the – so desired – pregnancy. Since the number of patients with infertility related to intra-uterine pathology is constantly growing due to the fact that more and more couples are postponing a first pregnancy until an age where a lot of other goals in life are achieved, the importance of this minimally invasive nature of endoscopic uterine surgery should not be underestimated. The same goes for the elderly, another growing group of people already mentioned. Indeed, with life expectation prolonging constantly in our industrialized countries, there will be more and more postmenopausal women who need minimally invasive treatment for intra-uterine lesions. It is clear that all women in addition to these groups can also benefit from a surgery that is as minimally invasive as possible.

Another striking (r)evolution, closely linked to the basic idea of minimally invasive surgery, has been the improvement of **image** quality, despite the reduction of the size of optics and cameras. The combination of the advantages of optical fibres and rod lenses, together with digital processing of the images, provides the surgeon with an ideal visual field. This enables us to integrate hysteroscopy in first-line diagnostic and therapeutic procedures for intra-uterine pathology. The possibilities offered through archiving, multiplication and transmission of these images through multimedia channels completes the broad picture of what modern medicine should be.

A third topic that has dominated this entire period of research has been continuous concern about the improvement of **safety measures** during intra-uterine procedures. Indeed, one of the major barriers to general acceptance of diagnostic hysteroscopy was caused by certain cases involving lethal complications due to the use of inadequate CO2 insufflation equipment. Based on experimental findings on the influence of CO2 gas on the cardiopulmonary system, purpose-designed hysteroflators that allow safe administration of this gas have been

developed. When using saline fluid as a distension medium, the equipment consists only of a pressure cuff and the risks are equally low. Where intra-uterine surgery is concerned, we have to be aware of the fact that, although the size of the instruments has been reduced significantly, we are still dealing with two powerful sources: fluid (for distension of the cavity) and energy (be it classical HF-current, laser or any other type of energy that destructs or resects tissue).

Regarding the first source, it should be stressed that the risk of "fluid-overload" or TUR (Trans Urethral Resection) syndrome during intra-uterine surgery is much greater than during the TUR procedures from where the original name came. This syndrome consists of excessive intravascular resorption of distension fluid, causing cardiopulmonary problems and even – in the case of electrolyte-free solutions – dilutional hyponatremia with eventually cerebral oedema and lethal complications. Due to the necessity of an intra-uterine pressure to distend the cavity of the womb against the forces of a thick muscular wall and the presence of important venous blood vessels in the myometrium, resorption of fluid is an important hazard in intra-uterine surgery. To counter these risks, a combination of mechanical and electronic devices have been incorporated in pump systems, thus enabling an accurate measurement of the amount of fluid absorbed at any time of the procedure. Even more sophisticated systems allow for display of this fluid deficit on the monitor, in order to give the surgeon the possibility of matching the residual operation time to the critical level of resorption where the procedure should be aborted.

The basics and hazards of high frequency monopolar current, which is most frequently used in intra-uterine surgery as well as in classical surgery, should be know by everyone who is performing hysteroscopic surgery. The same safety measures as in conventional surgery (e.g. correct application of neutral electrode, avoid patients skin contact with any item,…) are mandatory. The fact that the high-tech features of the so-called 'intelligent' HF-systems (which adapt the intensity of the outgoing current to the resistance of the tissue) allow a constant use of minimal power does not absolve anybody

from the obligation of honouring the safety first principle. The same goes, of course, for any other form intra-uterine treatment.
As a result of the above mentioned developments, the hysteroscopic procedure itself has been improved considerably. The use of small instruments with outstanding optical features allows us to apply the **atraumatic insertion technique**.
Introducing the small hysteroscope under direct visual control through the cervical canal that is dilated only by the distension medium, makes it possible to obtain a perfect view of the endocervix and uterine cavity without any form of anaesthesia or instrumental manipulation. So, nowadays diagnostic hysteroscopy has become a simple, safe and reliable technique that, together with clinical examination and vaginal sonography, should be a first-line diagnostic procedure in the gynaecological office to differentiate normal from abnormal cervical or intra-uterine findings.

Furthermore, the **advantages of minimally invasive intra-uterine surgery**, using high performing instruments in a safe way and under perfect visual control are obvious, in comparison to the - classical or laparoscopic – radical solutions. First of all the hysterocopic intervention takes unquestionably less time to perform. This, of course, has also implications for the anaesthesia. Both peri- and postoperative complications are, statistically speaking, far less common in this kind of surgery and there is significantly less need for supplementary medication, particularly antibiotics and analgesics during the post-operative period. These characteristics make intra-uterine surgery perfectly suitable for a "one day clinic" treatment, with all the advantages that this involves The organ-saving effect also has important implications for the woman's psychological well-being. She retains a much deeper sense of her own femininity, which in turn might have a beneficial effect on her sexuality. The flipside of the coin, however, is that there is obviously a greater risk of disorders recurring if the uterus is left in situ. But in these instances, repeat treatment is appropriate and patients are usually willing to undergo this second

intervention in view of their generally favourable experience of the initial endoscopic intervention.
Endoscopic intra-uterine interventions also have less of a socio-economic impact on patients than conventional surgery since they enable patients to resume their domestic and professional activities more quickly. For the gynaecologist it is clear that this kind of surgery, reducing the operating theatre time and other costs in a substantial way and needing only minimal assistance of personnel, offers various advantages.

Rationale for the ESGE course: Comparing the remarkable progression of hysteroscopic techniques and instruments with the poor spread of this procedure in daily practice, we have to admit that there is still a long way to go. The first step along the road is, of course, a thorough analysis of the reasons for this contradiction. First of all, although this technique is now very well defined, it still is, in general, not part of the conventional medical training of the gynaecologist. This is where the ESGE, as a society, has taken responsibility to offer these teaching facilities to each member. During this course experienced endoscopists will fully share their knowledge with inexperienced colleagues and help them to acquire the necessary skills to use these high-performance instruments in a minimally invasive way.
In addition to the lack of teaching, the need to purchase endoscopic equipment often represents another important additional cost for the starting gynaecologist compared to conventional diagnostic and operative gynaecological procedures. In order to counter this problem, the ESGE would like to establish a close co-operation with the endoscopic industry. Not only by integrating their logistical support for the organization of these courses, but also by making the companies aware of the fact that a reasonable sales policy is the only viable solution for the future.
Furthermore, the introduction of these techniques also has implications for general hospital management and (international) health organizations and insurance companies. In addition to the need for major investments for the

purchase of endoscopic equipment, modified operating theatres and after-care facilities also have to be taken into account. This could be realized by setting up day clinics, although this may not always be in accordance with national government strategies for patient care and hospital management. This is a long-term project, but it should neither be underestimated nor neglected. However, if we make the care for the patient as a person priority number one, which should - despite the high-tech possibilities - be one of the characteristics of modern medicine, these rather negative aspects can be offset by all the advantages already mentioned.

Conclusion

There exists an outstanding technique for minimally invasive diagnostic and therapeutic hysteroscopy.

Traditional medical training fails to teach these techniques in a general way.

The ESGE has to fulfil one of its major tasks by offering all of its members the possibility of training in hysteroscopy, for the benefit of the patients.

OUR EXPERIENCE WITH OUTPATIENT HYSTEROSCOPY

Branka Žegura

Objective
To evaluate the feasibility and acceptability of outpatient hysteroscopy, introduced in July 2003 to Slovenia.

Methods
The outcome of 358 consecutive outpatient hysteroscopies was analyzed. Cervical dilatation was performed when necessary and local anesthesia was not administered routinely. Endometrial biopsy and minor hysteroscopic procedures were carried out when indicated.

Results
The most common indication for the hysteroscopy was abnormal bleeding (54.3%). Hysteroscopy was performed successfully in 95.8%. Intrauterine pathology was diagnosed in 60.4%. Endometrial biopsy was performed in 44.4% and produced adequate tissue for histologic examination in 95.3%. Endometrial atypical hyperplasia or carcinoma were detected in 0.8% and 3.0%, respectively. Seventythree patients (20.6%) underwent a minor hysteroscopic procedure. For almost half of our patients the combined diagnostic-therapeutic hysteroscopy concluded their treatment.

Conclusion
Outpatient hysteroscopy has a high detection rate for intrauterine pathology. It may become as routine procedure in the 21st century as D&C has been in the 20th.

Key words
Outpatient hysteroscopy, diagnostic hysteroscopy, uterine cavity pathology.

Introduction

Modern diagnostic hysteroscopy began in 1970 when Edström and Fernström (1) described a hysteroscopic technique using 32% dextran for uterine distention, which permitted clear visualisation of the uterine cavity and enabled targeted endometrial biopsies. With continuing improvements in technology, the development of modern narrow-diameter hysteroscopes, light sources and medium-insufflators, allows the hysteroscopy to be performed as an outpatient procedure (2,3), even in the case of minor intrauterine surgery, not needing specific post-operative care. Coupled with its higher diagnostic accuracy, hysteroscopy is replacing inpatient D&C for the investigation of abnormal uterine bleeding (AUB), the single most common reason for gynecologic referrals (2). We report the outcome and findings of 358 consecutive patients who underwent the examination in a hospital-based outpatient hysteroscopy clinic.

Methods

Between July 2003 and December 2004, 358 women who were referred for outpatient hysteroscopy to hysteroscopy office at Department for Obstetrics and Gynecology, University Hospital Maribor, were included in this analysis.
Hysteroscopy was done using standard Olympus 3-mm telescope with a 30^{o} fore-oblique lens and constant uterine irrigation was obtained through a 4.5 or 6.5 continuous-flow sheath. Normal saline was used as distending medium. Illumination was provided by a high-intensity xenon cold-light source. The patient was placed in the lithotomy position, a gynecologic examination was performed to assess the size and position of the uterus as well as the characteristics of the cervix. In 194 (54.3%) patients a speculum was used and the cervix grasped with tenaculum. The local anesthesia followed in those patients who required it (pain with all these maneuvers), by injecting 5 ml of 1% lidocaine paracervicaly.

In 164 (45.8%) patients the procedure was performed by vaginoscopic approach with no speculum, tenaculum or anesthesia, allowing the progression of the hysteroscope only under direct vision, following the uterus natural axis. In both groups the cervical canal was revised completely during the insertion of the hysteroscope. The hysteroscope was guided through the endocervical canal to the uterine cavity, where tubal ostia were identified and the endometrial cavity was systematically explored. Biopsies were performed with biopsy forceps in a clockwise manner. All hysteroscopies were carried out by the same hysteroscopist. In premenopausal patients procedures were done in the proliferative phase of the menstrual cycle.

Results

The mean age of the 358 women was 54.5 years (range 22-87); 36 (10.1%) were nulligravid and 215 (60.1%) postmenopausal. The indication for the hysteroscopy were as follows: AUB (54.3%), abnormal ultrasonographic findings (40.4%), hormonal treatments follow-up (tamoxifen), infertility and recurrent abortions when indicated, missing IUD (5.1%), suspicion of persistence of gestational tissues. As contraindication were considered the presence of active infection of the genital tract, cervical cancer and pregnancy.
Hysteroscopy was successful in 95.8% and failed in 15 (4.2%). Unsuccessful hysteroscopies were statistically significant more common in postmenopausal women ($p=0.005$). The nature of presenting symptoms or a history of cervical surgery did not influence outcome. Reasons for failed hysteroscopy included cervical stenosis (n=12), poor hysteroscopic view (n=4) and severe discomfort (n=2). Two patients (0.6%) experienced vasovagal attacks immediately after the procedure. There were no other complications related to the use of local anesthesia or the hysteroscopy itself and no one required hospital admission after the procedure. Failed cases were referred for investigation under general anesthesia.

Local anesthesia (paracervical) and cervical dilation was required in 54.5% of procedures and it was more common in postmenopausal women (p=0.05).

The uterine cavity appeared normal in almost 40% of patients. Common abnormalities included endometrial polyps (50.9%) and fibroids (9.7%). Two patients had severe intrauterine adhesions. Intracervical pathology was diagnosed in 13 patients, consisting of cervical polyps in 12 and adhesions in one.

Targeted endometrial biopsies were taken from 147 (44.4%) patients, 36.2% of the histology showing normal endometrium. Other findings included endometrial polyps (50.9%) and endometrial hyperplasia in 3.8%. Ten women were found to have atypical endometrial hyperplasia (0.8%) and endometrial carcinoma (3.0%). Endometrial biopsy failed to produce sufficient tissue for complete histologic diagnosis more often in women with an atrophic cavity at hysteroscopy (4.7%).

Minor operative procedures were performed in 73 patients (20.6%). The techniques performed were 54 polypectomies, removal of intrauterine devices in 18 patients and mild adhesiolysis in 1 patient. For almost half of our patients (47.6%) the outpatient hysteroscopy was the only diagnostic or therapeutic procedure they needed. More than fifty percent (n=134) of our patients had D&C in their history and in 90% of them the indication for the D&C was the same but the procedure was not conclusive.

The pain experienced during the procedure was recorded. It was scored by the patient with a 10 cm visual analouge scale (VAS, 0=no pain, 10=intolerable pain) at the end of procedure. Vaginoscopic approach compared to the cervical dilation under local anesthesia was associated with less pain (0.48 ± 1.1 vs 2.1 ± 1.6, $p<0.00001$). Both modes of hysteroscopic approach are appropriate for outpatient setting as the pain score reported was low. It is considered that an examination is successful when the pain score is less than 4 (4).

Discusion and conclusion

Hysteroscopy by now has proved to be the most accurate and reliable method for diagnosis of intrauterine disorders (2-4). The ability to perform minor intrauterine surgical procedures in an outpatient setting is the main contribution of the continuous-flow technique. This advantage converts the office hysteroscopy in a combined diagnostic-therapeutic procedure, allowing more accurate, safe and patient friendly aproach for the evaluation of the uterine cavity pathology.

References

1. *Edström K, Fernström I. The diagnostic possibilities of a modified hysteroscopic technique. Acta Obstet Gynecol Scand 1970; 49:327-30.*
2. *Nagele F, O'Connor H, Davies A, Badwy A, Mohamed H, Magos A. 2500 outpatient diagnostic hysteroscopies. Obst Gynecol 1996; 88: 87-92.*
3. *Perez-Medina T, Bajo JM, Martinez-Cortes L, Castellanos P, Perez de Avila I. Six thousand office diagnostic-operative hysteroscopies. Int J Gynecl Obst 2000; 71: 33-8.*
4. *Campo R, Molinas CR, Rombauts L, Mestdagh G, Lauwers M, Braekmans P, Brosens I, Van Belle Y, Gordts S. Prospective multicentre randomized controlled trial to evaluate factors influencing the success rate of office diagnostic hysteroscopy. Hum Reprod 2004; 20: 258-263.*

LONG-TERM RESULTS OF HYSTEROSCOPIC MYOMECTOMY FOR ABNORMAL UTERINE BLEEDING

Mark Hans Emanuel

Objective

To analyze the efficacy of transcervical resection of submucous myomas and to identify prognostic factors for long-term results.

Methods

Two-hundred eighty-five women were treated with transcervical resection of submucous myomas without endometrial ablation. In case of incomplete resection a repeat procedure was offered. Long-term follow-up was obtained. Recurrence was defined as the need for further surgery. The relation of several variables with the outcome was analyzed using Cox proportional hazard regression analysis.

Results

Seventeen cases (6%) were lost to follow-up. The median follow-up was 46 months (range 1-104 months); for cases without recurrence median follow-up was 42 months (range 16-104 months). Forty-one (14.5%) patients had repeat surgery. An independent prognostic value of uterine size ($P < 0.001$) and number of submucous myomas ($P < 0.001$) for recurrence was noted. Twenty of 41 patients who had repeat surgery subsequently had a hysterectomy. None

of the variables investigated predicted the need for hysterectomy. The surgery-free percentage of 165 patients with normal sized uteri and not more than two myomas was 94.3% (standard error +/- 1.8%) at 2 years and 90.3% (+/- 3.0%) at 5 years.

Conclusion

Transcervical resection of submucous myomas is a safe and effective treatment for patients with a normal sized uterus and not more than two myomas. It is an acceptable alternative for selected other patients. The need for a combined endometrial ablation is questionable. Transcervical resection of submucous myomas will give patients a high chance of averting further surgery and should modify the way patients are counseled.

Supplement

Very recently data became available concerning a new 5 years follow-up round of this patient cohort. The recurrences, defined as the need for further surgery, after a median follow-up of 100 months will be presented and discussed.

THE INTRA UTERINE MORCELLATOR, A NEW HYSTEROSCOPIC TECHNIQUE TO REMOVE INTRAUTERINE POLYPS AND MYOMAS

Mark Hans Emanuel

Objective

To demonstrate the feasibility and safety of a new hysteroscopic operating technique.

Methods

The technique and its first clinical use in a gynaecology department of a university affiliated teaching hospital are described and compared retrospectively with conventional resectoscopy (Canadian Task Force Classification II-2).
A device similar to an arthroscopic surgery blade, the Intra Uterine Morcellator (IUM), 35 cm in length, was inserted in to a straight working-channel of a 9 mm hysteroscope. The major advantages are: the use of saline solution instead of the electrolyte-free solutions used in monopolar high-frequency resectoscopy and the ease of removal of the tissue fragments through the instrument. Fifty-five patients, 27 with endometrial polyps and 28 with submucous myomas were treated with the prototype of the IUM.

Results

The mean operating time was 8.7 min. (CI: 7.3-10.1) for the removal of endometrial polyps compared to 30.9 min.(CI: 27.0-34.8) for resectoscopy and 16.4 min. (CI: 12.6-20.2)

for submucous myomas compared to 42.2 min. (CI: 39.7-44.7). The amount of fluid deficit (saline) was comparable to the fluid lost (electrolyte-free solutions) during resectoscopy. All procedures were uneventful. In all, except 2 patients, the removal of the tissue was complete. Follow up revealed all patients free of abnormal uterine bleeding.

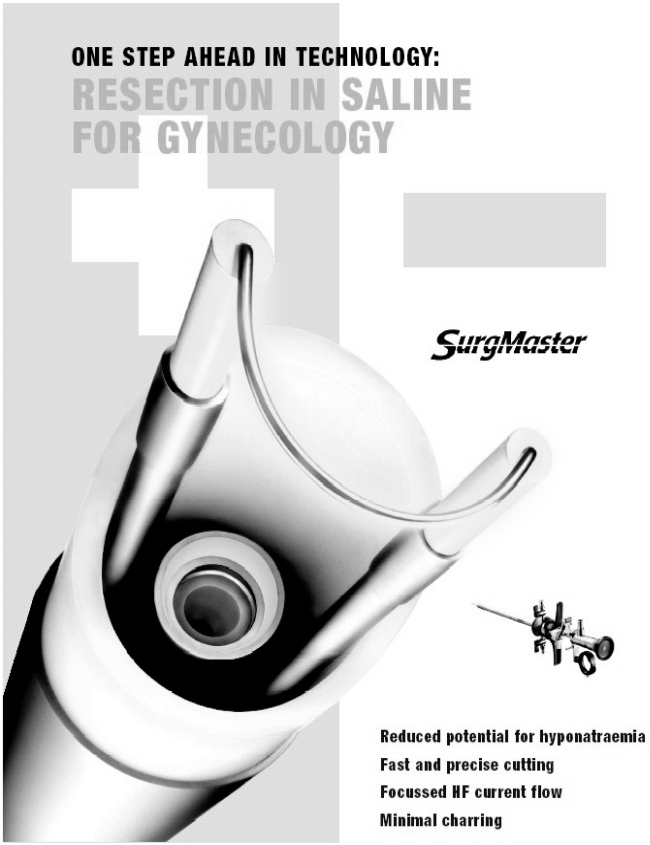
Conclusion

This new technique can be used to remove intra-uterine tissue effective and safe. However, this technique is faster as it seems easier to perform. Therefore, this technique can be expected to result in fewer fluid-related complications and to lead to a shorter learning-curve if compared with conventional resectoscopy.

TCRis – TRANSCERVICAL RESECTION IN SALINE

Xaver Liebold, Sales & Marketing, Olympus Europa GmbH, Hamburg

The Olympus SurgMaster TCRis system – Gone are many risks of monopolar HF resection:



Reduced risk for hyponatraemia

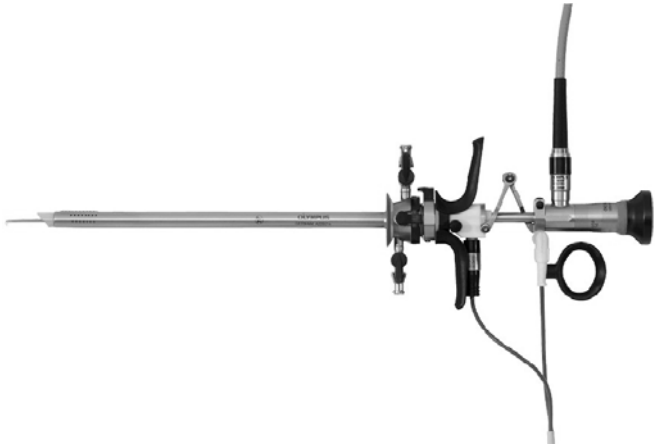
The Olympus SurgMaster resectoscope is used with a physiological saline for irrigation, thus significantly reducing the risk of a so called "TUR syndrome". Conventional electrosurgery requires a non-ionic distension medium with the potential risk of more iatrogenic complications: hyponatraemia, pulmo-nary and cerebral oedema and cardiac arrhythmias have all been reported from the use of glycine, sorbitol, purisol and manitol.

Focussed HF-current flow – No patient plate – Clean and precise cutting – Efficient coagulation & less charring

An uncontrolled flow of current through the patient's body, from the working electrode to the patient plate, is one of the major risks of conventional, monopolar electro surgery. Olympus SurgMaster integrates both electrodes within the resectoscope. This minimizes the area of current flow, which significantly increases patient safety. In contrast to conventional monopolar resection, the SurgMaster system uses the HF energy to convert saline into electrical plasma including a high density of free electrical particles which can cut tissue with exceptional precision. In addition to that, the reduced thermal spread results in a shallower coagulation effect and therefore less tissue charring.

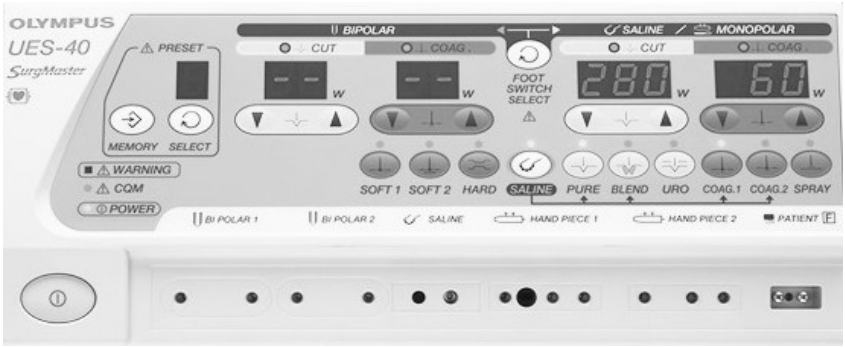
The equipment

The Olympus SurgMaster resectoscope for TCRis – Resection in saline



The resectoscope is based on the award-winning monopolar Olympus OES Pro rotatable continuous flow resectoscope for TCR. Only by exchanging the working element, HF cable and electrodes, the resectoscope can be upgraded for TCRis - resection in saline.
As a result, all features of the OES Pro resectoscope also apply:

- Anti blocking system (ABS) to ensure reliable saline flow even under challenging conditions.
- Longer: the impressive working length of 194 mm.
- Lighter: just 284 grams
- Slimmer: just 8.5 mm
- Autoclavable: all metal components are made of highly durable and chemically resistant stainless steel, ensuring long-term autoclavability.
- In addition, all kinds of loops (90° and 45°), needles and roller balls are available for TCRis, too.



The Olympus SurgMaster UES-40 – one generator for virtually any electrosurgical needs

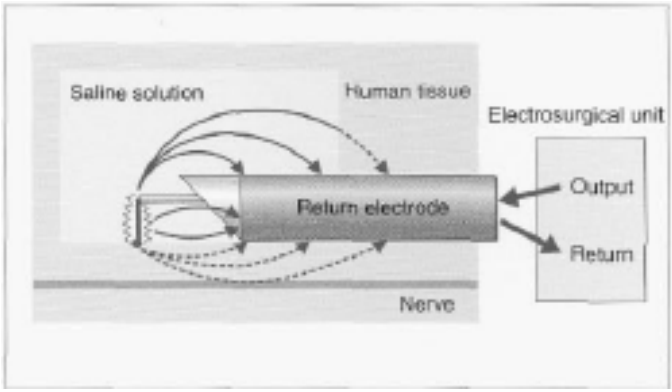
It is just one unit that enables the doctor to perform TCRis resection in saline, conventional monopolar resection and to connect bipolar and monopolar hand instruments as well. Therefore the unit is suitable for Gynaecology, Urology and General Surgery, offering unique features like automatic smoke evacuation in combination with Olympus insufflators, and the compatibility to EndoALPHA – the OR integration unit.

Settings for TCRis loops:
- 280 W for cutting (blend mode),
- 50 – 60 W for coagulation (coag 2 mode)

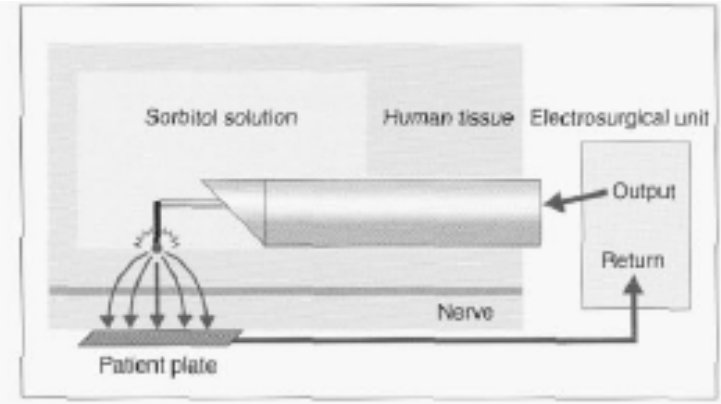
Settings for TCRis roller balls:
- 150 W (coag 1 mode)

Principle of monopolar versus TCRis principle

Principle of the SurgMaster TCRis system:
Current flow with TCRis through the conductive fluid (saline)



Principle of monopolar resection:
Current flow with monopolar TCR only through the tissue



WHICH UTERINE ANOMALIES SHOULD BE TREATED TO IMPROVE FERTILITY

Martina Ribič-Pucelj

Uterine anomalies (UA) are a well-known cause of repeated miscarriages, preterm deliveries, intrauterine growth retardation, obstetric complications and probably play also a role in infertility. The reported prevalence changed through history and depended mainly on the interest of gynecologists, indications for diagnostic procedures and particularly on the diagnostic procedures used. Nahum G. (1998), who performed a metaanalysis, found a prevalence of 0.50%. The main objection to this result is, that he included in his metaanalysis many studies in which UA were detected at delivery rooms on several thousands of deliveries. Because obstetricians at delivery rooms are usually not focused on UA and because UA with normal outer shape of the fundus can be rarely detected at normal delivery, the reported prevalence is probably too small. Raga F. (1997) reports on 4% prevalence, using hysterosalpingography and laparoscopy and Byrne J. (2000) on 3,9% using transabdominal ultrasonography. Even higher prevalence was found since minimally invasive and noninvasive diagnostic procedures were introduced. Maneschi F. (1995) found on hysteroscopy a prevalence of 10% and Ribič-Pucelj M. (1996), using transvaginal ultrasonography a similar number – 10.6%. To a higher number of UA detected, contributed particularly the introduction of transvaginal ultrasound which is noninvasive and highly sensitive and therefore suitable for screening test. Screening for UA and early diagnosis resulted also in an increasing number of surgical procedures, not only due to bad prognosis for favorable pregnancy outcome but mainly due to more liberal attitude to surgical treatment represented by minimally invasive hysteroscopic metroplasty. Both these facts resulted in 6-fold increase of surgical procedures at our department,

increase of hysteroscopic matroplasty and significant decrease in abdominal metroplasty (Fig.1).

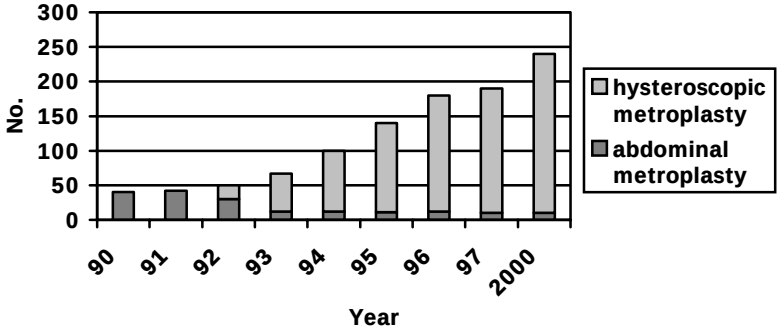


Figure 1. Impact of sonographic diagnostic on surgical treatment.

Due to the introduction of noninvasive diagnostic procedures, the diagnosis is no more delayed and performed yet after two or more miscarriages It is well known, that the prevalence of UA is increasing with the number of miscarriages (Fig. 2).

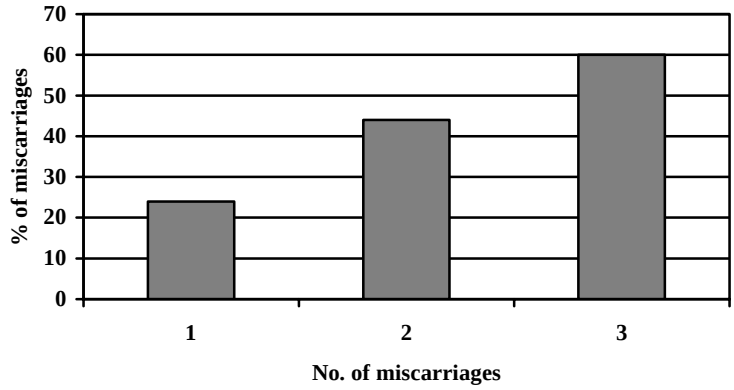


Figure 2. Prevalence of anomalies in women with miscarriages.

Most of the studies on diagnostic procedures and treatment are focused on women with repeated miscarriages, while the role of UA in the etiology of preterm delivery and/or intrauterine growth retardation was in great part underestimated, and particularly in women who delivered preterm, but a live child, screening for UA was not performed. The use of transvaginal ultrasound confirmed the importance of UA in the etiology of preterm delivery and/or intrauterine growth retardation. It was found that UA are present in 30% of women with idiopathic preterm delivery and/or intrauterine growth retardation (Ribič-Pucelj M. 1996) (Fig. 3).

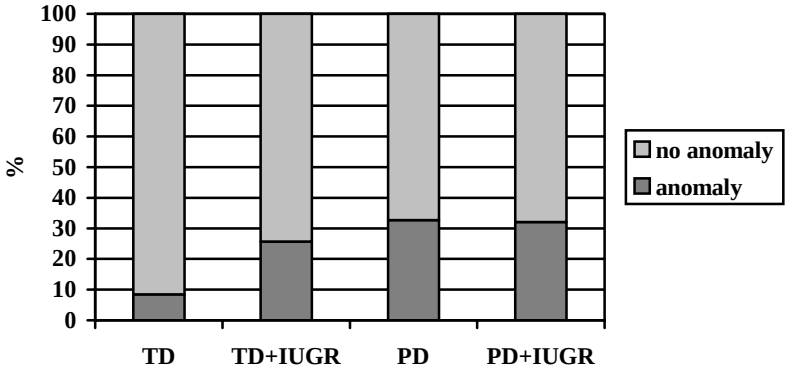


Figure 3. Prevalence of anomalies in women with idiopathic preterm delivery and/or IUGR.

Despite that the survival rate of preterm delivered infants is high in tertiary care centers, the cost of care and hospital stay are high - 400 Euros per day in intensive care and the average hospital stay for infants born before 28th week of gestation is 60 day and late sequele of preterm delivered infants are usually neglected, because they are out of the scope of gynecologists. Beside symptomatic UA there is also an increase in surgical treatment of asymptomatic ones, not only in infertile patients, particularly those undergoing in vitro fertilization, but also asymptomatic UA detected at preconceptional counseling. The role of UA infertility still

remains controversial, but more and more studies are proving the beneficial effect of surgical treatment on spontaneous conceptional rate as well as pregnancy rates following in vitro fertilization. The other question is, if all UA, detected by chance, should be treated. To answer this question we have to look at the pregnancy outcome of different classes of UA. The septate uterus (AFS class V) has without doubt the worst prognosis and nearly 70% of pregnancies end in miscarriage, 14 to 23% in preterm delivery and the survival rate ranges between 6 and 28%. Surgical treatment – the method of choice being hysteroscopic metroplasty with extremely low peri- and postoperative complications – results in over 80% term pregnancy rate. The ratio between unsuccessful and successful pregnancy outcome is inversely proportional following surgical treatment. Bicornuate uterus is the second most common anomaly. The miscarriage rate ranges from 28 to 35%, preterm delivery rate from 33 to 38% and the survival rate of infants 50%. There is a high rate of malpresentations and abruption of the placenta. The surgical treatment is abdominal metroplasty, therefore the decision on surgical treatment is frequently delayed. At the moment the most controversial is the role of small uterine septa (arcuate uterus according to Buttram's classification and class VI according to AFS classification). According to Grimbizis G F. et al (2001), Salim S (204) and Tomaževič T. et al (2004) small uterine septa impair fecundity, implantation rates and pregnancy outcome and hysteroscopic metroplasty significantly improves fertility. On the other side, Maneschi F. (1996), Lin P. et al (2004) and Raga F. et al did dot find any impact of small septa on reproduction. Therefore there remains the question: is surgical treatment of small septa overtreatment or underestimation of the problem?

References

1. *Ribič-Pucelj M, Novak-Antoloč Ž, Tomaževič T et al. Odkrivanje razvojnih nepravilnosti maternice z vaginalnim ultrazvokom. Zdrav vestn 1991; 12:509-12.*
2. *Grimbizis GF, Camus M, Tarlatzis BC et al. Clinical implications of uterine malformations and hysteroscopic treatment results. Hum Reprod Update 2001; 7: 161-174.*
3. *Kupešič S. Clinical implications of sonographic detection of uterine anomalies for reproductive outcome. Ultrasound Obstet Gynecol 2001; 18: 387-400.*
4. *Lin PC, Bhatnager KP, Nettleton GS et al. Female genital anomalies affectingreproduction. Fertil Steril 2002; 78:899-915.*
5. *Tomaževič T.Hysteroscopic metroplasty. In: Ribič-Pucelj M, Tomaževič T, Kobal B (eds): Basic and advanced course on gynecological endoscopic surgery, Book of proceedings; Ljubljana 2004; 110-13.*

DO SMALL UTERINE SEPTA (AFS grade 6) REALLY BEHAVE BENIGNLY

T. Tomaževič, H. Ban, T. Premru-Sršen, M. Ribič-Pucelj, I. Verdenik, A. Vogler, E. Vrtačnik-Bokal, S. Drobnič, B. Zorn, B. Pinter

Abstract

We compared pregnancy outcomes before and after hysteroscopic transsection of small and large uterine septa. The study involved 933 women after hysteroscopic transection of a uterine septum: 483 women with a large septum (1.5 cm to total) and 450 women with a small septum (1-1.5 cm). The structure of 957 pregnancies before the operation differed significantly from the structure of 564 pregnancies after the operation (P<0.000).The spontaneous abortion rates decreased from 83% to 19% (P<0.00000) in the women with a large septum, and from 82% to 16% in the women with a small septum (P<0.0000). The preterm birth rates decreased from 43% to 9% in the large septum group (P<0.00001), and from 40% to 11% (P<0.0000) in the small septum group. The birth weight of neonates after surgery increased and the incidence of neonates with birth weight less than 1500 g decreased. The referral of the neonates to the intensive care Unit was significantly reduced (P<0.000). There was a significant reduction of fetal stillbirth and neonatal mortality rates (P<0.01). Besides large uterine septa, small uterine septa represent an important hysteroscopically preventable risk variable for preterm birth and spontaneous abortion.

Keywords

Resectoscope, uterine septum, pregnancy outcome, spontaneous abortion, preterm birth.

Introduction

The improvements of diagnostic and surgical capabilities not only enlarged the indications for surgical treatment of uterine anomalies but also made it possible to reassess the role of uterine anomalies in human reproduction (1–6). It is well known that the surgical correction of larger complete and incomplete uterine septa Class 5 (from 1.5 cm to total septum) according to the American Fertility Society (AFS) classification significantly reduces the risk of preterm birth and spontaneous abortion (7). We have obtained similar results after hysteroscopic transection of smaller incomplete uterine septa AFS Class 6 (1.2–1.5 cm), which until recently were considered an unimportant paraphysiologic condition (8-10). In order to further test these findings we analysed the pregnancy outcomes before and after hysteroscopic transection on a larger series of patients.

Patients and methods

In the period between April 1993 and December 2000 we performed 993 hysteroscopic metroplasties in women with septate, subseptate and arcuate uterus. The arcuate uterus was defined by an internal fundal arch represented by a small large septum 1.2–1.5 cm of length. Preoperative analysis included vaginal ultrasound and diagnostic hysteroscopy. Transverse electrosurgical transection of the uterine septum was made equidistantly between the anterior and posterior wall. The length of uterine septum was evaluated by comparing the length of the yellow tip of the electric knife (14 mm) to the length of transected septum. According to septum length patients were divided in two groups: the small uterine septum group (septum length 1.2-1.5 cm) – group 6 according to the AFS classification (11), and the large uterine septum group - group 5 according to the AFS (septum length 1.5 cm to total septum). Clinical data, inquiry data and the perinatal data from the National Perinatal Informational System of Slovenia (NPIS) were used for evaluation in this

single centre comparative intervention study. Only perinatal data registered in the NPIS by July 2003 were considered for the analysis. Pregnancy outcomes in the two groups of uterine anomalies before and after transection by resectoscope were analysed and compared. Differences in characteristics of outcomes of pregnancies were assessed by Fisher exact test for categorical variables, and by Student t test for continuous variables. The significance level was set at 5%.

Results

Before the operation there were 957 pregnancies in 933 women: 713 spontaneous abortions, 76 ectopic pregnancies, 168 deliveries. In the postoperative period by July 2003 there were 564 pregnancies: 96 spontaneous abortions, 28 ectopic pregnancies and 440 deliveries. Altogether there were 933 hysteroscopic transections – 483 (52%) for the AFS group 5 septa and 450 (48 %) for the AFS group 6 septa.
The ectopic pregnancy rate decreased from 9% (76/957) before to 5% (28/564) after the transection (P<0.03). The spontaneous abortion rate decreased from 82% (723/881) to 18% (96/536) and the preterm birth rates decreased from 42% (52/123) before to 9% (30/337) after hysteroscopic transsection. Data on spontaneous abortions and preterm births in the AFS group 5 and in the AFS group 6 uterine anomalies are presented in Table 1.

		Before	After	P
Spontaneous abortion/ intrauterine pregnancy %	AFS 5	83%	19%	P<0.0000
	AFS 6	82%	16%	P<0.0000
Preterm birth */ singleton delivery %	AFS 5	44%	8%	P<0.0000
	AFS 6	41%	10%	P<0.0000
Podalic presentation/ singleton delivery %	AFS 5	19%	6%	P<0.005
	AFS 6	10%	4%	P<0.05

*Perinatal data from the NPIS

*Table 1. Pregnancy outcomes according to the grade of uterine anomaly in the group of women with AFS Class 5 and in the group of women with AFS Class 6 septa before and after hysteroscopic transection.**

		Before	After	P
Preterm birth <32 weeks	AFS 5	19.0%	3.0%	P<0.000
	AFS 6	13.0%	5.0%	P<0.05
Preterm birth 32 –37 weeks	AFS 5	24%	5.0%	P<0.000
	AFS 6	28%	6.0%	P<0.000
Mean birth weight (g)	AFS 5	2616.0	3348.0	P<0.000
	AFS 6	2774.0	3226.0	P<0.000
Birth weight < 1500 (g)	AFS 5	13%	3%	P<0.005
	AFS 6	12%	5%	P=0,07 NS.
Stillbirth and neonatal death %	AFS 5	17.0%	2.9%	P<0.000
	AFS 6	7%	0.6%	P<0.005
Neonatal intensive care and therapy unit %	AFS 5	32%	8 %	P<0.000
	AFS 6	26%	8 %	P<0.001

* Neonatal data from NPIS

Table 2. Neonatal data according to the grade of uterine anomaly in women with AFS Class 5 and in women with AFS Class 6 septum before and after hysteroscopic transection.

The neonatal results are presented in Table 2. The analysis involved 62 deliveries before and 173 deliveries after surgery in the Class 5 septa group, and 61 deliveries before and 164 deliveries after surgery in the Class 6 septa group. At the time of data collection (June 2003) the data of 93 women who delivered by June 2003 were not yet entered in the NPIS and were excluded. Twin pregnancies, one before and 9 after the operation (4 in the AFS Class 5 group and 5 in the AFS Class 6 group) were also excluded.

Discussion

Because the knowledge of some of the most significant variables causing preterm birth is still scarce, inventive research to find some frequent but underestimated risk factors has recently been suggested (12). According to the results of our study, a small uterine septum may be a candidate for such a significant underestimated preterm birth risk variable. There are three arguments to support its candidature as an important preterm birth risk factor. First: Until recently it has been considered a paraphysiologic condition (13). Second: Its high frequency in the population

(14-16). Third: Common etiology of preterm birth and spontaneous abortion (17). An extended analysis on larger database would therefore be recommended to further confirm our findings.
By combining a non invasive vaginal ultrasound diagnosis of mullerian anomalies and a minimally invasive hysteroscopic transection (1-7), the risk of prematurity in patients with larger and very frequent smaller mullerian anomalies could be largely reduced (8-10).

Conclusion

A small uterine septum (AFS 6) has been evidenced as an important hysteroscopically preventable risk variable for preterm birth and spontaneous abortion.

Acknowledgement

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References

1. Valli E, Zupi E, Marconi D, et al: Hysteroscopic finding in 344 women with recurrent spontaneous abortion. J Am Assoc Gynecol Laparosc 8:398-401, 2001.
2. Grimbisis GF, Camus M, Tarlatzis BC, et al: Clinical implications of uterine malformations and hysteroscopic treatment results. Hum Reprod Update 7:161-174, 2001.
3. Mencaglia L, Bianchi RC: Hysteroscopic metroplasty *In Hysteroscopy update*. Phillips JM, Hunt RB, Loffer FD Eds.AAGL, Santa Fe Springs pp.49-53, 1996.
4. Tantini C, Tiso E**,** Napolitano AC, et al: GnRH Influence of Minimal Septa on Human Gestation Capacity. In: Hysteroscopy update. Edited by JM Phillips, RB Hunt, FD Loffer. Santa Fe Springs, AAGL, 1996, 41-43.
5. Doridot V, Gervaise A, Taylor S, et al: Obstetric outcome after endoscopic transection of the uterine septum. J Am Assoc Gynecol Laparosc 10:271-275, 2003 .
6. Barranger E, Gervaise A, Doumerc S, et al: Reproductive performance after hysteroscopic metroplasty in the hypoplastic uterus: a study of 29 cases. Br J Obstet Gynaecol; 109:1331-1334, 2002.
7. March CM, Israel R: Hysteroscopic management of recurrent abortion caused by septate uterus. Am J Obstet Gynecol 156:834-842, 1987.
8. Tomazevic T, Premru Srsen T, Ribic Pucelj M et al. Reproductive outcomes after metroplasty by resectoscope. Presented at the 7th Congress of the European Society for Gynecological Endoscopy, Lausanne, Switzerland, December 6-12, 1998.
9. Tomaževič T, Ban H, Ribič Pucelj M, et al: Pregnancies before and after hysteroscopic resection of AFS 5 and AFS 6 uterine septa by hysteroscope. In: Coutinho EM, Spinol P, eds. Current Knowledge in Reproductive Medicine. Proceedings of 10th World Congress on Human Reproduction, Bahia, Brazil, 4-6 May 1999, Elsevier International Congress Series Oct 2000.
10. Tomaževič T, Ban H, Premru T, et al: The risk of preterm labour in different grades of uterine anomalies before and after hysteroscopic resection. IFFS 2001 Melbourne Australia. Selected Free Communications, November 25-30. 2001.
11. Buttram VC Jr, Gibbons W: Mullerian anomalies: A proposed classification. Fertil Steril 32:40-46, 1979.
12. Bekketeig LS, Bergsjo P: The epidemiology of preterm birth. In: Kurjak A, ed. Textbook of Perinatal Medicine. Parthenon Publishing, London, New York 1998.
13. Valle R: Hysteroscopic Treatment of Partial and Complete uterine septa*. In Hysteroscopy update*. Phillips JM, Hunt RB, Loffer FD Eds.AAGL, Santa Fe Springs pp.42-45, 1997.
14. Maneschi F, Zuppi E, Marconi D, et al: Diagnostic hysteroscopy in women with abnormal uterine bleeding detected a 10% prevalence of uterine anomalies, associated with a significantly high incidence of spontaneous abortion. J Reprod Med 40:684-688, 1995.

15. Ribič-Pucelj M, Tomaževič T: Transvaginosonographic detection of uterine malformations and its impact on metroplasty. Presented at the 7th Annual Meeting of the International Society for Gynecologic Endoscopy ISGE, Sun City, South Africa, Sun City South Africa Monduzzi Bologna pp.137-1941, 1998.
16. Golan A, Baum M, Pansky M, et al: The frequency, diagnosis, and reproductive performance associated with incomplete uterine septum. J Am Assoc Gynecol Laparosc 2: 4S17, 1995.
17. Saling E, Al Taie T, Luthje J, et al: Efficient and simple program including community based activities for prevention of very small prematures. In: Kurjak A. Ed. Textbook of Perinatal Medicine. London, New York: Parthenon Publishing, 1998.

REPRODUCTIVE OUTCOME BEFORE AND AFTER HYSTEROSCOPIC METROPLASTY IN WOMEN WITH SEPTATE UTERUS

M. Reljič, L. Mlakar, V. Vlaisavljević, V. Gavrić-Lovrec, V. Kovač

Introduction

Septate uterus is the most common uterus malformation and is associated with the highest incidence of reproductive failure and obstetric complications. Hysteroscopic metroplasty is now considered the first therapeutic option for such cases, despite the lack of prospective, randomized controlled trials and the small size of most reports. To confirm the benefit of hysteroscopic metroplasty the reproductive outcome before and after this procedure was analyzed in our study.

Materials and Methods

Between April 1997 and July 2003, 287 hysteroscopic metroplasties were performed in women with different degrees of septate uterus (AFS 6 and AFS 5). Indications for septum incision were adverse pregnancy outcome and/or infertility. Metroplasty was performed using 9 mm resectoscope with cutting knife electrode. The pregnancy outcome was assessed on the basis of data about further hospitalization, delivery records and mailed questionnaires. Pregnancy outcome before and after incision were compared using Fischer exact and T-test.

Results

Data were collected completely from 246 (85.7%) patients. Among them 125 had adverse pregnancy outcome before metroplasty. One hundred-twenty women had a history of spontaneous abortion, 63 one, 43 two, 13 three and 1 four spontaneous abortions. Preterm birth was observed in 11 patients. Infertility problems had 149 and primary infertility 101 women.

Postoperatively, 68 (67.3 %) women in the group of women with primary infertility conceived, 54 (79.4%) after in-vitro fertilization or intra-uterine insemination and 14 (20.6%) spontaneously. There were total 75 pregnancies; 56 (74.7%) term live births, 8 (14.3 %) preterm births and 11 (14.7 %) spontaneous abortions.

In the group of women with pregnancies before hysteroscopic metroplasty, 102 women conceived postoperatively for totally 111 pregnancies. After operation pregnancy outcome was clearly better (Table 1).

	Before OP	After OP	P
Spont. abortion/pregnancy (%)	83.5 (192/230)	27.0 (30/111)	<0.001
Birth/pregnancy (%)	15.6 (36/230)	73.0 (81/111)	<0.001
Term birth/pregnancy (%)	10.9 (25/230)	61.3 (68/111)	<0.001
Term birth/singleton pregnancy (%)	10.9 (25/230)	62.3 (66/106)	<0.001
Preterm birth (%)	28.6 (10/35)	14.7 (11/75)	0.07
Mean birth weight ± SD (g)	2965±985	3114±696	NS
Birth weight ±SD (g) (term delivery)	3381±619	3325±464	NS

Table 1. Pregnancy outcome before and after hysteroscopic metroplasty.

The highest incidence of poor pregnancy outcome after hysteroscopic septum incision was observed in-group patients with history of 2 or more spontaneous abortions

before operation. In this group of patient 49 pregnancies were observed. The term delivery rate was 51.0 (25/49), preterm delivery rate 24.2 (8/33) and abortion rate 32.7 (16/49).

Conclusions

Our data suggest that hysteroscopic metroplasty can improve pregnancy outcome and that results depend on patient selection. Anyway these observations should be confirmed with properly conducted randomized control trial.

Seznam donatorjev za histeroskopsko ambulanto:

The list of donators for the outpatient hysteroscopic office:

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Finea holding, d.o.o., Ulica Vita Kraigherja 10, Maribor

Loka trade, d.o.o., Tavčarjeva ulica 6, Škofja Loka

Fenestra, d.o.o., Dolnja Počehova 34, Pesnica pri Mariboru

KBM Leasing, d.o.o., Ulica Vita Kraigherja 5, Maribor

Bell, d.o.o., Ptujska cesta 22, Miklavž na dravskem polju

Tehnostor Jurij Prebil, s.p., Počehova 25a, Maribor

Saša Slavec, Zalog 13, Svarje

Zavarovalnica Maribor, d.d., Cankarjeva 3, Maribor

Sonal, d.o.o., Gregorčičeva ul. 56, Maribor

Stotinka, d.o.o., Pečke 58, 2321 Makole

Agrotex, d.o.o., Lackova cesta 42/a, Maribor

Polanec Darko "IPIS", Mladinska 5, Šentilj

Iris Polanc, Mladinska 5, Maribor

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