



## Patients offered orthognathic surgery: Why do many refrain from treatment?



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### ABSTRACT

**Aim:** To examine factors associated with patients' decision to decline surgery.

**Material/methods:** Of 470 consecutive patients referred to the University of Oslo from 2007 to 2009, a sample of 160 subjects who had not undergone surgery was identified and contacted. 236 operated patients from the same period served as a comparison group. Morphology was assessed from cephalograms and photographs, and the individuals' opinions were recorded using questionnaires.

**Results:** Dentofacial morphology represented normative treatment need and was generally similar except for a higher rate of severe negative overjet in the operated group ( $p < 0.001$ ). The most prevalent reasons for declining surgery were risks of side effects, the burden of care, and a general reluctance to undergo surgery. Many un-operated subjects were dissatisfied with their masticatory function and dentofacial appearance.

**Conclusion:** Informed consent to orthognathic surgery represents a challenge both to the patient and the professional. The findings imply that patients' motives and fears should be explored during consultation and that the information provided should be adapted to the potential risks and benefits related to the actual treatment.

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## 1. Introduction

Treatment of severe malocclusions involving orthognathic surgery is regarded as elective, and accordingly decisions about treatment should be informed. In order to provide relevant information during consultation it is also important that surgeons and orthodontists have an understanding of why some patients elect to have surgery, whereas others decline such treatment.

The available literature has addressed various factors related to the decision to have orthognathic surgery such as patients' motives (Bell et al., 1985; Phillips et al., 1997; Forssell et al., 1998; Rivera et al., 2000; Khattak et al., 2012), personality characteristics and psychosocial profile (Kiyak et al., 1986; Kindelan et al., 1998; Scott et al., 1999; Cunningham et al., 2000; Stirling et al., 2007; Rustemeyer and Gregersen, 2012), and facial morphology (Bell et al., 1985; Squire et al., 2006; Oland et al., 2011). Few studies have compared patients who accept surgery with those declining it after having been offered treatment. Phillips et al. (1997) examined

motives among 93 subjects who decided to undergo surgical treatment, 42 who declined surgery, and 15 who wanted orthodontic treatment only. Kindelan et al. (1998) compared the pre-surgical psychological profile among 30 patients who had elected to have surgery with 14 subjects who had declined treatment.

Morphological comparison between groups of patients who elected and declined surgery is scant. Surgical patients were found to have on average an increased facial convexity in a study by Bell et al. (1985) comprising a majority of patients with mandibular hypoplasia. Kiyak et al. (1986) compared personality characteristics between operated patients, those who declined treatment, and those who elected for orthodontic treatment only, and reported the skeletal diagnosis for the three groups. Most patients had mandibular hypoplasia and at a similar rate in all the three groups. The authors stated that the results provide important insight into how to prepare and counsel patients.

The Norwegian scheme for treatment of severe skeletal malocclusions means that patients who need orthognathic surgery receive pre- and post-orthodontic treatment and surgery with almost no monetary costs, and accordingly do not need to refrain from treatment due to the expense involved. Annually about 150 potential patients are referred from practicing orthodontists to the orthognathic team at the University of Oslo for a structured

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consultation applying visual aids. The patient is also provided with written information. The decision as to whether treatment should be started is usually not made at this stage. The referring orthodontist is informed if surgery has been offered or not, and it is recommended that a joint agreement by patient and orthodontist should be reached before pre-surgical orthodontic treatment is initiated. During the last 2–3 decades about 50 per cent of the subjects referred have had surgery.

The purpose of the study was to analyse differences between operated and un-operated subjects with respect to sex, age, dentofacial morphology, and soft tissue profile. Another objective was to examine the motivations reported by un-operated subjects, why they declined the treatment offered, as well as their current opinion about their masticatory function, facial appearance, tooth position, speech, and whether they considered having orthognathic surgery in the future. The subjects' opinion about the information they had received was explored.

The study was reported to the Regional Ethical Committee (REK). They found that the study did not require approval from them, because it was evaluating the quality of treatment/information the patients already had received in a standard treatment regimen. The study was also reported to the National Patient Register (NPR), and was accepted with the condition that the names of the patients were coded during the study and that the code key to the names would be deleted after the study was performed.

## 2. Materials and methods

The sample was established from a cohort of 470 patients consecutively referred between 2007 and 2009 to the University of Oslo orthognathic team, consisting of maxillofacial surgeons and orthodontists, for consultation and evaluation. A senior orthodontist and surgeon were always present during the consultation and provided information about the treatment process, prognosis long-term with or without surgery, the surgical procedure, and potential side effects. An improved occlusion was focused on as the main benefit of the treatment. The consultation took place before any treatment was started and lasted about 30–60 min.

Subjects not recommended or offered surgery ( $n = 34$ ), syndrome patients ( $n = 10$ ), and subjects with incomplete files ( $n = 30$ ) were excluded from the study. The main reasons for not offering or recommending surgery was that the malocclusion probably could be treated orthodontically, or risks involved if the patient was more than 40 years old and needed bilateral sagittal split osteotomy (BSSO). Of the remaining 396 subjects (mean age 23.2 years, SD 7.9), 236 (59.6%) had been operated on at the time of the study in 2012, whereas 160 subjects (40.4%) had not had surgery. In the operated sample 36.1% had bimaxillary surgery (LeFort I + BSSO or LeFort I + extraoral vertical subcondylar osteotomy (EVSO)), 59.7% had single jaw surgery (BSSO, LeFort I or EVSO) and 4.2% had genioplasty only.

Lateral cephalograms of all patients had been obtained at the initial evaluation and skeletal, dental and soft tissue measurements were recorded (Fig. 1). The tracings were performed digitally with a software program (Facad, Ilexis AB, Linköping, Sweden). ANB-angle between  $0^\circ$  and  $4^\circ$  was classified as skeletal class I, ANB-angle  $>4^\circ$  as skeletal class II and ANB-angle  $<0^\circ$  was defined as skeletal class III. Asymmetry of the face was evaluated from frontal photographs which were available for 385 subjects. The pupillary line was drawn on the photo and the midpoint of the face was defined as the midpoint of the intercanthal distance and a perpendicular through this point was drawn to examine asymmetry (Fig. 2). The distance from the midline between the upper incisors to the perpendicular was measured to illustrate maxillary asymmetry. The distance from the midpoint of the chin to the facial midline, was used to estimate mandibular asymmetry.

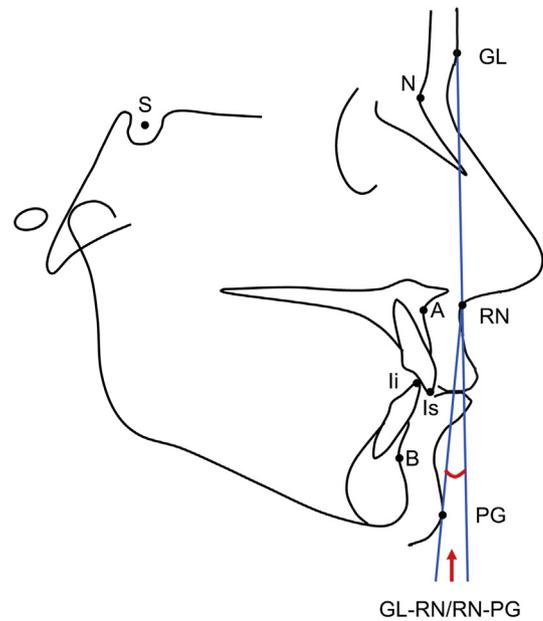


Fig. 1. Measurement of soft tissue profile.

Un-operated patients were mailed a questionnaire addressing their reasons for not wanting treatment, satisfaction with the information provided, their opinion about appearance and oral function, and whether they considered having surgery in the future. A reminder was sent 2 and 6 months later. The questionnaire was designed to allow for comparison with the opinions of operated patients. Some questions were therefore adapted from a questionnaire which is routinely distributed to operated patients at the consultation 3 years postsurgery. The operated patients' opinions about the information they had received and their current opinion about masticatory function and oral health-related well-being were recorded as a frame of reference.

### 2.1. Statistical methods

Independent sample *t*-tests were used to analyse mean differences in continuous variables, and categorical variables were analysed by chi-square tests. Level of significance was set at 0.05. All statistical analyses were performed with SPSS (IBM Corporation, Armonk, New York, USA).

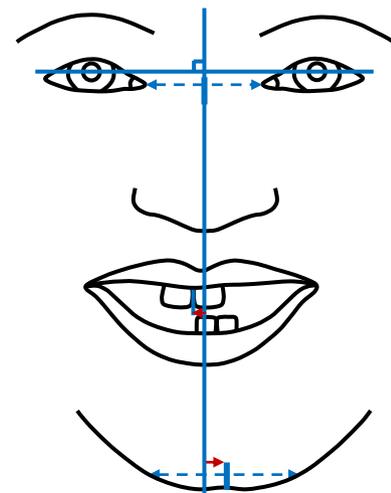


Fig. 2. Measurement of asymmetry from photographs.

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