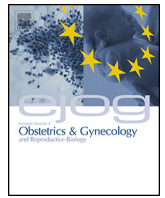




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## Local anesthetic versus forced coughing at colposcopic-guided biopsy: a prospective study<sup>☆,☆☆</sup>



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### ABSTRACT

**Objective:** To evaluate whether the administration of local anesthetic (LA) reduces pain in comparison with forced coughing (FC) for the execution of colposcopically guided biopsies (CGBs).

**Study design:** Data of 100 consecutive patients undergoing CGBs with the use of LA or FC were prospectively evaluated. Procedure-related pain was assessed with the use of a 100-mm visual analogue scale.

**Results:** Fifty-one and 49 patients had CGBs using LA and FC, respectively. No between-group differences were observed in terms of pain related to speculum insertion, CGBs and pain recorded after the procedures ( $p > 0.05$ ). However, patients in the LA group experienced pain related to cervical injection for administration of anesthesia (mean ( $\pm$ SD): 12.4 ( $\pm$ 1.6)). Operative time was longer in the LA than in the FC group (7.2 ( $\pm$ 0.2) vs. 5.0 ( $\pm$ 0.1) min;  $p < 0.001$ ).

**Conclusions:** FC should be preferred over LA. Although CGB-related pain levels do not differ, the omission of intracervical injection is associated with undoubted advantages.

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### Introduction

Colposcopy and colposcopic-guided biopsies (CGBs) are widely used to detect pre-cancerous and cancerous transformation of the uterine cervix [1,2]. Despite its clinical relevance many patients remain reluctant to undergo this “semi-invasive examination”.

Previous investigations have shown that colposcopy represents a stressful experience for women [3,4]. In fact, the diagnosis of a sexually transmitted disease (i.e. human papillomavirus (HPV)) per se, may cause distress and emotional reactions leading to anxiety and feelings of intrusion and contamination, thus increasing fragility [3]. Additionally, fear of pain increases worries among women scheduled to have cervical examination and potentially CGBs [5].

Interestingly, studies focusing on pain experienced by women undergoing CGBs suggested that pain levels are often high,

reaching a score of more than 40 points on a 100-point visual analogue scale (VAS) [6,7]. Recently, the results of a few randomized trials suggested that the use of local anesthesia (LA) provides beneficial effects in terms of pain relief in patients undergoing CGBs [6,7]. Anecdotally, however, the use of forced coughing (FC) represents an effective method to reduce pain perception during CGBs. In order to evaluate if the use of LA may be beneficial among patients who had cervical sampling in comparison with FC, we designed this investigation. As a secondary endpoint we sought to identify possible predictors of high pain levels at the time of CGBs.

### Materials and methods

We conducted a single-centre prospective study at the Obstetric and Gynecological Department of the University of Insubria (Varese, Italy). Institutional review board (IRB) approval was obtained. All patients included gave written informed consent. In our department colposcopies are performed in two sessions by two independent teams of physicians. We evaluated the effects of LA (performed by the first group of colposcopists) and FC (performed by the second group of colposcopists), comparing the data of all consecutive patients undergoing CGBs between 06/01/2012 and 02/28/2013.

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<sup>\*\*</sup> The study was conducted in Varese, Italy.

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Inclusion criteria were: age  $\geq 18$  years old, available information about pain perception at each time scheduled and presence of uterine cervix. Exclusion criteria were: pregnancy, the presence of gross invasive cancer and known allergies to anesthetic. Colposcopy and CGBs were performed according to institutional guidelines. The detailed technique for colposcopy is described elsewhere [8]. Each patient was asked to record the severity of pain expectancy on a 100-mm horizontal visual analogue scale (VAS), with 0 being no pain and 100 the worst pain imaginable. Pain was recorded at the time of speculum insertion, cervical injection, cervical biopsy and 5 min after the end of the procedure. LA (1.0–2.0 mL of 1% lidocaine) was administered using a single cervical injection with a 27-ga needle next to the abnormal area requiring biopsy. If multiple ( $\geq 2$ ) biopsies were necessary, multiple cervical injections of LA were done at different sites. Biopsies were performed about 2 min after cervical injection. Patients in the FC group were asked to cough at the moment of biopsy (FCs and CGBs needed to be coincident). Multiple FCs were required in the case of multiple CGBs. In the CGB group, the biopsy punch was placed directly next to the lesion before asking the patient to cough. Schumacher biopsy forceps (Aesculap-B. Braun, Melsungen, AG) were used to perform CGBs (Fig. 1).

In the case of multiple CGBs, we evaluated the pain experienced at the time of the first biopsy. Attempts were made to reduce the number of unnecessary biopsies. Usually, cytobrush was performed in the case of a non-visible squamocolumnar junction, while endocervical curettages were omitted [9]. Operative time was measured in minutes, from speculum insertion to its removal. Complications included any event requiring re-inspection, hospital admission, drug administration and/or surgical procedures (e.g. hemostasis for uncontrolled cervical bleeding). Prolonged duration of pain was defined as pain levels  $>33$  persisting after 5 min.

Four trained residents (two for each group, who perform  $>200$  colposcopies per year), performed all the procedures under the supervision of certified colposcopists. Preoperative and intraoperative variables were evaluated in order to identify risk factors influencing high pain perception (defined by VAS  $> 33$  mm), based on fitting a univariable model. VAS  $>33$  was used as the cut-off according to the data of Bird & Dickson, suggesting “clinically significant changes” in pain throughout the whole range of the VAS [10]. Multivariable models were fitted using stepwise and backward variable selection methods considering all variables with a  $p$ -value  $< 0.20$  based on univariable analysis. All calculated  $p$  values were two-sided and  $p$  values less than 0.05 were considered statistically significant. Statistical analysis was performed with

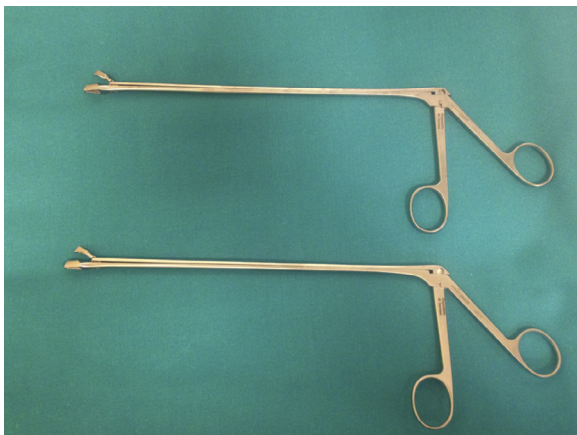


Fig. 1. Biopsy punches. Schumacher biopsy forceps used to perform colposcopically guided biopsy.

GraphPad version 5 (GraphPad Software, San Diego CA) and IBM-SPSS version 20.0.

## Results

The study group included 49 and 51 patients who had cervical biopsies performed using FC and LA, respectively. Baseline characteristics were similar between the groups (Table 1). Overall, the main indication for CGBs was diagnosis of L-SIL at pre-colposcopy cervical smear (72%). No complications related to LA occurred. As shown in Fig. 2, no differences were observed in (mean ( $\pm$ SD)) pain expectancy levels (14.8 ( $\pm$ 2.4) in the LA group vs. 19.6 ( $\pm$ 2.6) in the FC group;  $p = 0.22$ ) as well as pain score recorded for speculum insertion (17.7 ( $\pm$ 2.6) in the LA group vs. 16.5 ( $\pm$ 2.4) in the FC group;  $p = 0.74$ ), cervical biopsy (11.9 ( $\pm$ 1.7) in the LA group vs. 13.2 ( $\pm$ 1.6) in the FC group;  $p = 0.59$ ) and 5 min after the procedure (1.4 ( $\pm$ 0.6) in the LA group vs. 0.8 ( $\pm$ 0.5) in the FC group;  $p = 0.47$ ). However, patients in the LA group experienced pain related to cervical injection for anesthesia administration (mean ( $\pm$ SD): 12.4 ( $\pm$ 1.6)), which was obviously absent in the FC group. Mean (SD) time needed in the LA group was longer than for the FC group (7.2 ( $\pm$ 0.2) vs. 5.0 ( $\pm$ 0.1) min;  $p < 0.001$ ). In the LA group, no difficulties in performing CGBs due to LA-related tissue distortions occurred. No postoperative complications or prolonged duration of pain were reported in the FC and LA arms of the study.

Evaluating factors predicting high pain levels ( $>33$  points on VAS) at the time of CGBs, we observed that univariately patients who experienced high pain levels had a higher pain expectancy ( $p < 0.001$ ) registered before the execution of colposcopy. Additionally, a trend toward suggesting associations between high pain levels with nulliparity ( $p = 0.08$ ) and number of previous vaginal deliveries ( $p = 0.06$ ) was observed (Table 2). Notwithstanding, via

Table 1  
Demographic characteristics of patients included.

Characteristics	Local anesthesia ( $n=51$ )	Forcing coughing ( $n=49$ )	$p$ value
Age (years)	38 (19–65)	34 (22–67)	0.86
BMI	24.0 (18–32.4)	24.3 (18.2–34.5)	0.52
Educational level (at least high school graduate)	45 (88%)	40 (82%)	0.41
CCI			
0–1	47 (92%)	46 (94%)	1.0
2–3	4 (8%)	2 (4%)	0.67
$\geq 4$	0	1 (2%)	0.49
Nulliparity	21 (41%)	28 (57%)	0.16
Parity	0 (0–2)	1 (0–5)	0.10
Previous CS	14 (27%)	7 (14%)	0.14
h/o LEEP	6 (12%)	9 (18%)	0.26
Indication			
L-SIL	40 (78%)	32 (66%)	0.18
H-SIL	8 (16%)	11 (22%)	0.45
Other	3 (6%)	6 (12%)	0.31
Multiple biopsies	4 (8%)	3 (6%)	1.0
Number of biopsies	1 (1–4)	1 (1–3)	0.87
Endocervical curettage	1 (2%)	2 (4%)	0.61
Endocervical cytological sampling	7 (14%)	4 (8%)	0.52

Data are expressed in number (%) or median (range). BMI, body mass index (kg/mq); Parity, numbers of previous vaginal deliveries; CS, Cesarean section; Indication, indication for colposcopy based on pre-colposcopic cervical cytology; L-SIL, low-grade squamous intraepithelial lesion; H-SIL, high-grade squamous intraepithelial lesion; CCI, Charlson comorbidity index; h/o, history of; LEEP, large electro-surgical excision procedure.

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