

Dental Implants

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EXAM-DAY SUMMARY

everything on this page → detail in §§ overleaf

OSSEOINTEGRATION → §1

- Direct functional + structural bone ↔ load-carrying Ti implant
- **No intervening connective tissue**
- Needs planning · surgery · restoration · host response

IMPLANT TYPES → §1

- Root: 3–6 mm wide · 5–17 mm long
- Average **4 mm × 10 mm**
- Mini · zygomatic · orthodontic (= anchorage)

INDICATIONS → §2

- Can't retain dentures · multiple missing · single tooth
- **Maxillofacial prosthesis** after cancer therapy

RELATIVE CIS → §2

- Poor OH · poor bone · smoking · anticoagulants · alcohol/drugs
- **Uncontrolled DM** · **active** chemo/RT to jaws · immunocompromised
- Cardiac → **infective endocarditis**

PLANNING → §3

- **Top-down / prosthetically driven**
- 3D · CBCT · radiographic stent · augmentation?

SPACE → §3

- M-D span ≥ **6 mm** (at narrowest point)
- Interocclusal 8–12 mm · Williams probe

BONE → §3

- Clinical + CBCT · 5.5–6 mm M-D + B-L
- Implant↔tooth 1.5–2 mm · implant↔implant **3 mm**
- Less → ridge split / augment

TIMING & SUCCESS → §4

- Immediate · imm-delayed (soft tissue) · delayed (bone)
- Integration **3–6 months**
- 90% / 10 yr · Md > Mx

SURGERY → §4

- Flap → drill → position + parallelism
- 2-stage: cover screw, flap closed
- 1-stage: **healing abutment**, suture around

OCCCLUSION → §5

- RCP · MIP · lateral excursion
- Single implant: **first contact on natural teeth** · Shimstock

COMPLICATIONS → §6

- Pain/swelling/bruising · bleeding · failed integration
- **ORN** (RT) / bisphosphonates · sinus · recession
- Fracture · loosening · wear

PERI-IMPLANT DISEASE → §6

- Mucositis: reversible, **no** bone loss
- Peri-implantitis: + bone loss · **> 40%** of pts
- Debride + OH → surgery, grafts, regeneration

§1 Osseointegration and implant types

- **Principle:** implantology depends on **osseointegration** (slides also write “osteointegration”)
- **Definition:** **direct** functional + structural connection between a **load-carrying titanium implant** and bone → ★**no intervening connective tissue**
- **Success depends on:** meticulous planning · careful surgery · restoration · favourable host response

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Fibrous tissue between implant and bone = **failure** of osseointegration, not a weaker form of it. Key words: “direct” + “no intervening connective tissue”.

Table 1 — Types of implant

Type	Lecture points
1. Root (root-form)	Width 3–6 mm · length 5–17 mm · average ≈ ★4 mm Ø × 10 mm long · width + length chosen by tooth replaced + surrounding structures
2. Mini-implants	Listed type (narrower than root-form)
3. Zygomatic implants	Listed type (anchored in the zygoma)
4. Orthodontic implants	Anchorage

§2 Case selection

Table 2 — Indications vs relative contraindications

Indications	Relative contraindications
1. Edentulous / partially edentulous, unable to retain dentures	1. Poor oral hygiene (OH) · 2. poor bone quality · 3. smoking
2. Multiple missing teeth	4. Anticoagulants · 5. alcohol or drug abuse
3. Single tooth replacement	6. Uncontrolled diabetes mellitus (DM) · 7. active chemotherapy or radiotherapy to the jaw bones
4. Maxillofacial prosthesis after cancer therapy	8. Immunocompromised patient · 9. chronic cardiac condition → risk of ★ infective endocarditis

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All nine are **relative**, and the qualifiers carry the marks: *uncontrolled* DM, *active* chemo/radiotherapy. Well-controlled DM is not on the list.

§3 Planning and pre-surgical evaluation

3.1 Planning

- **Approach:** ★**top-down / prosthetically driven** → plan the restoration first, place the implant to serve it
- **Imaging:** 3D planning · cone beam CT (CBCT) · radiographic stent
- **Decide:** need for bone augmentation

3.2 Edentulous space

- **Assess:** available tooth space / dimensions of the edentulous ridge
- **Mesiodistal span:** minimum ★6 mm = narrowest implant 4 mm + 1 mm bone mesially + distally
- **Interdental distance:** measured at the **narrowest** space between adjacent teeth → allow for prosthetic plan (crown + emergence profile)
- **Interocclusal space:** ridge → opposing teeth · measured with **Williams periodontal probe** · ★8–12 mm vertical required



Fig. 1 — Mesiodistal span across the gap.



Fig. 2 — Vertical arrow: interocclusal space · horizontal: span.

3.3 Bone

- **Assess:** clinically + CBCT
- **Width needed:** 5.5–6 mm bone at implant site, mesiodistal (M-D) + buccolingual (B-L) → narrowest implant 3.5 mm + ≥ 1 mm bone around it
 - less → ridge splitting or bone augmentation
- **Implant ↔ natural tooth:** ≥ 1.5–2 mm · **implant ↔ implant:** ≥ ★3 mm

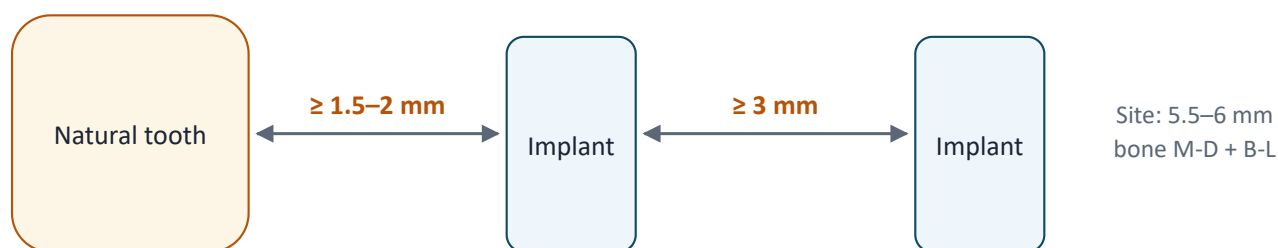


Diagram 1 — Minimum clearances from slide 14.

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Slides conflict: narrowest implant **4 mm** (space slide) vs **3.5 mm** (bone slide); the 6 mm span allows 1 mm per side, but implant↔tooth minimum is 1.5–2 mm. Learn the stated numbers (6 mm span · 1.5–2 mm · 3 mm); expect a real single-tooth gap to need a little more than 6 mm.

§4 Placement, healing and outcomes

Table 3 — Timing of placement after extraction

Protocol	When
1. Immediate	At extraction
2. Immediate-delayed	Weeks → a couple of months · after soft tissue healing
3. Delayed	After partial or complete bone healing

1. **Flap:** gingival mucosal flap
 2. **Drill:** drilling for the fixture
 3. **Check:** position + parallelism
- **Two-stage:** cover screw → flap closed (submerged)
 - **One-stage: healing abutment** → suture around it (transmucosal)
 - **Osseointegration time:** ★3–6 months
 - **Success:** 90% over the past 10 years · mandible (Md) > maxilla (Mx)



Fig. 3 — One-stage: healing abutment through the mucosa.

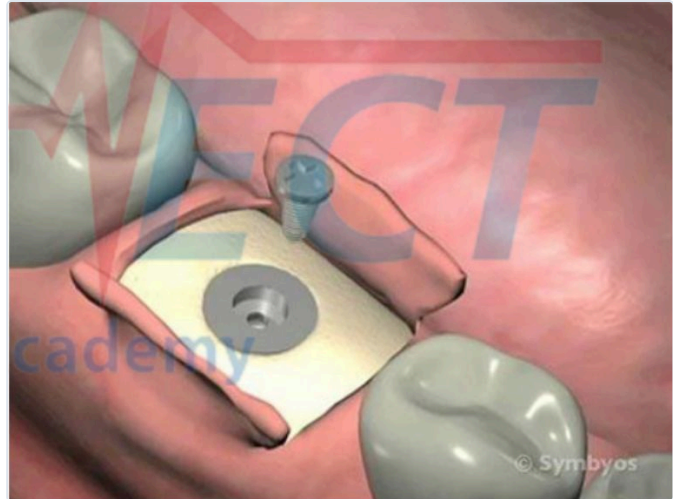


Fig. 4 — Two-stage: cover screw, then flap closed.

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3–6 months tracks the jaw: classic Brånemark ≈ **3 months mandible, 6 months maxilla** (less dense bone) → same reason success Md > Mx.

§5 Occlusion

- **Record:** retruded contact position (RCP) · maximum intercuspation · lateral excursion (slide: “extrusion” — typo)
- **Single implant crown:** ★ **initial contact on adjacent natural teeth** · check with **Shimstock foil**
 - implant has no periodontal ligament → cannot intrude under load like natural teeth

§6 Complications and peri-implant disease

- **Surgical:** pain, swelling, bruising · bleeding
- **Biological:** failure of osseointegration · peri-implantitis · sinus problems · gingival recession
- **Bone necrosis:** osteoradionecrosis in radiotherapy patients · osteonecrosis with bisphosphonates
- **Mechanical:** implant fracture · loosening · wear

Table 4 — Peri-implant mucositis vs peri-implantitis

	Peri-implant mucositis	Peri-implantitis
Nature	Inflammation of soft tissue around implant	Site-specific infection → inflammation of soft tissues
Bone	No peri-implant bone loss	Bone loss around an osseointegrated implant in function
Reversibility	Reversible	—

- **Prevalence:** ★ > **40%** of patients experience peri-implantitis to an extent
- **Management:** local debridement + improved OH → surgery with bone grafts + regenerative procedures

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Discriminator = **bone loss**. Bleeding around an implant with stable bone = mucositis (reversible); bone lost = peri-implantitis.