Decision-Making Process for Treatment of Mandibular Fractures among Minority Groups

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Abstract

Objectives: *While patients' preferences for medical care are widely studied, only a small number of studies have looked at the decision-making process for dental treatment of mandibular fracture. This study examines the decision-making process for treatment of mandibular fractures among minority groups. Study participants were asked to consider Maxillomandibular Fixation (MMF - a non-surgical approach of wiring the teeth for 4-8 weeks) or Rigid Internal Fixation (RIF - surgical placement of bone plate).* ***Methods:*** *A qualitative study of patients receiving care at an inner-city hospital for either 3rd molar extraction under general anesthesia or a mandibular fracture were recruited to participate in an hour-long focus group to discuss their preferences. The 3rd molar group was selected as a comparison group exemplifying experience with oral surgery and recovery from general anesthesia.* ***Results:*** *Seven decision-making factors affecting choice of treatment were discussed by both jaw fracture and 3rd molar groups, including: side effects, effectiveness of each treatment, trusting doctor's recommendation, what to expect from each procedure, use of pictures from previous case studies, surgery location of scar/ incision, and size of scar. Rigid Internal Fixation (RIF) participants discussed a different set of concerns compared to Maxillomandibular Fixation (MMF) participants.* ***Conclusions:*** *Regardless of gender, the treatment of choice for both 3rd molar and jaw fracture participants was the non-surgical method of wiring of the teeth for 4-8 weeks. The Phase II part of this study will systematically examine patient preferences among a larger sample of 3rd molar and jaw fracture patients by incorporating the patient-reported concerns about treatment of jaw fracture found in this inductive, phenomenological study.*

Key Words: Decision making, patient preference, oral surgery, minority, African-American, Hispanic, oral health

Introduction

The traditional *paternalistic mode of health care* entrusts the clinician with making treatment decisions for the patient because of the clinician's extensive, specialized knowledge about what treatment is best for a patient in the condition. The more contemporary *informed patient model* empowers the patient to take an active role in the decision-making process (1). In the current consumerist health care system, in order to fulfill their roles as informed consumers, patients are encouraged to educate themselves about the various treatment options and learn about the consequences of each. Some suggest that people with limited language skills or educational deficits are disenfranchised from participating in the decision-making process (2,3,4,5,6). Chapple *et al.* (1) advises that:

"Research on patient's decisional role preferences, however, presents a complex picture with some patients wishing to become actively involved in treatment decision-making, whilst others prefer to adopt a passive role in this process. Furthermore preferences are individualistic – demographic variables have not been found to be a reliable predictor of patients' preferred level of participation (p.321)."

While the patient's decision-making role for treatments has been widely studied in the context of medical treatment, especially for cancer and surgery, only a small number of studies have looked at the decision-making process of dental treatment for mandibular fractures (7,8,9,10,11,12). In an attempt to prepare for a clinical study that will fill this gap and learn more about the type of care received, the decision-making process for selecting treatment for mandibular fracture and the healing process, a qualitative study was conducted at the King/Drew Medical Center in Los Angeles, California, an inner city hospital serving minority populations, predominantly African-American and Hispanic.

The mandible, the largest and strongest facial bone, is commonly fractured as a result of trauma. Assault is the most common cause of mandibular fractures, followed by motor vehicle accidents and gun shot wounds (13,14). Two standard treatments are used to repair mandibular fractures. The first treatment, Maxillomandibular Fixation (MMF), is a non-surgical approach of wiring the teeth shut for 4-8 weeks. The second treatment, Rigid Internal Fixation (RIF) requires surgical placement of a bone plate using an incision either intra-orally or outside on the face. Both treatments have disadvantages and advantages. Maxillomandibular Fixation patients often experience

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TABLE 1
Subject characteristics for focus groups

Ethnicity	Gender	Treatment Group	# of patients eligible	# of patients who agreed to participate	# of focus group participants
African-American	Male	Fracture	38	24	15
		3rd molar	22	4	3
Latino	Male	Fracture	2	2	1
		3rd molar	19	7	1
African-American	Female	Fracture	4	0	0
		3rd molar	19	10	6
Latina	Female	Fracture	6	3	2
		3rd molar	27	7	6
Total			137	57 (42%)	34 (60%)

functional difficulties such as inability to eat solid food and difficulty talking when the teeth are wired together (15). Rigid Internal Fixation patients often experience physical disadvantages such as appearance of a facial scar (16,17,18). This paper explores the patient's decision-making concerns and process with regards to treatment of jaw fracture.

Methods

Since little is known about the patient's perception of care received during oral and maxillofacial surgery and the subsequent healing phase, a qualitative research approach was used. This descriptive, inductive, and phenomenological research is used to observe events, ask questions with open-ended answers, and interpret the subject's personal reactions in order to develop emergent speculations or hypothesis. Any hypotheses developed will be used to inform the analysis plan for Phase II of this research program, whose intent is to examine the stability of patients' preferences for treatment over time. The study was approved by the Institutional Review Boards at the University of California, Los Angeles and Charles R. Drew University School of Medicine and Science.

A qualitative study of patients receiving care at the King/Drew Medical Center for either a multiple 3rd molar extraction under general anesthesia or a mandibular fracture was conducted. Patients were recruited to participate in an hour-long focus group to discuss their experience with the care they received, their coping strategies, their overall recovery, and the process they would like to go through when making a treatment decision in the future. Patients with surgical extraction for 3rd molars were included in the study as a comparison group exemplifying experience with oral surgery and recovery from general anesthesia.

Separate focus groups were conducted for men and women to provide an atmosphere optimal for privacy, comfort, and confidentiality. In addition, when numbers of patients were sufficient, focus groups were organized by race and type of treatment received. A total of seven focus groups were conducted: three all-female and four all-male. Out of a total of 136 eligible patients, 57 agreed to participate, and 34 actually participated in the focus groups. The three jaw fracture groups were composed of 15 African-American males, 2 Latina women, and 1 Latino male. The remaining four 3rd molar groups were composed of 6 African-American females, 3 African-American males, 6 Latina women and 1 Latino male (Table 1).

The recruitment rates of males and females for patients with fracture and third molars were analyzed. Although statistical tests are often not used for qualitative data, gender, ethnic and group differences in participation rate were examined in this study using chi-square. African-American males with fractures were more likely to agree to participate (63.2%) at p=0.001. Statistically, there were no overall gender differences in *agreement to participate*, but female *fracture* patients were marginally less likely to participate (p=0.05). In terms of group differences, fracture patients were more likely to agree to participate (p=0.01) than 3rd molar patients. Table 1 shows the characteristics of the study subjects.

The focus groups were held in a conference room at King/Drew Medical Center. Participants were given bus vouchers for transportation to and from the medical center.

Before starting the interview process, each participant signed two consent forms. The first form explained the purpose of the study and issues regarding confidentiality. By signing this form they agreed to participate in the focus group. The second form allowed the research team to audiotape and videotape the interview. Study participants were also offered lunch and the opportunity to meet the research team and ask questions about the study. The focus group facilitators included two male African-American oral surgeons and a female Caucasian research dentist. They developed a guide for the semi-structured interviews as described by McCracken (1988) (19). The guide was used to direct open-ended questions to the informants, allowing them to introduce issues and themes that they deemed important. Each interviewer was trained to ensure consistency across groups. A bilingual Latina study coordinator conducted the initial recruitment, the informed consent process, and the videotaping. Upon completion of the interview, participants were given a $25.00 honorarium.

An open-ended interview guide was used by all three focus group facilitators to draw patients into the conversation and encourage them to share their recovery process and discuss their coping strategies. Toward the end of the interview, the two treatment modalities, Maxillomandibular Fixation (MMF) and Rigid Internal Fixation (RIF), were described by the focus group facilitator. Study participants were then asked, if given the choice between having their teeth

wired together for 4-8 weeks (Maxillomandibular Fixation) versus having an external incision below the mandible and a surgical bone plate with a possible scar on their face/neck (Rigid Internal Fixation), which one they would choose if they were to experience a future jaw fracture. Participants were also asked what information they would desire to make a treatment decision between Maxillomandibular Fixation and Rigid Internal Fixation and how the information should be provided by the clinical staff.

Transcripts were made from the audiotape and used for the qualitative analysis. The videotape was used to clarify specific responses on the audiotape. Qualitative data analysis was conducted using the QSR NUD*IST (version 4) software program (20). Key words were identified and counted. Each key word count was then examined in the context of each transcribed text to ensure proper ordering and identification of each emerging concept or issue discussed in the focus group. Responses were then grouped by gender, race and treatment group. The findings in the tables are presented separately for the 3rd molar group and the mandibular fracture group and comparisons are made between male and female patients.

Results

When asked what factors would influence any future decisions regarding jaw treatment, fracture patients were encouraged to provide input from their experience and discuss preferred treatment for any future fracture incident. Third molar patients who had experience with oral surgery were asked for their views on treatment choice if and when they were given the choice if faced with a future fracture incident. The following factors were discussed by both fracture and 3rd molar patients: adequate information regarding side effects; the effectiveness of each treatment; their trust in the doctor's experience/recommendation; wanting to know everything (*"give it to me straight"*); the importance of pictures in explaining the treatment modalities; and the need to understand the location and size of any scar (Table 2).

TABLE 2
Decision-making factors affecting choice of treatment

Decision-making factors	Fracture	3rd Molar	Male	Female	Total
Side effects of treatment	8	5	7	6	13
Effectiveness of treatment	4	7	6	5	11
Trust doctor's experience /recommendation	3	6	3	6	9
"Give it to me straight"	3	4	4	3	7
Use of pictures	3	1	4	0	4
Location of scar	2	1	2	1	3
Size of scar	2	0	1	1	2
TOTAL	25	24	27	22	49

Note: The total in each column does not add up to the total number of patients since there is overlap in the number of comments. The same patient could have given several comments.

The majority of the participants wanted to hear about the effectiveness and side effects of each treatment before making a decision. Males and females of both treatment groups (3rd molar and jaw fracture patients) wanted to be informed about the effectiveness and side effects of each treatment. A Latina patient who had a fracture treated with Rigid Internal Fixation explained,

"I would have liked to know the difference between the two treatments, pros and cons of every treatment and what sort of problems I was going to confront with each."

A 3rd molar Latina patient expressed almost the same interest:

"I would like to know the effectiveness of each separately. Do the braces work as well as the screws and if it does, why go through all this. Why would you suggest surgery or recommend surgery instead of just wiring my mouth. Why be more invasive?"

A male fracture patient who had Rigid Internal Fixation surgery integrated both his need for information and the value of the doctor patient relationship, even when the relationship is new:

"Tell me about the different things that might happen you know, that is cool there and then give you a chance to ask questions - - well, what does that mean, you know tell me so that I will know and then that will relax you a little. But just do your job, do it right, you know what I am saying. ... treat the person as you want to be treated because a lot of us don't know those big words."

Seven patients used the phrase *"give it to me straight"* when trying to express their need to know exactly what to expect from surgical vs. non-surgical methods of treatment for jaw fractures. These patients did not want the doctors to "sugar coat" the treatment process. They would rather the doctor tell them exactly what to expect from each treatment. They expected the physician to treat the patient with respect and have the confidence that the patient can handle the truth.

Use of pictures was another factor discussed by study participants. Four patients discussed the importance of using pictures to show what to expect from the two procedures. One male patient whose fracture occurred because of a gunshot said,

"I would rather have him (the doctor) sit down with me like he said but I would also like to see pictures of someone who had the same procedure done so that I can see exactly what I am going to look like."

Another gunshot patient expressed the same concern:

"For me – like he said – talk to me and have some pictures for me to see how I would look like."

Trusting a doctor's experience and following a doctor's recommendation for choice of treatment was another factor that was discussed. For nine study patients, a doctor's recommendation was extremely valuable. A Latina 3rd molar patient expressed herself by stating:

"I would prefer the treatment based on the doctor's experience."

During the same focus group another female patient concurred and expanded on this point by stating,

"Just give me more information of what to expect. I would go with what he is saying because I put my trust in him and would rather him tell me each and every information I need to know before he goes and does whatever he has to do."

A Latina fracture patient also expressed a similar sentiment:

"I would like for him to simply tell me what treatment is best for me and why. I would not like to make the decision because I am not a surgeon, I don't know what's best for me and ending up with complications afterwards is something I'd not like at all."

Two additional concerns were mentioned by study participants: location and size of the scar. Three patients explained that if the incision on the face could be hidden under the chin then they would seriously consider having surgery over teeth wiring.

Concerns about Rigid Internal Fixation. When discussing factors that they considered regarding surgery, appearance of a scar on the face was the most important concern when surgery was discussed. Ten fracture patients and ten 3rd molar patients reported not wanting a scar on their face (Table 3). Both males and females expressed concerns regarding the visibility of a large facial scar. An African-American woman (from the 3rd molar group) remarked,

"Nobody wants a scar on their face."

Everyone in the room agreed with this response. This was corroborated by another African-American female, who added,

"I much rather be wired. I don't want the scar."

Males were equally concerned about having a scar on their face. An African-American man from the 3rd molar group remarked on the difference between a temporary healing symptom and a permanent condition: *"Having your mouth wired is temporary but having a scar on your face is different."* Indeed, four female patients were interested in finding out whether or not the facial scar can be removed by laser surgery and, if that is an option, might consider the surgical approach.

Having pain and being cut open were secondary concerns of surgery. Third molar male patients showed concerns about the severity of pain with surgery by recounting their own problems with oral surgical pain following the extractions. They were particularly concerned with the degree of pain one might expect (21). While both males and females expressed fear of being cut open, length of healing time, developing keloids and experiencing numbness after surgery were concerns mentioned by male patients only (see Table 3).

Concerns about Maxillomandibular Fixation. When asked to discuss their concerns with Maxillomandibular Fixation, or wiring of the teeth, study subjects expressed fewer physical concerns and more functional disadvantages such as not being able to eat and talk for 4-8 weeks while the teeth are wired shut. Both males and females discussed the limitations imposed by wires and possible inability to brush their teeth. One female 3rd molar patient viewed wiring of the jaw in a positive light by remarking that,

"If your mouth is wired for four weeks – you would lose a lot of weight!"

Disruption of daily routine was a major concern for both Latino and African-American men. Number of

Table 3
Number of patients with decision- making concerns about surgical treatment (Rigid Internal Fixation)

Types of Concerns	Fracture	3rd Molar	Male	Female	Total
Appearance of scar	10	10	11	9	20
Removal of scar	1	3	0	4	4
Pain	1	3	3	1	4
Fear of "being opened up" or "cut my face"	2	1	1	2	3
Length of healing time	2	0	2	0	2
Keloids	2	0	2	0	2
Numbness	1	0	1	0	1
Total	19	17	20	16	36

Note: The total in each column does not add up to the total number of patients since there is overlap in the number of comments. The same patient gave several comments.

Table 4
Number of patients with decision-making concerns about non-surgical treatment (Maxillomandibular Fixation)

Types of Concerns	Fracture	3rd Molar	Male	Female	Total
Functional Defects:					
eating	5	4	7	2	9
talking	1	5	4	2	6
brushing teeth	0	1	0	1	1
Wire problems	2	1	2	1	3
Pain	2	0	2	0	2
Disruption of daily routine (e.g. work)	1	1	2	0	2
Length healing time	0	1	0	1	1
Total	11	13	17	7	24

Note: Not every patient commented about MMF (wiring of teeth). Hence the total is less than the total number of patients in the study.

Table 5
Treatment choice by gender and treatment group

	Gender		Treatment Group	
Treatment Choice	Males	Females	Fracture	3rd Molar
Surgery	7 (33%)	3 (38%)	3 (23%)	7 (44%)
Non-Surgery (wire)	12 (57%)	3 (38%)	7 (54%)	8 (50%)
Undecided	2 (10%)	2 (25%)	3 (23%)	1 (6%)
Total	21 (100%)	8 (100%)	13 (100%)	16 (100%)

days absent from work was an important consideration when deciding which procedure to choose. According to a 3rd molar African-American male patient,

"If the doctor says one week if you go with this procedure and I did not have any absence from work – I mean it would all have to do with that too. I would have to go to work."

The same patient expands on his thoughts, while weighing the ramifications of a disruption in his work schedule to a permanent scar:

"At the point that I am right now I would have to go to work you know – just right now like I said I am just graduating from college and trying to get a job right now. If a tragedy happens where I had to get surgery and I had a job where I would have to talk then that would be an issue and I had to be there, I would have to have the surgery. Right now, me personally right now I would have to work and I don't think that a scar will hinder my ability to perform or make me any less of a person or anything like that. It would not be so detrimental; I am not a model or anything like that! So, it would not be detrimental to me or anything like that and will take the surgery."

An African-American fracture patient at another focus group also remarked,

"You know for me, the only reason I would consider the operation is because of what happened to me. Right before my jaw was wired, I started a brand new job and I did this type of work where I needed to communicate with people. So having my jaw wired shut was – especially going to a new job – I did not want to take that kind of baggage. So, of course I would go for the other route."

Length of healing time and pain were secondary concerns when considering which factors influence their decision regarding wiring of the teeth (Table 4).

Treatment of choice. During the interview process the study participants were asked to indicate their preferred choice of treatment. Out of 34 participants, 29 subjects engaged in this discussion. The females did not show a preference for one treatment over the other. The males on the other hand showed a preference for non-surgical method (Table 5).

The 3rd molar group as a whole did not have a strong preference for either procedure (50% non-surgical vs. 44% surgical). For the fracture group there seems to be a strong preference for non-surgical treatment (54% vs. 23%). This general consensus was summed up by two males with Maxillomandibular Fixation:

"I'd much rather have my jaw wired together for eight weeks" (African-American male). *"I'll go for the wires! I don't want a scar on my face* (Latino male)".

Chi-square statistical analyses were performed to see if there were any significant differences between males and females and the two treatment groups. No significant differences were found for either of the two comparisons. A test was conducted to determine what the effect size would be to achieve significance. The findings indicated that the sample size would have to be increased at least ten times to achieve significance. Therefore, it is appropriate to conclude that among this group of patients, gender did not influence treatment choice, nor did the type of treatment the patient had prior to participating in the focus group.

Discussion

Birch and Ismail (10) conclude that in doing dental health services research, "...we must be careful to ensure that we measure the right thing in the right way and for the right group." With respect to Birch and Ismail's "right" way, the authors of this study chose a qualitative approach to explore the range of information needs related to patient preferences for treatment of jaw fractures as a basis for hypothesis development for future studies.

Study participants were asked to discuss factors that would affect their decision about which treatment to choose for a fractured lower jaw. Consistent with other findings (1, 10, 7, 22, 23), knowing about the side effects of each treatment and having information on effectiveness of each one were both important considerations addressed by the majority of study patients. Additionally, supporting Chapple *et al.* (1), demographic variables such as gender were not reliable predictors of patients' preferences.

Supporting previous evidence (22), patients in this qualitative study were more likely to endure side effects of treatment that reduce quality of life in the immediate postoperative period in order to gain better quality of life in the long term. For many subjects, the relatively short -term discomfort of wiring the jaw shut outweighed the long-term ramifications of a permanent scar. Matthews, *et al.* (24, 25) suggest that most therapeutic preferences involve a trade-off between accepting some risk in order to gain better results from a specified treatment. Therefore, understanding the side effects and duration of such side effects will influence preferences for treatment.

Additionally, the degree to which the patient trusts the doctor's experience and recommendations as a measure of the dentist-patient relationship was an important theme in this study. Even though this group of patients had limited options for obtaining health care (i.e., receive their health care through a county hospital), they expressed a great deal of trust in their doctors. Future research is needed to

assess whether patients who determine that they have insufficient expertise to make a treatment preference and defer to their doctors are taking a passive role, or whether the patient is, in fact, actively participating in the decision-making process to maximize an optimal outcome.

Another area in which the dentist-patient relationship can be undermined is when 'patient-defined' surprises occur. Surprises may produce dental anxiety, which poses a problem for dental health in general, and in particular, oral surgery outcomes. Ng, *et al.* (26) found that forewarning patients on operative procedures such as length and placement of a scar reduced anxiety among oral surgery patients with low trait anxiety, but not high trait anxiety. In this study, multiple participants mentioned the importance of getting "straight" information on what was coming. Ogden, *et al.* (27) suggest that patients are less likely to express dissatisfaction with the effects of surgery if they are not surprised by the side effects. For example, if they are forewarned that eating will be bothersome, then they will be more likely to consider this a payoff for a successful outcome in the near future. Again, the process of linking with the patient and developing trust are emphasis elements.

The treatment of choice for the majority of respondents, both 3rd molar and fracture, was non-surgical wiring of teeth rather than surgery. Even some of those who underwent surgical treatment for jaw fracture stated a preference for wiring. Having more concerns about the surgical than non-surgical factors would influence their decision about treatment. Appearance of a scar on the face was the most often expressed concern. The findings of this study showed that concerns regarding cosmetic ramifications such as possible scar removal would influence the decisions of females more, while knowledge of pain and the healing process would influence a male's decision more. This finding supports Awad and colleagues' (7) suggestion that even among patients who express similar preferences for treatment, important differences among these patients may exist in terms of the concerns that influence treatment preferences. It is these differences that may influence treatment outcomes.

Consistent with other research findings (27), this study also found that functional limitations such as having difficulty eating and talking are the most commonly discussed factors affecting decisions for non-surgical treatment. Contrary to conventional wisdom, in reviewing the surgery and recovery experience, length of healing time was not a prominent concern among this sample. While length of healing time may be an anticipated concern, in retrospect, the 4-8 weeks of healing time did not present as one of the primary concerns that would influence a treatment choice. It may be that the length of time was seen as a small price to pay for a non-surgical procedure.

Qualitative research has its strengths and weaknesses. It allows the participants to inform the scientist regarding salient issues rather than having them predetermined by the scientist. Qualitative analyses moves the study of patient involvement in treatment decision-making forward by examining response patterns, especially among underserved populations, and helps in development of hypotheses and research questions.

The selection of participants and the types of analyses limit the generalizability of the results. In many cases the numbers underestimate the actual degree of information provided because a consensus of the participants on videotape analysis showed affirmation nods, utterances, or comments that are not reflected in the tables.

Another limitation of this study was the disproportionately low participation rate of women, especially since women are often the victims of interpersonal violence that results in jaw fractures. Future qualitative research in this area must consider the social and mental health issues of women who may want to take part in focus groups, but are prevented by general fear, reporting laws, and a longstanding culture of keeping quiet. While efforts were made to conduct separate focus groups for men and women, it is clear that other efforts must be made in the future to make it more comfortable and convenient for women to participate.

Revira and colleagues (28) suggest that a patient's own reasoning and goals for surgical outcomes must be examined. How the patient interprets information received, coupled with goals and expectations, is an important consideration in determining patient preferences. Often, the interpretation of the information can differ from the actual information given. Redford and Gift (29) discuss the importance of focus groups as a way to capture the influence that a patients' real life contingencies have on treatment decision making. This study showed the importance of considering the patient in a social context when treatment decisions are made. For example, issues of job security played a dominant role in some participant's decision-making process. For this specific patient population, where disability insurance may not be common, the option of taking time off from work to recover from surgery may not be in the realm of possibilities. The open-ended, unstructured responses help to elicit the patient's perspective or interpretation of the experience. This information, in turn, informs future clinical interventions.

Shared decision-making by patients has long been advocated, yet little is known about the degree to which participation in decision-making actually takes place. This study attempts to move decision-making research forward by looking at the different dimensions of health and preferences, especially among an understudied minority population. With an improved understanding of individual patient decision-making, one must also consider similar research questions regarding the preferences of a community for specific services that meet the needs of both individuals and groups within a cultural and environmental context. This qualitative study helps us understand not

only the degree but also the nature of the decision-making process among a disadvantaged minority sample recovering from oral surgery at an inner city trauma center. Future research is needed to expand on the findings of this study, specifically evaluation of oral clinicians' awareness and appreciation of the patient's desire to participate in treatment decision- making. By examining all dimensions of health associated with patient preferences, oral health practitioners may be in a better position to address environmental, psychosocial and clinical factors that influence recovery. Incorporating patient preferences into the post-operative planning may also contribute to compliance with discharge instruction and minimize the unnecessary use of emergency room visits by trauma patients recovering from orofacial injuries.

Source of Funding

This research was supported by grant R01 DE013839 from the National Institute for Dental and Craniofacial Research.

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