PATIENTS' RETROSPECTIVE PREFERENCE FOR EXTRACTION
OF ASYMPTOMATIC THIRD MOLARS

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Patients’ retrospective preference for extraction of asymptomatic third molars


Abstract – The purpose of this study was to determine the personal utility of asymptomatic third molar removal in military patients. From 1 to 30 days (mean = 7.4) after the extraction of one or more third molars, 100 returning patients (all male, mean age = 20.1) were asked to respond to hypothetical questions concerning the extraction of asymptomatic third molars. If the likelihood of third molars ever having to be removed was given as 10%, 50%, and 100%, then 45%, 61%, and 88% of responses, respectively, showed preference for immediate extraction. When respondents chose to delay treatment until there was a problem, no likelihood group would tolerate more than 2.77 additional days of post-extraction pain before changing their preference to immediate extraction. 87% of respondents preferred extractions prior to a deployment which would make treatment delivery difficult, and 89% prior to becoming a civilian at which time treatment might no longer be free. The results indicate general acceptance of the strategy of prophylactic third molar removal among a sample of military patients who have undergone pre-treatment counseling and the surgical procedure. A question remains as to the personal utility that might be measured prior to surgery.

Research on dentist-patient communication has emphasized ways practitioners can influence patients to accept treatment (see 1 for a review of the compliance literature) and has less frequently addressed sensitivity to patients’ treatment preferences. Grembowski et al. (2) found that “only about 33% of dentists considered patient factors important in choosing alternative therapies”. Aside from financial constraints, patient preferences may be considered of limited importance because practitioners either: (a) believe that patients are uninterested in entering the treatment decision process, preferring to leave it in the hands of experts; or (b) know what is in the best interests of patients and should persuade them in that direction. Two evaluations of this paternalism are found in commentaries by Szkol (3) and Slack (4).

Recent evidence and discussion suggests, however, that many patients prefer, or would benefit from, active participation in medical treatment decision making (5-7). But exercising this prerogative is hindered by substantial role-based obstacles between patient and physician (4, 5). Consideration of patient values is more important if there is uncertainty about the best treatment approach (5). Evidence on the prophylactic removal of third molars suggests that this is an area where active solicitation of patient preferences is necessary.

Removal of asymptomatic teeth in one study (8) accounted for 32% of impacted third molar extractions. Aside from orthodontic requirements, justification for these extractions lies in reduced risks for more serious future problems. Recent analysis of expected costs (9, 10) by decision analysis methods (11), however, found that in young patients prophylactic removal was not the most effective disability-reducing strategy. Under a wide variety of assumptions about treatment outcomes and associated disabilities, the risk-minimizing solution was to extract only pathologically involved third molars. This conclusion was subject to the caveat that increases in the severity of outcomes in older patients might be great enough to support prophylactic removal. Unfortunately, the data required to evaluate this possibility were considered to be unavailable.

“Days of standard discomfort” (“defined in terms of the disability normally associated with an uncomplicated surgical extraction of a third molar – namely, pain, swelling, bruising, and malaise”, ref. 10, p. 654) were assigned by 46 clinicians to each third molar treatment outcome and this served as the single “cost” value to be minimized. This is appropriate since appreciation of patient discomfort has a central role in the practice of dentistry, but there are other possible considerations. For example, research by one of the same authors (12) on the cost-effectiveness of alternative methods of periodontal disease control considered, besides tooth sensitivity, monetary costs and patients’ views on aesthetics and the relative value of present versus future tooth years. These evaluations fall within utility analysis (13), an area of decision analysis that focuses on the determination and incorporation of patient values. The patient provides critical input into the choice of treatment alternatives based on personal preference for outcomes.

With regard to the third molar question, patients may value certain contemporary pain differently than probabilistic future pain. In the present research, pa-
The Naval Dental Research Institute would like you to complete the following questionnaire so we can better understand experiences that patients have when their third molars (wisdom teeth) are removed. You are not required to answer these questions and if you decide not to, there will be no adverse consequences. We believe that your views will provide useful information. Your individual responses will be held in confidence and only study findings for the entire group, without personal identification, will be released.

If you are willing to help us, please continue with this questionnaire.

Fig. 1. Nature of participation.

1. Had any of the teeth that were extracted, or gums around these teeth, ever caused you any pain or discomfort before their removal?

Check the teeth that had ever caused you any pain or discomfort.

____ Top jaw, left side
____ Bottom jaw, left side
____ Top jaw, right side
____ Bottom jaw, right side.

Check the worst pain that any of these teeth had caused you before removal.

____ no pain
____ mild pain
____ moderate pain
____ severe pain

Fig. 2. Questions on pain history.

2. Was the pain and discomfort that you had after the removal of your third molar(s) what you expected? (circle the number)

Much less pain than expected
About what you expected
Much greater pain than expected

1 2 3 4 5 6 7

3. For how many days after the removal of your third molars did you have:

severe pain ______
moderate pain ______

* Add the number of days of severe and moderate pain ______ and use this value for answering questions 4 through 9.

* In the computerized version this total was computed by the program.

Fig. 3. Questions on post-extraction pain.
The remainder of this questionnaire deals with hypothetical situations that are unrelated to your particular case and to the facts that your dentist or oral surgeon considered in deciding to remove your third molar(s).

Third molars that have never caused trouble are sometimes removed to prevent future problems. When these problems occur, third molar removal can be more complicated and result in more pain than if they had been removed before problems began or when the patient was younger. We would like to know the trade-offs that patients would make if their third molar(s) did not have to be removed immediately.

In answering these questions, assume that:

- your third molar(s) have NOT yet been removed
- your third molar(s) NEVER caused you a problem before their removal
- dental care is always available to you without delay.

Fig. 4. Instructions and information given to patient.

Suppose it was CERTAIN that one day your third molar(s) would have to be removed because of pain or another problem. You may choose to have these teeth removed now and have the days of severe and moderate pain that you calculated in question 3, or you may delay treatment until after your third molars cause you a problem.

4. By waiting, you will suffer no additional days of severe or moderate pain following third molar removal. Would you prefer removal: NOW or LATER (circle one)?

5. If you chose LATER in question 4 then decide what number of additional days of severe or moderate pain would make you prefer removal NOW. (For example, the answer "3" says that if waiting until there is a problem means you would suffer 3 additional days of severe or moderate pain after third molar removal, then you would prefer removal NOW.)

   Days of additional pain that would lead you to choose removal NOW.

Now suppose it is NOT CERTAIN that your third molars will ever have to be removed because of pain or another problem. Instead of the 100% chance in questions 4-5, the chance that your third molars will have to be removed sometime in your lifetime will either be 50% (1 out of 2) or 10% (1 in 10). You may choose to have these teeth removed now and have the days of severe and moderate pain that you calculated in question 3, or you may wait until if and when your third molars cause you a problem.

6. There is a 50% chance that your third molar(s) will have to be removed sometime in your lifetime. But if they are removed, you will suffer no additional days of severe or moderate pain by waiting. Would you prefer removal: NOW or LATER (circle one)?

7. If you chose LATER in question 6 then decide what number of additional days of severe or moderate pain would make you prefer removal NOW.

   Days of additional pain that would lead you to choose removal NOW.

(Questions 8 and 9 are repetitions of 6 and 7 with 10% replacing 50%).

Fig. 5. Extraction preferences for three removal probabilities.

In questions 4 through 9 you were assured that dental care was always available to you without delay. If your third molar(s) started to cause you pain, they could be removed immediately.

Now suppose that because of your naval duty you are frequently deployed on small ships or with land forces where a dentist is not available. You don't know when and if your third molar(s) will begin to cause you a problem. If your third molars do cause you a problem while you are deployed you may develop a fever and suffer severe pain for days before treatment can be arranged. You may not be able to perform your duties, you may require a medical evacuation, and your command's mission may be compromised.

10. Assume that you still have all your third molars. Considering possible difficulties in getting treatment, would you prefer to have your third molars removed PRIOR TO DEPLOYMENT or would you prefer to continue to WAIT for a problem? (circle the number).

   Strongly prefer removal prior to deployment
   Strongly prefer to wait until there is a problem
   Don't care

   1 2 3 4 5 6 7

11. The dental services for third molar removal that you now get free, would cost you between $200 and $1,000 as a civilian. Would you prefer to have your third molars removed PRIOR TO LEAVING THE NAVY or would you prefer to continue to wait for a problem.

   Strongly prefer removal prior to leaving Navy
   Strongly prefer to wait until there is a problem
   Don't care

   1 2 3 4 5 6 7

Fig. 6. Questions related to treatment availability relevant to the military setting.

difficulty in understanding portions of the questionnaire.

Although personal attributes such as ethnic background and educational level might influence the determination of personal utility, this information could not be collected at the individual level in this study. However, mean values for these attributes have been published (14). Among all active duty enlisted Navy personnel, which should not differ substantially from recruits, minorities accounted for 26.7% of the population (16.0% Black Americans; 5.1% Hispanic Americans; and 5.6% either Native Americans, Alaskan Natives, or Pacific Islanders). 91% of Navy recruits during the time frame of this study were high school graduates. Recruits with more or less education than that were uncommon.

Results and Discussion

Half the patients (n = 50) reported no pain associated with their third molars any time prior to the extractions. Each patient had one to four teeth removed (mean = 2.11), and of the 211 teeth removed, 45.5% were erupted, 43.6% were partially erupted, and 10.9% were unerupted.

Patients experienced slightly less pain than they expected with the mean score for question 2 being 2.96. On average, patients reported having 1.28 days of severe pain and 1.92 days of moderate pain after extractions.

If the likelihood of third molars ever having to be removed in the hypothetical patient’s lifetime was given as 10%, 50%, and 100%, then 45%, 61%, and 88% of responses, respectively, showed preference for immediate extraction. When respondents chose to delay treatment until there was a problem, 10%, 50%, and 100% likelihood groups would tolerate no more than 1.64, 2.77, and 2.76 additional days of post-extraction pain, respectively, before changing their preference to immediate extraction. 87% of respondents preferred extractions prior to a deployment which would make treatment delivery difficult, and 89% prior to becoming a civilian at which time treatment might no longer be free.

Various statistical procedures including stepwise linear and stepwise logistic regression were used to identify significant factors associated with two dependent variables. These were: (a) the
number of days of additional pain that would be tolerated to defer extractions and (b) choosing extraction "now" versus "later". Predictors investigated included presence or absence of pre-surgical pain, differences in post-extraction pain from what was anticipated, actual days of post-extraction pain, days elapsed since extractions, number of teeth extracted, and the removal of unerupted teeth. These predictors could not account for a statistically significant amount of variation in the dependent variables. It is possible that the generally high level of treatment strategy acceptance caused a ceiling effect that precluded the measurement of activity associated with factors that would intuitively play a role in patients' decisions.

In the questions that addressed preference for removal prior to deployment and prior to becoming a civilian, a specific probability for third molar problems was not provided for subjects. The crossing of these two questions with all three probability levels studied in other questions did not seem feasible in terms of additional time requirements and complexity. Therefore a decision had to be made between studying a single selected probability level or leaving the probability unstated. We chose the latter alternative anticipating that subjects would use all available information in generating a personally appropriate subjective probability that would be applied to the hypothetical patient. However, this assumption was not verified and it is possible that subjects may have read a high degree of third molar problem certainty into these questions. It would be informative to replicate these procedures with assigned probability levels.

The results indicate general acceptance of prophylactic third molar removal in a sample of military patients who have undergone pre-treatment counseling and the surgical procedure. Treatment refusal was very rare in this military population, which precludes a significant selection bias. Thus, practitioners can have some assurance that these patients are generally satisfied with their decision and the personal utility that it has brought to them. Generalization of these findings to populations other than military enlisted recruits would be very difficult in that subjects come from a relatively narrow demographic range. These individuals also self select for the military environment and the acceptance of authority which this entails. Absence of data from individuals who refuse treatment may lead to an overestimation of "average" extraction preference since these persons are likely to tolerate more days of discomfort and higher probabilities of third molar problems before choosing immediate extraction. Issues of generalizability underscores the importance of the personal utility perspective.

The population studied was relatively homogeneous with respect to age, education, and socioeconomic status, and these variables were not considered in explanatory models. Ethnic background is a potentially more interesting predictive variable that could be considered in future work.

In addition to population effects, these preferences may be different if measured prior to extractions. It is possible that patients redefine their attitudes to conform to their own actions which may, at the time of surgical consent, been subject to external pressure. This redefinition would serve to reduce the psychological state of cognitive dissonance by bringing their acts and attitudes into alignment.

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The purpose of this study was to determine the personal utility of asymptomatic third molar removal in military patients. From 1 to 30 days (mean=7.4) after the extraction of one or more third molars, 100 returning patients (all male, mean age=20.1) were asked to respond to hypothetical questions concerning the extraction of asymptomatic third molars. If the likelihood of third molars ever having to be removed was given as 10%, 50%, and 100%,
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