

## An analysis of pain and analgesia after Mohs micrographic surgery

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**Background:** Pain characteristics and analgesia in patients undergoing Mohs micrographic surgery have not been systematically studied. It is important to know about pain after Mohs micrographic surgery to better serve patient needs.

**Objective:** We sought to measure pain in patients after Mohs micrographic surgery, and to investigate the relationship among postoperative pain, surgical characteristics, patient characteristics, and analgesics used.

**Methods:** The Wong-Baker 0-to-10 pain scale was prospectively administered postoperatively to all patients presenting for Mohs micrographic surgery in a private practice setting between October 1, 2007, and December 31, 2008. Patients recorded their pain level from the day of surgery through postoperative day 4. The age, sex, location of surgery, number of lesions operated on, postoperative size, type of repair, severity of pain, and oral analgesics consumed and dosages used were recorded.

**Results:** A total of 433 patients were included in the final analysis. The highest pain scores were found on the day of surgery and steadily declined until postoperative day 4 ( $P < .000$ ). In all, 52% of patients took pain medication on the day of surgery, which declined successively with each postoperative day. The highest mean pain scores were statistically significantly associated with repair type (flaps), age ( $<66$  years), number of lesions, and consumption of narcotics for pain relief. No statistically significant differences existed for sex or postoperative defect size.

**Limitations:** The instrument used to measure pain relied on patient self-report in a private practice surgery center. Only the validated Wong-Baker pain scale was used to assess pain in this study.

**Conclusion:** Approximately half of the patients after Mohs micrographic surgery take medication for pain control. Type of closure, location of surgery, age, and type of pain medication taken were significantly associated with postoperative pain. (J Am Acad Dermatol 2010;63:79-86.)

**Key words:** analgesia; Mohs micrographic surgery; pain; postoperative pain; Wong-Baker pain scale.

To better serve patients' needs, it is important to know approximately how many patients experience pain after surgery, and what factors affect postoperative pain. The movement to

assess and treat patient pain has become an integral part of every in-patient hospital stay. Pain control is part of the standard of care for all patients admitted to the hospital. This movement has largely been supported by The Joint Commission, a nonprofit organization that accredits and certifies more than 15,000 health care organizations and programs in the United States.<sup>1</sup> This organization has required that a pain score be part of the vital signs assessment. This movement has started to involve outpatient medical and surgical subspecialties in addition to inpatient hospital admissions. Several subspecialties have started to systematically investigate postsurgical pain and its response to analgesics.<sup>2</sup>

One of the most commonly used pain scales is the Wong-Baker pain scale originally developed in the pediatric population.<sup>3,4</sup> It is a series of faces

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expressing different degrees of pain and was subsequently validated in adults. The only study to date in which pain scales were administered to patients during Mohs micrographic surgery involves pain surrounding administration of different concentrations of local anesthesia.<sup>5</sup> We initiated a prospective pain assessment study to all patients having Mohs micrographic surgery and investigated tumor location, type of repair, size of defect, age, sex, and pain medications consumed after Mohs micrographic surgery.

## METHODS

Between October 1, 2007, and December 31, 2008, all patients undergoing Mohs micrographic surgery were given a postoperative pain assessment sheet upon completion of surgery (Fig 1). Patients with contraindications to analgesic consumption (ie, liver disease or documented medication allergy) were not included in this study. Before discharge, the patient was instructed to apply ice and take 500 mg of acetaminophen orally (Extra Strength Tylenol, McNeil Consumer Healthcare, Fort Washington, PA) only when needed for pain. Patients were not instructed to use analgesics prophylactically. The patients were advised to refrain from using nonsteroidal anti-inflammatory drugs (NSAIDs) and aspirin to reduce postoperative bleeding risk. If a patient requested prescription pain medication, either 100 mg of propoxyphene napsylate and 650 mg of acetaminophen (Darvocet N100, Xanodyne Pharmaceuticals, Basking Ridge, NJ) or 5 mg of hydrocodone and 500 mg of acetaminophen (Vicodin, Abbott Laboratories, Parsippany, NJ) were prescribed.

The patients were instructed to rate their pain each morning and evening for 4 postoperative days. Their pain scores were self-rated using the Wong-Baker FACES scale, a 0-to-10 scale using descriptive faces to assess pain.<sup>3,4</sup> In addition to the postoperative pain assessment, medication and dosage used for pain control, patient's date of surgery and date of birth, and the defect site, size, and type of closure for each lesion were recorded.

Surgery sites were grouped into the following locations: ear, nose, temple, cheek and preauricular, forehead including eyebrow and hairline, lip including cutaneous lip, chin, eyelid including canthi, scalp, neck, back, leg, arm, hand, foot, chest, and

abdomen. Closure types were complex and intermediate linear, granulate and epithelialize (G&E), full-thickness skin graft, split-thickness skin graft, advancement, rotation, transposition, and island pedicle flap. Pain medications listed included 500 mg of acetaminophen, 100 mg propoxyphene napsylate and 650 mg acetaminophen or 5 mg hydrocodone and 500 mg acetaminophen; some patients also took medications we did not prescribe including aspirin, tramadol, and NSAIDs. These medications were included in the analysis.

## RESULTS

A total of 433 patient questionnaires were returned and included in the final analysis. The questionnaire was administered to 2197 patients, for a response rate of 19.7%. For this type of nonincentive-based questionnaire involving several days of follow-up,

the expected response rate was 10% to 15%.<sup>6</sup> This response rate was satisfactory given the questionnaire type and based on recent studies showing less bias with lower questionnaire response rates.<sup>7,8</sup> Demographic criteria are included in Table I. In all, 56% of patients were male and 44% were female. A total of 80% (n = 344) of patients had one lesion treated whereas 20% (n = 89) of patients had more than one lesion treated on the day of surgery. The mean age of the patients was 67 years; the youngest treated was 21 years old, while the oldest was 100 years old. As demonstrated in Table II, the average size of the postoperative Mohs defect was 4.29 cm<sup>2</sup>. The median size was 2.7 cm<sup>2</sup> with the smallest lesion at 0.14 cm<sup>2</sup> and the largest at 67.5 cm<sup>2</sup>.

Table III demonstrates the frequencies of operative locations. The most common sites of surgery included the nose (30%), cheek (14.7%), forehead (9.9%), ear (9%), eyelid (5.3%), neck (5.1%), lip (4.4%), and temple (4.1%). In all, 82.5% of lesions undergoing Mohs micrographic surgery were on the head and neck.

Table IV demonstrates the frequencies of the repair type. The most common repair type was the linear closure (69.5%). G&E was the second most common type (13.4%). Certain patients with superficial tumors limited to the epidermis in challenging locations were operated on using the flexible scalpel technique.<sup>9</sup> When the tumor was

## CAPSULE SUMMARY

- This was a prospective study that investigated postoperative pain and analgesic use after Mohs micrographic surgery.
- The analysis performed investigated relationships among type of closure, location of tumor, patient age and sex, analgesia used, and level of postoperative pain.
- The highest pain scores were associated with the day of surgery, number of lesions excised, flap and graft repair, younger age, and narcotics consumed.

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