Is your knowledge up-to-date?

A 42-year-old female patient visits the dental hygienist. She has been a patient for more than 10 years and has had an implant on the location of the 21 for the last 5 years.

Medical history

The medical history shows no complications.

Dental history

Implant 21.
Good oral hygiene.
Non-smoker.

Mouth inspection

Clinical situation: healthy gingiva, no bleeding, no pockets >3 mm, except for the 17 mesial (5 mm and bleeding on probing) and at the implant location 21 (distal 4 mm, no bleeding). No visible plaque, good oral hygiene.

The patient is very worried about this situation. She does not want to lose the implant. She is not worried about the 17.

On the radiographs, no bone loss is visible around the 21 implant. Some minor bone loss is visible at the 17.

Questions

1. What should the dental hygienist explain this patient about the differences between measuring pocket depths at real teeth and implants?

2. Is it sufficient to probe at the regular dental check-ups in case of implants to determine if there is a healthy or unhealthy situation? Which parameters are essential to establish a correct diagnosis?

3. Is there a difference in the survival rate between implants placed because of periodontal problems in the past and implants placed because of tooth loss of non-periodontal reasons?

Answers

1. Probing depths around natural teeth and implants cannot really be compared. Periodontium in normal dentition is not as it is surrounding an implant area. The peri-implant probing protocol should be different from periodontal probing because of inherent anatomical differences. Specifically, the absence of three types of connective tissue fibres in the apical part of the gingival tissue around the implants makes probing around implants different. Most collagen fibres in the supracrestal connective tissue compartment have been demonstrated to run mostly in a parallel direction to the implant axis (1). The dental hygienist should be aware that controlled peri-implant probing force is necessary. Peri-implant probing depths are more sensitive to force variation than periodontal pocket probing (2). Other factors influencing the pocket depth at implants are: the type of implant, the suprastructure and the position of the head of the implant in relation to the bone and gingiva (3, 4). Implant shape and surface texture can influence the penetration of the probe tip.

Peri-implant probing should start when the suprastructure is fitted to the implant (baseline measurement functioning as point of reference for the future) and repeated during every control visit. A radiograph is imperative to be made at baseline (after placing the suprastructure) to interpret the clinical findings correctly (probing pocket depth).

Registration of bleeding on probing is important. There is no bleeding on probing at the 21 implant. Bleeding on probing is characterized by high negative predictive values, and thus negative scores can serve as an indicator for stable peri-implant conditions (5).

As with natural teeth, pockets deeper than 4 mm are a niche for anaerobic micro-organisms and therefore a hazard and a risk factor for the development of peri-implantitis. The establishment of baseline probing depth values at the time of delivery of the suprastructure is of critical importance, including the location of the soft tissue margin relative to a fixed landmark point on the implant (1).

The dental hygienist and the patient should compare the difference in pocket depth with the baseline measurements.

2. It depends on the comparison with the baseline findings if probing only is sufficient. There are three parameters involved: probing pocket depth, bleeding after probing and bone level (specifically for the implant used) on a radiographic image. If the probing pocket depth does not change in time, there is no

need to make a new radiograph. When the probing pocket depth changes more than 2 mm, a new radiograph should be made and compared with the radiographs present (which serve as the baseline measurement so that a possible chance can be correctly diagnosed) (6).

The radiographs show bone loss at the 17 and no bone loss at the 21 implant. In this case, probing alone would be sufficient if the baseline measurement was within this 2-mm range. The kind of probe used for peri-implant probing is very important. The probe should be plastic or made of titanium, preferably a special pressure probe.

3. It is important to probe each visit and record the bleeding. Treatment, recall and preventive interventions are the same in patients with or without implants; however, it is important to specifically follow patients with implants and a history of chronic periodontitis (7).

Patients with implants replacing teeth lost due to chronic periodontitis demonstrated lower survival rates and more biological complications than patients with implants replacing teeth lost due to reasons other than periodontitis during a 10-year maintenance period (7, 8).

The 10-year survival rate is significantly lower for implants placed in patients who smoke and have a history of periodontitis. Also, that group had a higher complication rate (7).

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