Advanced operative office hysteroscopy without anaesthesia: analysis of 501 cases treated with a 5 Fr. bipolar electrode

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BACKGROUND: The aim of this study was to evaluate treatment efficacy and patient acceptability of a new bipolar probe used during office hysteroscopic treatment of benign intrauterine pathologies. METHODS: In this observational clinical study, 501 women were treated for benign intrauterine pathologies using an office hysteroscopic procedure, without analgesia or anaesthesia. A Versapoint 5 Fr. bipolar electrical generator was used to treat endometrial polyps ranging between 0.5 and 4.5 cm, as well as submucosal and partially intramural myomas between 0.6 and 2.0 cm. Treatment efficacy and patient compliance were evaluated. RESULTS: At follow-up, the uterine cavity was normal in all patients without any recurrence or persistence of the pathology. One focal adenocarcinoma was discovered at histology in an endometrial polyp of a menopausal patient. Patient acceptance was satisfactory; 47.6–79.3% of the patients underwent the procedure without discomfort. CONCLUSIONS: The combination of a new generation small diameter hysteroscope and a new bipolar 5 Fr. electrode enables the gynaecologist to treat intrauterine pathologies in an office setting without anaesthesia. Experimentation of a special set-up of the electrical generator reduced patient discomfort during the operative part of the hysteroscopic procedure.

Key words: office hysteroscopy/patient acceptability/submucous myomas/uterine polyps/Versapoint bipolar electrode

Introduction

Menorrhagia, infertility or recurrent pregnancy loss are frequently related to the presence of submucosal myomas and endometrial or cervical polyps. Traditionally, the resectoscope has played a major role in the resolution of these pathologies, forcing the hysteroscopist to use this large diameter instrument even in the presence of small lesions (Loffer, 1990; Corson and Brooks, 1991; Hallez, 1996; Porreca et al., 1996; Bettocchi et al., 1998). The results were excellent, but due to the size of the instruments and hence the need to dilate the cervical canal, the use of general anaesthesia and an operating room were generally required.

In the last 10 years, technological improvements have led to the production of smaller diameter scopes. This has prompted the industry to develop sheaths which continue to have a final diameter of ~5 mm, as was the case in the old generation of purely diagnostic scopes, but this now includes the working channel and continuous flow features.

Another major advantage of these new instruments is their use of bipolar rather than monopolar energy. The advantages of bipolar over monopolar technology are well accepted in the medical field. The most important benefit in hysteroscopy is the use of saline solution rather than non-ionic distension media (i.e. glycine, sorbitol, mannitol, etc.), as well as the reduction of energy spread through the tissue during resection. These new scopes enable diagnostic and operative hysteroscopy to be performed simultaneously, in the office setting, without cervical dilatation and consequently without anaesthesia or analgesia (Bettocchi and Selvaggi, 1997).

In this paper we evaluate the benefits of minimally invasive techniques in hysteroscopy, focusing on the use of 5 Fr. bipolar electrosurgical equipment in the treatment of large benign intrauterine pathologies.

Materials and methods

Since 1995 we have performed 7256 hysteroscopic office-based procedures at our University Center of Endoscopy in Bari, Italy. Institutional review board approval was obtained for this study. All the procedures were performed during the proliferative phase of the cycle, using the transvaginal approach, without tenaculum and speculum, using saline distension medium and a 5 mm continuous flow office hysteroscope (Bettocchi Office Hysteroscope size 5; Karl Storz GmbH & Co., Tuttingen, Germany). The scope is based on a rod lens system with a diameter of 2.9 mm and a 30° view. The
continuous flow sheath has an oval profile and maximum 5 mm diameter with an incorporated 5 Fr. working channel; the mechanical instruments used were grasping forceps with teeth and scissors (Karl Storz GmbH & Co.). Intrauterine pressure was maintained at a constant 25/35 mmHg using an electronic pump for irrigation and aspiration (Endomat; Karl Storz GmbH & Co.).

The electrosurgical instrument was the Versapoint Bipolar Electrosurgical System (Gynecare; Ethicon Inc., NJ, USA), consisting of a dedicated bipolar electrosurgical generator and two types of instruments used were grasping forceps with teeth and scissors (Karl Storz GmbH & Co.). Intrauterine pressure was maintained at a constant 25/35 mmHg using an electronic pump for irrigation and aspiration (Endomat; Karl Storz GmbH & Co.). Intrauterine pressure was maintained at a constant 25/35 mmHg using an electronic pump for irrigation and aspiration (Endomat; Karl Storz GmbH & Co.). Intrauterine pressure was maintained at a constant 25/35 mmHg using an electronic pump for irrigation and aspiration (Endomat; Karl Storz GmbH & Co.). Intrauterine pressure was maintained at a constant 25/35 mmHg using an electronic pump for irrigation and aspiration (Endomat; Karl Storz GmbH & Co.). Intrauterine pressure was maintained at a constant 25/35 mmHg using an electronic pump for irrigation and aspiration (Endomat; Karl Storz GmbH & Co.). Intrauterine pressure was maintained at a constant 25/35 mmHg using an electronic pump for irrigation and aspiration (Endomat; Karl Storz GmbH & Co.).

The generator provides different modes of operation (waveform): the Twizzle, specifically for precise and controlled vaporization (resembling cutting) and the Spring, used for diffuse tissue vaporization (Figure 1). Each electrode consists of an active electrode located at the tip and a return electrode located on the shaft, separated by a ceramic insert. Only tissue in contact with the active electrode in the electrical path circuit will be desiccated or vaporized. The generator provides different modes of operation (waveform): the vapour cut waveform, resembling a cut mode (the acronyms are VC1, VC2, VC3, where VC3 corresponds to the mildest energy flowing into the tissue), the blend waveform (BL1, BL2) and the desiccation waveform, resembling a coagulation mode (DES). The generator is connected to the 5 Fr. electrode via a flexible cable. Once connected, the generator automatically adjusts to the default setting (VC1 and 100 W).

**Instrument settings**

After a test period we concluded that the default settings of the Versapoint bipolar electrical generator were incompatible with our techniques performed without any type of anaesthesia or analgesia, and therefore decided to use the mildest vapour cutting mode (VC3) and to reduce by half the power setting (50 W). For the same reasons, we chose the Twizzle electrode over the Spring, as in our experience the Twizzle electrode is a more precise ‘cutting’ instrument and with lower power settings it can work closer to the myometrium with less discomfort.

**Patients**

Since 1998, and up to April 2002, we have treated 501 patients (age range 18–79 years) with single or multiple benign intrauterine pathologies observed during hysteroscopy, by the Versapoint 5 Fr. procedure. These included 445 endometrial polyps, 49 submucosal myomas ≤ 2 cm and 21 partial intramural myomas with a submucosal section ≤ 1.5 cm. Larger myomas were treated with the resectoscope, as in our experience use of the 5 Fr. Versapoint electrodes to treat these larger myomas (>2 cm) is time-consuming and yields lower quality final results. The patients came to our centre for abnormal uterine bleeding, abnormal ultrasound findings, sterility/infertility problems and evaluation prior to or during hormone replacement therapy (HRT). They underwent an office hysteroscopic procedure, without any analgesic pretreatment, in the proliferative phase of the cycle (days 6–11) as well as transvaginal ultrasound (TV–US). Infertile patients presenting a partially intramural myoma (n = 21) were pretreated with 3 months of GnRH analogue to shrink the fibroids. In all cases the removed tissue was sent to a pathologist for histological confirmation.

To verify patient acceptability, a visual analogue score of pain was proposed immediately after the procedure (Downes and Al-Azzawi; 1993). Patients were asked to complete privately an anonymous questionnaire assessing the maximum amount of pain suffered during the procedure, by marking a cross on a 10 cm line. The following classification was proposed: 0–1 = no discomfort; 2–4 = discomfort similar to normal menstrual pain; 5–7 = moderate pain similar to heavy menstrual pain; 8–10 = severe pain.

**Operative technique**

All polyps ≤ 0.5 cm were removed using 5 Fr. mechanical instruments (sharp scissors and/or crocodile forceps), largely for cost reasons. Larger polyps were removed intact, with the Versapoint Twizzle electrode, only if the internal cervical os size was wide enough for their extraction. Otherwise, they were sliced from the free edge to the base into two/three fragments large enough to be pulled out.

**Table I. Patient acceptability during Versapoint procedures**

<table>
<thead>
<tr>
<th>Procedure</th>
<th>No discomfort (0–1)</th>
<th>Discomfort/pain Low (2–4)</th>
<th>Moderate (5–7)</th>
<th>Strong (8–10)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Endometrial polyps, n = 445 (%)</td>
<td>353 (79.3)</td>
<td>66 (14.8)</td>
<td>26 (5.9)</td>
<td>–</td>
<td>&lt; 0.05</td>
</tr>
<tr>
<td>Submucosal myomas, n = 49 (%)</td>
<td>31 (63.3)</td>
<td>11 (22.4)</td>
<td>7 (14.3)</td>
<td>–</td>
<td>NS</td>
</tr>
<tr>
<td>Intramural myomas, n = 21 (%)</td>
<td>10 (47.6)</td>
<td>6 (28.6)</td>
<td>5 (23.8)</td>
<td>–</td>
<td>NS</td>
</tr>
</tbody>
</table>

NS = not significant.
through the uterine cavity using 5 Fr. grasping forceps with teeth (Figure 2). To remove the entire base of the polyp without going too deep into the myometrium, in some cases the Twizzle electrode was bent by 25–30°, enough to obtain a kind of hook electrode. A similar technique was applied on submucosal myomas with the difference that, due to their higher tissue density, they were first divided into two half-spheres and then each of these was sliced as described above (Figure 3). Particular attention was paid to the intramural part of the myoma, if present. To avoid any myometrial stimulation or damage, the myoma was first gently separated from the capsule using mechanical instruments (grasping forceps or scissors) as already described for resectoscopic myomectomy (Mazzon and Sbiroli, 1997; Gimpelson, 2000). Once the intramural section became submucosal it was sliced with the Versapoint Twizzle electrode. A similar technique was applied on submucosal myomas with the difference that, due to their higher tissue density, they were first divided into two half-spheres and then each of these was sliced as described above (Figure 3). Particular attention was paid to the intramural part of the myoma, if present.

Results

All patients were treated without anaesthesia or analgesia. The 445 endometrial polyps ranged between 0.5–4.5 cm and the average operating time was 17 min. A total of 206 polyps (46.3%) were removed intact while the rest (239, 53.7%) were removed using the slicing technique. Endometrial polyps <0.5 cm were removed using mechanical instruments.

The 49 submucosal myomas ranged between 0.5–2.0 cm and the average operating time was 22 min (longer due to the need to slice the myoma at different angles prior to removal, as discussed above). The 21 partially intramural myomas, all pretreated with 3 months of GnRH analogue therapy, ranged between 0.6–1.5 cm and the average operating time was 31 min (still longer due to the special operative technique—a combination of mechanical and electrical instruments, as described above—and to the need to avoid any myometrial stimulation, particularly difficult in view of the location of the myoma). The results of the visual analogue scale assessing patient discomfort are reported in Table I.

Histological examination of the removed tissue showed a correspondence with the hysteroscopic diagnosis in all cases but one. This was a menopausal patient taking HRT who presented with abnormal uterine bleeding. TV–US showed an endometrial thickness of 7 mm. At hysteroscopy, a 1.5 cm polyp on the anterior uterine wall was discovered and removed during the same procedure. The macroscopic aspect at hysteroscopy was normal, without any sign of necrosis, degeneration or vascular abnormalities, but histology showed a focal carcinoma located at the base of the polyp. The patient underwent hysterectomy 2 weeks later and the final histological examination of the whole uterus showed no sign of malignancy.

No failures or major complications (i.e. severe pain, vagal reflex, intravasation, uterine perforation, etc.) occurred during the procedures.

Follow-up was performed after 3 months, or after two spontaneous cycles in patients who had had GnRH pretreatment (n = 21). All the hysteroscopic procedures were performed during the proliferative phase of the cycle (days 6–11) to avoid endometrial thickness. Only one patient underwent hysterectomy, as described above. No recurrence of the pathologies was observed at follow-up in any of the patients. In those operated upon for myomas, the uterine wall had a normal aspect with no scar tissue.

Discussion

The advent of bipolar electrosurgical technology, as well as small diameter scopes with working channels and continuous...
flow systems, has significantly changed the way we treat patients and perform hysteroscopic procedures (Figure 4) (Vilos, 1999). In the past we would have been unable to perform hysteroscopy on these 501 patients in a ‘see and treat’ fashion in an out-patient setting without any anaesthesia.

An important point to note is the special technique which was adopted in our centre: the use of electricity in a totally awake patient without generating any marked discomfort. It is important to remember that the sensitive innervation in the uterus starts from the myometrium out, while the endometrium and any fibrotic tissue are not sensitive. After a test period we lowered the power of the Versapoint bipolar generator from the default settings of VC1/100 W down to the mildest level, VC3 in combination with 50 W. This was one of the main reasons for the excellent patient tolerance recorded during the procedure. The combination of the thin Versapoint Twizzle electrode together with the lower voltage (50 W) and reduced energy flow (VC3) enables minimal dissection of the tissue (resembling a precise ‘cut’) and minimal generation of bubbles, thus assuring a clear visual field. With this ‘cutting’ instrument, histological samples can be collected rather than vaporizing the pathology. By so doing, we were able to discover a focal adenocarcinoma located at the base of the polyp; if we had vaporized it we would have lost this important histological result, which led to the immediate scheduling of hysterectomy.

In conclusion, improved technology now enables us to perform many operative procedures in an office setting, without significant patient discomfort, reserving operating room hysteroscopy (resectoscopy) for the treatment of the less common, larger intrauterine pathologies.

References


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