MEGAGEN FULL ARCH SOLUTIONS

Making it easier with Confidence!

MEGAGEN
For Lifetime Smiles

PARTIAL EDENTULISM CLASSIFICATION

Kennedy Class I: Bilaterally located edentulous spaces posterior to natural teeth.

In a Kennedy Class I scenario, there are edentulous spaces on both sides of the arch, located posterior to the remaining natural teeth. When planning a prosthesis, the appliance should have some features that keep the denture stable and allow it to function efficiently.
The partial denture is designed as follows.

Kennedy Class II: A unilateral edentulous space located posterior to the remaining natural teeth.

In a Kennedy Class II scenario, the edentulous space is similar to Class I but present only on one side of the arch.

Kennedy Class III: A unilateral edentulous space with natural teeth remaining both anterior and posterior to it.

In a Kennedy Class III scenario, the edentulous space is on one side, with natural teeth remaining both in front of and behind the space.

Kennedy Class IV: A single, but bilateral (crossing the midline), edentulous space located anterior to the remaining natural teeth.

A Kennedy Class IV scenario involves missing teeth in the anterior region, with the space extending across the midline. The design for Kennedy Class IV is unique compared to other classes. They require esthetic considerations to ensure a natural appearance. Clasps and other retentive elements are placed in areas with minimal visibility, and the major connector should be rigid, with broad palatal coverage used in the maxillary arch.

QUALITY OF THE REMAINING TEETH

Caries and Decay

One major concern in partially edentulous patients is the high prevalence of dental caries in the **remaining** teeth, which can range from **30%** to **60%**.

Read the study: BMC Oral Health

Periodontal Health

The periodontal condition of the remaining teeth is another critical factor. One review noted that more than 40% of partially edentulous adults showed moderate to severe periodontitis, significantly affecting the health of the remaining dentition.

Read the study: BMC Oral Health

Wear and Structural Integrity

The remaining teeth are often subject to increased wear due to **occlusal imbalance**. After tooth loss, the remaining teeth may bear excessive forces, leading to attrition or even fractures over time.

Read the study: BMC Oral Health

MANAGEMENT OF EDENTULISM

Complete dentures

Removable Complete Dentures
A complete denture replaces all teeth in the either upper or lower arch. Studies show that between 60% and 80% of fully edentulous patients choose removable dentures, especially among older and lower-income populations.

Advantages
- Non-invasive or minimally invasive
- Economical for many patients
- Functional replacement of lost teeth

Disadvantages
- Possible discomfort due to movement
- Continued bone resorption under the denture
- Food entrapment and generally lower patient satisfaction

Implant supported dentures

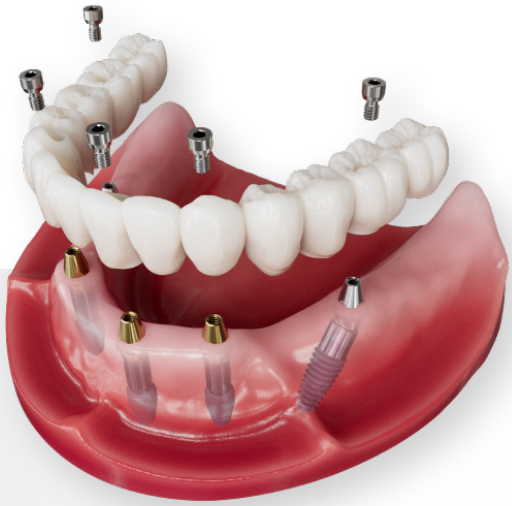
Implant-Supported Dentures
Dental implants can be used to support a full denture, improving stability and reducing movement during chewing or speaking. Currently, around 20% of edentulous patients opt for implant supported dentures.

Advantages
- Minimally invasive in most cases
- Economical with government support in some regions
- Improved function and retention

Disadvantages
- Possible gum irritation or wear
- Metal sleeve components may wear over time
- Bone resorption may still occur in the posterior region
- Requires at least two follow-up visits per year

MANAGEMENT OF EDENTULISM

Dental Implants



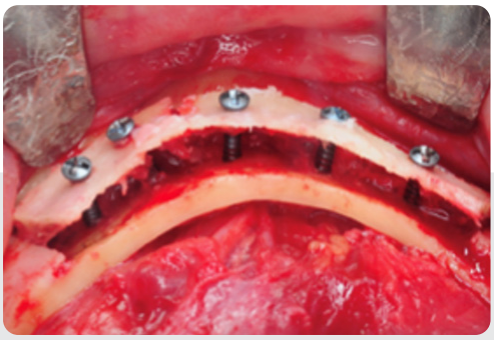
All-on-X
This is a popular method in which four implants support a full-arch prosthesis. It is often used for patients who want fixed teeth but have limited bone volume. The prevalence of fully impant-supported dentured is rising, with estimates showing around **10-20%** of edentulous patients opting for this treatment, especially in more developed regions.

Advantages
- Provides a permanent solution with better stability than removable dentures
- Helps prevent bone resorption by stimulating the jawbone
- Improved comfort and chewing efficiency

Disadvantages
- More expensive than dentures
- Requires surgery and healing time

Read the study: Journal of Oral Implantology

Bone Grafting & Soft Tissue Augmentation



If significant bone loss has occured, bone grafting may be necessary before placing implants.
Soft tissue grafting may also be needed to ensure the gums adequately cover and support the prostheses. Estimates suggest that 20-50% of edentulous maxilla cases require bone grafting, especially for sinus lifts or ridge augmentation.

Around **15-30% of fully edentulous mandibular patients** may require bone augmentation procedures.

Read the study: Systematic Review

Read the study: Clinical Oral Investigations

Case Evaluation

CONSIDERATIONS & PRE-REQUISITES

Bone Quantity and Quality

Bone Height and Width

For most implant procedures, a mininum bone width of **5 mm and height of 9-12 mm** is required. In cases of bone deficiency, augmentation procedures may be necessary, such as ridge augmentation or sinus lifts.

Bone Density

The density of bone impacts the type and number of implants used. In softer bone, longer and more numerous implants may be needed.

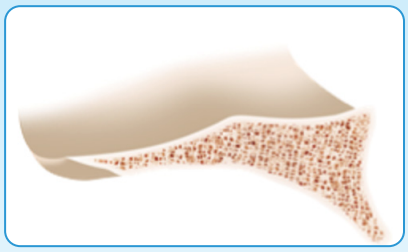
How could we manage

- 5 mm of width without bone grafting?
- Limited vertical dimension?
- Soft bone density?
- Manage wider extraction sockets?

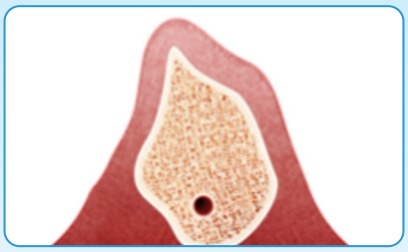
Case evaluation and product selection following bone atrophies

The prevalence of bone atrophy in edentulous patients varies based on the type and the severity of bone loss. Studies show that **mild to moderate atrophy** is common, with around **40-60%** of edentulous patients experiencing some degree of horizontal or vertical bone loss.

Severe atrophy, which significantly impacts implant placement, is seen in around **10-30%** of cases. Severe atrophy often requires advanced procedures like bone grafting or sinus lifts.

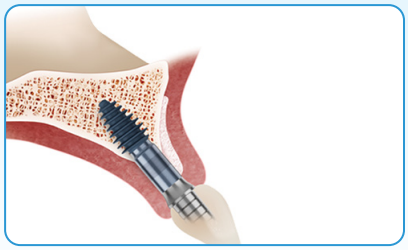


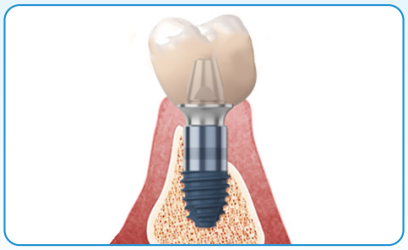
Anterior



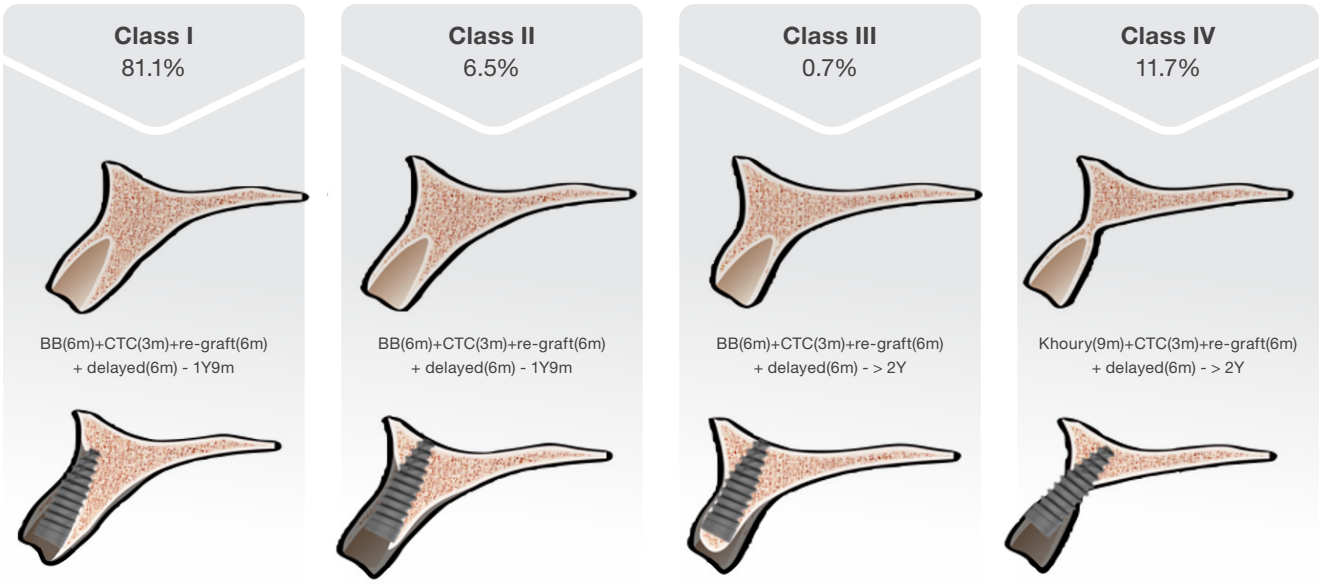
Pre & Molar

Mandible





ANTERIOR



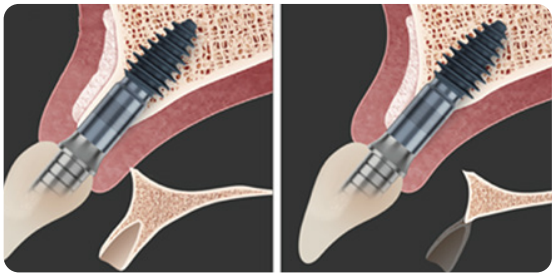
Read the study: Joseph Y K Kan, 2011

C2C conversation (1)

ARi achieves mechanical stabilisation in the basal bone. The super-stable, reversed Morse-tapered prosthetic connection remains at the cortical level, keeping micromovements away from the bone and minimizing the risk of peri-implantitis.

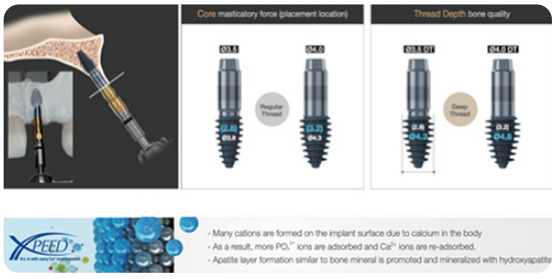
C2C conversation (2)

Bone material is used for “contourisation” of the gingival facade rather than of the mandible. As the implant stays stable in the basal bone, labial bone is not required to secure the stability of the implant against lateral forces. For contourisation, synthetic bone is recommended due to its lower complication rate compared to xeno or allograft.



C2C conversation (3)

Following the quality of basal bone, ARI provides high primary stability, over 45 NCm in most cases. 45 NCm is a safe mechanical stability which allows immediate placement and loading protocols. The XPEED surface treatment accelerates collagen fiber development on the implant surface, boosting osteoblast accumulation, enabling accelerated loading within 4–6 weeks.

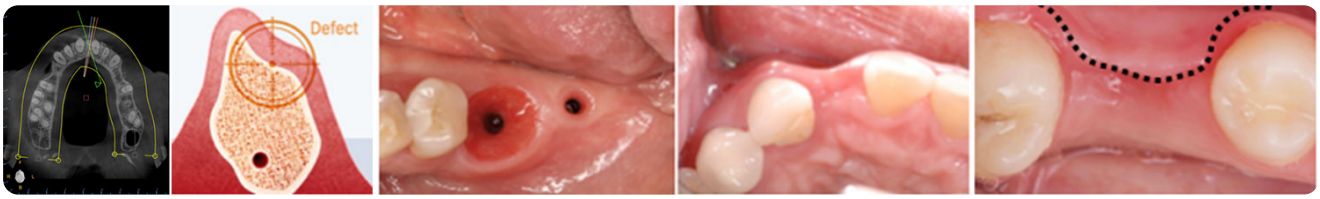


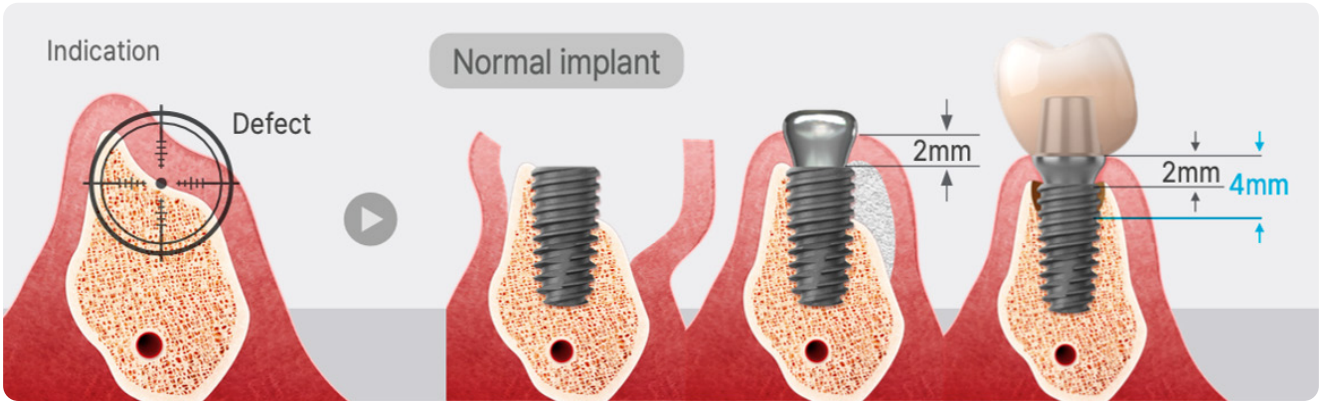
PREMOLARS & MOLARS

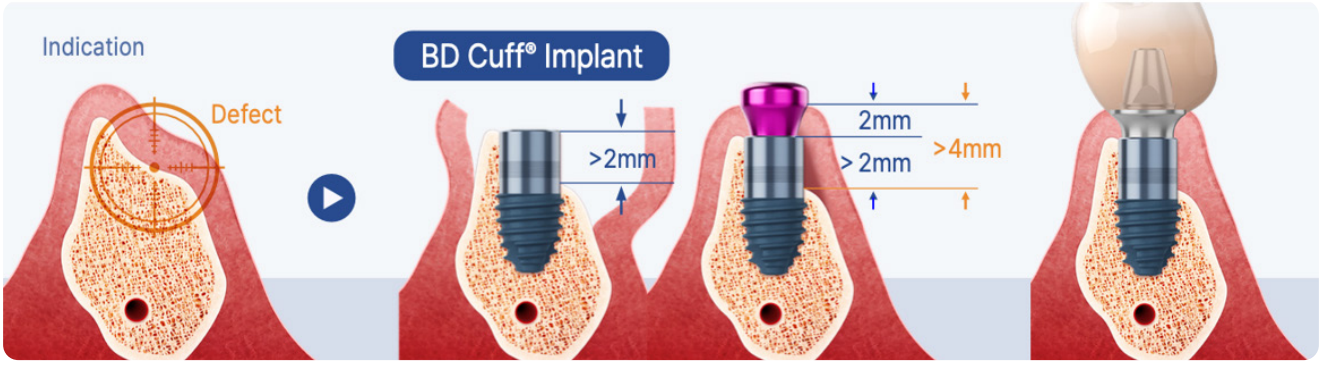
Hard tissue horizontal dimensional percentage change

A **32%** reduction in ridge width can occur within **3 months**, with up to **63%** reduction in horizontal dimension in **6 months**.

This shows that **more than half of the ridge** width could be resorbed after **6 months** in some patients.



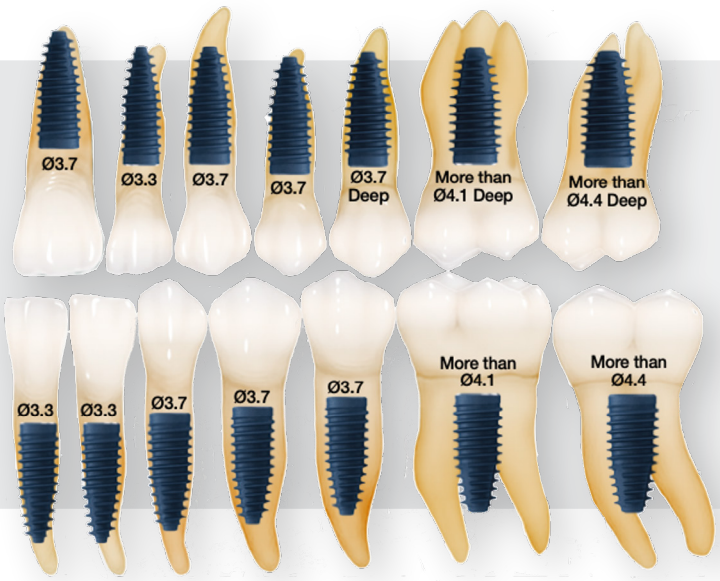




COMPLETE FULL ARCH

Fixture Selection Guide

Higher success rate guaranteed when using appropriate fixture diameter & thread for tooth size, bone thickness, & bone density



- Use **Ø3.7** without GBR for narrow premolar ridge (large diameter is recommended for wide ridge)
- For elderly patients with narrow ridges, use **Ø4.1** for posterior teeth (large diameter is recommended for wide ridges)
- Use **Ø3.0** Advanced Intermezzo for narrow mandibular anterior ridges

Excellent initial stability in any bone condition!

During initial drilling, if bone quality is poor, place deep-thread fixture

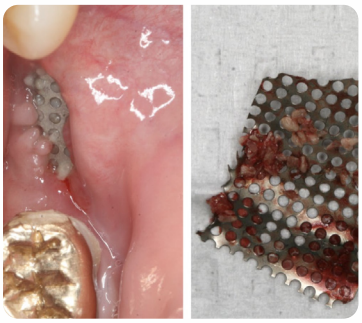
Different thread depths with same core
Ex: Ø4.1 Regular vs. Deep Thread is 0.2mm longer (on each side) with same core: Ø0.4 difference with just thread depth!

Better initial stability!

Regular Thread Deep Thread

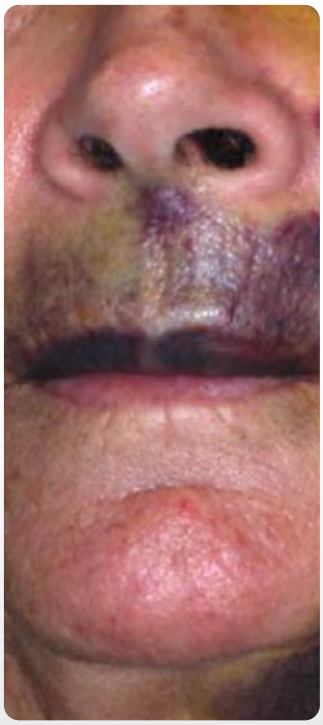
	Ø3.3							
	Ø3.3	Ø3.7	Ø4.1	Ø4.4	Ø4.8	Ø5.3	Ø5.8	Ø6.3
Regular Thread								
Thread Depth	0.4	0.4	0.45	0.45	0.4	0.45		
Deep Thread								
Thread Depth	0.6	0.6	0.65	0.6	0.65	0.65	0.9	1.15

Exposure rate up to 45% of GBR



Exposure rate up to 35% of titanium mesh

Exposure rate up to 70% of bone blocks



Complications in bone-grafting procedures
Classification and management

Ignacio Sanz-Sánchez | Ignacio Sanz-Martín | Alberto Ortiz-Vigón | Ana Molina | Mariano Sanz

The effect of virtual reality on reducing patients' anxiety and pain during dental implant surgery

Discomfort from Pain is frequently reported by patients undergoing dental treatment, even during routine restorative procedures. In one population-based study, **71% of respondents reported a negative dental experience** related to pain, with 30% reporting three or more painful incidents.
This is compared to **lifetime prevalence data, where 60% of respondents stated their last dental visit was painful.**

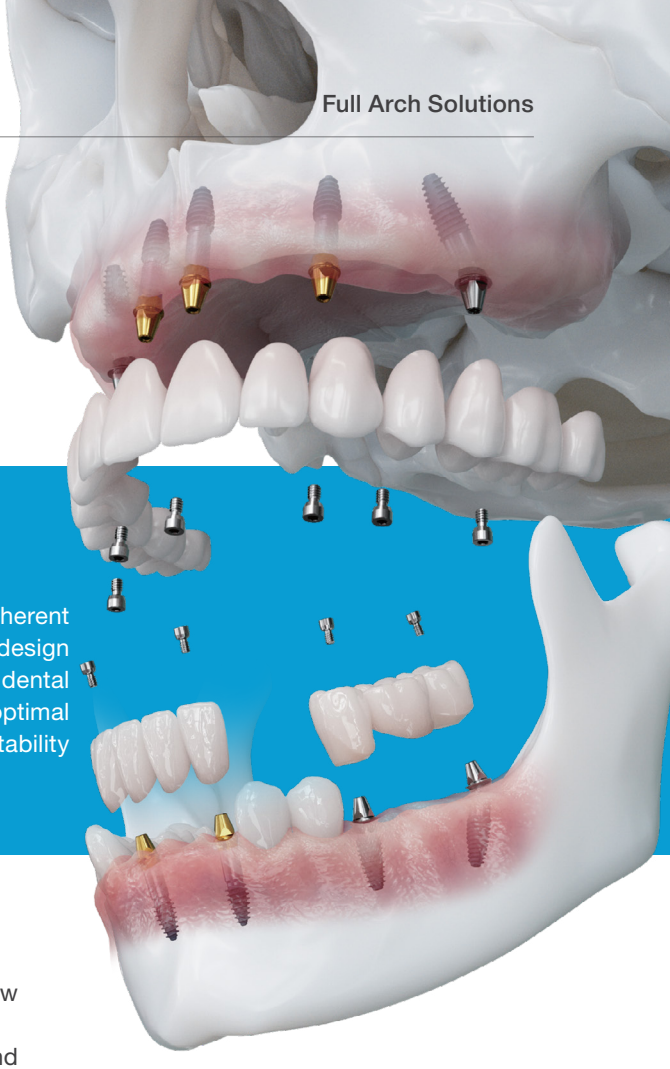
Complications of harvesting a CTG from the palate.
A retrospective study and description of a new technique

Conclusions: "...all of these studies showed that the most important complications after harvesting a graft would be pain, inflammation, bleeding, flap necrosis and infection in the donor site. Concerning pain, in the present study, **35% of the patients in the TD group showed a severe pain"**

Necrosis in a patient of the control group

AXA

All-on-X Abutment



For Full Arch Solutions

For decades, the industry standard for All-on-4 and full-arch restorations has been the Multi-Unit Abutment (MUA), which helps to correct implant angles placed at various inclinations.

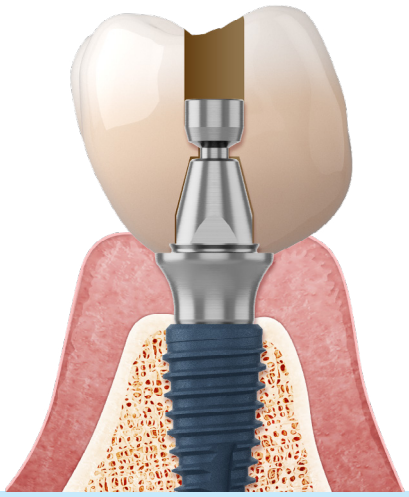
However, the MUA has some inherent limitations. The new AXA design enables both dentists and dental technicians to achieve optimal mechanical and biological stability with a single solution.

Benefits for dentists

1. If you could be an engineer for 10 minutes at a dental company, how would you redesign a standard N-type MUA?
2. How would those changes help improve long-term outcomes and increase the success rates of full-arch protocols?
3. Would you like to be among the first dentists in your country to try this NEW product for ALL-ON-X concept?

Benefits for patients

1. Have you noticed patients often return with mechanical issues in full-arch cases, such as screw loosening, abutment fracture or de-cementation of the framework?
2. Do you find it profitable to meet patients often just to change the prosthetic parts?
3. Would you like to eliminate these problems and have high success, survival, and patient satisfaction rates in full-arch treatments?

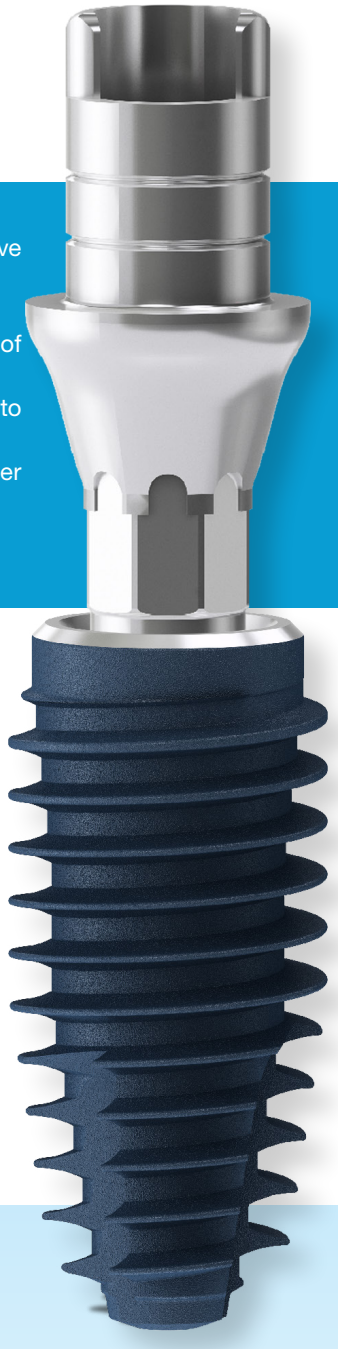


Technical approach

1. The limited contact area between a standard MUA abutment and the final prosthesis compromises long-term stability and often leads to fracture in the upper part of the abutment. Our geometrical changes allow dentists to use 2 times higher torque values and minimise the fracture rate to near zero.
2. Flat narrow-diameter prosthetic screws, which are inherently at risk of screw loosening and fracture over time, have been changed to 45% angle. Thanks to these changes, a much higher torque force, up to 35 NCm, can be used. The gingiva may be pushed down with prosthetics using this torque force without issues.
3. Eliminating the Ti base allows us to use more ZR for the prosthetic framework, decreasing the most common complication of full arch – fracture of the framework itself. At the same time, we minimise treatment cost.
4. Finally – our new design of scan bars, allows us to minimise scanning errors by up to 4 times compared to regular scan bodies. This gives a precise framework for a quick and easy smile delivery to the patients. Additionally, the system allows for deeper implant placement, ideal for immediate loading protocols—even in the molar zone.

BLUE DIAMOND

For strong occlusion and long-term stability



The development of **Blue Diamond** implants was inspired to overcome challenges such as:

1. Optimizing the thickness and external shape of the fixture/abutment wall
2. Optimizing the shape and diameter of the abutment screw
3. Optimizing the shape and contact area of the fixture/abutment connection
4. Selection of a titanium material to improve overall strength

These 4 optimisations support the idea of long-term stability and success with dental implant treatments. These ideas helped us to create the strongest dental implant on the market—allowing for narrow diameter placement in both anterior and posterior regions without compromising strength.

Benefits for dentists

1. Do you find it challenging to achieve reliable primary stability with a narrower implant? (3.3 - 4.1)
2. Do you find it easy to manage single, partial or full edentulism with bone substitutes? What are the regular outcomes of bone grafting procedures?
3. How often do you come across abutment screw loosening or even fractures in your practice?
4. How easily can you identify a non-seated restoration – probably the most common reason for the problems above?

Benefits for patients

1. Maximize patient satisfaction with high success rates and minimally invasive dentistry. Skip large surgical procedures and reduce chair times by by 3!

Technical approach

1. **BLUE DIAMOND**® implants have a unique X-FIT connection. Devised from architectural principles, the arch-type keystone improves long-term mechanical stability—similar to the enduring structure of a Roman bridge. When correctly screwed, the abutment and fixture snap together and create a perfect connection. No more inaccurate connections between implant and abutment! With **BLUE DIAMOND**® implants it is not possible to tighten the abutment screw if the prosthesis is not correctly seated in the fixture – this allows you to skip CT scans to assure connected prosthetics.
2. As bone structures across the mouth are not uniform, **BLUE DIAMOND**® offers two different thread lengths – regular and deep. Regular may be used for D1 to D3 bone and deep threads for D3 to D4. This concept allows you to achieve high ITV and BIC in almost any position giving you an opportunity to offer your patient immediate implant placement and loading even in compromised sockets.
3. The stable X-FIT connection allows you to place the implant deeper, which is recommended for immediate implant protocols even in the molar zone.

BDC

Blue Diamond Cuff

For posterior atrophic defects

For significant buccal wall defects, a delayed approach is most commonly used, allowing 6-8 weeks for soft tissue healing, followed by GBR surgery (with 3-6 months of healing). This method typically requires three surgeries and extends the treatment duration to 6 months or more. Even skilled implantologists face challenges managing narrow ridges in the posterior zone due to lack of blood supply/vascularisation.

Benefits for dentists

1. Do you find difficulties managing single or partial edentulism in the posterior zone?
2. How often have you observed bone block or GBR integration failures? According to the literature – bone blocks have up to a 70% failure rate; GBR up to 45%, Ti-mesh - up to 35% and 1 out of 4 cases may require re-grafting procedures. Do you encounter similar challenges in your daily practice?
3. Do you consider these procedures cost-effective?
4. Would you like to significantly minimise these complications - potentially even to near zero?

Benefits for patients

1. How frequently do patients report low satisfaction following GBR, bone block, or Ti-mesh procedures?
2. Have you noticed that patients frequently experience swelling and pain following grafting procedures?
3. Recent studies indicate that up to 71% of patients report discomfort and pain – that's nearly 3 out of 4 cases.
4. How would reducing such negative feedback to nearly zero impact your clinical practice?

Technical approach

1. Right from the apical end of the implant, BDC achieves good primary stability in the apical bone. **The Knife-Thread®** design, and a 38% greater surface with deep threads, secures high ITV and BIC – with the potential to support the immediate loading concept.
2. Cellike® grooves facilitate soft tissue maintenance and prevent subsidence. The use of 17 micro grooves induces cell attachment to a 2mm section below the connection, keeping the roughened implant surface well away from potential development of peri-implantitis. A gingival recession "limit-line" prevents continuous gingival downgrowth.
3. With the option of using multiple implant systems in one arch, BDC allows you to use the same surgical and prosthetic options as our regular sub-crestal implant - **BLUE DIAMOND®**. With these two implant systems, the majority of problematic situations for tooth replacement can be overcome, starting from narrow and short anatomical structures up to deep implant placement with a wide variety of prosthetic options.

ARi

AnyRidge Incisor

For anterior atrophic defects

ARi is a special implant design that acquires strong stability and osseointegration from unresorbed basal bone instead of in atrophied alveolar bone. The implant body design is also more effective for post care, and long term stability is assured, even if the alveolar bone is lost.

Benefits for dentists

1. Do you find any difficulty managing significant anterior atrophy?
2. How many times have you noticed bone block or GBR integration failure? According to the literature – bone blocks have up to 70% failure rate; GBR up to 45%, Ti-mesh - up to 35% and 1 out of 4 cases may require regrafting. Do you experience similar outcomes in your daily work?
3. Do you find these procedures cost effective?
4. Would you like to be able to significantly reduce these complications possibly to near zero?

Benefits for patients

1. How often do patients report low satisfaction after GBR, bone block, or Ti-mesh procedures?
2. Have you noticed that patients experience pain and swelling following grafting procedures?
3. Studies show up to 71% of patients report discomfort or pain – nearly 3 out of 4 cases.
4. How would minimising negative feedback impact your clinical practice?

Technical approach

1. ARi achieves mechanical stabilisation in the basal bone. The margin of the super-stable, reversed Morse-tapered prosthetic connection stays at a cortical level, keeping any micro-movements away from the bone, at the same time minimising the development of peri-implantitis.
2. Bone material may be used to “contourise” the gingival façade, rather than rely on labial bone. Since the implant stays stable in the basal bone, labial bone is not essential to secure the stability of the implant against lateral forces. In the case of contourisation, we recommend synthetic bone, as it has a lower complication rate than xeno- or allografts.
3. Depending on the quality of basal bone, ARi offers the best potential stability, over 45NCm in most cases. 45 NCm is a safe mechanical stability allowing immediate placement and loading protocols. At the same time XPEED accelerates collagen fibre development, boosting osteoblast accumulation and offering accelerated loading concept possibility in 4-6 weeks.

WHY OFFER FULL ARCH RESTORATIONS?

Patient Satisfaction

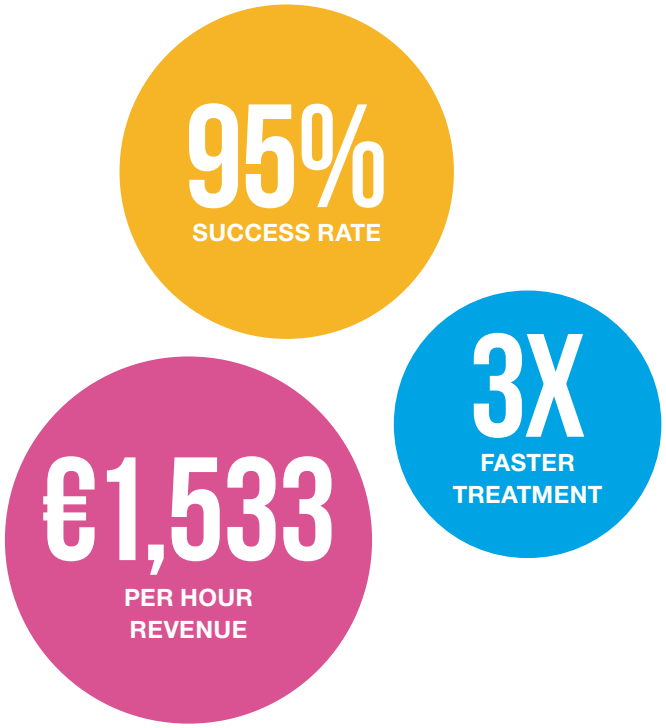
- Patients tend to stay at one practice rather than referrals
- Complete patient transformation
- “Mouth-to-mouth” marketing success
- Complete patient experience story events

Financial Impact

- Single unit restorations vs. full arch cases
- Chair time vs. units of restorations
- Guaranteed maintenance visits for hygiene
- Predictable revenue streams

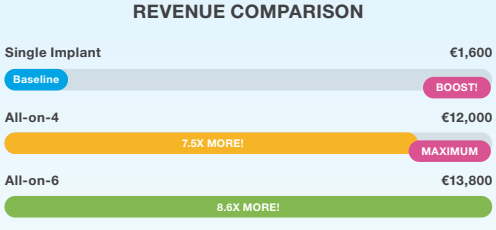
Media Presence

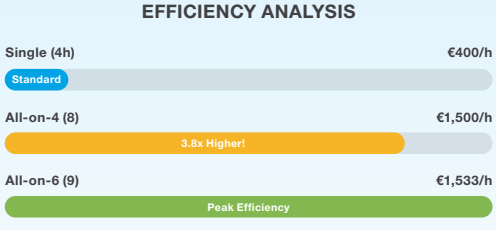
- Single unit restorations vs. full arch cases
- Chair time vs. units of restorations
- Guaranteed maintenance visits for hygiene
- Predictable revenue streams



Financial impact with full arch restoration

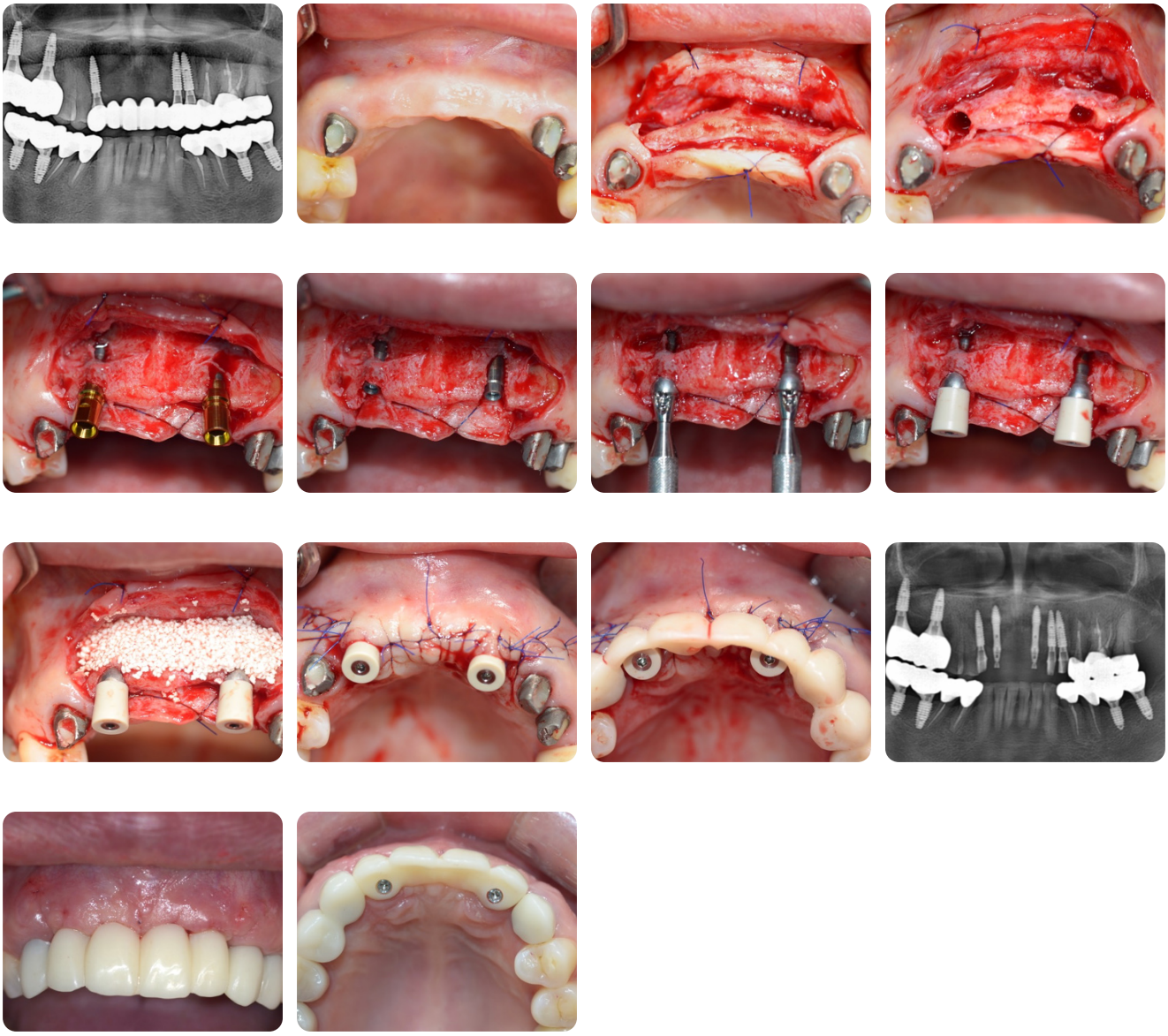
Restoration	Fixtures	Income	Screw retained prosthetics	Income	Pontics	Income	Temporaries	Income	Total	Chair time, h	$/h
Single	1	800	1	500	0	400	1	300	1600	4	400
All of 4	4	3200	4	2000	8	3200	12	3600	12000	8	1500
All of 6	6	4800	6	3000	6	2400	12	3600	13800	9	1533





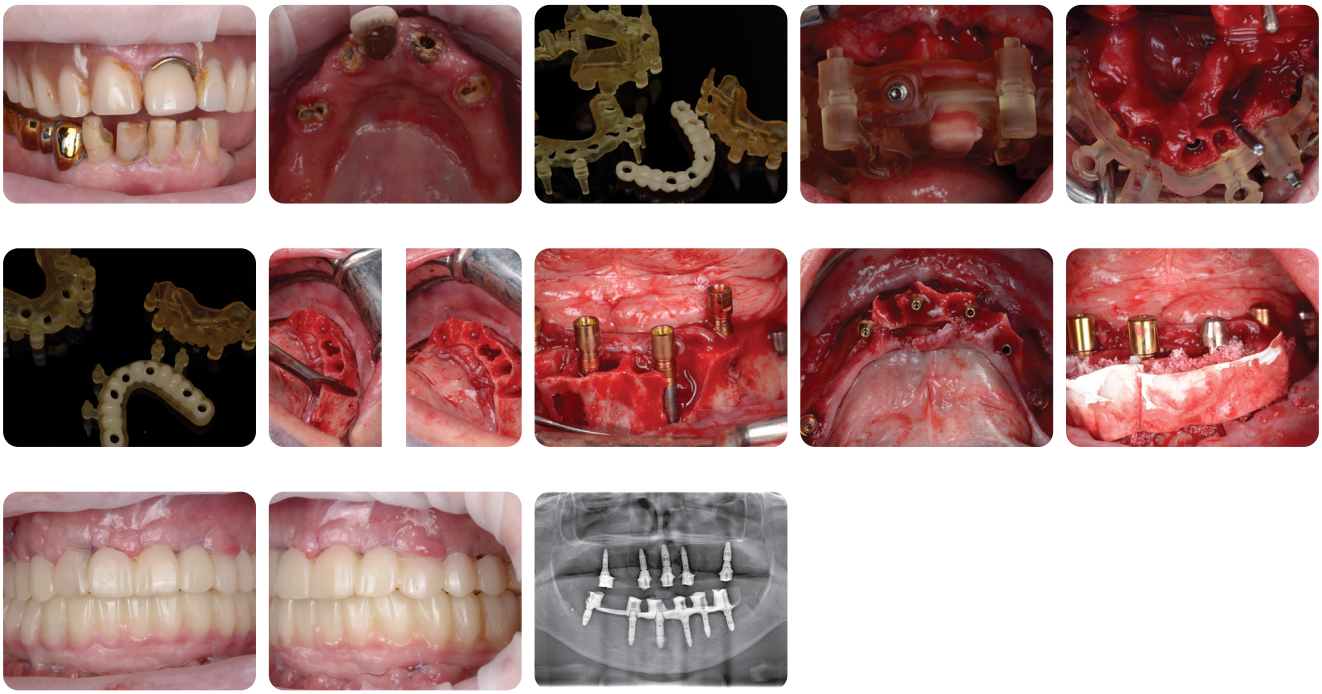
ARi

Multi Case #12, #22



ALL-ON-5 & ALL-ON-6

Multi Case #11, #12

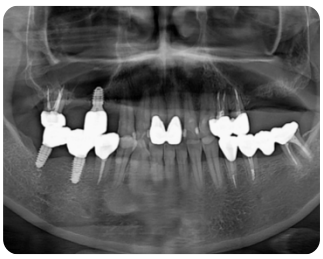


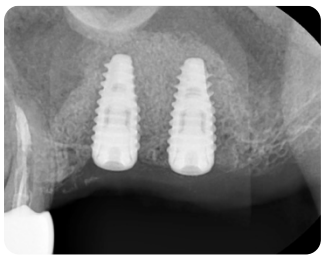
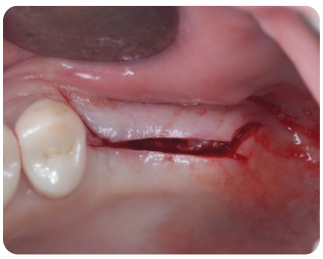
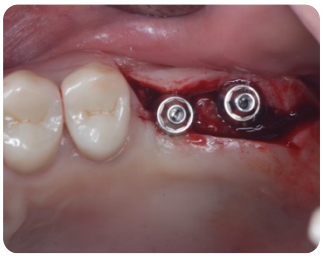
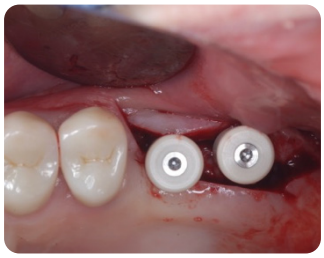
BLUE DIAMOND

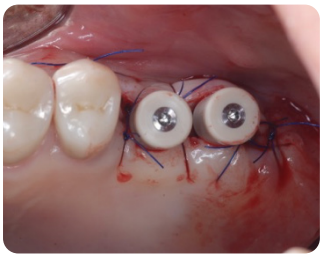
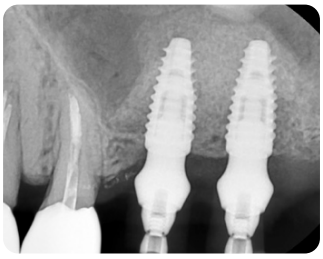
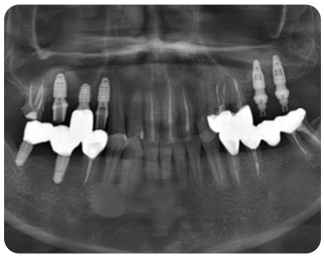
Multi Case #24, #25, #26

BLUE DIAMOND

Multi Case #26, #27

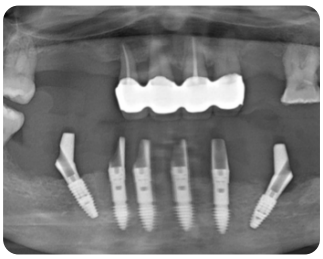


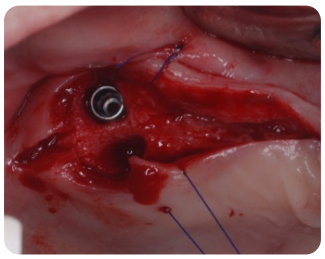
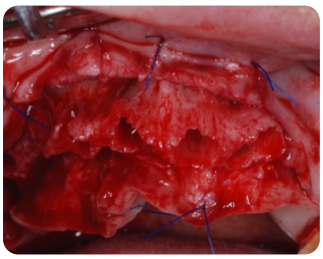





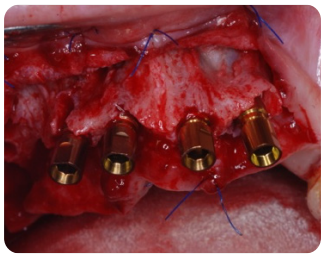
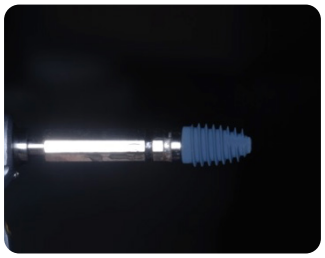
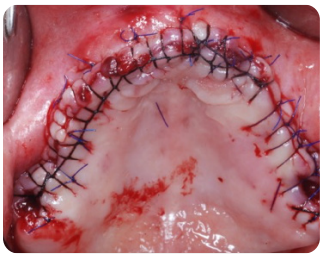
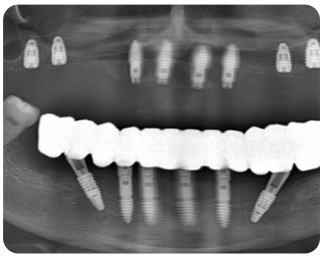
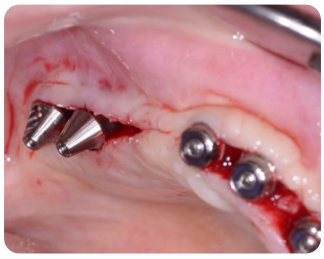
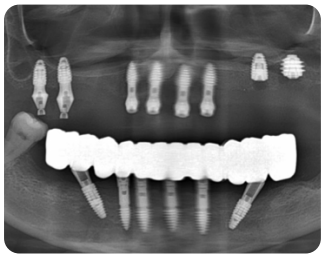




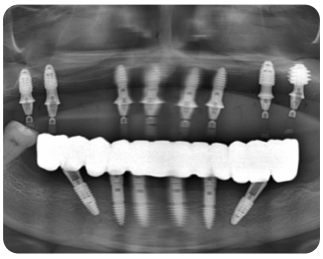

ARi + BLUE DIAMOND

All-on-8





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