Purpose: Informed consent forms an important part of treatment, especially in the case of elective treatment. The aim of this survey was to establish how much patients can recall of the information given during an informed consent interview before orthognathic surgery. During the consultation, attention was given to all aspects of the treatment. However, because of “insurance-related factors,” the need for treatment because of functional reasons was stressed over esthetics. The recall of information given during an informed consent interview before orthognathic surgery was measured using a questionnaire.

Materials and Methods: Patients with a mandibular deficiency with a low mandibular plane angle were questioned after an informed consent interview regarding surgical orthodontic treatment.

Results: Esthetics were more frequently and functional problems were less frequently recalled as the reason for operation than was expected. The risk of a change in the sensation of the lower lip by surgery was frequently recalled as a reason to refrain from the operation. The overall recall rate of the possible risks and complications of orthodontic surgery was 40%.

Conclusions: No reports were found of comparable research on the preoperative recall after consultation before surgical orthodontic surgery. The aspects of communication that can improve recall must be clarified. A recall rate of 100% seems a utopia, although an arbitrary line is needed to determine the quality of an informed consent interview.

© 2009 American Association of Oral and Maxillofacial Surgeons
Orthodontic therapy is an integral part of the treatment. Preoperative orthodontic treatment is followed by surgery and consecutively by postoperative orthodontic treatment. The aim of this study was to determine what patients could recall after a pretreatment consultation of surgical orthodontic treatment.

Materials and Methods

This survey was performed at the Department of Oral and Maxillofacial Surgery of the VU University Medical Centre/Academic Centre for Dentistry Amsterdam in Amsterdam, The Netherlands.

During a consultation, the patient was informed about their dentofacial deformity and the surgical procedure that would be a part of the surgical orthodontic treatment to correct it. The reasons to decide in favor of this treatment and the reasons to refrain were balanced with each other and any possible complications were mentioned. The “rules of the game” were explained verbally and illustrated by pictures and drawings.

The diagnosis of most patients could be categorized in 1 of the 5 following categories: mandibular prognathism, mandibular prognathism with open bite, mandibular deficiency with a low mandibular plane angle, relative mandibular deficiency, and an absolute mandibular deficiency with a high mandibular plane angle.4

A total of 24 patients (age range 16 to 48 years, mean 24) classified as having mandibular deficiency with a low mandibular plane angle (sellar nasion–mandibular plane angle <35°) (Fig 1) were included in this survey.

All the patients were, before the decision of whether to start or refrain from surgical orthodontic therapy, informed by 1 surgeon of the reasons for and against undergoing correction of the deformity and about the consequences and possible complications of the sagittal split osteotomy (Table 1).

The questionnaire consisted of 3 multiple-choice and 2 open-ended questions in the Dutch language. The open-ended questions concerned the reasons for and against undergoing the treatment and about the possible complications and consequences of the treatment.

A pilot study was performed to determine the quality of the questionnaire. This pilot study contained 9 completed questionnaires. The findings from the pilot study were that the instructions on answering the questionnaire were not clear. Therefore, the instructions were rewritten, and the lines for where the answers to the open-ended questions should be written were numbered to highlight the concern for giving multiple answers. The final questionnaire was answered from February to June 2005 by 24 patients immediately after the preoperative consultation of maxillofacial surgery. (See Appendix for an example of the questionnaire.)

The process of the informed consent interview and answering the questionnaire was standardized. The surgeon who would perform the surgery conducted the informed consent interview. The information was given in particular order and, at the same time, the points mentioned were written down. Illustrations were shown, and the opportunity was given to ask for clarification during the entire conversation. Immediately after the consultation, the patient was requested to answer the questionnaire. Assistance was only allowed by the person who conducted the questionnaire, someone other than the surgeon. If a question was indistinct, the patient had the opportunity to ask for clarification.

Results

The recall rates of the reasons to undergo correction of the maxillofacial disproportion are listed in Table 2. The recall rates of the reasons to not undergo correction of the maxillofacial disproportion are listed in Table 3. The recall rates of the consequences and possible complications of surgical correction of the craniofacial disproportion are listed in Table 1.

Poor esthetics was the most-often recalled reason for undergoing the operation. This was logical, because a fine esthetic appearance is highly appreciated and of high value. At least of equal importance is that esthetics is a subjective item, and an opinion about it requires no medical education or information, making
the remembrance of poor esthetics a reason to operate invariably possible.

The next most recalled items were “prevention” and “poor occlusal fit.” Both items are not very specific and are likely to be remembered even without the consultation. This also might explain the reason items with a more medical and specific foundation, such as “impossible to correct with orthodontics only,” “prosthetic problems,” and “progressive process,” were recalled less often.

The reasons not to undergo the surgery were far less often recalled even when a few were present. Some patients were confused whether an item belonged under “consequences and possible complications” or “reasons not to operate.” This was not astonishing, because an overlap exists between both. It seems that the arbitrary classification of an item to the division “reason not to operate” or “consequences and possible complications” was not understood by most patients. Not recalling the reasons to refrain from surgery demonstrates that patients tend to retain only what is in favor of the decision to undergo surgery and to suppress information that provokes anxiety or is life threatening. It appears that some part of all patients convinced themselves of the need to correct the maxillofacial disproportion by surgery by not remembering the contraindications to the operation.

The mean recall percentage of the consequences and possible complications of the operation was 42%. However, the most important risk of sagittal split osteotomy, a permanent change in the sensation of the inferior alveolar nerve, was recalled most frequently by 71% of the patients. However, this also meant that although much attention was given to this risk, almost 3 of 10 patients still did not recall this risk, which could have a serious effect.

**Discussion**

No reports were found of comparable research on preoperative recall after consultation before maxillofacial surgery. The investigation of recall has been done in other medical specialties.

Krupp et al reported a recall rate of 18%. This rate was found 2 hours after the consent interview on the day before the operation. That the operation was nearby was likely experienced as a threat. This alters one’s emotion and cognitive processes, decreasing attention during the consent interview and decreasing the recall afterward.

Herz et al reported an immediate retention rate of 43.5% and a mean score of 38.4% at 6 weeks after the consent interview. This greater retention rate can be explained because the patients met or spoke with the physician 3 times and also attended an additional educational conference. This intensive teaching seemed to improve recall.

Godwin reported a retention rate of 25% 6 days postoperatively in a group of patients undergoing reduction mammoplasty. The patients were informed 3 different times by 3 different health care professionals. Because the recall test was done postoperatively, a tendency existed for cognitive dissociation, which decreases recall.

Morgan and Schwab found, in a survey of patients undergoing cataract extraction, a recall rate of 37% at

<table>
<thead>
<tr>
<th>Table 1. RECALL OF CONSEQUENCES AND POSSIBLE COMPLICATIONS OF OPERATION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sagittal Osteotomy</strong></td>
</tr>
<tr>
<td>Numbness of lower lip/chin for months</td>
</tr>
<tr>
<td>Risk of having different feeling after 1 yr</td>
</tr>
<tr>
<td>Fixation with titanium screws (permanent)</td>
</tr>
<tr>
<td>Tenderness of temporomandibular joint</td>
</tr>
<tr>
<td>5 wk of soft diet</td>
</tr>
<tr>
<td>Overall percentage</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Table 2. RECALL RATES OF REASONS TO CORRECT MANDIBULAR DEFICIENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reason</strong></td>
</tr>
<tr>
<td>Poor esthetics</td>
</tr>
<tr>
<td>Prevention</td>
</tr>
<tr>
<td>Poor occlusal fit</td>
</tr>
<tr>
<td>Traumatic deep bite</td>
</tr>
<tr>
<td>Impaired masticatory function</td>
</tr>
<tr>
<td>Prosthetic problems</td>
</tr>
<tr>
<td>Myogenic TMD</td>
</tr>
<tr>
<td>Not possible to correct with orthodontics only</td>
</tr>
<tr>
<td>Psychological problems</td>
</tr>
<tr>
<td>Damage of teeth</td>
</tr>
<tr>
<td>Progressive process</td>
</tr>
<tr>
<td>Impaired speech</td>
</tr>
<tr>
<td>Impaired closure of lips</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Table 3. RECALL RATES OF REASONS TO REFRAIN FROM SURGICAL INTERVENTION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Reason</strong></td>
</tr>
<tr>
<td>Operation under narcosis</td>
</tr>
<tr>
<td>Affect of changed appearance</td>
</tr>
</tbody>
</table>

1 day postoperatively. This was after a single, relatively short consultation, of 10 to 20 minutes, and the average age of the patients undergoing cataract extraction was 72 to 75 years. The explanation might be that of the 10 questions asked to measure retention, only a few (3 or 4 questions) could be answered correctly without consulting a physician. Thus, instead of recalling new information, “long time known” information might have been recorded. Furthermore, age and educational level are factors that influence the recall percentage. Advanced age and a less than high school education resulted in a lower recall rate.

Priluck et al. found in a survey of patients undergoing eye surgery, a retention rate of 49.4% at a mean of 4 days postoperatively. In that study, an effort was made to be liberal in determining whether a question was adequately answered. This might have resulted in the outcome of a greater than average recall.

Turner and Williams found that patients immediately after consultation recalled a small percentage of information. In particular, patients recalled the postoperative recovery time frames and possible operative complications poorly. It is known that a description of the diagnosis, alternative therapies, and the surgical techniques are recalled twice as frequently as the period of rehabilitation and the surgical risks.

Also, patients tend to retain only what is in favor of the decision to undergo surgery and suppress information that provokes anxiety and is life-threatening.

Our study had some limitations, for instance, the question regarding the reasons patients know to undergo treatment and the reasons not to undergo treatment. This question implies not only the items mentioned in the discussion during the consultation but also the possible reasons that were not discussed.

Also, the question about the “rules of the game,” which asks for the consequences and possible risks of operation, was not fully understood by some patients, even though the phrase “the rules of the game” was mentioned several times during the consultation. All patients had the opportunity to ask for an explanation of any indistinct questions. Nevertheless, this lack of clarity might have led to a lower recall rate.

Answering a questionnaire also requires abilities other than the recall of spoken, written, and visual information. It requires abilities such as reading, writing, and comprehension. These requirements will also influence the patient’s recall.

The size of the patient sample might be another flaw in our survey. In a small sample, only large differences and relationships will be noted. Therefore, the results of our research can only serve as an indication for additional studies.

Furthermore, determining an adequate answer for open-ended questions is a subjective process. This can be better used for a recall survey than multiple choice questions as these give the possibility of recognition.

Because a relationship seems to exist between the number of items discussed during the consultation and the recall percentage, it might be advisable to mention the number of consequences and possible risks of the operation. In this way, patients will know whether all items have been recalled. Furthermore, it has been shown that a small amount of information is retained for a longer period than a large amount of information. Summarizing the consultation and reading over the written information at the end or at a follow-up consultation visit might improve patients’ recall.

Patients seem to have some reasons to undergo surgery before the consultation. In general, these are based on their opinion. Additional information should be given about the medical reasons in favor of surgical correction.

Surgical correction of a maxillofacial disproportion is an elective procedure. By emphasizing this, patients can be made aware that it is necessary to take the reasons not to undergo surgery into account.

Finally, giving information requires communication skills. Patients’ main criticisms about physicians have been the lack of time to adequately inform patients, talking too fast or too quietly, the use of jargon, and the use of an excessively familiar manner of expression. Furthermore, the effect of nonverbal expression is known to be greater than that of verbal communication.

Information recall of the risks and possible complications immediately after an informed consent interview for surgical orthodontic treatment resulted in a mean recall rate of 42%. It is possible that the recall rate increases when the preoperative orthodontic procedure is started and information comes “to life.” Clarification is needed of other factors relevant to the improvement of recall, as well as legal terms to define whether physicians have fulfilled their obligation of informed consent.

References
Appendix

TEST OF INFORMED CONSENT

1. Was the interview today the first time you had this consultation or have you had it more than once?
   a. Once ____________________
   b. More than once ____________________

2. Which operation(s) do you need to undergo to correct the relation of your jaws?
   a. Upper jaw ________________
   b. Lower jaw ________________
   c. Upper and lower jaw ________________

3. What reasons do you know to and not to undergo this operation?
   Reasons to: Reasons not to:
   1. .................... 1. ....................
   2. .................... 2. ....................
   3. .................... 3. ....................
   4. .................... 4. ....................

4. What “rules of the game” do you know regarding the operation itself and the expectations of the recovery period after the operation?
   1. ....................
   2. ....................
   3. ....................
   4. ....................
   5. ....................
   6. ....................
   7. ....................
   8. ....................

5. What is the next step in the treatment planning now you have had this consultation?
   a. You make an appointment yourself
   b. You expect to be called to be operated on
   c. You consider the operation
   d. You decide not to be operated on
   e. You have been advised not to have the operation
   f. You don’t know
   g. Other: ....................