Goals of Supportive Therapy

1. Prevent or Minimize Recurrence of Disease Progression
2. Prevent or Reduce the Incidence of Teeth or Implant Loss
3. Increase the Probability of Locating and Treating other Disease and Conditions
Steps of Supportive Therapy

1. Review and Update of Medical and Dental History
2. Clinical Examination
3. Radiographic Examination
4. Assessment of Disease Status
5. Assessment of Oral Hygiene Status
6. Treatment
7. Communication
8. Planning of Next Visit

Etiology of Periodontal Disease

Cause-effect relationship plaque gingivitis
Löe et al 1965

Cause-effect relationship plaque accumulation and development of periodontal disease
Lindhe et al 1975

SPT & Lack of Compliance

Naturally occurring periodontal disease

Fig. 59-1
(a) Mean probing depth reduction (+) or increase (−) in millimeters with or without repeated scaling and root planing in experimental (oral hygiene) and control (no oral hygiene) animals relative to baseline means.
(b) Mean gain (+) or loss (−) of probing attachment with or without repeated scaling and root planing in experimental (oral hygiene) and control (no oral hygiene) animals relative to baseline means. (Data from Morrison et al. 1979.)
Why is that?

Changes in subgingival microbiota (quantity and quality)
Listgarten et al 1978

Periodontal pathogenic microbiota will take several months to recolonize the pocket
Listgarten et al 1978
Slots et al 1979
Caton et al 1982
Magnusson et al 1984

Why is that?

Crucial role of SPT in maintaining successful results
Ramfjord et al 1968
Lindhe & Nyman 1975
Rosling et al 1976
Nyman et al 1977
Isidor & Karring 1986
Kaldahl et al 1988

Patients treated for advanced periodontal disease involving surgery but not incorporated in SPT
Rate of loss of attachment: 3x-5x higher than SPT

Treatment without SPT

Periodontal Therapy

SPT every 3 months
Stable results at 15 years
Nyman & Lindhe 1979
Only 1.3% of the teeth had attachment loss
Nyman et al 2000

No SPT

Obvious signs of recurrent periodontitis
45% of patient returned to values similar to before treatment
Kerr 1981
Increased probing depth
Increased furcation involvement
Increased tooth loss
Bader et al 1994
Radiographic bone loss
Increased tooth loss
Bader et al 1994

Table 59-1
Percentage of sites showing various changes in probing attachment level between baseline examination, 2 months after completion of active periodontal therapy, and at follow-up examination 6 years later (adapted from Axelsson & Lindhe 1981b)

<table>
<thead>
<tr>
<th>Change in attachment level</th>
<th>Percentage of surfaces showing change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attachment level improved</td>
<td>17%</td>
</tr>
<tr>
<td>No change</td>
<td>72%</td>
</tr>
<tr>
<td>Attachment level worse by:</td>
<td></td>
</tr>
<tr>
<td>≥ 1 mm</td>
<td>10%</td>
</tr>
<tr>
<td>2–5 mm</td>
<td>1%</td>
</tr>
</tbody>
</table>

Table 59-2
Percentage of various probing depths in recall and non-recall patients at the initial examination, 2 months after active periodontal treatment, and at 3- and 6-year follow-up visits (adapted from Axelsson & Lindhe 1981b)

<table>
<thead>
<tr>
<th>Examinations</th>
<th>£ 3 mm</th>
<th>4–6 mm</th>
<th>≥ 7 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recall</td>
<td>35%</td>
<td>50%</td>
<td>58%</td>
</tr>
<tr>
<td>Non-recall</td>
<td>38%</td>
<td>8%</td>
<td>8%</td>
</tr>
<tr>
<td>Recall</td>
<td>99%</td>
<td>1%</td>
<td>0%</td>
</tr>
<tr>
<td>Non-recall</td>
<td>91%</td>
<td>9%</td>
<td>0%</td>
</tr>
<tr>
<td>Recall</td>
<td>99%</td>
<td>1%</td>
<td>0%</td>
</tr>
<tr>
<td>Non-recall</td>
<td>80%</td>
<td>19%</td>
<td>1%</td>
</tr>
</tbody>
</table>

Plaque

Gingivitis

100% 50% 50% 0% 0% 0%

Initial Exam

Treatment

Baseline

Follow-up: 3 years

Follow-up: 6 years

Fig. 59-2
Histograms showing (a) average percentages of tooth surfaces harboring visible plaque (above) and inflamed gingival units (bleeding on probing) (below), and (b) average probing depth (above) and probing attachment levels (below), at initial, baseline and follow-up examinations. (Data from Axelsson & Lindhe 1981b.)
A dynamic equilibrium

Indicators for disease recurrence

All periodontal patients are considered MEDIUM to HIGH risk

Determine the level of risk for each individual patient

Determine the frequency and extent of professional support to maintain attachment levels

Indicators for disease recurrence

Compliance with recall

Wilson et al 1984
Wilson et al 1993
Indicators for disease recurrence

Over zealous hygiene

Over zealous hygiene
Over zealous hygiene

Indicators for disease recurrence

Bleeding on probing

- BOP > 20%-30% higher risk for disease progression
  - Claffey et al. 1990
  - Badersten et al. 1990

- BOP <10% low risk for disease progression
  - Lang et al. 1990

Non bleeding site may be considered periodontally stable
  - Lang et al. 1990

Indicators for disease recurrence

Suppuration

Suppuration linked to disease progression

- Badersten et al. 1990
- Badersten et al. 1990
- Claffey et al. 1990
Indicators for disease recurrence

Residual pockets

Deep residual pockets and deepening pockets associated with disease recurrence
Claffey et al. 1990
Badersten et al. 1990

Tooth loss

If >8 teeth are lost, oral function is impaired
Klyver 1981

Tooth loss represent the history of periodontal disease and trauma

Bone loss

Dentition may be functional even in presence of a reduced periodontal support
Papapanou et al. 1988
Indicators for disease recurrence

**Systemic conditions**

- Diabetes type I and type II
  - Genco & Löe 1993
- Interleukin-1 polymorphisms
  - Norrman et al 1997
  - McGuire & Nunn 1999
- Smoking
  - Ismail et al 1983
  - Bergström 1989
  - Haber 1993

**Environmental factors (smoking)**

**Indicators for disease recurrence**

- Bleeding on probing
- Prevalence of pockets >5mm
- Loss of teeth
- Loss of attachment in relation to age
- Systemic and genetic conditions
- Environmental factors (smoking)

**Low Risk**

- BOP is 15%
- Four pockets >5mm
- Two missing teeth
- Bone factor in relation to age is 0.25
- No systemic factor
- Non-smoker

**Indicators for disease recurrence**

- Lang & Tonetti 2003
Following the assessment of the subject's risk factors, recall interval at the end of the maintenance visit. Choice of future SPT and the determination of the patient's risk factors will also influence the future management of the patient. An extraoral and intraoral soft tissue examination should be performed at any SPT visit to detect any abnormalities. Since patients on SPT may experience significant changes in health status and the use of medications should be noted, in middle-aged to elderly patients, especially, these aspects might influence positive treatment outcomes and optimal long-term prognosis rather than the patient's own regular oral hygiene practices.

The recall hour should be planned to meet the patient's individual needs. It basically consists of an assessment of the situation, including the determination of future SPT visits (PFD). Approximately 5–10 minutes have to be reserved for this section. The recall hour (Fig. 59-9) is generally composed of four different sections which may require various amounts of time during a regularly scheduled visit: (1) Examination, re-evaluation, and diagnosis (ERD) followed by 30–40 minutes of motivation, reinstruction, and instrumentation. (2) Motivation, reinstruction, and instrumentation (MRI) will provide information on stable and inflamed sites. This is usually done for each tooth site-related risk factors are evaluated. As indicated above, the diagnostic procedure usually requires the assessment of the location of attachment levels. The latter is quite time-consuming and requires the assessment of the cemento-enamel junction as a reference mark. (3) Treatment of reinfected sites (TRS) may require a second appointment. Sites which were diagnosed as not stable are instrumented. (4) Polishing all tooth surfaces, application of fluorides, and determination of future SPT (PFD) concludes the recall hour (5–10 minutes).

### Indicators for disease recurrence

**Medium Risk**
- BOP is 9%
- Six pockets >5mm
- Four missing teeth
- Bone factor in relation to age is 0.75
- Type I Diabetes
- Non-smoker

**High Risk**
- BOP is 32%
- Ten pockets >5mm
- Ten missing teeth
- Bone factor in relation to age is 1.25
- No systemic factor
- Occasional smoker

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**SPT in practice**

- Medical and Dental Hygiene update
- Intraoral and extraoral examination
- Screening of oral cancer
- BOP, PD, AL, Suppuration
- Caries
- Radiographs

**Pie Chart**
- Treatment of reinfected sites: 45%
- Caries: 25%
- Suppuration: 15%
- Radiographs: 10%
- Intraoral and extraoral examination: 5%
SPT in practice

1. Examination, re-evaluation, and diagnosis (ERD)
   - Examination
   - Reevaluation
   - Diagnosis
   - Duration: 10–15 min

2. Motivation, reinstruction, and instrumentation (MRI)
   - Motivation
   - Reinstruction
   - Instrumentation
   - Duration: 5–10 min

3. Treatment of reinfected sites (TRS)
   - Treatment
   - Duration: 10–15 min

4. Polishing all tooth surfaces, application of fluorides and antimicrobials
   - Polishing
   - Application of fluorides
   - Duration: 30–40 min

5. The exploration for carious lesions
   - Exploration
   - Duration: 10–15 min

6. The recall for caries diagnostic purposes.
   - Recall
   - Duration: 5–10 min

Omission of retreatment will result in loss of attachment

Revaluation visit important

Screening of oral cancer

Medical and Dental Hy update

Intraoral and extraoral examination

Screening of oral cancer

BOP/PD >4mm, AL, Suppuration

Caries

Radiographs

Oral hygiene instructions and motivation

Instrument sites with:
BOP or PD >5mm

Cosmetic and preventative

Reapply lost fluorides

SRP under anesthesia

Local application of antibiotics

Surgical access

Kallehe et al 1988

Kallehe et al 1993

Kallehe et al 1986, 1990

Joss et al 1989

Lindhe et al 1988

Claffey et al 1986, 1990

Mombelli et al 1986

Kalkwarf et al 1989

Kalkwarf et al 1988

Kalkwarf et al 1989
SPT in practice

How do we deal with implants?

- Plaque assessment
- Bleeding on probing
- Peri-implant probing depth (baseline is important)
- Peri-implant keratinized mucosa
- Peri-implant sulcus fluid analysis (no markers available)
- Suppuration

How do we deal with implants?

- Just polishing
- Plastic curette
- Chemicals
- We don’t know?
How do we deal with implants?

Ideal bone levels
2-3mm peri-implant pocket

Bone loss
>3mm peri-implant pocket

How do we deal with implants?

SPT:

Supragingival polishing

≤3mm peri-implant PD
No bone loss
No BOP

How do we deal with implants?

SPT:

Supragingival polishing
Plastic curette
Cavitron with conventional/plastic insert

≤3mm peri-implant PD
No bone loss
BOP
How do we deal with implants?

SPT:

Supragingival polishing
Plastic curette
Cavitron with conventional insert
Chlorhexidine rinse + irrigation

4-5mm peri-implant PD
No bone loss
No BOP

How do we deal with implants?

>5mm peri-implant PD
No bone loss
BOP

SPT:

Supragingival polishing
Plastic curette
Cavitron with conventional insert
Chlorhexidine rinse + irrigation
How do we deal with implants?

>5mm peri-implant PD
≤2mm Bone loss
BOP

SPT:
Supragingival polishing
Curette
Cavitron with conventional insert
Chlorhexidine rinse + irrigation
Local or systemic antibiotic

Treatment of peri-implantitis

Clinical photograph from implant sites in the mandible of a 75-year-old male (a) and a 62-year-old woman (b). Note

Fig. 41-1
Implant sites in Fig. 41-1 after 3 months of self-performed mechanical infection control combined with professional

Fig. 41-2
Additional Therapy
Chlorhexidine rinse + irrigation
Curette

Fig. 41-3
Surgical therapy of peri-implantitis lesions is
prerequisite for surgical therapy in treatment of peri-
resolution of peri-implant lesions. On the other
access to the implant surfaces harboring biofi-

Fig. 41-4, 41-5, and 41-6. Clinical signs
ammation in the peri-implant mucosa (a).

Fig. 41-6

b
6-month follow-up after surgery, PPD was reduced morphology of the interproximal bone walls. At the resective procedures were performed to adjust the not suitable for regenerative techniques and, hence, this case the morphology of the osseous defect was or regenerative procedures (see also Chapter 46). In treated bone defect may be treated using either resective pellets soaked in saline. The peri-implantitis associ-ment of the implant surface was performed using using steel curettes (Fig. 41-5). Mechanical debride-energy with BoP and suppuration were detected at the of inflammation, PPD of about 10 mm in combina-ment of the osseous defects. The implant surfaces are accessible for mechanical debridement. bone walls of the osseous defects. The implant surfaces are removal of granulation tissue. Note the absence of buccal

Fig. 41-5

Implant sites in Fig. 41-3 after fl

Clinical photograph from implant sites with peri-implantitis. Note the PPD of 10 mm and suppuration (a) and the

Fig. 41-4

Chlorhexidine rinse + irrigation

Local or systemic antibiotic

Supragingival polishing

Curette

Cavitron with conventional insert

Chlorhexidine rinse + irrigation

Local or systemic antibiotic

Regenerative surgery

Pocket reduction surgery

Persson

In dog experiments by Ericsson

Resolution of peri-implantitis lesions

Protocol.

Insuffi-antibiotics. Klinge (Klinge

different treatment procedures have been suggested tion to mechanical debridement a vast number of articles in the literature consist mainly of case reports (Klinge

Fig. 41-6).

and clinical signs of inflammation were absent the pocket elimination procedure.

Fig. 41-6

Implant sites in Fig. 41-3 at 6 months after surgical control is provided. Note the soft tissue recession following therapy. Maintenance therapy with supervised infection
Treatment of peri-implantitis

Detecting excess of cement
Detecting excess of cement

Thank You!