

Perioperative Patient Perspectives on Orthognathic Surgery - A Prospective Study

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Abstract

Introduction: Understanding patient motivations and expectations of orthognathic surgery are critical aspects of the perioperative assessment, as these factors have been demonstrated to influence patient satisfaction with surgical outcomes. **Materials and Methods:** Consecutive patients undergoing orthognathic surgery by a tertiary oral and maxillofacial surgeon underwent two structured interviews to explore their pre-operative motivations for orthognathic surgery, their post-operative reflections on the surgery and their outcomes. Interviews were transcribed verbatim and analysed using thematic analysis. **Results:** Eighteen patients were recruited and interviewed preoperatively, and seven completed interviews postoperatively. Pre-operative themes describe patient hopes for aesthetic improvements, socio-emotional improvements, functional improvements and reduced pain, as well as fears about surgical risks, surgical recovery and changing appearance. Post-operative themes describe the challenging recovery process, the absence of regrets and functional, aesthetic and socio-emotional improvements. **Discussion:** Orthognathic surgery patients may be motivated by functional, aesthetic and socio-emotional improvements before surgery.

Keywords: Motivation, orthognathic surgery, patient satisfaction, patient survey, qualitative research

INTRODUCTION

Research into patient motivations for orthognathic surgery oft uses quantitative survey methods^[1-4] which limits the capture of the patients' multi-dimensional experience. This prospective study uses in-person interviews to explore pre-operative patient motivations and compares them with post-surgery patient reflections. The results may assist surgeons to meet patient expectations for orthognathic surgery.

MATERIALS AND METHODS

The study was granted ethical approval from the Human Research Ethics Committees of the Western Sydney and Northern Sydney Local Health Districts (REGIS 2019/PID10792ETH09743). Participant recruitment was performed between July 2019 and December 2020. Consecutive patients were serially selected from orthognathic surgery waiting lists at the Department of Oral and Maxillofacial Surgery at Westmead Public Hospital in Sydney, Australia, and the private consulting rooms. Patients scheduled for corrective orthognathic surgery

would attend a review appointment with their surgeon. At the end of their appointment, patients were invited to participate in the study and were offered detailed verbal and written information about the study and what would be required of participants. The inclusion criteria were being 18–40 years of age, having the capacity to offer informed consent and not having a history of cleft palate, maxillofacial deformity or medical conditions that may impact healing and post-operative recovery or that may impact the patient's physical appearance and/or social interactions. Each participant was provided with study information and completed a written consent form. All participants were informed of their right to withdraw consent at any point during the study. Baseline demographics were

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recorded during history-taking and from the participants' medical records.

Three to six months before surgery, participants were invited to complete their interview. The researcher asked a total of six pre-prepared open-ended questions [Table 1] formulated by members of the research team on patient motivation for surgery. Participants were encouraged to express themselves in their words of choice. At times, answers may have been followed up with further questions at the discretion of the researcher. Interviews were recorded using a digital camera (Sony HDR C × 405 Handy Cam). The recorded interview questions and patient responses were then transcribed for analysis by members of the research team. All recordings and transcriptions were collected, de-identified and digitally stored by the principal investigator and secured with an electronic password. Three to nine months following surgery, the interview process was repeated by the researcher with the consenting and available participants. The period of 3–9 months was used as it was the author's opinion that this is the period where the final cosmetic and surgical outcome would be achieved with a sufficient period of time to allow participants to reflect on their post-operative outcome without being so remote as to introduce recall biases. Participants who did not attend the scheduled interview were re-contacted and requested to attend the clinic study by the investigators. The post-operative interview included eight pre-prepared open-ended questions [Table 1] formulated by the members of the research team. The questions focussed on the patients' impressions of their surgical experience and also their personal

reflections on their decision to proceed with surgery. Those who did not attend an interview within the 9-month timeframe were considered to be lost to follow-up.

All pre- and post-operative interviews were conducted face to face and in comfortable workplace interview rooms attended to by the research interviewer and participant interviewee only. There were no time limits for interviews defined by the research protocol, and the time taken to complete interviews was determined only by participant responses to the prepared questions. No field notes were taken during the interview. Recordings and transcripts were not viewed or modified by participants at any point. The research team used thematic analysis to identify patterns of meaning within the data set.^[5] Interview transcripts were imported into NVivo 12 qualitative data analysis software to facilitate the coding process. Given the structured nature of the interviews and the narrow focus of the research questions, the thematic analysis was primarily deductive, with the interview questions guiding the coding process. The analysis began with immersion, which involved multiple readings of all transcripts to grasp the overall breadth and quality of the data, followed by descriptive coding of the entire dataset. Higher-order themes were identified from the list of initial codes, then refined and reviewed through a recursive and collaborative process. Once the thematic structure was finalised, themes were defined and described with the inclusion of illustrative quotes.

RESULTS

A total of 18 participants were initially recruited into the study and underwent the pre-operative interview. Seven of these patients completed the post-operative interview. Participant characteristics are summarised in Tables 2 and 3. Operations included a total of four lower jaw surgeries and 14 combined upper and lower jaw surgeries. A significant contributor to the low retention rate was the concurrent impact of COVID-19 lockdown policies implemented by the local health district during the study period which imparted restrictions on face-to-face consultations in the public sector. Participants who were lost to follow-up were thus more likely to be from the public outpatient department. However, there was no statistically significant difference in follow-up groups in terms of age or sex. Table 4 summarises all themes identified from pre-operative and post-operative interviews, respectively. Table 5 includes pre-operative patient responses and is divided into themes of hope and fear.

All participants expected an improvement in their facial appearance post-surgery, and many participants stated that this was their primary motivation for surgery. Patient specified hopes for improvements aspects of their facial appearance, which included the shape of their jaws, chin, nose, their dental appearance and smile, and one participant (P08) hoped that their acne might improve. Most participants believed that having surgery would boost their self-esteem due to perceived improvements in their appearance. The participants' facial appearance had been a source of embarrassment and

Table 1: Pre-operative motivational questions

How are you feeling about your upcoming surgery? Why do you feel that way?
What are your expectations for the outcomes of surgery?
Apart from improving the alignment of your teeth and jaws, are you expecting any other improvements in your life following surgery?
What would you say your main motivation for surgery is?
Any other motivations to go through this surgery?
Do you have any concerns? What are they? Why do you feel concerned about this?
Post-operative questions on patient experience
Overall, how do you feel about your surgery? If a friend were to ask you what it was like, what would you say?
Are you glad you had the surgery? Would you recommend the surgery to a friend?
What were your expectations of the outcomes of surgery? Have your expectations of surgery been met?
Were there any outcomes of surgery that you didn't expect?
Do you notice any changes in your life as a result of surgery? If so, what? Do you notice any changes in your social life or relationships as a result of surgery? Would you say that your quality of life is better, the same or worse than it was before surgery?
What would you say is the main reason you would recommend the surgery to others is (or not)?
Any other reasons why someone with jaw misalignment might benefit from this surgery?
Is there anything you wish you had known before the surgery?

Table 2: Patient details

Initials	Age	Post-operative interview	Operation	Hospital
P01	43	No	Bilateral sagittal split osteotomy + genioplasty	Public
P02	23	Yes	Bimaxillary osteotomy	Public
P03	25	No	Bimaxillary osteotomy	Public
P04	20	No	Bimaxillary osteotomy + genioplasty	Private
P05	26	Yes	Bimaxillary osteotomy	Private
P06	21	No	Bimaxillary osteotomy	Public
P07	22	No	Bilateral sagittal split osteotomy	Private
P08	23	Yes	Bimaxillary osteotomy	Private
P09	36	No	Bilateral sagittal split osteotomy	Public
P10	25	Yes	Bimaxillary osteotomy + R high condylectomy	Public
P11	24	Yes	Bimaxillary osteotomy	Public
P12	25	No	Bimaxillary osteotomy	Public
P13	20	Yes	Bimaxillary osteotomy	Private
P14	19	Yes	Bimaxillary osteotomy + genioplasty	Public
P15	22	No	Bilateral sagittal split osteotomy + genioplasty	Public
P16	28	No	Bimaxillary osteotomy	Private
P17	20	No	Bimaxillary osteotomy	Public
P18	18	No	Bilateral sagittal split osteotomy + genioplasty	Public

Table 3: Patient demographics

Total number	Pre-operative patients (n=18)	Post-operative patients (n=7)
Age	18–43 (mean=24)	19–26 (mean=23)
Males	8	4
Females	10	4
Public	12	3
Private	6	4

Table 4: Pre-operative patient responses and themes

Pre-operative themes	Post-operative themes
Hope for aesthetic improvements	Post-surgical recovery
Hope for socio-emotional improvements	Post-surgical outcomes
Hope for functional improvements	Aesthetic improvements
Hope for reduced pain	Functional improvements
Fear of general surgical risks	Socio-emotional improvements
Fear of specific surgical risks	
Fears of post-surgery recovery	
Fear of changing appearance	
Anxiety and excitement	
Being told that they needed it	
Social stigma	

self-consciousness for many years and described themselves as ‘repulsed’, ‘insecure’ and ‘fixated’ on their self-image. A number of participants were looking forward to feeling more comfortable smiling and having their photo taken. Relatedly, participants anticipated experiencing greater confidence in work and social settings once they had recovered from surgery.

Several participants expected that the surgery would lead to functional improvements including speaking without lips, chewing and digestion, eating time, consumption

of a wider food range and breathing with alleviation of snoring, sleeping and exercising. A few participants hoped undergoing surgery would relieve them of jaw pain. Concerns related to general surgical risk included failure to wake up after anaesthetic, experiencing pain during surgery, blood loss, infection and allergic reactions. The main surgery-specific concern was lip paraesthesia; however, a number of participants qualified their fears of surgery by explaining that they trusted the surgical team. A number of participants acknowledged that their concerns about anaesthesia were disproportionate.

Concerns related to the length of the recovery period were associated with work leave, absence from exercise and social engagements and sick role dependency on other people, post-operative pain, swelling, bruising and body weight. Participants were typically anxious about their appearance transforming and affecting their own self-recognition, or how peers would notice or comment on their changed appearance. Participants generally reported being more excited than fearful and how they were relieved to have surgery after a prolonged wait time. Some participants reported that they had been informed that surgery was necessary and subsequently became self-conscious about a perceived deformity. One participant (P08) was concerned about the stigma associated with having the surgery.

Post-operative patient responses are summarised in Table 6 and focussed broadly on five themes.

All participants found the post-operative recovery process physically and mentally challenging due to difficulty with pain, eating, swelling, restricted activity, social isolation, boredom, constipation, adverse reactions to pain medicine and dependency on a support system. Participants still reported that they were well prepared, informed and supported. One

Table 5: Pre-operative patient responses

Theme	Key patient quotes
Hope for aesthetic improvements	<p>‘[M]y mouth has got an overbite’, P09</p> <p>‘My double chin will go’, P12</p> <p>‘[T]he little kink in my nose gets straightened up’, P03</p> <p>‘I have a flat face profile’, P05</p> <p>‘[M]y teeth are always bucky’, P09</p> <p>‘It’s a bit gummy’, P14</p> <p>‘[T]here’s some research that suggests that having proper facial structure helps with that, sort of circulations and things’, P08</p>
Hope for socio-emotional improvements	<p>‘Repulsed by my own reflection’, P14</p> <p>‘Really insecure about my face’, P17</p> <p>‘It’s been making me feel down and it’s really affected my self-esteem and my confidence’, P11</p> <p>‘Excited to actually smile in photos, post on Instagram with me showing my teeth and everything...’, P13</p> <p>‘More comfortable in my own skin’, P11</p> <p>‘Get back out into the world’, P04</p>
Hope for functional improvements	<p>‘I get to speak properly, breathe properly, eat properly, be a healthier person’, P08</p> <p>‘Some people, they don’t understand what I’m saying’, P06</p> <p>‘Sometimes my voice can sound a bit muffled’, P10</p>
Hope for reduced pain	<p>‘I’ll be able to eat food and not worry about my jaw hurting’, P15</p> <p>‘I can’t really yawn normally, because it just hurts that much’, P17</p>
Fear of general surgical risks	<p>‘[W]ith every surgery, you have to feel concerned’, P06</p> <p>‘[T]here’s always a slight chance of surgery not going well’, P08</p> <p>‘...what if I wake up and feel pain, always the worst-case scenario’, P15</p> <p>‘It’s just sort of some irrational nerves basically’, P08</p> <p>‘I have a slightly higher chance of bleeding out’, P08</p> <p>‘I’ve got a lot of allergies, [so] what if I’m allergic to any medication ...?’, P11</p>
Fear of specific surgical risks	<p>‘[T]here’s a lot of nerves, it might just clip, or something’, P09</p> <p>‘Having to go back in’, P11</p> <p>‘I know my doctor’s got a lot of experience and I feel confident’, P11</p> <p>‘If they didn’t know what they were doing, they wouldn’t be in that room’, P04</p>
Fears with post-surgery recovery	<p>‘Put life on hold’, P12</p> <p>‘Because it stopped me from doing a few things which I won’t be able to do, which is very sad’, P04</p> <p>‘That’s when I become like... a bit depressed’, P12</p>
Fear of changing appearance	<p>‘You spend twenty years looking into the mirror and seeing the same face and then... one minute, its changing’, P04</p> <p>‘I’m hoping I can still look in a mirror and recognise myself’, P04</p> <p>‘I’m just nervous of what people will think after it’, P13</p>
Anxiety and excitement	<p>‘I’m more excited than scared to be honest’, P06</p> <p>‘I’m slightly nervous about the operation itself, but overall, I’m quite optimistic’, P08</p> <p>‘I am a bit terrified, but I’m also eager to do it’, P12</p> <p>‘Obviously very nervous, but excited as well’, P13</p> <p>‘I am a little bit concerned, but I think my excitement overtakes it’, P11</p>
Being told that they needed it	<p>‘... I didn’t know nothing about this surgery until my orthodontist told me, gave me the rundown.’, P09</p> <p>‘Now that [my doctor and I] have spoken about it, and I know that it’s not normal, I’ve been noticing it a lot and it’s been making me feel down’..., P11</p>
Social stigma	<p>‘I think there’s some controversy of people nowadays getting surgery and like some people just don’t understand that it’s not always wanting to be someone else or looking a certain way, it’s like for your health as well’, P08</p>

participant (P14), however, wished there was more ‘honesty about how much care I (was) actually going to be provided with... I had (the surgery) during COVID, so I had very limited support afterwards, which was quite difficult’.

Regarding quality of life, all participants reported aesthetic and functional improvements, and all participants reported that they had no regrets about having the surgery despite the challenges of recovery. One participant (P02) said that other people noticed the physical changes after surgery more than they themselves had noticed, whereas another participant (P14) was surprised more

people did not notice the physical changes. Participants also reported that they looked more like family members after having surgery, which gave them a sense of belonging. Functional improvements included speech, chewing, breathing and sleep. The participant (P08) described a significant improvement in daily activities. All participants reported experiencing a boost to their confidence and self-esteem after the surgery. In turn, they describe being able to be more authentic in social situations, which helped them strengthen relationships. Participant 14 said they felt people were now more likely to approach them socially as ‘(they are) more conventionally attractive’.

Table 6: Post-operative patient responses

Theme	Key patient quotes
Post-surgical recovery	<p>‘Very challenging physically and mentally going through the motions’, P10</p> <p>[T] he recovery was more severe than I thought it would be, especially the pain wise trying to get to sleep’, P02</p> <p>‘I expected to be in a lot of pain, but I guess not that much pain... I would say it was as bad as giving birth’, P11</p> <p>‘Most of the things I was worried about didn’t end up being a problem’, P14</p> <p>‘The surgeons made a really really good effort in not giving me any false hopes’, P10</p> <p>‘I was certainly well informed about everything that was going to happen’, P08</p> <p>‘Honesty about how much care I [was] actually am going to be provided with... I had [the surgery] during COVID, so I had very limited support afterwards which was quite difficult’, P14</p>
Post-surgical outcomes	<p>‘I definitely made the right decision’, P10</p> <p>‘It’s worth the price of it’, P05</p> <p>‘It’s really been a life changing event for me’, P14</p>
Aesthetic improvements	<p>‘My dysmorphia towards my face and my discomfort on a day-to-day basis and all of that combined, like instantly disappeared after the surgery... I love this face’, P14</p> <p>‘They are like ‘oh you look so different’ and I can’t see it but they are like ‘you look crazy different; you look a lot better’, P02</p> <p>‘I was really surprised with how many people didn’t notice that I had the surgery because to me it’s an entirely different face’, P14</p> <p>‘I now look a lot more like my mother and so I think this is what I was always supposed to look like’, P10</p>
Functional improvements	<p>‘I had a speech impediment, but they say it has gotten a lot better with the surgery’, P02</p> <p>‘It is really good being able to bite into an apple’, P08</p> <p>‘I felt like I was getting so much air’, P13</p> <p>‘I wake up just rejuvenated’, P05</p> <p>‘A lot of day-to-day activities, like very mundane activities, became easier’, P08</p>
Socio-emotional improvements	<p>‘I feel so much better about myself’, P14</p> <p>‘Just to look someone dead in the eyes like hey this is me’, P05</p> <p>‘I am able to somehow form better relationships with people’, P10</p> <p>‘I feel like it has helped in my relationships because I am more confident and outgoing’, P11</p> <p>‘[People were now more likely to approach me] because I am more conventionally attractive’</p>

DISCUSSION

This article uses qualitative interviews in order to study patient experience in their own words of choice. The use of thematic analysis^[5] is a validated approach to provide a systematic framework for analysing patients’ lived experiences.^[6] The strongest motivator for surgery is a desire for aesthetic improvement, and participants used phrases that indicated their primary aesthetic concern, such as ‘flat face’ or ‘bucky teeth’. Participants explained that they were ‘insecure’ and ‘depressed’, with surgery viewed as a means of gaining self-confidence to ‘get back out into the world’. Patients were anxious about the changes in their appearance and how they would be perceived by others. These findings are in harmony with the literature which reports that orofacial structures impact perceived trustworthiness and fertility,^[7] one’s treatment by peers,^[8] degrees of personal influence,^[9] the level of attention that one receives,^[10] one’s romantic relationships,^[11] and personal income potential.^[12] This prime motivation was closely followed by the motivation for stomatognathic functional improvement which is also commonly reported.^[13-15]

Patients also carry significant anxiety into the operating theatre. The prolonged recovery period was a noted concern, as participants worried that it would interfere with the continuity of social and life activities. Post-operative patient discomfort may be effectively addressed by the provision of counselling and information and positively supplemented by the patient’s

social support networks in order for the patient’s post-operative experiences to match their pre-operative expectations.^[16] The post-operative interviews explore patient reflections on the surgical experience and outcomes. The greatest challenge faced by most participants was the recovery period, not only the physical symptoms but also the social and mental challenges faced when enduring prescribed activity restriction. Participants expressed their satisfaction with the aesthetic outcome and reported that it positively influenced their self-confidence and peer relationships.

There are practical implications for our findings. In our study, the strongest patient motivations were related to aesthetic concerns. Exploring these areas of concern with the patient may disclose patient expectations of surgery (realistic or otherwise) hitherto not been discussed. Second, the patient’s perceptions of how they will cope with the post-operative period are strongly influenced by lifestyle and social factors. Finally, the patient’s concerns for functional improvement are less complicated insofar as being expressed directly and therefore may be addressed via the provision of targeted information. Exploring patient motivations routinely would engage patients and validate their concerns, create trust, which has been shown to be medico-legally protective^[17] and facilitate the provision of tailored information and counselling. The authors suggest the following questions to understand patient motivation during the history-taking process:

In your own words, tell me what is your greatest motivation for surgery is, how do you actually feel about yourself? Do you think this will change after your surgery? Are you expecting improvements in your social or work life? What concerns you most about this surgery? The recovery period is long. How do you feel about this?

The main strength of this article lies in its methodology. Studies on patient experiences in orthognathic surgery do exist.^[1-4] However, in this study, open-ended questions ensured that patient concerns were not suggested by the researchers and rather directed by the participant. The data are in the form of the patients' words of choice and in the natural setting of a conversational interview. Researcher-led bias is thus minimised, and the themes found in this study are derived from the patients' own personal expressions and reflections.

The primary limitation is a limited patient cohort size which meant that the patient sample is not adequately heterogeneous to represent the general population. The limited participant number also implicated a lack of probity in the socioeconomic and cultural background of the patient sample. The effect of COVID-19 protocols on local health policy caused a reduction in face-to-face consultations and public hospital elective operating lists. As a result, the expected cohort size was not achieved based on the recruitment periods initially foreseen at the study design phase. In addition, the impact of COVID-19 restrictions at the time of the study affected the ability of participants to be followed up effectively. This significant loss in follow-up rate in our study certainly has the potential to introduce unforeseen biases. The use of telehealth consultation technology was considered when in-person post-operative interviews were not possible; however, this was felt to change the consultation dynamic and therefore add other unforeseen biases. Our clinical guide on motivational history-taking may also be difficult to incorporate into the routine of a busy surgical practice. However, as this clinical guide uses themes identified by patients in this study [Table 4] the motivational history taking process would be more time efficient.

CONCLUSION

This study confirms patients' psychological and social motivations for surgery. Patient post-operative concerns strongly focus on the impact of the recovery period on their life in the short to medium term. Routine exploration of these themes during history-taking using open-ended questions could contribute meaningfully towards achieving holistic patient care. Achieving this efficiently within the constraints of a busy practice is challenging, and motivational history-taking would be a subject of further research.

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Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Conflicts of interest

There are no conflicts of interest.

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