Stage 4 | Aftercare and maintenance

Step 2
Maintenance visit

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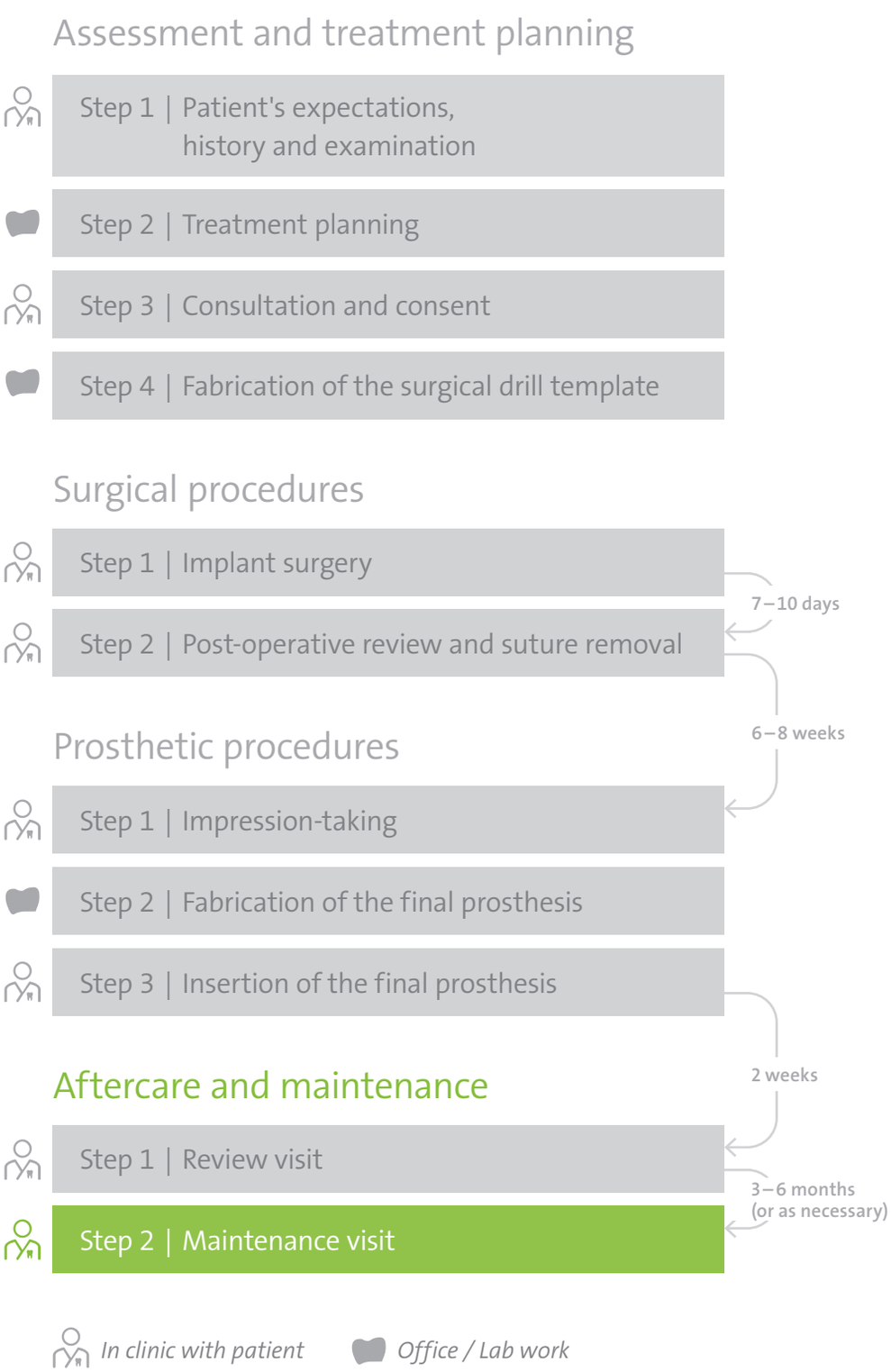
Aftercare and maintenance

Step 2 | Maintenance visit



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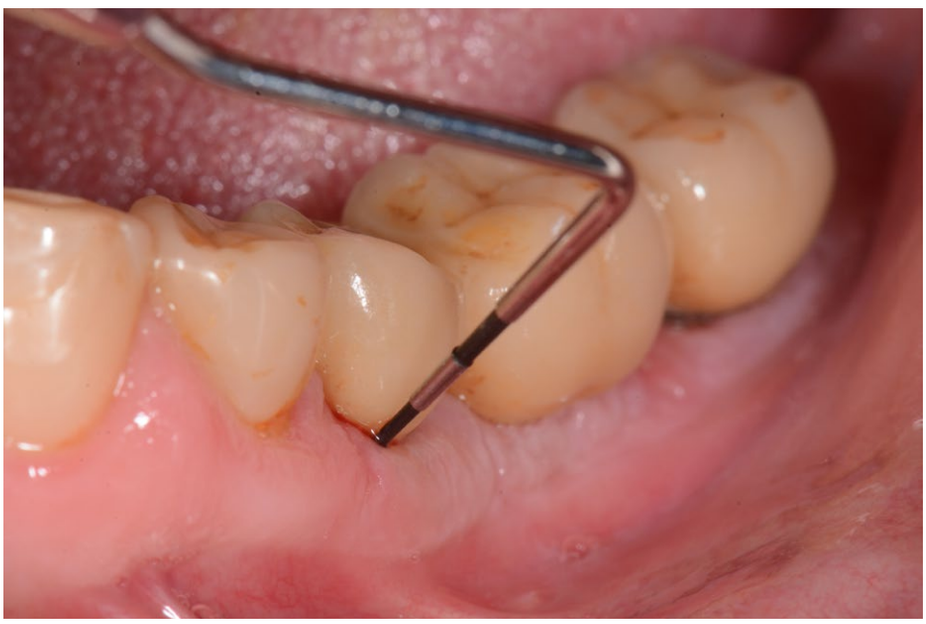
Introduction



Each maintenance visit should comprise of:
- Assessment and update of medical/dental history
- Clinical examination of FDP and peri-implant tissues
- Radiographic monitoring (if necessary)
- Evaluation of risk factors
- Reinforcement of oral hygiene

Patients who have undergone successful implant therapy should be evaluated at regular intervals by their dentist. During each maintenance visit, a thorough assessment and update of the patient's medical and dental history must be made and recorded. A clinical examination of the implant-supported prosthesis including the evaluation of risk factors and monitoring of the peri-implant tissues (e.g., presence of plaque, probing pocket depths, bleeding on probing and/or suppuration, etc.) is done.

All these clinical (and radiographic if indicated) findings are recorded and compared with the established baselines after delivery of the final implant-supported prosthesis. The frequency of maintenance visits for long-term monitoring depends on clinical and radiographic findings upon completion of the prosthodontic work, risk factors the patient may have, and the outcome of each maintenance visit.

Oral hygiene is reinforced at every maintenance visit and the next appointment is scheduled according to the patient's needs to ensure good long-term monitoring.

Learning objectives

- Be able to routinely assess the condition of the implants, fixed dental prosthesis (FDP), soft tissue and bone levels around the implants.
- Perform implant-specific clinical evaluation to diagnose healthy peri-implant tissues.
- Recognize signs and symptoms of biological and technical complications and know how to manage these complications.

1. Assessment

1.1 Medical and dental history

- Review and update the patient's medical and dental history
- Obtain feedback from the patient about the implant sites, comfort and function

Thoroughly review and update the patient's medical and dental history.

You may use this example of a **Clinical Record Form** to record your findings.

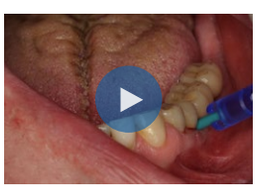
2. Clinical examination

2.1 General

- Extra-oral and intra-oral examination
- Dental and periodontal examination

Look out for any signs and symptoms at the implant sites.

Video: Maintenance visit



2.2 Implants and fixed dental prosthesis (FDP)

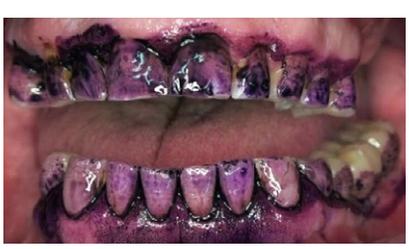
2.2.1 At the implants

- Check the implant stability: Apply the handle of a dental mirror onto the FDP and try to move the implants by pushing in an oro-facial direction.

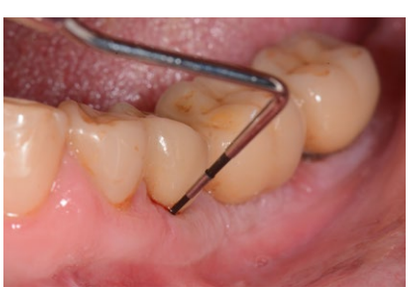
Check for:
- Implant stability
- Peri-implant soft tissue condition
- Plaque scores
- Probing depths
- Bleeding on probing
- Suppuration
- Stability and location of gingival margin

If only the FDP moves, this may be a sign of screw-loosening. If the whole implants are mobile, complete loss of osseointegration has occurred and is a sign of total implant failure[1]. The cause of any mobility should be determined whether it is due to FDP-loosening or loss of implant stability or both.

- Assess the peri-implant soft tissue condition. Check for visual signs of inflammation such as redness, swelling, alteration in contour or consistency, and fistulas.



- Take a plaque control record (O'Leary index) to assess the patient's oral hygiene skills.



- Record clinical probing depths with gentle pressure (approximately 0.15 N of force[2]).
- Record any bleeding on probing.

- Check for any suppuration.
- Check the stability and location of the soft tissue margins, look out for gingival recession.

2.2.2 At the FDP

- Check for proper retention of the FDP.

Check for:
- FDP or screw loosening
- Integrity of screw access holes restorations
- Occlusal interferences or disharmony
- Signs of FDP wear or parafunctional activity

Any movement at this stage may be due to:
- lack of osseointegration of the implant(s)
- possible failure of the cement bond between the FDP and the abutment(s)
- fracture or loosening of the abutment(s) and/or FDP

Caution: Screw loosening is a common problem in implant dentistry[3]. The screw that retains the abutment(s) or the screws that retain the FDP can come loose. In this case, it is sometimes difficult to determine whether the implant(s) or only the abutment screw(s) are loose.

One useful hint is the presence of a fistula located within the keratinized mucosa in close proximity to the microgap. Once an abutment is loose, the microgap widens considerably, which results in heavier microbial colonization, often resulting in the formation of a fistula.

The presence of a fistula can be an indicator for abutment screw loosening.

- In screw-retained FDPs, check whether the fillings in the screw access holes are still intact and providing a good seal.

- Check the occlusal contact at the FDP[4]:
  - anterior or lateral guidance with natural dentition.
  - light contact on the bridge during heavy occlusion and no contact during light occlusion is recommended.

  - shimstock should be held with only tightly clenched teeth to avoid excessive occlusal loading.
  - avoid non-centric interference and premature contacts.

- Look out for signs of occlusal wear, chipping or fracture of the veneered ceramic. This could be a sign of bruxism or other parafunctional activity, and can lead to prosthetic failure or complications.

2.3 Radiographic examination

Standard periapical radiographs using the long-cone paralleling technique can be taken every 2-3 years. However, this interval should be varied according to the patient's needs.

Routine periapical radiographic examination can be done every 2-3 years or more frequently if necessary.

For example, if there are clinical signs or a need to monitor the following:

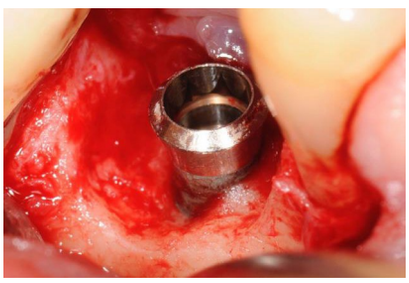
- peri-implant mucositis or inflammation
- incomplete seating of the FDP and/or abutment(s)
- possible cement remnants
- increase in clinical probing depths
- bleeding on probing
- suppuration

⚠ **Caution:** If there are signs of radiographic bone loss, this could mean a peri-implant infection is taking place and additional surgical or non-surgical therapy might be indicated. A consultation or referral to a periodontal specialist is recommended.

Radiographic bone loss can be an indicator for a peri-implant infection.

3. Implant-specific diagnosis

- Healthy soft tissue conditions.
- Peri-implant mucositis – presence of inflammation confined to the soft tissues surrounding a dental implant with no signs of loss of supporting bone following initial bone remodeling during healing.



- Peri-implantitis – presence of inflammation around a dental implant, which includes both soft tissue inflammation and progressive loss of supporting bone beyond biological bone remodeling.

Know how to differentiate between:
- healthy peri-implant tissues
- peri-implant mucositis
- peri-implantitis

4. Standard maintenance treatment

- Review oral hygiene compliance and reinforce oral hygiene instructions.
- Remove plaque and calculus from supra- and subgingival areas.

- Polish teeth.

- Behavioral modifications
  - Oral hygiene habits
  - Control of risk factors such as smoking
- Occlusal adjustments if necessary
- Plan maintenance visit frequency

Maintenance protocol includes:
- Oral hygiene review
- Scaling and polishing
- Identification of modified risk factors or habits
- Check of occlusion
- Planning of maintenance intervals

⚠ **Caution:** Patients with a higher risk of peri-implantitis (e.g., smokers, history of chronic periodontal disease, poor plaque control) should be identified and monitored at least every 3 months.

Monitor patients who are at higher risk of peri-implant complications more frequently.

⚠ **Caution:** Routine instrumentation may scratch exposed implant surfaces resulting in surface alterations that may enhance plaque accumulation. Studies have shown that titanium and hydroxyapatite-coated surfaces are frequently scratched when metal curettes or ultrasonic devices are used. Therefore, plastic curettes, graphite or nylon-type instruments and rubber cups with fine abrasive paste for polishing are recommended[5,6].

CHECKLIST FOR MAINTENANCE VISITS

☐ Assessment
- Medical and dental history

☐ Clinical examination
- General
- Implants and FDP
- Radiographic examination

☐ Implant-specific diagnosis
- Healthy soft tissue conditions
- Peri-implant mucositis
- Peri-implantitis

☐ Standard maintenance treatment
- Review oral hygiene compliance and reinforce oral hygiene instructions
- Remove plaque and calculus from supra- and subgingival areas and polish teeth
- Behavioral modifications
- Occlusal adjustments if necessary
- Plan maintenance visit frequency

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Straumann® Smart is a blended training and education program focused on the education of general dentists who want to become surgically active in the field of dental implantology. The program is limited to information pertaining to straightforward implant cases and focuses on a reduced portfolio of products that are suitable for the treatment of such cases.

All clinical Straumann® Smart content – such as texts, medical record forms, pictures and videos – was created in collaboration with Prof. Dr. Christoph Hämmerle, Prof. Dr. Ronald Jung, Dr. Francine Brandenberg-Lustenberger and Dr. Alain Fontolliet from the University of Zürich, Clinic for Fixed and Removable Prosthodontics and Dental Material Science, Switzerland.

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