

Stage 1 | Assessment and treatment planning

Step 1

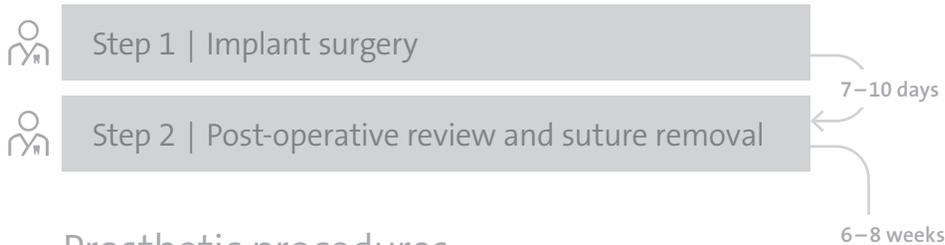
Patient's expectations, history and examination



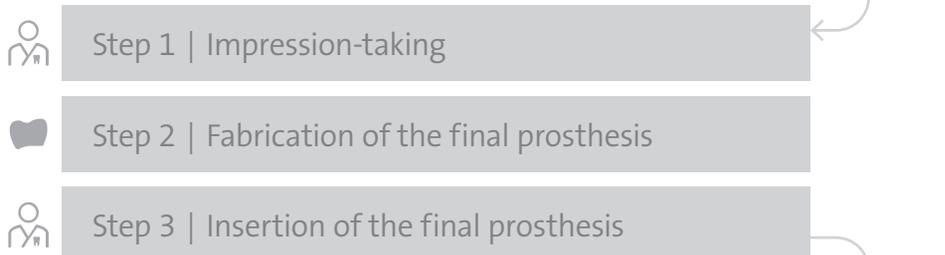
Assessment and treatment planning



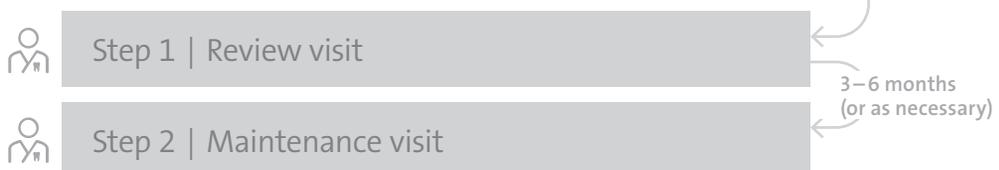
Surgical procedures



Prosthetic procedures



Aftercare and maintenance



 In clinic with patient  Office / Lab work



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Introduction

Successful implant treatment starts with the history and examination of the patient and an understanding of the patient's expectations. This step comprises three essential elements for creating an accurate patient assessment, diagnosis and proper treatment plan:



1. Patient history

A fully comprehensive patient medical and dental history, to gather profound knowledge of the patient's wishes, expectations and medical risk factors.



2. Examination

A thorough clinical and radiographic examination, to gather information about the extraoral and intraoral situation to help formulate the diagnosis and treatment plan.



3. Provisional diagnosis and tentative treatment plan

A discussion with the patient about the diagnosis, treatment options and costs, will help the patient make an informed decision about their treatment.

History and examination comprises:

- Patient's expectations
- Patient history
- Examination
- Provisional diagnosis and tentative treatment plan



Click on the graphic to go directly to the chapter.

Using this systematic approach, you will be able to identify potential risk factors and/or contraindications for implant treatment. From the findings in this visit, you can discuss with the patient about his or her general dental health status and possible treatment options. This will help both you and the patient to have a mutual understanding regarding requirements, expectations as well as limitations, and to prepare for upcoming treatment sessions. All findings and discussions should be documented in the patient's records and dated for future reference.

Be systematic in identifying risk factors and contraindications.



Learning objectives

-  Be able to conduct a structured patient assessment to gather details of the patient's medical and dental history.
-  Recognize the absolute and relative general and medical contraindications for implant treatment.
-  Conduct a thorough extraoral and intraoral clinical examination, and look for site-specific factors which are relevant for implant treatment planning.
-  Be aware of success and survival rates of different treatment options to be able to discuss the benefits and risks of treatment with the patient.



1. Patient history

The knowledge of former and current diseases, surgeries, and medications helps you identify patients at risk. **Should you have any doubts or concerns or if the patient has any serious internal medical problems, always consult the patient's physician or medical specialist for further clarification¹.**

Various systemic conditions and their treatments are risk factors in implant therapy¹. These factors can determine whether or not a patient is suitable for implant placement². The level of evidence supporting absolute and relative contraindications for oral implant therapy due to systemic conditions and treatments is low. The largest amount of information exists for diabetes mellitus, osteoporosis, and radiotherapy.

Always read the  [instructions for use](#) of any product that you are considering to use in the patient's treatment.

1.1 Absolute contraindications for implant placement^{3,4}

If one or more of the following serious internal medical problems is present, you should **consider non-surgical treatment alternatives to restore the patient's dentition or refer the patient to a specialist oral surgeon:**

- Recent myocardial infarction or cerebrovascular accident (≤ 6 months ago)
- Valvular prosthesis surgery (≤ 6 months ago)
- Previously irradiated bone in the head or neck area
- Intravenous bisphosphonate therapy
- Ongoing chemotherapy
- High-dose immunosuppressive therapy
- Allergies to implant materials (e.g., titanium Grade 4)
- Lack of compliance
- Incomplete maxillary and mandibular growth
- ASA⁵ 5 or 6

Risk assessment starts with a good knowledge of the patient's medical history.

Be aware of the risk factors in implant therapy.

Avoid implant treatment if the patient has any of these absolute contraindications.



1.2 Relative general and medical contraindications

- Poor general state of health
- Uncooperative and/or unmotivated patient, with inadequate oral hygiene
- Uncontrolled diabetes mellitus
- Uncontrolled bleeding disorders or patient who is on antithrombotic medication
- Immunocompromised patient
- Bone metabolism disturbances
- Prolonged therapy-resistant functional disorders (e.g., craniomandibular disorders)
- Inadequate wound healing capacity
- Tobacco, drug or alcohol abuse
- Oral bisphosphonate therapy
- Allergies to local anesthetics which may require referral to a specialist
- Pathologic diseases of the jaw or oral mucosa, or unfavorable anatomic bone conditions
- Uncontrolled periodontitis
- Acute infection of proposed implant site
- Severe bruxism or parafunctional habits
- Local root remnants
- Pregnancy
- Psychoses

Consider if the benefits of implant treatment outweigh the risk of complications and be able to discuss this with the patient.

Smoking and periodontitis are commonly encountered risk factors when assessing a patient for implant treatment. You can find more detailed information about these two topics on the following page.



Assessment and treatment planning

Step 1 | Patient's expectations, history and examination

1. Patient history



1.3 Smoking as a risk factor for implant therapy⁶

Smoking is not an absolute contraindication for implant placement but it lowers the survival and success rates of implants. It is also a risk factor for general and oral health. Smoking has a long-term chronic effect on the immune system and inflammatory processes. Some deleterious effects of smoking include: impaired wound healing, reduced collagen production, impaired fibroblast function, reduced peripheral circulation, and compromised function of neutrophils and macrophages⁶.

Smoking can cause:

- 4–5 times higher risk of peri-implantitis compared with non-smokers;
- 2–10 times higher risk for progressive bone loss compared with non-smokers;
- reduced implant survival rates compared with non-smokers.

Therefore, motivating the patient to stop smoking will be beneficial both for implant treatment and their general health.

1.4 Periodontitis as a risk factor for implant therapy⁶

Implant placement in patients with a history of periodontitis is not contraindicated, as the majority of studies report implant survival rates greater than 90%. However, there is a **3-4-fold** increased risk of developing peri-implantitis. Microbial colonization following implant placement has been shown to occur within a short period of time; the composition of microbiota within the peri-implant sulcus is similar to that found at neighboring teeth in partially dentate patients. Successful treatment of periodontitis prior to implant placement and individualized maintenance care following implant treatment is important.

Smoking lowers the survival and success rates of implants⁶.

Smoking can increase the risks⁶ of:

- peri-implantitis
- progressive bone loss
- implant loss

Motivate your patient to stop smoking.

Periodontitis can increase the risk of peri-implantitis⁶.

Successful treatment of periodontitis is a prerequisite for implant treatment.



Assessment and treatment planning

Step 1 | Patient's expectations, history and examination

1. Patient history



1.5 Combined risk factors

One single factor alone may not influence the risk of treatment failure measurably, whereas a combination of multiple independent factors may have a significant impact on the treatment outcome.

Several risk factors may increase the overall risk of treatment failure.





1.6 Checklist for patient history

For a thorough patient history, you may use this example of a

 [Clinical Record Form](#) to document the following:

Example of a clinical record form

Patient's chief complaint and expectations

During this first visit, discuss in detail the following questions with your patient:

- Why is the patient here, what is his/her primary objective?
- What is the patient's chief complaint?
- What are his/her expectations regarding the treatment outcome in terms of esthetics, health and function?
- What does the patient know about implant therapy? Are his/her knowledge and expectations realistic?

Medical history

Before planning surgery, the patient's general psychological and physical health status should be carefully assessed. It is important to record, regularly check and update all such information in the patient's record. In case of significant medical issues, the patient's physician should be consulted for further details.



You may use this example of a  [Medical Record Form](#) to document a comprehensive list of information about the patient's medical history. It is helpful to ask the patient to bring a list of their current medications during this visit.

Example of a medical record form

Dental history

- Previous dental care
- Reasons for tooth loss
- History of treated periodontitis
- Oral hygiene habits

Social and family history

- Financial capability
- Genetic predisposition for tooth loss

Habits

- Parafunctional activity (e.g., bruxism)

Motivation and compliance

- Patient's motivation to invest time and money in oral health
- Frequency of oral hygiene procedures



2. Examination

A thorough examination for accurate diagnosis and treatment planning includes the following:



2.1 Clinical examination

- General
- Site-specific



2.2 Radiographic examination

- X-ray template
- General
- Site-specific



2.3 Additional investigations

- Impressions for analysis of study models
- Intraoral photographs

Accurate diagnosis and treatment planning requires:

- Clinical examination
- Radiographic examination
- Additional investigations

2.1 Clinical examination

2.1.1 General

These parameters should be assessed to make a thorough diagnosis and treatment plan:

- Extraoral and intraoral hard and soft tissues: swelling or lesions, asymmetries, palpation of lymph nodes, head and neck musculature, temporomandibular joint
- Oral hygiene status
- Dental, periodontal and restorative condition of remaining teeth: caries, vitality testing, tooth misalignment, fractures, attrition, abrasion, abfraction, periodontal status (probing pocket depth, mobility, bleeding on probing, furcation involvements)
- Occlusion and function: vertical dimension of occlusion, maxillo-mandibular relationship (Angle's classification), overbite, overjet, centric relation, slide-in-centric, lateral and anterior excursive contacts (canine guidance, group function, anterior guidance), signs and symptoms of temporomandibular joint disorders

General clinical examination: Systematically examine the patient.



Assessment and treatment planning

Step 1 | Patient's expectations, history and examination

2. Examination



2.1.2 Site-specific

A three-dimensional space assessment and evaluation of the condition of the adjacent teeth and the surrounding hard and soft tissues is necessary for provisional diagnosis. There are 4 parameters to consider:

2.1.2.1 Interproximal distance of bone

2.1.2.2 Bucco-lingual (or bucco-palatal) width of bone

2.1.2.3 Minimum vertical mouth opening and inter-occlusal distance

2.1.2.4 Soft tissue condition in the edentulous area



[Video: Intra-oral clinical examination](#)

Site-specific clinical examination: Assess the three-dimensional space.



A detailed and accurate space assessment is often difficult to do intraorally. We recommend to perform this diagnostic step on mounted study casts during the treatment planning step. For more details regarding diagnostic space evaluation, refer to the next step on [“Treatment Planning”](#).

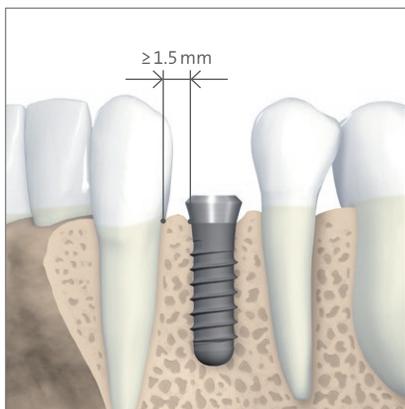
Recommendation: Assess the space on mounted study casts.

2.1.2.1 Interproximal distance of bone



Edentulous spaces should be large enough to be restored with implant restorations that ideally have the same mesiodistal width of the lost natural tooth.

The space available should fit the width of the natural tooth.



In a single tooth gap, a **minimal distance of 1.5 mm of bone** from the implant to the adjacent tooth **at bone level** (mesial and distal) is required. This will help to preserve bone and soft tissue to create a restoration with adequate emergence profile and soft tissue attachment to support oral hygiene measures and esthetics.

Minimal distance of bone from implant to adjacent tooth at bone level: 1.5 mm.



Assessment and treatment planning

Step 1 | Patient's expectations, history and examination

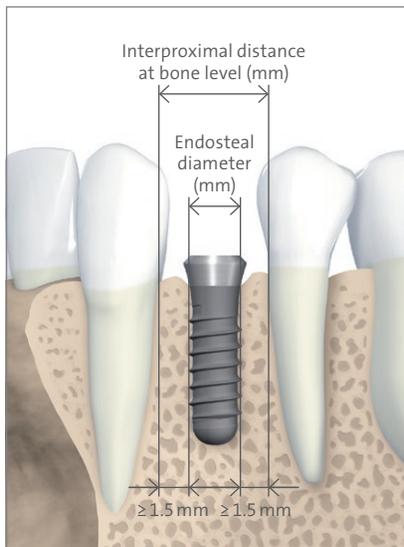
2. Examination



Start by using the [Straumann® Diagnostic T](#) in the patient's mouth to assess the prosthetic platform of the future implant in a single tooth gap. This instrument can also be used to plan the prosthetic reconstruction on study models during Step 2 [“Treatment Planning”](#).

Prosthetic platform planning with Standard Plus Implants and Straumann® Diagnostic T.

⚠ Note: Currently, a Diagnostic T for Straumann® Bone Level Tapered (BLT) Implants is not available.



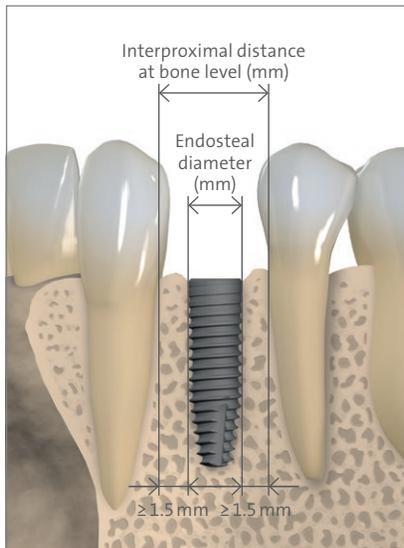
For [Standard Plus \(RN/WN\) Implants](#):

- The interproximal distance at bone level must be **at least 6.5 mm** wide to allow the placement of a Regular Neck (RN) Implant with an **endosteal diameter of 3.3 mm**.
- The interproximal distance at bone level must be **at least 7 mm** wide to allow the placement of a Regular Neck (RN) Implant with an **endosteal diameter of 4.1 mm**.
- The interproximal distance at bone level must be **at least 8 mm** wide to allow the placement of a Wide Neck (WN) Implant with an **endosteal diameter of 4.8 mm**.

Standard Plus Implants require an interproximal distance at bone level of:
 $\geq 6.5 \text{ mm}$ ($\varnothing 3.3 \text{ mm RN}$)
 $\geq 7 \text{ mm}$ ($\varnothing 4.1 \text{ mm RN}$)
 $\geq 8 \text{ mm}$ ($\varnothing 4.8 \text{ mm WN}$)

[→ Chart of minimum widths of bone for planning which SP Implant \(RN/WN\) to use](#)

Chart for reference



For Bone Level Tapered (NC/RC) Implants:

- The interproximal distance at bone level must be **at least 6.5 mm** wide to allow the placement of a Narrow CrossFit® (NC) Implant with an **endosteal diameter of 3.3 mm**.

Narrow CrossFit® (NC) Implants are not recommended for the posterior region.

- The interproximal distance at bone level must be **at least 7 mm** wide to allow the placement of a Regular CrossFit® (RC) Implant with an **endosteal diameter of 4.1 mm**.
- The interproximal distance at bone level must be **at least 8 mm** wide to allow the placement of a Regular CrossFit® (RC) Implant with an **endosteal diameter of 4.8 mm**.

Chart of minimum widths of bone for planning which BLT (NC/RC) Implant to use

Bone Level Tapered Implants require an interproximal distance at bone level of:

≥ 6.5 mm (∅ 3.3 mm NC)

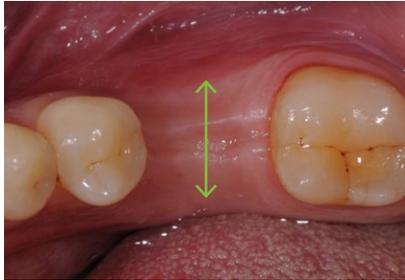
≥ 7 mm (∅ 4.1 mm RC)

≥ 8 mm (∅ 4.8 mm RC)

Chart for reference

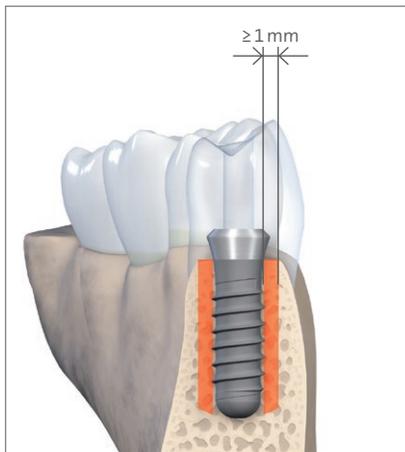


2.1.2.2 Bucco-lingual (or bucco-palatal) width of bone



A restoratively-driven orofacial implant position and axis is important in planning for implant-supported restorations. This can be done by:

- Assessing the contour of the ridge by palpation
- Visually evaluating the available orofacial space for an implant
- Being aware of the presence of concavities (lingual and/or buccal undercuts)



The bucco-lingual or bucco-palatal bone wall must be **at least 1 mm thick** to ensure stable hard and soft tissue conditions.

Minimum thickness of bucco-lingual or bucco-palatal bone wall in posterior areas: 1 mm.

➔ [Chart of minimum bucco-lingual or bucco-palatal width of bone for BLT Implants.](#)

Charts for reference

➔ [Chart of minimum bucco-lingual or bucco-palatal width of bone for SP Implants.](#)



If the overlying tissue is fibrous or thick, accurate assessment may be difficult with visual assessment and palpation. Probing of the local tissues with an endodontic file with a rubber stop under local anesthesia may be indicated to assess soft tissue thickness and to confirm the presence of sufficient alveolar bone.

Bone mapping with endodontic files can be helpful.

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