

9th Consensus on Indications for Tooth Extraction and Oral Implant Placement

(Ver 1.0: January 2024)

Preface

Indications for tooth extraction were part of the 1st consensus document of the International Implant Foundation IF[®] since version 4 of that document had been issued in 2018. The topic was explained in more details in Version 5.1 and 5.2 of that consensus document. Around 2017/18, conventional dentists and their chambers began an unfriendly discussion about tooth extractions associated with implant placement. They recognized an ever-increasing competition between conventional dentists and implantologists who used the method of modern, cortical implantology. Such a competitive situation does not exist with the field of conventional oral implantology (COI), since it has hardly become widespread anyway, since its area of application is also more than limited, and since it was not a competitor to dental treatment in terms of costs. All of this has changed since the introduction of modern cortical implantology. Individual chambers, e.g. in the EU, began to issue (national) but probably inadequately considered „guidelines“ to give their members certainty regarding tooth extractions¹.

Earlier conventional oral implants (COI, also named “2-stage implants”) had been considered (mainly for the rich) as a replacement for missing teeth in order to avoid removable dentures. This was the traditional field of use since the invention of COI in the early 1950s. After the use of modern Corticobasal[®] implants (and the so-called Strategic Implant[®]) became more widespread and later dominating on the world markets, the community realized that the treatment options of the modern implants were by far larger than those of the conventional oral implants (COI). Modern Corticobasal[®] implants and alike designs are used for replacing missing teeth, but also as an alternative to natural teeth. For the first time in history, these implants allowed that patients would opt against their own teeth and for fixed teeth on modern oral implants.

The reasons why patients opt for full tooth removal are not of primary importance, as this is a private decision of the patients. It became apparent, however, that patients are ready for this switch even at the age of around 30 years, and later with every year more, table 1.

¹ It is interesting to mention that in a document issued by the Bulgarian Ministry of Health: “Guidelines for good clinical practice in dental medicine“ in the section “Indications for tooth extraction“, the following valid indications are recognized: overerupted teeth, and all other teeth which could compromise the stability of the prosthetic work, also esthetics is recognized as indication for extraction (if the teeth cannot be restored by other means).

Age of treated patients	up to 30	30 - 34	35 - 39	40 - 44	45 - 49	50 - 54	55 - 59	60 - 65	65+	Total
% of the patients	0.9 %	1.8 %	3.8 %	5.6 %	12.2 %	23.1 %	16.6 %	18.5 %	17.6 %	100 %

Table 1: Age of a cohort of patients which opted for full tooth removal and Corticobasal® implant placement in a Swiss clinic.

1. Indications for tooth removal to enable the use of the Strategic Implant® / Corticobasal® implants and alike implants, compared to conventional oral implants (COI, 2-stage implants) and compared to conventional dental treatment

The development of reliable methods of replacing teeth with basal implants / Technology of the Strategic Implant® / Corticobasal® implants has changed the entire field of dentistry tremendously. The indications for tooth extraction are broader today than ever before in the history of dentistry. Indications for saving teeth are significantly reduced.

Since the knowledgebase for modern dentistry is not evenly spread in the population of dentists, in many places ineffective dentistry is practiced, while in other (often nearby) clinics a modern, time- and moneysaving, straightforward approach to help patients with tooth problems is applied. Even within one country and specifically in “well developed” countries, the differences between the treatment approaches are dramatically big.

Many experts have previously assumed that “oral implantology” belongs more to the field of oral surgeons or even maxillofacial surgeons and less to the field of work of specially trained dentists. What was overlooked was the fact that neither oral surgeons nor maxillofacial surgeons learn implantology as part of their specialist training, and they never take an exam in this area. One of the main reasons for this situation is that there are no comprehensive treatment standards that can be taught or tested in conventional oral implantology (COI).

Considering the tendency of the patients to reach a higher age in life, the willingness of patients to get their natural teeth treated is getting significantly reduced, because many patients understand that they will lose most of their teeth anyway in due course and the chances to reach the end of their life with those teeth (in an acceptable functional status) are for most patients zero. The rate of dentition decay increases with age.

Dental implant placement is an elective intervention. Patients today are considering implants (instead of their own teeth, and not only after they have lost their teeth) for a number of good reasons. The aim of the insertion of dental implants (in general) is to create a bilateral, even pattern of chewing and to support a harmonious facial profile in the patient, good esthetics and a chewing table from 6-6 in both jaws. Creating frontal contacts between implant-borne bridges (just as in removable dentures) is a bad practice.

1.1. General consideration:

Indications for tooth removal must be considered in view of the oral implant technology that is planned to be used.

1.2. Implantologists which work with the Method of Osseointegration should consider that the “life expectation” for those implants is uncertain and they can expect that those implants on average will not last longer than seven to ten years. This leads to a number of implications for the question of tooth extractions:

- For single tooth replacements and small bridges on 2-stage implants, the main indication are the already missing teeth
- For full arch reconstructions on 2-stage implants, the main indication is the edentulous jaw, since the necessary bone for osseointegrating implants in the posterior tooth area is often missing

1.3. As we know today that 2-stage implants are in general limited regarding their “life expectation”, the removal of teeth with the intention to replace them with implants, which last longer than teeth, is rather a doubtful treatment plan.

The usage of 2-stage implants in general tends to be rejected by patients nowadays. The following considerations lead to a situation where patients reject these devices:

- The treatment plan for COI (2-stage implants) includes typically undesired healing time. This motivates patients rather to opt for immediate loading protocols which can hardly be offered for COI
- Often (undesired) waiting time after tooth extraction and implant placement is required, this often leads to the necessity to incorporate temporary dentures. This creates additional costs
- Most patients over the age of 50 years do not provide enough bone for conventional dental implants. Hence, they are told that they require “bone augmentation”. Many patients refuse COI for this reason, they rather keep on living with severely compromised teeth
- Smoking is a severe risk factor for bone augmentation because it affects the wound closure; most commonly, smokers are excluded from implants because bone augmentation is (for them) a very risky step. Smoking is not a risk-factor for implants in general, and implants which do not require bone augmentation (like Corticobasal® implants, lateral basal implants and alike) may be used on smokers with very good success
- Placement of 2-stage implants with the intention to improve esthetics is (on long term) a doubtful approach, especially if the transition zone between the prosthetic workpieces and the natural gums is visible

- Due to the aforementioned esthetic problems with COI, very often patients are referred to COI-based dentures instead of to fixed teeth on implants. This example shows the use of COI is very limited
- Literature shows that placement of 2-stage implants with the intention to stop periodontal disease and to create thereby stability in the masticatory system is a doubtful approach from the beginningⁱ. COI should not be placed in cases with active or recently treated periodontal disease, because it takes up to 24 months until the jaw bone comes to rest after extractions and surgical periodontal treatments
- If COI are placed, patients must be informed that the life expectation of these implants is around seven to ten years and that it might take additional investments and treatments to make these implants reach this timeline. Patients also have to be informed that COI lead to irreversible loss of bone which might make it impossible to place another set of COI after the first one has failed. Under these circumstances, the indication for preserving teeth is given if those teeth provide a life expectation of seven to ten years and more. This is the reason why 2-stage implantology is mainly applied in small gaps and for short bridges
- 2-stage implants should not be used if more than five implants are incorporated per jaw, because a higher number of implants increases the risk of periimplantitis significantlyⁱⁱ. Periimplantitis also occurs much earlier and more frequently under these conditions
- COI which provide polished endosseous surfaces (even if they feature larger diameters) have a significantly lower risk for developing periimplantitis (PI). Unfortunately, these excellent devices were taken off the markets more than 20 years ago for being “outdated”. Before this, COI featuring rough endosseous surfaces were introduced to the market and the word “periimplantitis” had to be invented
- 2-stage implants require a large amount of (expensive) professional aftercare. Many of them require replacement after only a few years
- COI with rough endosseous surfaces are per se non-hygienic devices. Their use is contra-indicated in the group of (unreliable) non-cleaning patients. If the treatment provider wants to use these devices, it's his obligation to make sure that the patient will change the cleaning (and even lifestyle) habits. Failures of the patient to change the cleaning habits are considered to be a mistake of the treatment provider, because devices which allow to treat non-cleaners without risks (such as Cortico-basal[®] implants) are available nowadays

i Victoria Wilson An insight into peri-implantitis: a systematic literature review. Prim im Dent J. 2013 Apr;2(2):69-73

ii Passoni et al., Does the number of implants have any relation with PI disease? J Appl Oral Sci; 2014;22(5): 403-8; <https://doi.org/10.1590/1678-775720140055>

For the mentioned reasons, implant devices which work according to the Method of Osseointegration seem hardly useful in the daily clinical practice. The Method has a high rejection rate due to the long treatment process, high risks and high costs. An unknown number of patients is deselected from the group of patients seeking implant for medical reasons. This process is called “patient selection”. Those who are deselected remain typically untreated. Almost all “scientific studies” systematically hide this fact and especially the amount of “deselection”.

We can assume, however, that if the Method of Osseointegration is chosen by the treatment provider, the estimated number of deselected patients amounts up to 30 - 50 %. It increases with the age of the patients, because jawbone resorbs and patients accumulate diseases which are deemed to be a contra-indication for COI. Hence, the group of conventional oral implants (COI) shows has a low effectiveness, low applicability, and low acceptance.

The International Implant Foundation IF® questions that the method of COI can be subject for teaching at state-universities in the future,

- if more applicable and effective methods are available,
- and considering that the funding for these universities is provided solely or mainly by the general public (i.e. by the taxpayers)

	Method of Osseointegration Conventional Oral Implants (COI)	Method of Osseofixation
Permanent medical contra-indications for oral implant treatment which will lead to de-selection of the patient by the treatment provider	Unfavorable medical conditions (diabetics, hypertension, various medications, IV bisphosphonate treatment, etc.) Smoking Insufficient bone supply and unfavorable conditions for bone augmentation	n.A.
Temporary medical contra-indications for oral implant treatment which will lead to temporary postponing of the patient by the treatment provider	IV bisphosphonate treatment Periodontal infections, cysts in the bone, infections in the bone, recent radiation therapy	IV bisphosphonate treatment, recent radiation therapy
Reasons for patient's refusal to undergo oral implant treatment	Long duration of treatment Very high costs of implant treatment High risks associated with bone augmentation Additional costs of bone augmentation Fear of repeated pain during multi-step surgical protocols Unwillingness to wear an intermediate removable denture or to be without teeth for some time Fear of experiencing periimplantitis which will lead to pain, infections and eventually to the loss of large amounts of bone and loss of the implants	Despite the comparatively lower treatment costs, some patients still have to postpone treatment for financial reasons. This shows that further developments in the effective handling and applications of the Method in the local clinics are necessary in order to eliminate the necessity of the incorporation of removable dentures, the application of root canal treatments and periodontal treatments fully

Table 2: The table shows major differences between the Method of Osseointegration and the Method of Osseofixation regarding permanent and temporary contra-indications as well as regarding patient's reason(s) for not accepting the treatment and opting for alternative treatments like endodontic and periodontal treatments.

- 1.4. Conventional dentists are trained to "save teeth", whatever it takes. They are supported by dental chambers, who work in the interest of traditional dentists, but (of course) these chambers are not protecting the interests of patients. **One of the few organizations which support the interests of patients is the International Implant Foundation IF®, Munich / Germany.**
- 1.5. The International Implant Foundation IF®, advised by a highly qualified advisory board, decided to clarify the circumstances around the question when teeth are removed in connection to oral implant treatments. The following comments refer to the newer Method of Osseofixation which has numerous specific advantages compared to the Method of Osseointegration. For the

newer method, by far more reasons for extraction can be listed, because the implants per se do not provide a limited life expectation. On average, such implants last (often much) longer than teeth which have been in function for 40 years and more. In addition, modern cortical implants can be easily removed and usually replaced without any problems (and above all without bone augmentation). All this is not possible if the method of osseointegration has been applied.

Corticobasal® implants (and alike designs) can thus become a necessary or a desired part of the treatment plan:

- if patients declare that for them, the burden of maintaining teeth is not acceptable any more (for financial reasons, for esthetic reasons, for medical reasons (e.g. because root canal treatments would be necessary, if patients have no trust in their dentition, if they prefer to avoid removable dentures, etc.). **We have to realize that more than 99% of all problems in the oral cavity stem from teeth. This alone calls for their early removal if an alternative is given. This alternative is given today**
- if the patients require the removal of their teeth for esthetic reasons: **Dental implantology has the potential to be both a medical discipline and applied cosmetics.** Due to the shortcomings and flaws in their design, COI are often not useful as cosmetic devices and devices for creating esthetics. If used in small gaps between teeth, this disadvantage of COI does not become as apparent as in circular implant borne bridges

1.6. The fact that a tooth **can possibly be saved** by using methods of treatment from traditional dentistry (crowns, fillings, root canal treatments, perio treatments etc.) does not mean that the **indication for the saving of the tooth** is given as well. **Saving a tooth is (also) an elective intervention which requires the patient's consent.** The simple possibility of carrying out a conventional dental treatment on a tooth or even on all teeth in a jaw is not creating the indication to treat these teeth.

Likewise, the possibility of performing a conventional dental treatment does not imply that a national or private dental health insurance must pay for this treatment if better treatment options are available. Nowadays, tooth removal and an immediate treatment with **Corticobasal® implants provide a better perspective and a more effective, longer lasting and thereby typically a cheaper solution.** From this point of view, keeping teeth can be considered to be a luxury for individuals who want to pay for this and who want to take the risks. This "luxury" includes risks which reach from simple endodontic and periodontal infections to life threatening infections and deaths caused by defective teeth.

- 1.7. To keep and maintain single pre-treated or first-time damaged teeth may be in the financial reach of single individuals with sufficient funds (without being insured for these events).
However, national or private insurances should **not be forced to support such “whatever-it-costs-treatments” on teeth**, as today a reliable (implant) alternative is available. The International Implant Foundation IF® recommends that insurers for health strongly revise their present principles of paying for conventional dental treatments and instead support their clients in realizing a **non-tooth-borne durable solution** to maintain a fixed dentition. COI cannot offer this solution.
- 1.8. Restorations on 2-stage implants cannot count presently as an effective and applicable solution because studies are missing which follow the rules of medical reporting. In the field of 2-stage implantology (Method of Osseointegration), a vast number of studies have been published but they lack information about the real-life applicability and effectiveness of this treatment. Their authors have widely managed to disguise the fact that every patient which was rejected for treatment will interrupt the “cohort” and that RCTs are impossible under such conditions.
- 1.9. Reasons for tooth removal in connection with placement of Corticobasal® implants – the following observations on patients will lead to **prophylactic tooth removal**:
- Wisdom teeth should be removed in patients receiving dental implants. The ancient idea to keep wisdom teeth as an “anchor of last resort” does not reflect the possibilities of modern oral implantology. Erupted wisdom teeth tend to elongate (with the bone) and hence they create an increase of the vertical dimension of the whole tooth arch (especially in the mandible). The newly formed bone is, however, not stable due to a lack of sufficient function and as soon as it collapses, patients develop signs of periodontitis (which should be classified rather as a super-infected elongitis)
 - Elongated teeth (with or without elongation of the alveolar bone) should be removed if they block the possibility to install tooth arches with an acceptable AFMP and APPI on both sides. Their bony bed has to be considered potentially unstable, because bone around elongated teeth tends to collapse sooner or later
 - Periodontally involved teeth with an attachment-loss of 20 % (of the root surface) or more should be removed. Dental implants should not be placed in jaws where generalized bone loss is visible and takes place, because the whole affected piece of bone can be expected to be under strong and constant remodeling which will not stop soon after the implants are placed

- Teeth with mobility L1 and more should be removed because mobility of teeth in adults cannot be treated in general, it tends to increase, and sooner or later it prevents a pain-free mastication as well as a stable occlusion
- Teeth that would require a second or third crown should be removed as they last much shorter compared to even conventional oral implants. If these teeth will get lost later, an early (at least partial) re-treatment will become necessary
- Teeth whose position in the jawbone prevents resorption-stable bone areas from being reached and / or used for cortical anchoring of implants should be removed (this applies also to single 2nd molars, all wisdom teeth for conventional dental treatment as well as to impacted upper canines, etc.)
- Bone augmentations and sinus lifts should be removed if Corticobasal[®] implants are planned to be used, unless the possibility to safely bypass the augmented areas of potential danger with the implants is given
- Teeth (including “healthy teeth”) which the patient (for any reasons) wishes to extract should be removed
- Natural teeth are often positioned in the oral cavity in such a way that the transition zone to the mucous membrane becomes visible when the lip moves (when laughing, talking or smiling). In such cases, the bone level has to be corrected in order to come to an acceptable esthetic result. This bone reduction demands removal of the teeth in any case
- Removal of ugly and severely restored teeth is indicated for esthetic reasons at the patient's request. In such cases, soft and hard tissue are also typically corrected vertically
- If the sum of the necessary dental treatments seems unbearable or unaffordable for the patient, even healthy teeth should be extracted as this avoids suffering of the patient. If a severely pre-damaged dentition is given, a complete removal of all teeth and placement of Corticobasal[®] implants is in general the cheaper solution with a better long-term perspective
- The decision for removing (all) teeth comes easy, if both patients and treatment providers are sure that the chosen Method of implant restoration does not include the risk of periimplantitis
- Teeth that have been treated with a root canal should be removed in view of their permanent release of toxins. If this is not desired, the bone areas around these teeth must be considered potentially necrotic or infected
- With regard to the follow-up costs of a dental treatment (“re-dentistry”), especially if the expected remaining time for usage of (some teeth) is less than six to eight years, it should be urgently proposed that the teeth should be removed and that no investments (neither through private nor through state insurers) are being made into those teeth

- To avoid removable dentures, the treatment plan may include the removal of additional teeth (healthy teeth, not mentioned in this list) in order to install a standard solution with high predictability (a standard segment on implants, a circular bridge, full mouth restoration)
- In order to achieve a faster treatment result, extractions are generally indicated if the patient expresses the wish for this treatment variant
- Extractions are indicated to allow creation of a cross-arch stabilization on implants
- Extractions are indicated if the existing tooth arch does not allow restoration of the masticatory system with the plane of bite being parallel to the plane of Camper, or if there are non-identical curves of Spee on both sides, or if the APPI differs on both sides, and if the frontal groups cannot be kept out of contact in occlusion or during mastication without overly raising the bite
- Not to interrupt stabilizing splinting by teeth which are not included into the prosthetic construction. Natural teeth are not included into prosthetic constructions on Corticobasal® implants because they have a shorter life expectancy than this type of implant
- Extractions are indicated for teeth without antagonist, if the elongation of those teeth and subsequently the development of early contacts between the implant-borne bridge and the tooth must be expected
- Due to the hygienic surface design, significantly lower demands are placed on the oral hygiene of the patient if Corticobasal® implants are chosen. This is true in comparison to teeth and in comparison to 2-stage implants. The cost of renewing such bridges after years is reasonable (especially if production data from the 1st bridge is available) for many patients and can be calculated in advance
- A significant improvement in esthetics is possible if the vertical bone reduction in the visible zone is combined with tooth removal. The ability to position dental arches independently of the jawbone in an esthetically and functionally desired position enables significant improvements in esthetics, even with fixed restorations. The possibility for such treatments are incomparably higher for Corticobasal® implants compared to COI
- Patients plan to switch to an implant-supported denture / bridge at a time when they have sufficient income. As the Strategic Implant® / Corticobasal® implant provides the principal perspective for life-long stability, these implants are the preferred devices in this situation. Nowadays, many treatment providers which apply such implants offer (in addition to an initial four to five years warranty) a payable “warranty extension”. This creates a situation where the costs for life-long maintenance of the implant work can be suddenly calculated. Such a lifetime extension of warranty is not possible on COI due to the structural flaws of the devices and the method
- Treatments with dental implants are cheaper than continually repairing

teeth and making repairs ("re-dentistry")

The International Implant Foundation IF® supports patients in their rights of self-determination, in cases when they have made a decision for the extraction of natural teeth in order to receive a comprehensive therapy with implant-supported (fixed) teeth as a result. This refers to patients and cases in which the removal of teeth is requested even though some of the removed teeth are healthy or could have been "saved" by one or more disciplines of dentistry (e.g. endodontics, periodontics, surgery, prosthetic and conservative dentistry).

Even if a private or national health insurance company would be willing to pay for the individual dental treatments in order to "save" these teeth: this alone does not give an indication to save the teeth.

Conclusions

The appearance of Corticobasal® implants in the markets of the world has put the implantologist with training for this technology in a much better position to treat patients compared to conventional dentists.

The gap of possibilities between those two groups of implantologists has become unimaginably large today. It has to be understood that nowadays, two completely different methods of oral implant treatments are available, and both implant practitioners and patients will have to decide which method to apply.

Only conventionally trained dentists are presumably underqualified to work on today's market of dentistry in adults which have lost teeth if, due to lack of further education, they must base their work on an aged dentition with a limited life expectation. Whether or not their university education has provided the necessary knowledge for treating the population 45+ with a compromised dentition must be raised.

The following should be considered in this regard:

- Treatments with dental implants are cheaper than continually repairing teeth and making repairs ("re-dentistry")
- COI avoid many of the shortcomings of natural teeth, but they themselves bring along a lot of disadvantages which deter patients to even agree to treatment with these implants
- Modern Corticobasal® implants and the technology of their use have overcome almost all of these disadvantages
- In light of these facts, treatment of defective teeth is today at best one of the options

Only specifically trained and experienced implantologists for Corticobasal® implants or for the Strategic Implant® (and alike devices) have received the superior education and superior knowledge that allows them to provide higher and more durable services to these patients.

The **Method of Osseointegration**, due to the limited life expectation of the devices used, **cannot give a justification** for the extraction of healthy teeth which can be expected to last seven to ten years and more.

The **Method of Osseofixation** has proven to be not associated with general problems which are found only in COI. COI provide on average a maximum life expectation of the implant device itself. Hence, practitioners which apply this method can consider removal of teeth even in younger patients and under by far more indications, as long as the extractions are requested by the patients.

Therefore, both interventions - placing an implant vs. repairing ("saving") the tooth - are elective interventions which require the informed consent of the patient. A large variety of aspects will be considered by the patient. Many patients will opt for tooth removal and replacement by implants using the Method of Osseofixation, while they will rather keep their teeth if they are offered treatment in the older Method of Osseointegration.

Implant practitioners which plan to apply the older Method of Osseointegration to their patients must fully inform about the shortcomings of this method, such as the occurrence of periimplantitis, the necessity of bone augmentations, unloaded healing times and more. A patient who did not get this information in full is not in a position to sign an informed consent.

Implantologists who plan treatment with modern jaw implants (e.g. Corticobasal® implants or alike devices) cannot be expected to inform their patients about the availability and disadvantages of the older (outdated) method of osseointegration.

Approved by the Board of Directors and the Scientific Advisory Board of the International Implant Foundation IF®: Ver 1.0 EN, January 2nd 2024

Change Index

Change No.	Document Name / Number	New Version	Previous Version	Change	Date Approval	Approved by
n.a.	9_EN_Consensus_indications_tooth_extraction_oral_implant_placement_2024-01	1.0	-	This 9 th IF® consensus document has been developed since 2017 / 2018. The topic of "extractions" was initially part of the 1 st IF® consensus document (section 10). Since in the last years, new matter (incl. a new mindset) to this topic has developed, the IF® Board has decided to create this new, 9 th IF® consensus document out of section 10 (ver 5.3) of the 1 st IF® consensus document. At the same time when version 6.0 of the 1 st consensus document was ready for publishing, the 9 th IF® consensus document was also ready for publishing	02.01.2024	IF® Board