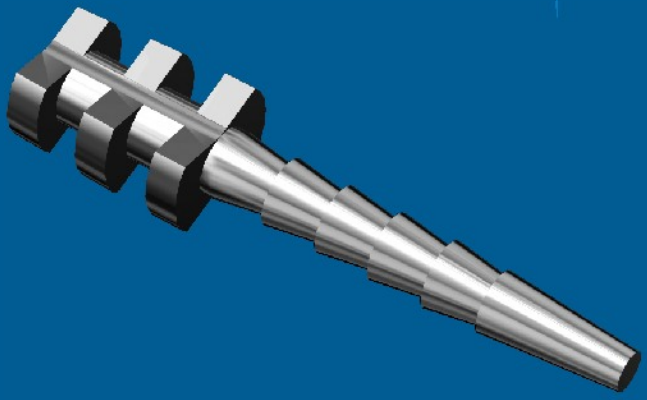
IKADENT



TITANIUM ANCHOR POSTS

Product catalogue
Installation practice

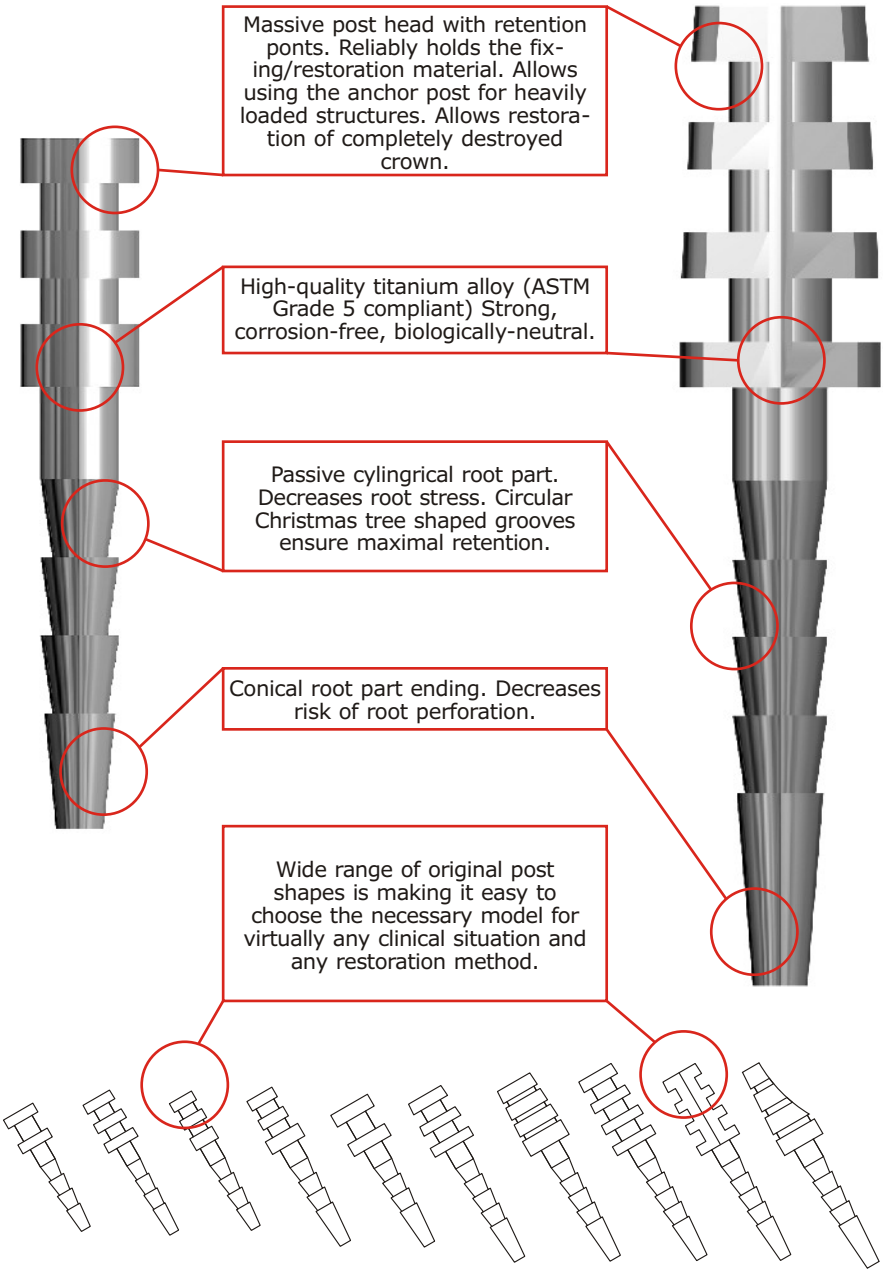
Massive post head with retention ponts. Reliably holds the fix-ing/restoration material. Allows using the anchor post for heavily loaded structures. Allows restora-tion of completely destroyed crown.

High-quality titanium alloy (ASTM Grade 5 compliant) Strong, corrosion-free, biologically-neutral.

Passive cylingrical root part. Decreases root stress. Circular Christmas tree shaped grooves ensure maximal retention.

Conical root part ending. Decreases risk of root perforation.

Wide range of original post shapes is making it easy to choose the necessary model for virtually any clinical situation and any restoration method.



For over 10 years IKADENT Company has been involved in the development, manufacturing and sales of dental titanium root and anchor posts. The quality of our products is on the same level with the items offered by the world major suppliers. At the same time the price for our root posts is far more attractive to the consumers. Our specially designed high quality products simplify the restoration procedure, increase its efficiency and make it broadly available to patients. That is why IKADENT posts have received only favorable reports and gained recognition of experts in dentistry.

So why are IKADENT posts so popular and what are their advantages?

1. IKADENT posts are made of special titanium alloy.

We use only high quality titanium alloy supplied from the USA. The alloy is ASTM F136 Grade 5 and DIN 3.7165 compliant and is used worldwide for production of implantable parts. Decades of clinical experience have proven titanium to be the only material that possesses all the qualities necessary for durable and uncomplicated dental restoration. Titanium is a high strength, corrosion resistant material which is hypoallergenic (causing no allergy or foreign body reactions) and chemically neutral (not interacting with the biological environment or creating galvanic currents) . Titanium allows for wider range of post size and shape and enables individual customizing of posts during the restoration procedure.

Other materials used for posts have certain drawbacks often seen by dentists, sometimes years after post installation. Examples:

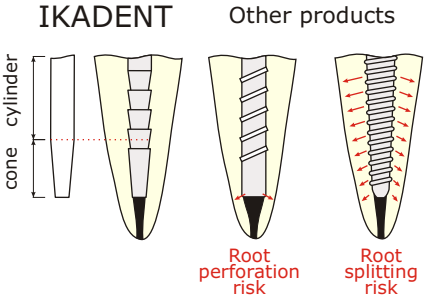
Stainless steel – lower corrosion resistance, lower strength, more chemically active.

Gold plated brass (copper-zinc alloy) – very low corrosion resistance (the gold layer is often damaged during installation), poor hardness, poor strength, high chemical activity (cases are known of migraine and mastication muscle pain due to galvanic current caused by brass posts).

Glass fiber – due to the linear fiber structure the posts cannot have complex anchor heads and thus are not used for massive restorations; glass fiber cannot be processed individually during restoration process and has not been extensively used over long time (discussion on elasticity as the basic parameter of glass fiber is still in progress).

2. IKADENT posts are optimally designed.

Root part of the post has patented configuration with cylindrical and conical segments having certain length ratio. It is known that active posts (installed by screwing and retained in the root canal by threading) exert maximum stress on root walls. IKADENT posts having circular grooves with inclined side surface (Christmas tree shaped) instead of threading are passive, thus free from that disadvantage (see practical part of the booklet for more information on passive and active posts).



All anchor posts have base elements that relieve the root canal from extra load

and ensure stability against side chewing forces.

All IKADENT posts have anchor heads with marked retention points (circular grooves) ensuring reliable retention of restoration material even on small posts.

Thus, IKADENT posts have significant advantages comparing to other similar products:

- ✓ decreased load on dental root during installation and use, minimizing risk of root splitting;
- ✓ better fixation of the post in the prepared post bed;
- ✓ betted durability of restoration and prosthetic devices if fixed on IKADENT posts.

3. IKADENT posts increase availability of restoration to the patients.

IKADENT posts have wide range of original shapes (some of them unique) making it easy to choose the necessary model for virtually any clinical situation and any restoration method.

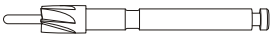
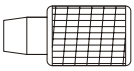
Use of IKADENT posts decrease the treatment duration (often to one visit only) and lowers the cost while ensuring high quality and durability of restoration. This makes the clinic or individual dentist using the IKADENT posts to be more attractive to patients.

PRODUCT CATALOGUE

Post sets: types and contents

The posts may be supplied separately (in polyethylene packaging) or in sets with tools needed for post installation. Working dimensions of tools are compliant with setting dimensions of posts in the set.

Supplied tools and their purpose:

 Penetration drill	Preliminary root canal widening. Setting direction for root facer.
 Root facer	Creation of flat base area for the posts base element to ensure stability
 Calibration drill	Final canal widening to match the posts root part dimensions
 Mandrel	Holding the rotary tools for more accurate manual drilling

The technique of post installation and usage of supplied tools is described further in the practical section of this booklet.

How to use the catalogue?

To make an order you need to select post model and type of the set and get the corresponding reference number. Example:

Reference number of the set: **IKT-D20-F**

Posts material - titanium
Model of posts in the set
Package/contents type of the set

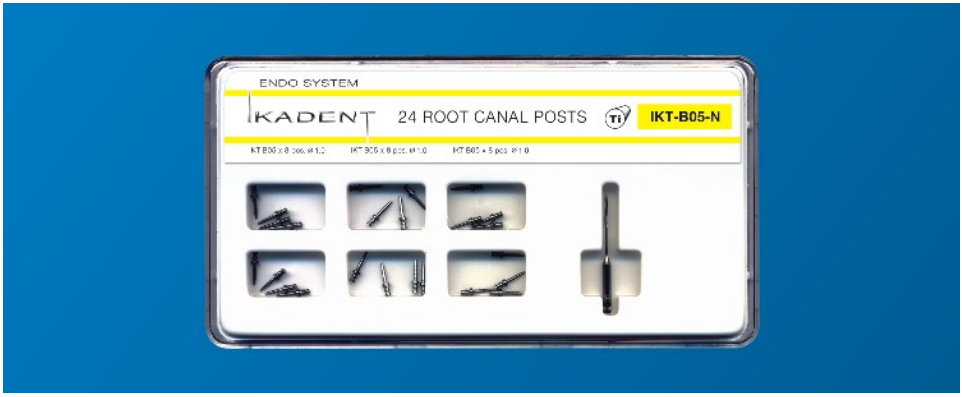
Each packaging/contents type is described below

*Plastic box sets, type **F***

24 anchor posts of single model, 1 penetration drill, 1 root facer, 1 calibration drill and 1 mandrel. Packaging: plastic box.

*Plastic box sets, type **N***

24 posts of single model, 1 calibration drill and 1 mandrel. Packaging: plastic box.



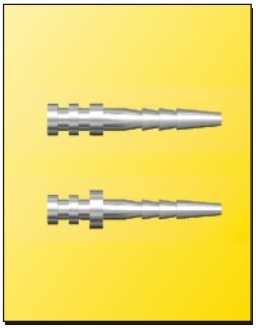
Refill pack, type ***V***

24 posts of single model in polyethylene packaging. Good choice for those who have properly functioning tools from a previously purchased (F) set.

Post models

Root canal posts
Models A and B

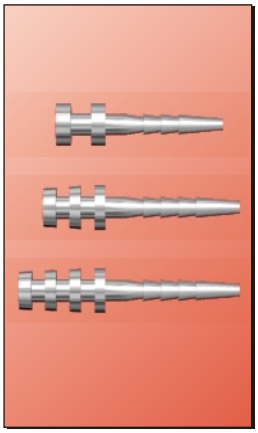
IKADENT root canal posts are used in endodontics as reinforcing elements for restoration of partially destroyed dental crowns with filling material. These posts are used in all groups of teeth provided that at least two crown walls are preserved. Root canal posts are cylindrical and have elongated anchor heads. These posts should **not** be used as support for metal-ceramic crowns, bridges and other massive restorations.

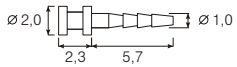
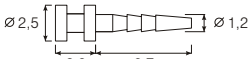
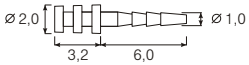
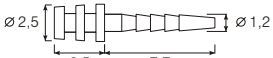
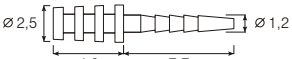


A05	Ø 1,5 — 3,2 — 5,7 — Ø 1,0	IKT-A05-N	IKT-A05-V
B05	Ø 2,0 — 3,2 — 5,7 — Ø 1,0	IKT-B05-N	IKT-B05-V
A20	Ø 1,7 — 3,7 — 6,7 — Ø 1,2	IKT-A20-N	IKT-A20-V
B20	Ø 2,2 — 3,7 — 6,7 — Ø 1,2	IKT-B20-N	IKT-B20-V

Universal anchor posts
Models C and D

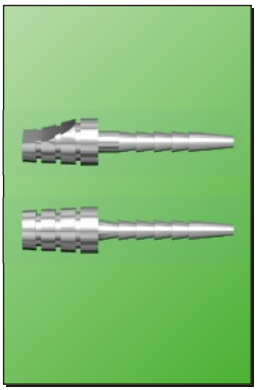
IKADENT anchor posts are used for restoration of partially or completely destroyed tooth crown. Depending on post model, the technique supports both metal-ceramic crowns and clinical modeling of the tooth on a post without involving the laboratory. Anchor posts have advanced anchor heads with base elements and may be used to support massive heavily loaded restorations. **C** and **D** posts are most universal ones. These are frequently used for composite crown formation.

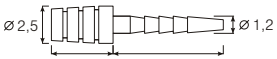
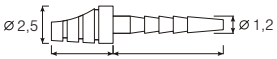
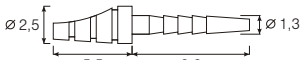
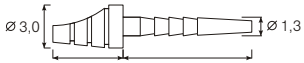


C05		IKT-C05-N	IKT-C05-V
C20		IKT-C20-F	IKT-C20-V
D05		IKT-D05-N	IKT-D05-V
D20		IKT-D20-F	IKT-D20-V
D25		IKT-D25-F	IKT-D25-V

Anchor posts for metal-ceramic restoration
Models E and EF

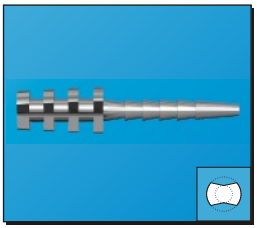
E and **EF** posts have larger anchor heads with a depression for front teeth. These posts are perfect for metal-ceramic crowns and bridges and present a good alternative to cast inlays.

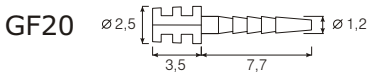


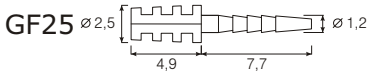
E20		IKT-E20-F	IKT-E20-V
EF20		IKT-EF20-F	IKT-EF20-V
EF30		IKT-EF30-F	IKT-EF30-V
EF35		IKT-EF35-F	IKT-EF35-V

Flat-headed anchor posts.
GF model

GF posts have flat anchor head and offer more flexibility in orientation relative to the root canal axis. These posts may be used without additional processing where flat root/crown is present.







GF20	IKT-GF20-F	IKT-GF20-V
GF25	IKT-GF25-F	IKT-GF25-V

Combination sets / starter kits

IKADENT offers new series of sets: starter kits (combination sets) **IKT-X10-F**, **IKT-X15-F** and **IKT-X20-F**. Unlike the ordinary sets including 24 posts of single model, the starter kits include posts of 6 different models.

These kits have obvious advantage: you don't have to pay for six full sets but can still choose between 6 different posts for various clinical situations. This is a perfect choice for those who buy their first IKADENT set.

IKT-X10-F: 30 posts (A05 x 5, B05 x 5, A20 x 5, B20 x 5, C05 x 5, D05 x 5), 2 drills, plastic box.

IKT-X15-F: 24 posts (C05 x 4, D05 x 4, C20 x 4, D20 x 4, D25 x 4, GF25 x 4), 2 drills, 1 root facer, 1 mandrel, plastic box.

IKT-X20-F: 24 posts (C20 x 4, D20 x 4, D25 x 4, GF25 x 4, E20 x 4, EF20 x 4), 2 drills, 1 root facer, 1 mandrel, plastic box.

INSTALLATION PRACTICE

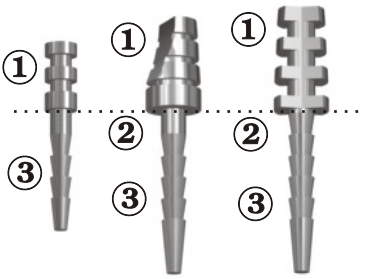
Terminology and classification

IKADENT posts like most posts on the market consist of several sections having special purpose (see picture on next page):

1. Head. It is usually cylindrical or conical with retention points (grooves) on side surfaces. Sometimes the head has additional depressions for maximum resemblance to natural teeth. The head is shaped in order to increase its surface for better retention of restoration material.

2. Base element. It lies on the root dentin and supports the post. It ensures that the restoration sustains side chewing load.

3. Root part. It ensures retention of the whole post structure in the canal and even distribution of chewing load over the root. It resists against vertical stress. Root part of the post may be smooth, have circular grooves or threading. Usually root part of the post is cylindrical or conical. However, we are deeply convinced that cylindro-conical shape with circular grooves is the best solution for a root part of the post.



You should distinguish between **root canal posts** and **anchor posts**. Root canal posts usually have no base elements, their head diameter as comparable to diameter of the root part in their junction point. Anchor posts have large anchor head and strong base element that significantly exceeds the root part in diameter. Such shape of anchor head and base element ensures effective replenishment of the lost tooth mass. Anchor posts may be used for heavy loaded reconstruction.

Indications and contraindications for post application

Restoration of teeth on root canal and anchor posts is possible provided that there is no inflammation around the tooth (the teeth are painless on percussion and stable). X-ray study should reveal good obturation of root canals, no fissures and fractures of the root, no pathological signs in bifurcation and periapical tissue. The length of healthy root part should exceed the future height of restored crown. Direct restoration of pulpless teeth on posts is possible when the crown is partially or totally destroyed. Besides, a post should always be used if at least one wall of the dental crown is lost.

Contraindications to dental post installation

Local:
- significant destruction of the periodontal ligament;
- fissures or fracture of the root;
- tooth destruction deep under the gum;
- stage III-IV tooth instability;
- acute periodontal inflammation;
- trigger areas around teeth to be restored;
- unsatisfactory oral hygiene.

General:
- mental diseases;
- organic CNS lesions;
- polyvalent allergy, including allergy for metals;
- severe systemic diseases;
- bruxism.

Preparation of the tooth for the post installation

Caries cavity preparation decreases the volume of dental tissue, while the load exerted on the tooth by chewing remains virtually unchanged. Thus the same load is exerted on decreased tooth mass, so the tooth will be overloaded. Therefore it is important that after restoration of the tooth crown:

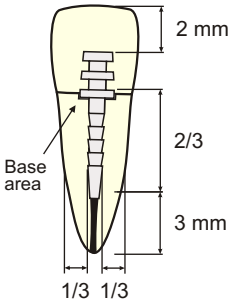
a) chewing load is distributed in the root system of the tooth in the same way

(if possible) as it had been distributed in the healthy tooth (before the destruction). If load parameters are changed, anatomical and physiological conditions for the tooth will be altered that will lead to adverse results.

b) no extra load on the root is exerted by the post (which may cause additional root stress).

If there are no contraindications to canal post placement, you should first select the needed shape and size of the post. The following parameters should be considered:

- ✓ length and diameter of the root part of the post;
- ✓ height and diameter of the head.



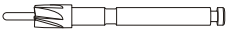
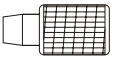
Root part of the post should occupy at least 2/3 of the length of the root, root filing should be left at least at 3 mm from the physiological apex. Diameter of the root part of the post should not exceed 1/3 of outer root diameter. Root dentine thickness of the post bed should not be less than 1 mm (conventionally, 1 mm thick layer of dentine can sustain mechanical load).

Diameter and length of the post depend on the size and degree of destruction of the crown: the worse destruction of the crown, the higher anchor head and the more retention points should be on it. Maximum height of the anchor head should be 2 mm less than the height of the crown.

Anchor head requires additional flat base area cleared around the canal opening using root facer with a guide rod.

Stages of root canal treatment and post fitting

IKADENT post kits marked with «F» or «N» contain rotary tools for canal treatment. Normally these include penetration drill, calibration drill, root facer and mandrel. Working diameters of tools in the set comply with setting diameters of posts in the set.

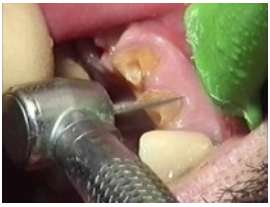
Supplied tool	Working diameter	Action
 Penetration drill	Working diameter is less than post root diameter by 0.15 mm	Preliminary canal widening, setting of direction for the post and root facer (for anchor post only). Not suitable for removing of old canal filling!
 Root facer	Working diameter exceeds the diameter of post base element by 0,3 – 0,6 mm	Creation of flat base area to support the base element of the post
 Calibration drill	Working diameter is equal to post root diameter	Final canal widening for canal compliance to the root part of the post
 Mandrel	Compatible with any rotary tool for right angle handpiece	Holding the rotary tool for more accurate manual treatment

Canal preparation consists of several stages and requires that optimal cutting modes are used. For all procedures, insert tools into the canal after nominal rotation speed is achieved. Water cooling is required. In order to avoid overheat-

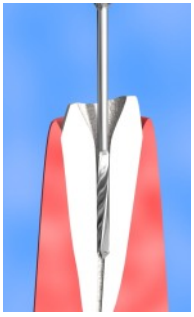
ing and jamming of instruments use reciprocating motion with pressing (mechanical removal of tissues) alternating with retracting (cooling, washing removed tissue away with water).

Canal treatment sequence is following:

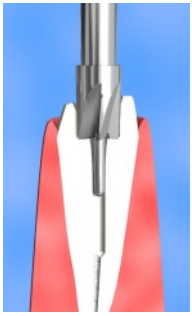
1. The canal is opened with Gates of Largo drill. If necessary, filling removal is performed with the same instrument or with an appropriate diamond bur. **WARNING! Do not use penetration drill from IKADENT set for filling removal, because this drill has no front cutting bit and may break due to overheating.**



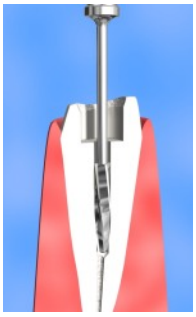
2. Softened dentine and pathological tissues as well as sharp margins of the root above the gum are removed using diamond bur.



3. Penetration drill is used to widen the canal. The canal should be treated at depth not less than the length of the root part of the post.



4. If anchor post with base element is to be installed, base area is created around canal opening using root facer to ensure stability. The facer is centered on the canal using the guide rod. **WARNING! This stage is mandatory when installing an anchor post. Otherwise anchor head breaking off, canal seal failure and other complications may result.**

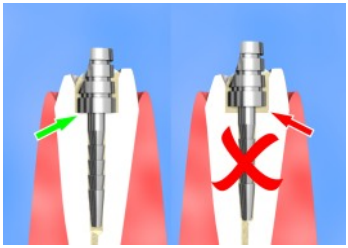


5. Further, calibration drill is used for final widening and smoothing of canal walls for full compliance with the root part of the post. Rinsing and special brushes are used to remove debris from the canal.

6. Fitting, i.e. placement of the post inside the canal without fixation material in order to check post position and orientation is performed

WARNING! During the fitting process check that

- ✓ **the post can be easily inserted into the canal at full length and the root part completely hides in the canal;**
- ✓ **the base element of the post (if any) is completely carried by the dentine of the base area.**



This may not be observed if the depth of the treated canal is insufficient. If this is the case, additional treatment of the canal is performed and the post is fitted again.

7. Mechanical canal treatment may be combined with chemical treatment: ethylenediamine tetra acetate (EDTA) containing ointment and gels, sodium hypochlorite, hydrogen peroxide etc. Purposes of

chemical treatment of the canal are the following:

- ✓ removal of the smear layer from dentine walls (EDTA and sodium hypochlorite);
- ✓ antiseptic treatment (sodium hypochlorite, hydrogen peroxide etc.);
- ✓ dilution of remaining organic tissue in the canal (sodium hypochlorite).

8. Prior to post placement the prepared canal is rinsed with physiological saline and dried with paper posts. The post is sterilized by placing it in alcohol for 2-3 minutes or by using sterilization sprays.

Choosing cement and fixation of the post in the tooth canal

Posts are cemented for retention and hermetic isolation of the root canal. Besides, the layer of cement acts as a buffer absorbing the load exerted by the post on the root walls. Zinc phosphate, polycarboxylate and glass ionomer cements are most widely used.

Zinc phosphate cements, used for over 100 years, are quite easy to use and have best compression strength. The disadvantages include low flexural strength, high solubility and the lack of chemical binding with the tooth.

Polycarboxylate cements chemically bind to dentine and metal. These cements have significant flexural strength; however compression strength is very low. Procedure duration is half of that for zinc phosphate cements.

Glass ionomer cements (GIC) chemically bind with tooth tissues, their strength approaches that of zinc-phosphate cements. Besides, these cements are cariostatic.

Clinical practice shows that self-cured or dual-cured glass ionomer cements are best for IKADENT posts. Examples:

- ✓ Fuji I, Fuji Plus (GC)
- ✓ Vitremer (3M)
- ✓ Aqua Meron (VOCO)
- ✓ Ceramcem (Perfection PLus)
- ✓ AquaCem (Dentsply)

The pretreated canal is filled with excessive amount of cement using a paste filler. Then the post is inserted and maintained in the correct position until the cement starts to harden. Excessive cement is removed with a probe in the elastic phase.

Restoration of the tooth crown

Filling material for restoration is chosen based on the following:

- ✓ aim of restoration (for an artificial crown, or for esthetical restoration);
- ✓ location of the tooth to be restored (frontal or chewing group).

Tooth core may be restored using a wide range of modern dental materials: silver amalgam, composites and glass ionomer cements.

Amalgam has best strength and therefore remains the most popular material for restoration. However, amalgam has certain disadvantages: long cure time,

insufficient adhesion to the tooth and risk of galvanic current if neighboring with other alloys. However, with fast curing amalgam (with spherical particles) the treatment may be continued on the same day. Adhesive techniques increase the binding between amalgam and the tooth and decrease the risk of filling break-off.

Composites are extensively used by dentists and have indisputable advantages:

- ✓ fast and strong adhesion to tooth tissues preliminarily prepared for adhesion;
- ✓ core or crown may be treated immediately after polymerization;
- ✓ a core may be formed for further ceramic or composite restoration.

When tooth crown is restored using a composite, first an opaque composite core is formed on the post. Its color should be one tone below the main color. Then a composite crown is formed and polymerized on the core.

The following materials are recommended for composite crowns:

- ✓ Luxacore (DMG)
- ✓ Admira (VOCO)
- ✓ Alert (Jenetic/Pentron)
- ✓ Valux Plus (3M)
- ✓ OptiGuard (Kerr) etc.

Frequently asked questions about IKADENT posts.

1. What tool is used for screwing-in the posts?

The posts are passive, so they are not screwed in and create no excessive stress on the root. The posts are inserted into the canal without applying any pressure. This can be done with forceps (posterior teeth) or with fingers (anterior teeth).

2. What is the mandrel for?

The mandrel is compatible with the right angle handpiece. It is used to fix supplied tools (or any other tools) for manual canal treatment in hard-to-reach locations or where the risk of jamming is present.

3. We purchased the set, but the posts do not fit into the mandrel.

Te mandrel is used for tools, not for posts (see question 2). Posts are inserted without the mandrel (see question 1).

4. Posts have no threading. This is bad because they are hard to remove.

See question 5. IKADENT posts are often compared with threaded gold plated posts. These almost definitely need to be removed 2 to 4 years after implantation due to significant corrosion (the gliding is damaged during installation) or post break (due to low strength of brass). Threading does not help in this case, because the brass head simply breaks off during unscrewing. Titanium IKADENT

posts never need to be removed if properly installed. Other advantages of passive posts are described in previous sections.

5. How can the post be removed?

Posts are removed with an ultrasound scaler within several minutes (depending on cement characteristics). Some scalers are even supplied with the necessary attachment.

6. What is the root facer needed for?

The root facer is used to form a flat surface for the base element of the post. For maximum strength of the restoration all the surface of the base element of the post must lie on dentine. Normally, after the treatment, root canal opening and crown remnants are not flat, thus flat surface needs to be created using the facer. If it is not done, the crown part of the post will be "hanging in the air" and will likely break from side pressure.

7. Supplied drills break.

The drills are intended for widening root canal to required diameter and for removal of the layer of pathological tissue. They cannot be used to remove the filling material, as they do not have a cutting head in front, which results in overheating. This is mentioned in the supplied manual.

8. What are the differences between titanium and glass fiber posts?

These are two techniques intended for different clinical situations. Unlike titanium anchor posts, glass fiber posts cannot be used for massive reconstruction, because they are smooth, have no heads and do not ensure sufficient retention of the crown. Both titanium and glass fiber posts may be used for restoration of a crown with preserved walls following endodontic treatment. However, titanium posts are 2 to 10 times cheaper that glass fiber ones. Besides, glass fiber posts were introduced recently, while titanium has been tested by time.

9. Anchor posts are round in cross-section. Do they rotate in the canal?

No. The posts do not rotate during normal use (chewing). Firstly, torsion impact during chewing is insignificant. Secondly, besides chemical adhesion the crown (composite or ceramic) prevents post rotation, because it is asymmetrical and lies on the asymmetrically shaped root.

10. Can titanium posts be trimmed or individually shaped?

Yes, titanium can be treated with any abrasive tool if cooling is available.

11. Why aren't there any IKADENT posts with increased root canal length?

From mechanical point of view, increasing post length is unreasonable because main load is carried by the base element (if any) and upper canal part of the post. Lower root part of the post contributes less to its strength, while its increased length enhances the risk of root perforation and makes the post unusable in the root canal that is curved in the apical third.

12. How to become your dealer?

To become our dealer you need to call the IKADENT central office. We are interested in new partners, and we offer attractive terms for cooperation.

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