

## Oral Pain Management for Pregnant Patients: A Survey of Endodontists

Cristóbal S. Berry-Cabán<sup>1</sup>, Jarom Burbank<sup>2</sup>, Toni Buchheit<sup>3</sup>, Thomas Beltran<sup>4</sup>, Amy McCoart<sup>5</sup>

<sup>1,4,5</sup>Department of Clinical Investigation, Womack Army Medical Center, Fort Bragg, NC, USA

<sup>2</sup>Department of Endodontics, Cowan Dental Clinic, Fort Sill, OK

<sup>3</sup>Department of Obstetrics and Gynecology, Womack Army Medical Center, Fort Bragg, NC

**Corresponding Author:** Cristóbal S. Berry-Cabán, Department of Clinical Investigation, Womack Army Medical Center, Fort Bragg, NC, USA. Phone/Fax 90-907-8844, Email: [Cristobal.s.berry-caban.civ@mail.mil](mailto:Cristobal.s.berry-caban.civ@mail.mil)

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### Abstract

**Introduction:** Oral health during pregnancy is an important part of prenatal care as there is a known association between oral diseases and preterm delivery, low birth weight, preeclampsia, small for gestational age, gestational diabetes and stillbirth. This study examines current approaches by endodontists to pain management for severe oral pain in pregnant patients.

**Methods:** A web-based survey was sent to 2,777 members of the American Association of Endodontists to obtain data regarding pain management during pregnancy. Responses were compared based on gender, practice setting, as well as by time in practice. Comparisons were accomplished using the Kruskal-Wallis test.

**Results:** Two hundred ninety-three endodontists completed a web-based survey. In regards to NSAIDs prescribing there were significant differences based on provider experience. Providers with less experience were less likely to prescribe ibuprofen than those with 20+ years experience. In regards to the prescription of opioids and NSAIDS per trimester opioids were equally prescribed throughout as was acetaminophen or the combination however NSAIDS were generally prescribed less often.

**Discussion:** Collaborating with patients obstetricians and endodontists regarding the safety and efficacy of pain medications in pregnancy could lead to improved management of severe oral pain during pregnancy.

**Keywords :** : Inlay-Core, Tooth (Crown) Fracture, Ceramic Restoration, Prosthodontics

## Introduction

Oral health during pregnancy is an important part of prenatal care as there is a known association between oral diseases and preterm delivery, low birth weight, preeclampsia, small for gestational age, gestational diabetes and stillbirth.<sup>1</sup> Due to the physiology of pregnancy, gravid women are at a higher risk for gingivitis, dental caries, tooth erosion and other oral pathology.<sup>2</sup> Oral infections have also been investigated as a potential risk factor for preterm labor or premature rupture of membranes that are major obstetric antecedents to spontaneous preterm births.<sup>3</sup> These outcomes were first publicized after the Surgeon General's report on the high prevalence of oral disease in the United States in 2000.<sup>3</sup> The Surgeon General's report also identified oral health treatment during pregnancy as a way to improve overall maternal health.<sup>3</sup>

There has been research on the safety of dental treatment during pregnancy to include routine cleanings and checkups, radiographs and oral surgical procedures and attitudes of endodontists regarding such treatments. Outcomes of several studies have indicated the relative safety of dental treatments in pregnancy. Therefore, pregnant patients are encouraged to have oral procedures completed and to maintain their oral health to avoid increased risk of undesired outcomes.<sup>2,4,5</sup>

Oral pain management during pregnancy is not well ascertained.<sup>6-8</sup> Patil reviewed medications used after dental procedures in pregnancy but only mentioned ibuprofen being class B and D depending on the trimester it is used. No other analgesics were reviewed.<sup>9</sup> Additionally, studies also show that higher stress of the mother is associated with preterm delivery and growth restriction.<sup>10</sup> Uncontrolled oral pain after dental work could possibly lead to higher stress of the mother therefore possibly cancelling some of the benefits of having oral procedures performed in pregnancy.

In October of 2011 a nation-wide expert workgroup reviewed federal and national organization policies<sup>11</sup> and identified common ground to increase health professionals' awareness of the importance and safety of women's oral health care during pregnancy. From this workgroup a national consensus statement was developed to help and guide health professionals in the provision of oral care to include indications, contraindications and special considerations of common analgesics and anesthetics.<sup>11</sup>

This study examines pain management among endodontists for oral pain during pregnancy. The objective of this study is to examine which medications are prescribed, if prescriptions vary by trimester and if there is a difference among endodontists based on experience, gender, or practice setting.

## Methods

Data were collected using a web-based survey. Emails were sent to 2,777 members of the American Association of Endodontists that

included a link to a survey housed on the QuestionPro website<sup>TM</sup>. Access to email addresses were obtained through the American Association of Endodontists database. Each participant was provided an individual link to the survey. No personally identifiable information was collected as part of the survey. Data were collected between 1 September and 31 December 2014.

The survey instrument consisted of twelve questions. Demographic and professional questions included age band, gender, and practice setting. Additionally, participants were questioned about choices of pain medications in each trimester for oral pain. Lastly, participants were questioned about the type of nonsteroidal anti-inflammatory drugs (NSAIDs) if any, they prescribe to pregnant patients and acetaminophen/opioid combinations if any prescribed in pregnancy.

Data were retrieved from the QuestionPro website. Self-reported prescription preferences are reported with frequencies by trimester. Additionally, primary practice setting and number of years post-residency are reported as frequency and percentages. Kruskal-Wallis tests were conducted to evaluate response differences between respondents based on gender, primary practice setting (Private Practice, Academia, Federal, Resident, or Other), as well as by experience. Due to sample size limitations, individuals reporting Academia, Federal, Resident, or Other as their primary practice setting were grouped together for comparisons with those in private practice. Individual experience was self-reported based on the number of years since completion of residency training. Pairwise comparisons were computed using the Mann-Whitney U test and were corrected for multiple comparisons using the Bonferroni adjustment.

A P value < 0.05 was considered statistically significant. All data were analyzed by using SPSS version 22.0 (SPSS, Chicago, IL USA). This protocol was reviewed by the Womack Army Medical Center Human Protections Administrator and determined to be exempt.

## Results

The survey response rate was 11% (n = 293). Respondents included 244 male providers (83.4%), 45 female providers (15.6%), and 4 providers who did not disclose gender. Ages were reported as age band and ranged from 21-30 years to 61+ years. Three individuals (1.0%) reported being 21-30 years of age; 65 individuals (22.2%) reported being 31-40 years of age; 81 individuals (27.6%) reported being 41-50 years of age; 77 individuals (26.3%) reported being 51-60 years of age; and 67 individuals (22.9%) reported their age as over 61 years old. Table 1 shows the practice setting of respondents and the number of years since residency training.

**Table 1. Years Elapsed Since Completion of Residency Training, No. (%)**

	0 – 5 Years	6 - 10 Years	11 - 15 Years	16 - 20 Years	Over 20 Years	Total
Private Practice	11 (5.0)	58 (26.5)	49 (22.4)	30 (13.7)	71 (32.4)	219 (100.0)
Academia	1 (3.1)	3 (9.4)	5 (15.6)	3 (9.4)	20 (62.5)	32 (100.0)
Resident	3 (50.0)	1 (16.7)	1 (16.7)	0 (0.0)	1 (16.7)	6 (100.0)
Federal	13 (50.0)	4 (15.4)	3 (11.5)	6 (23.1)	0 (0.0)	26 (100.0)
Other	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	6 (100.0)	6 (100.0)
Total	28 (9.7)	66 (22.8)	58 (20.1)	39 (13.5)	98 (33.9)	289 (100.0)

When asked “What NSAIDs do you most often prescribe to a pregnant woman?” results showed no significant differences based on the provider’s gender or primary practice setting. However, results of the analysis indicated that there were significant differences based on the years of providers’ experience,  $P < .01$ . The proportion of variability in the ranked dependent variable accounted for by the provider’s experience was 0.05.

Pairwise comparisons were conducted to evaluate differences between the 5 experience groups. Controlling for Type I error across tests, results indicate a significant difference between the 0-5 years experience group and the 20+ years experience group,  $P < 0.001$ . Providers with less experience were less likely to prescribe ibuprofen to pregnant patients than those with 20+ years experience

**Table 2. Acetaminophen / Opioid Combination Prescriptions**

	n	Percent
Percocet	19	6.5
Tylenol3	112	38.5
Vicodin	93	32.0
Norco	5	1.7
Other	2	0.7
None	60	20.6

**Table 3. Frequency of Self-Reported Prescription Preference by Trimester<sup>a</sup>**

	1 <sup>st</sup> Trimester	2 <sup>nd</sup> Trimester	3 <sup>rd</sup> Trimester
NSAID	22	24	16
Acetaminophen	186	172	172
Acetaminophen / NSAID	21	31	27
Acetaminophen / Opioid	30	31	29
Opioid	172	181	181
NSAID / Opioid	8	10	10
Other	33	29	29
None	14	10	11

<sup>a</sup> Frequencies based on responses from 293 providers. Providers may have chosen to select more than one medication per trimester.

No differences were found with regard to what acetaminophen/opioid combinations were prescribed to pregnant women based on provider gender, experience, or practice setting. Medication frequencies are shown in Table 2. Similarly, responses to the question “After successful emergency endodontic treatment, when would you want to complete the non-surgical Root Canal Therapy (RTC)?” showed no differences based on gender, experience, or practice setting. The majority of providers responded that they would wait until at least the 2nd trimester (n=175, 61.2%). Twelve providers (4.2%) stated that they would perform RTC in the 1st trimester; 20 providers (7.0%) stated that they would wait until the 3rd trimester; and 79 providers (27.6%) stated that they would wait for post-partum. Table 3 shows pain medication prescriptions by trimester.

**Discussion**

Unlike NSAIDs, opioids are generally category B and/or C in pregnancy depending on the manufacturer. The risk of opioid use cannot be ruled out by evidence based studies; therefore the risks of prescribing the medication must be weighed against its benefits. Thus, chronic use of opioids is not recommended and should not be promoted in pregnancy. “However, short-term opioid use could be a relatively safe and very effective way to treat severe oral pain during pregnancy when done in conjunction with proper dental therapy. Collaborating with patients obstetricians and endodontists regarding the safety and efficacy of pain medica-

tions in pregnancy could lead to improved management of severe oral pain during pregnancy.”

According to The National Consensus Statement on Oral Health Care During Pregnancy, acetaminophen (alone or with codeine, hydrocodone or oxycodone), codeine, meperidine, may be used during pregnancy. In relation to the use of NSAIDS such as aspirin, ibuprofen and naproxen the recommendation is to use for only a short duration (48-72 hours) and avoid throughout the first and third trimesters. Any general or intravenous anesthesia should always involve consulting the obstetric care provider.<sup>11</sup>

Another hypothesized benefit from better pain control is that it would further reduce undesired outcomes in pregnancy. In theory, better pain control would lead to less stress in the mother. As shown in previous studies, stress has been associated with preterm labor.<sup>9</sup> Therefore, better severe pain control in pregnancy could potentially lead to a decrease in preterm birth rates

Pregnant women need to be aware of the availability of effective oral analgesics and that avoidance of proper dental care can lead to detrimental outcomes in their pregnancy. Education is vital and should start at initial obstetric appointments. This would likely lead to better adherence to the Surgeon General’s recommendation of oral health care in pregnancy.<sup>3</sup>

Further studies will need to be conducted to investigate patient’s perspective and knowledge of availability of pain control options

that result from oral care or procedures. Furthermore, studies on these medications and adequate oral pain control on maternal and neonatal morbidity and mortality, specifically preterm delivery, low birth weight, preeclampsia, small for gestational age, gestational diabetes and stillbirth, are needed.

In conclusion, communication between the patient, their endodontist or dentist and the obstetric care provider is necessary to aid in the alleviation of fear and to promote proper oral care during pregnancy. The lack of effective oral care during pregnancy can lead to more severe complications than short-term treatment with an appropriate oral analgesic in conjunction with proper dental procedures.

### Disclaimer

The views expressed herein are those of the authors and do not reflect the official policy of the Department of the Army, Department of Defense, or the US Government.

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