

Original Article

Hysteroscopic Endometrial Polypectomy: Clinical and Economic Data in Decision Making

Mario Franchini, MD, Giuseppe Lippi, MD, Stefano Calzolari, MD, Giovanna Giarrè, MD, Giampietro Gubbini, MD, Ursula Catena, MD, Attilio Di Spiezio Sardo, PhD, MD, and Pasquale Florio, PhD, MD

From the The Hospital Center Florence Pietro Palagi, Florence, Italy (Drs. Franchini, Lippi, Calzolari, and Giarrè), Madre Fortunata Toniolo Clinic, Bologna, Italy (Dr. Gubbini), Department of Public Health, School of Medicine, University of Naples Federico II, Naples, Italy (Drs. Catena and Sardo), and UOC Obstetrics and Gynecology, San Iacopo Hospital, Pistoia, Italy (Dr. Florio).

ABSTRACT **Study Objective:** To compare the costs of hysteroscopic polypectomy using mechanical and electrosurgical systems in the hospital operating room and an office-based setting.

Design: Retrospective cohort study (Canadian Task Force classification II-2).

Setting: Tertiary referral hospital and center for gynecologic care.

Patients: Seven hundred and fifty-four women who underwent endometrial polypectomy between January 20, 2015, and April 27, 2016.

Interventions: Hysteroscopic endometrial polypectomy performed in the same-day hospital setting or office setting using one of the following: bipolar electrode, loop electrode, mechanical device, or hysteroscopic tissue removal system.

Measurements and Main Results: The various costs associated with the 2 clinical settings at Palagi Hospital, Florence, Italy were compiled, and a direct cost comparison was made using an activity-based cost-management system. The costs for using reusable loop electrode resection-16 or loop electrode resection-26 were significantly less expensive than using disposable loop electrode resection-27, the tissue removal system, or bipolar electrode resection ($p = .0002$). Total hospital costs for polypectomy with all systems were significantly less expensive in an office setting compared with same-day surgery in the hospital setting ($p = .0001$). Office-based hysteroscopic tissue removal was associated with shorter operative time compared with the other procedures ($p = .0002$).

Conclusion: The total cost of hysteroscopic polypectomy is markedly higher when using disposable equipment compared with reusable equipment, both in the hospital operating room and the office setting. Same-day hospital or office-based surgery with reusable loop electrode resection is the most cost-effective approach in each settings, but requires experienced surgeons. Finally, the shorter surgical time should be taken into consideration for patients undergoing vaginal polypectomy in the office setting, owing more to patient comfort than to cost savings. Journal of Minimally Invasive Gynecology (2018) 25, 418–425 © 2017 AAGL. All rights reserved.

Keywords: Cost analysis; Hysteroscopy; Office setting; Operating room; Polyps

Endometrial polyps are common, diagnosed in 10% to 40% of women with abnormal uterine bleeding, as well as in 1% to 12% of asymptomatic patients during gynecologic examinations [1]. Moreover, hysteroscopic resection has been adopted as the standard treatment for endometrial polyps,

because it is easy to perform under general anesthesia and carries a low risk of complications [2].

Advances in instrumentation with small-diameter scopes and mechanical and bipolar instruments have led to the ability to perform polypectomy in the office setting [3,4]. Disadvantages of this approach include a greater learning curve, higher costs of disposable and specialized equipment [5], and longer procedure time to cut tissue and remove fragments from the uterine cavity [6]. A recently introduced technique aimed at overcoming these challenges is the use of a hysteroscopic tissue removal system, which has been shown to be effective, fast, and easily learned and can be applied in an

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Corresponding author: Pasquale Florio, PhD, MD, UOC Obstetrics and Gynecology, San Iacopo Hospital, via Ciliegiole, 51100 Pistoia, Italy.
E-mail: floriop@hotmail.com

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operating room or office setting with or without cervical dilation, depending on scope diameter [7].

Several available mechanical or electrosurgical systems allow the removal of polyps in both the operating room and office settings. However, no study to date has compared these systems to determine the most effective and cost-saving equipment for hysteroscopic polypectomy [8].

Medical institutions need to determine the actual costs associated with specific activities based on the resources they consume. Activity-based cost management determines usefulness and timeliness and thereby allows organizations to use the information as a basis for cost management [9].

In the present study, we compared current costs for hysteroscopic polypectomy using mechanical or electrosurgical systems in different clinical settings and evaluated how activity-based cost management can support decision making.

Materials and Methods

Retrospective health and nonhealth service costs, as well as clinical details and types of surgical procedures, were obtained from patient electronic medical records for January 20, 2015, to April 27, 2016. A total of 773 consecutive procedures (in 754 women, 19 with repeat procedures) for endometrial polypectomy were performed and classified

according to the type of technology used and the model of care in the tertiary center for gynecologic care.

All women underwent clinical evaluation (gynecologic consultation, ultrasound, and hysteroscopy) in an office setting. Patients diagnosed with 1 or more polyps were given the option of undergoing treatment during the same prescreening consultation via office-based surgery (OBS; $n = 210$) or treatment several weeks later in the hospital operating room for same-day surgery (SDS; $n = 544$). The choice of hysteroscopic polypectomy system was made by skilled surgeons according to instrument availability and/or surgeon preference based on experience [6,10–13].

A total of 210 polypectomies were performed using the different OBS setting instruments listed in Table 1, and 563 polypectomies (in 544 women, 19 with repeat procedures) were performed using the various SDS setting instruments listed in Table 2. All hysteroscopic procedures requiring ≤ 5 -mm-diameter scopes were performed vaginoscopically. All OBS procedures were performed without sedation or local anesthesia. For SDS procedures, general or spinal anesthesia with low-dose hyperbaric bupivacaine and intrathecal fentanyl was used in the hospital operating room [14].

A suction-irrigating unit (Endomat; Karl Storz, Tuttlingen, Germany) was used to provide a continuous flow of 250 to 350 mL, a positive pressure of 60 to 70 mm Hg (150 mm Hg

Table 1

Office-based surgery procedures and instruments*

Type of procedure	n	Instruments
OBS-HTR	35	A 5.6-mm, 0-degree field of view*, rigid continuous-flow hysteroscopic morcellator incorporating a 9 Fr operative channel was used with a 2.9-mm disposable blade for mechanical polyp removal. Because the outflow sheath increases the overall diameter to 5.6 mm, before beginning the procedure, the scope diameter was reduced to 5 mm, removing the outer sheath. The 2.9-mm disposable blade was secured to a reusable hand piece, and fluid evacuation was accomplished while the inner tube was working with a clear vision and good distention of the uterine cavity.
OBS-MechP-5	39	A 5-mm, 30-degree field of view, rigid continuous-flow hysteroscope with a 5 Fr working channel† was used with 5 Fr reusable scissors and graspers for mechanical polypectomy.
OBS-MechP-3.5	37	A 3.5-mm, 90-degree field of view, semirigid 1.8-mm continuous-flow hysteroscope‡ with a single-use 3.5-mm sheath incorporating expandable working channel§ was used with reusable 5 Fr scissors and graspers for mechanical polypectomy.
OBS-BEP-5	31	A 5-mm, 30-degree field of view, rigid continuous-flow hysteroscope with a 5 Fr working channel† was used for electrosurgical polypectomy with a 5 Fr coaxial bipolar disposable twizzle electrode¶ and a 5 Fr reusable grasping forceps for extraction.
OBS-BEP-3.5	30	A 3.5-mm, 90-degree field of view, semirigid 1.8-mm continuous-flow hysteroscope‡ with a single-use 3.5-mm sheath incorporating an expandable working channel§ was used for electrosurgical polypectomy with a 5 Fr coaxial bipolar disposable twizzle electrode¶ and a 5 Fr semirigid reusable grasping forceps for extraction.
OBS-LEP-16	38	A 16 Fr, 0-degree field of view, rigid continuous-flow mini-resectoscope** with a reusable bipolar 13 Fr angled loop-electrode was used for polyp resection.

OBS = office-based surgery; HTR = hysteroscopic tissue removal; Mech = mechanical; BEP = bipolar electrosurgical probe; LEP = loop electrosurgical probe.

* Truclear 5.0 system; Medtronic, Dublin, Ireland.

† Karl Storz, Tuttlingen, Germany.

‡ Alphascope hysteroscope; Ethicon, Menlo Park, CA.

§ Gynecare Versascope; Ethicon, Menlo Park, CA.

¶ Versapoint Bipolar Electrosurgical System; Gynecare, Ethicon, Menlo Park, CA.

** Gubbini system; Tontarra, Medizintechnik, Tuttlingen, Germany.

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