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Review article

Society of Family Planning clinical guidelines pain control in surgical abortion part 1 — local anesthesia and minimal sedation

Rebecca H. Allen [a,*], Rameet Singh [b]

[a] Obstetrics and Gynecology, Warren Alpert Medical School of Brown University, Women and Infants Hospital, 101 Dudley Street, Providence, RI 02905
[b] Division of Family Planning, Department of Obstetrics and Gynecology, University of New Mexico School of Medicine, Albuquerque, NM 87131

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ABSTRACT

Satisfactory pain control for women undergoing surgical abortion is important for patient comfort and satisfaction. Clinicians ought to be aware of the safety and efficacy of different pain control regimens. This document will focus on nonpharmacologic modalities to reduce pain and pharmacologic interventions up to the level of minimal sedation. For surgical abortion without intravenous medications, a multimodal approach to pain control may combine a dedicated emotional-support person, visual or auditory distraction, administration of local anesthesia to the cervix with buffered lidocaine and a preoperative nonsteroidal anti-inflammatory drug. Oral opioids do not decrease procedural pain. Oral anxiolytics decrease anxiety but not the experience of pain. Further research is needed on alternative options to control pain short of moderate or deep sedation.

Contents

Background

Pain experienced during an abortion procedure is influenced by a complex interplay of physical, psychological, social and medical factors [1]. Pain related to surgical abortion stems from stimulation of the sensory fibers that innervate the uterus and cervix. Impulses transmitted via neural pathways to the brain and spinal cord are interpreted as pain by the higher cortical centers. Sensation from the upper vagina, cervix and lower uterine segment carried by parasympathetic nerves from the sacral spine (S2 to S4) enters the uterus along the uterine blood vessels at about 3 o'clock and 9 o'clock. Sympathetic fibers from the thoracic and lumbar spine (T10 to L1) innervate the uterine fundus via the ovarian plexuses entering the cornua and at the uterosacral ligaments [2].

Pharmacologic pain management options for surgical abortion include local cervical anesthesia alone; oral (PO), intramuscular (IM) or intravenous (IV) medications; general anesthesia; or some combination thereof. These options form part of a continuum from no sedation to deep sedation monitored by anesthesiologists or specialists. The levels

* Corresponding author. Tel.: +1 866-584-6758.
E-mail addresses: rhallen@wihri.org, lborgatta@societyfp.org (R.H. Allen), RHSingh@salud.unm.edu (R. Singh).

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of sedation that have been developed and adopted by the American Society of Anesthesiologists allow for a standardized definition and guide provision of sedation and analgesia while minimizing associated risks [3]. The definition of minimal sedation is a single oral sedative or analgesic medication administered in doses appropriate for the unsupervised treatment of insomnia, anxiety or pain. Less than 50% inhaled nitrous oxide in oxygen with no other sedative or analgesic medications is considered minimal anesthesia. Safety, effectiveness, side-effect profile, cost, patient preference, facility and personnel resources, governmental regulations, training, and provider choice or bias influence the choice of anesthesia or analgesia [4]. As of 2002, only 21% of National Abortion Federation member clinics offered deep IV sedation or general anesthesia, while 33% offered local anesthesia with IV sedation and 46% offered local anesthesia only, with or without oral sedation [5].

The objective measurement of pain in research studies and clinical care is challenging. Both numeric scales such as the visual analog scale (VAS) or numeric rating scale (NRS) and descriptive categories have been used [6]. The VAS, a continuous scale made up of a 10-cm (100-mm) line, is anchored by "no pain" at one end and "worst pain imaginable" at the other. Subjects complete the assessment by marking a line perpendicular to the VAS line at the point that represents their pain intensity. Similarly, the NRS is marked with numbers from 0 to 10, and subjects select the whole number that best reflects the intensity of their pain. This 11-point scale can be modified by providing participants with half numbers between the whole numbers, offering 21 points to report pain. Most human beings do not discriminate among more than 21 levels of pain [7]. Verbal rating scales (VRS) consist of categorical variables such as none, mild, moderate or severe pain, which generally correspond to the NRS as follows: none=0, mild=1–3, moderate=4–6 and severe=7–10. There are multiple variations of the NRS and VRS. When comparing interventions to reduce pain, the clinically significant difference in acute pain scores is debated [8]. Most researchers consider a difference of 1.5–2.0 cm on the VAS or a difference of 1.5–2.0 points on the NRS as clinically significant [9,10]. While pain scores are often not normally distributed, many researchers report both means and medians to allow for comparisons between studies.

This guideline will focus on nonpharmacologic techniques as well as local anesthesia and minimal sedation options for pain control for surgical abortion.

Clinical questions

1. *What characteristics are associated with the experience of pain, and what can patients expect?*

   The experience of pain is influenced not only by physical factors but also by psychological and social factors [1,11]. Some of these factors may be modifiable (e.g., anxiety) and others not (e.g., parity). Knowledge of these characteristics may help the provider anticipate patient needs during the procedure. Anxiety, depression and a woman's anticipation of the pain are strong predictors of the pain she perceives during surgical abortion [12–16]. An older study found that ambivalence and moral dilemma about the abortion decision were associated with increased pain [14], while a contemporary study did not [16]. Nulliparity is associated with increased pain, while prior vaginal birth is associated with decreased pain [14,15,17]. Prior abortion does not measurably change the pain experience [15]. Some, but not all, studies have found that young patient age, retroverted uterus, history of dysmenorrhea and gestational age (≤7 weeks vs. ≥12 weeks) are predictors of increased pain [12,14,15,18].

   Several studies examining patients' experience of pain during first-trimester surgical abortion under local anesthesia report mean pain scores between 4 and 7 on a scale of 0–10 [16,19–21]. For descriptive categories, 1055 women reported the following levels of pain: 1.5%, none; 5.7%, hardly any; 14.2%, a little; 20.3%, medium; 31.7%, quite a bit; and 26.4%, severe [15]. In another evaluation, 2299 women reported the following levels of pain: 3%, none; 17%, mild; 46%, moderate; 32%, severe; and 2%, very severe [12]. These women also rated their abortion pain by comparing it to pain from other conditions: 71% rated abortion pain as more painful than menstrual pain, 63% as more painful than headache pain, but only 11% as more painful than labor pain. In another study that detailed the quality of abortion pain among 109 women, the sensory words of the McGill Pain Questionnaire chosen most often were beating, jumping, cramping, pulling and taut [14]. In this study, the pain during abortion was rated as less than labor pain but more than postherpetic neuralgia, toothache or arthritis. Preabortion counseling can reduce pain by decreasing fearfulness and anxiety [2,12]. Knowing what to expect before, during and after the procedure can empower women to manage their pain during the procedure.

2. *Does cervical preparation decrease pain from surgical abortion?*

   There is no evidence that cervical preparation with any modality decreases pain intraoperatively. Preoperative cramping and abdominal pain as well as vaginal bleeding occur more frequently in women exposed to osmotic dilators, misoprostol or mifepristone versus placebo [22–30]. Discomfort associated with cervical preparation is usually described as mild and not requiring analgesic agents [22,23,30–33]. Cervical preparation typically shortens operative time by reducing the need for mechanical dilation, but this does not always translate into lower pain being perceived by the patient, as was shown in one trial [23]. Furthermore, studies have shown that cervical priming with prostaglandin analogs can increase postoperative pain and the use of analgesics [25,34]. Continuing uterine contractions caused by the misoprostol may contribute to higher postoperative pain levels.

3. *What surgical techniques are associated with more or less pain?*

   Women tend to report more pain during longer procedures, particularly if such procedures are performed under local anesthesia alone [15]. While difficult to measure, providers likely affect the patient's pain experience through verbal conversation or procedural technique and skill [1,2,20,35]. Proficient providers performed procedures faster than trainees in one study, and patients perceived less pain during cervical dilation but not during uterine aspiration [20]. Atraumatic and single-tooth tenacula have similar pain scores as demonstrated in one randomized controlled trial (RCT) of 80 women comparing the standard single-tooth tenaculum and the atraumatic vulsellum tenaculum for intrauterine device (IUD) insertion (mean 3.5 cm vs. 3.5 cm, VAS; p=.58) [36].

   Studies yield conflicting information on the effect of source of suction (electric or manual) on the perception of pain, whether due to procedure time or noise of the electric suction [16,20,35,37,38]. Noise of electric suction will vary by whether the facility uses centralized suction (quieter) or a freestanding electric suction machine (noisier). Three U.S. RCTs comparing electric to manual suction found similar values for aspiration pain in procedures up to 10 or 11 weeks' gestation [16,20,35]. In one study of 84 women, most women (69%) noticed the noise of electric suction, but only 20% were "a little" or "somewhat" bothered by the noise and none were "very bothered" by it [35]. Pain scores were also similar between the two techniques in a meta-analysis of two trials of 383 women at up to 11 weeks' gestation, one from China and one from the United States [relative risk (RR), 0.78; 95% confidence interval (CI), 0.43–1.41] [37]. In contrast, a meta-analysis based on 800 women in four trials from China reported less severe pain with manual compared to electric suction in women undergoing procedures at less than 7 weeks' gestation (RR, 0.04; 95% CI, 0.01–0.12)

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