

Failures in implant therapy. Biological and mechanical complications. Their prevention management.

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Complications could be:

- Doctor related
- Patient related
- Early
- Late (often the problem is recognized late but the real cause is early)
- Biological
- Mechanical

Complications of implant therapy.

Doctor related:

- Incomplete diagnosis
- Incorrect treatment plan (surgical, prosthetic restoration)
- Surgical technique errors
- Mistakes in prosthetic rehabilitation
- Incompetence of a dental lab
- Inadequate information, aftercare instructions, motivation
- Improper patient selection (unrealistic expectations)
- No patient recall

Patient related:

- Poor oral hygiene
- Failure to follow doctor's instructions
- Missing follow up appointments

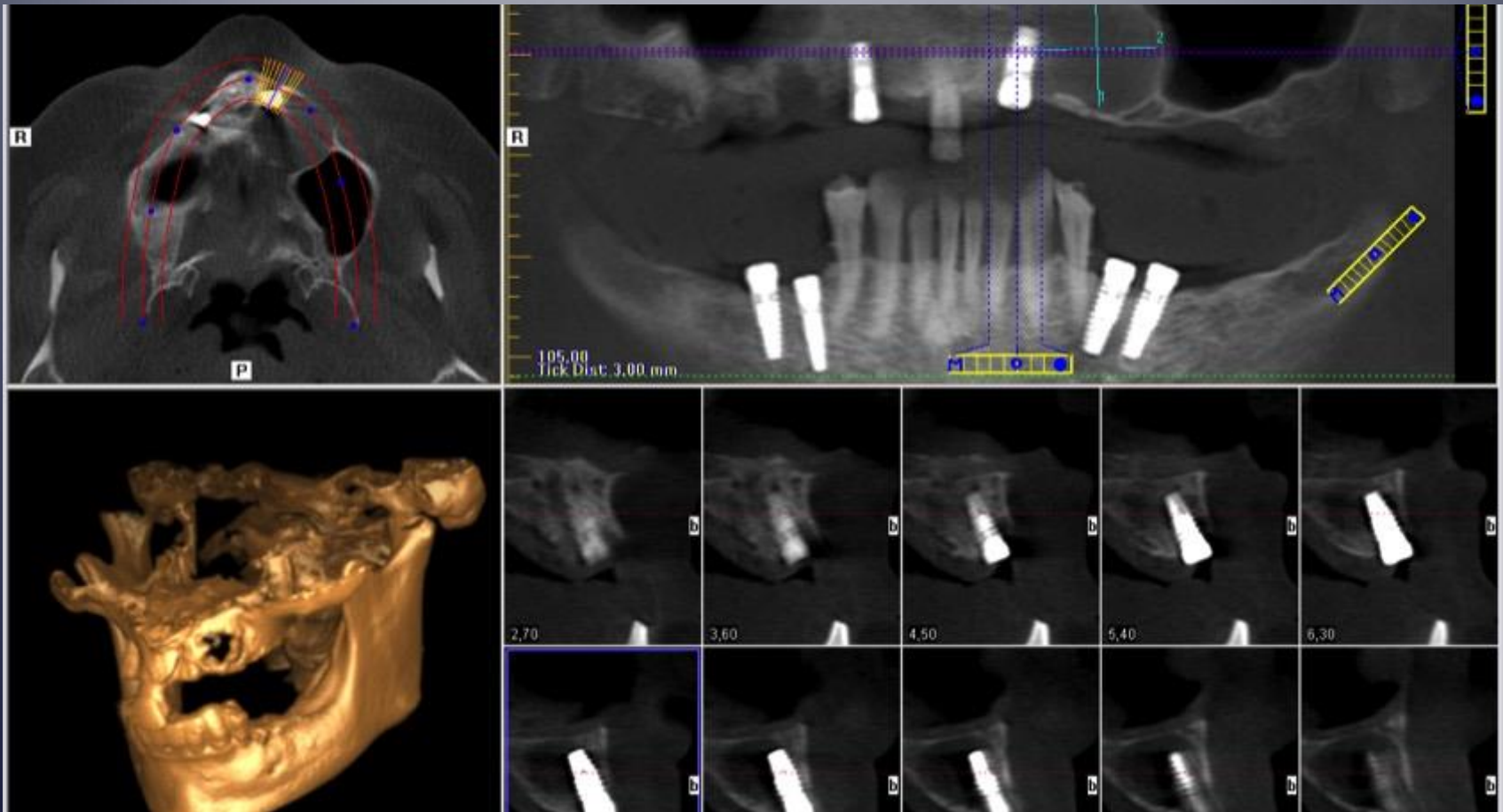
Complications in implant surgery

- Early
 - Planning
 - Incorrect framework
 - Used implant type
 - Surgical
 - Implant placement, position, primary stability
 - Inflammatory response
 - Damage to the anatomical structures
 - Instrument, implant fracture
- Late
 - Biological(inflammation, mucositis, peri-implantitis)
 - Mechanical (implant,screw,prosthesis loosening, fracture)

Complications

- **Early**
 - Planning
 - Incorrect framework
 - Implant number, position, type of prosthetic restoration

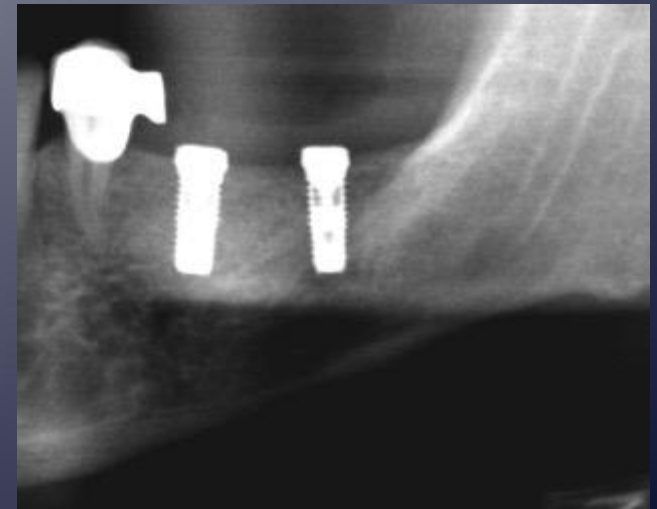
Planning errors



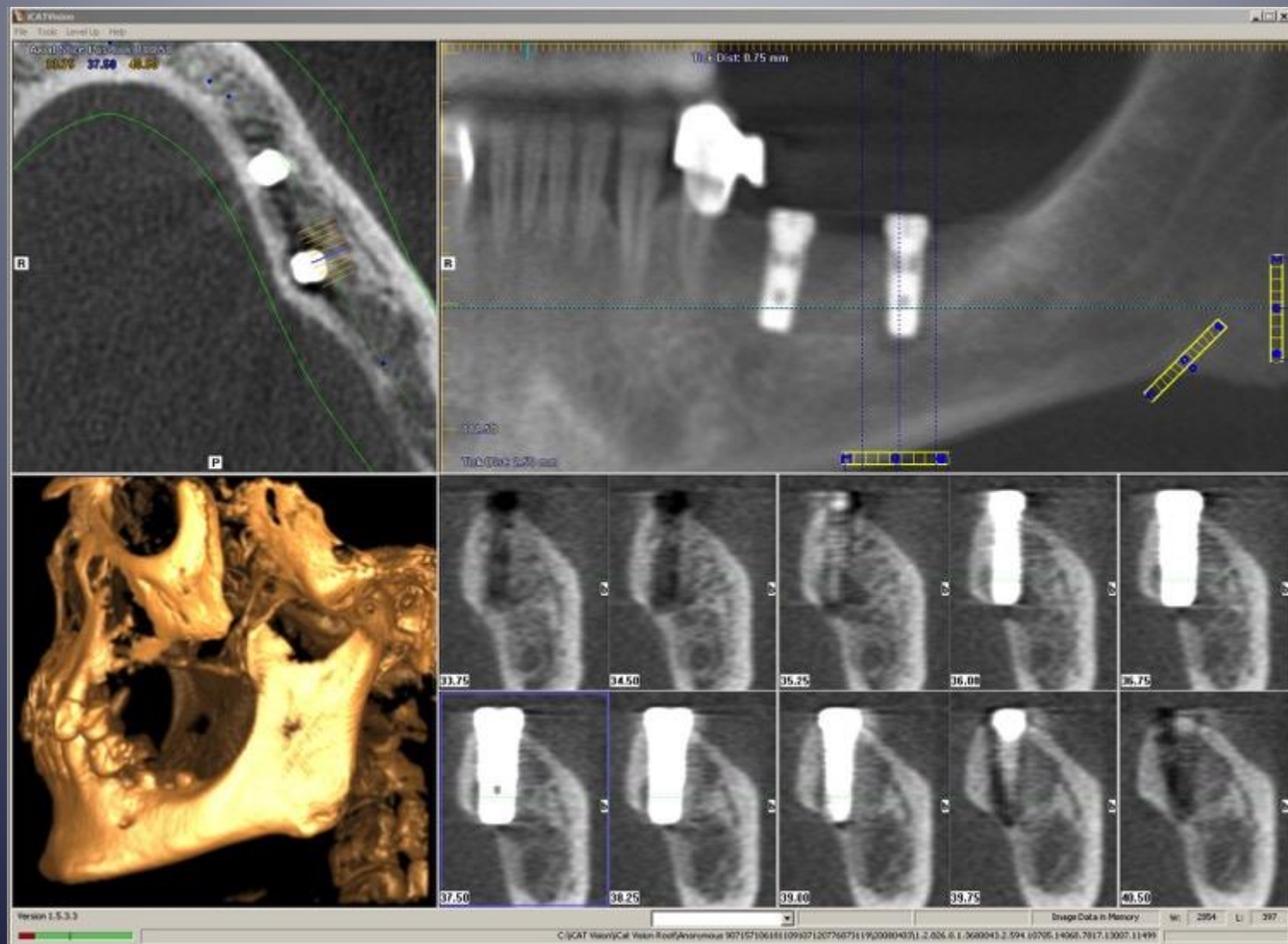
Planning errors

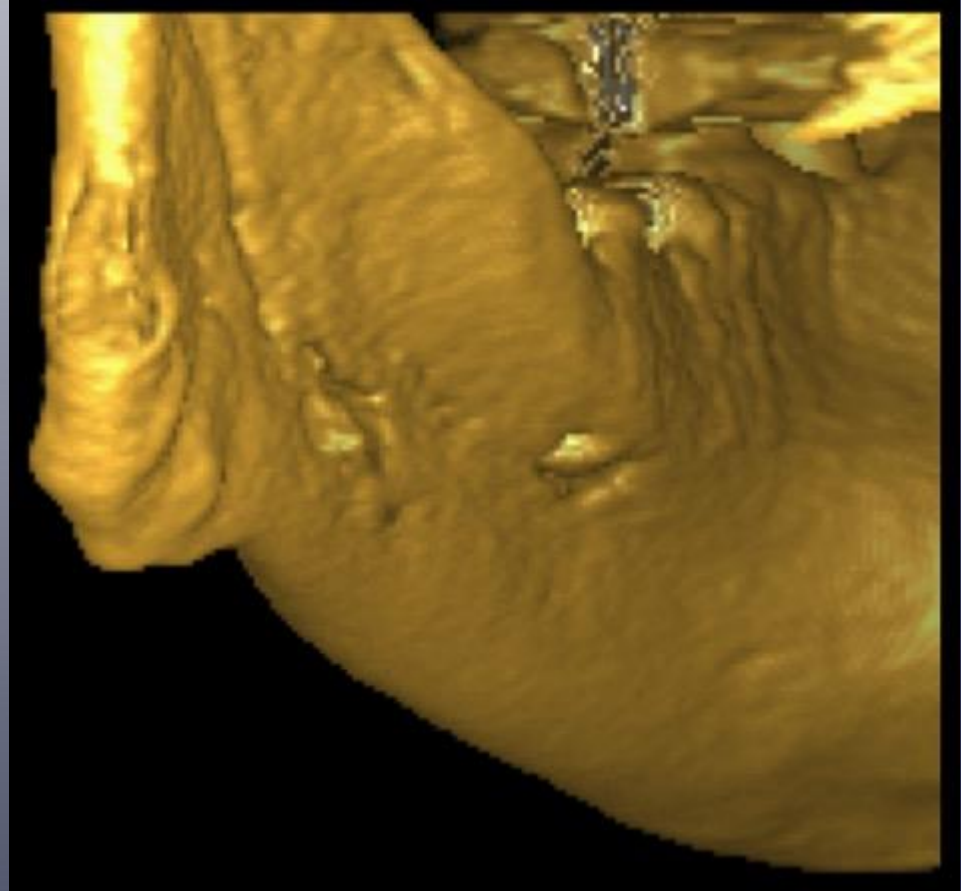
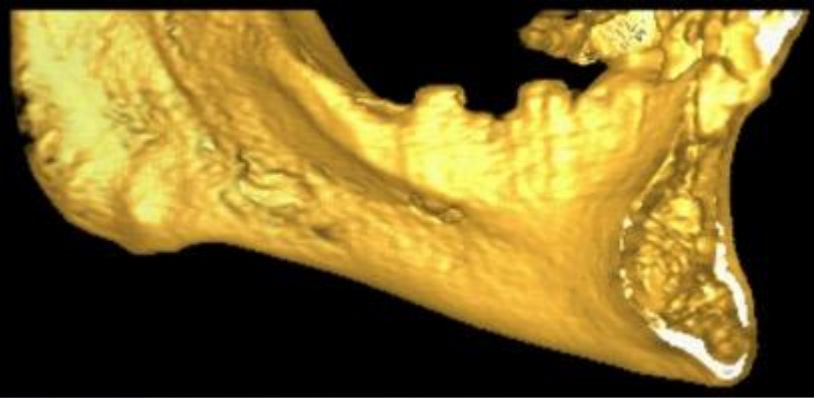
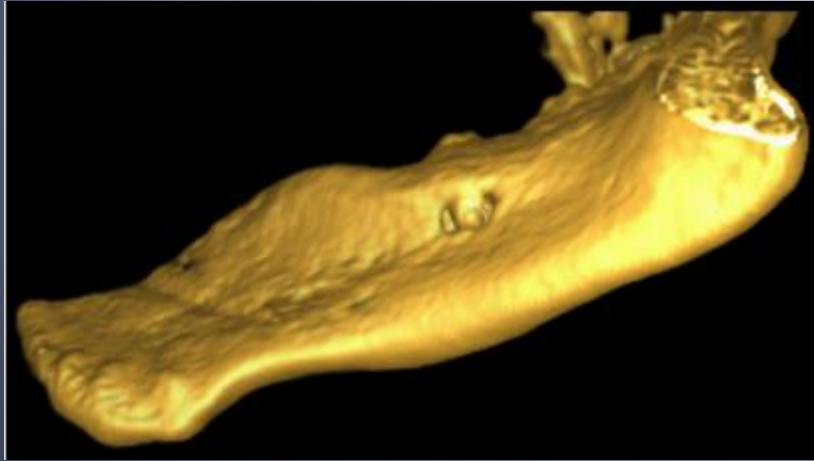


Incorrect position and axis



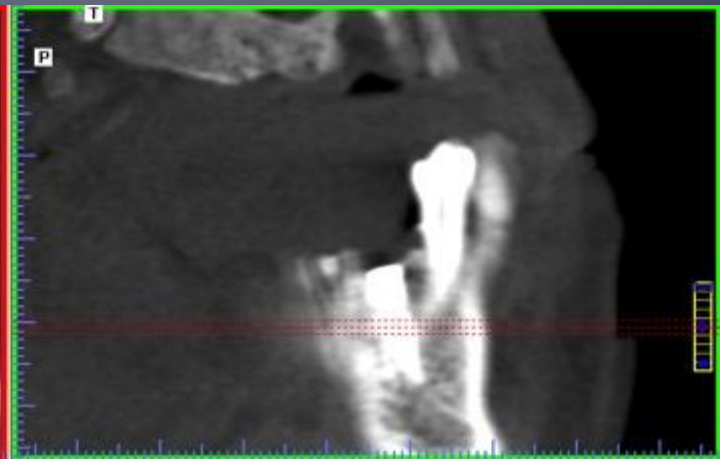
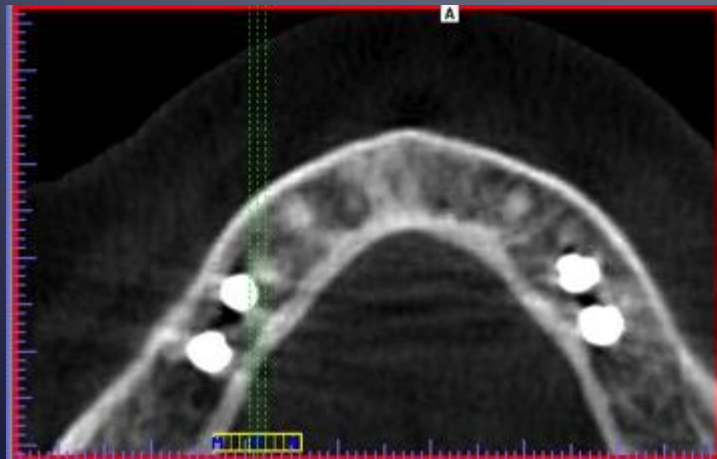
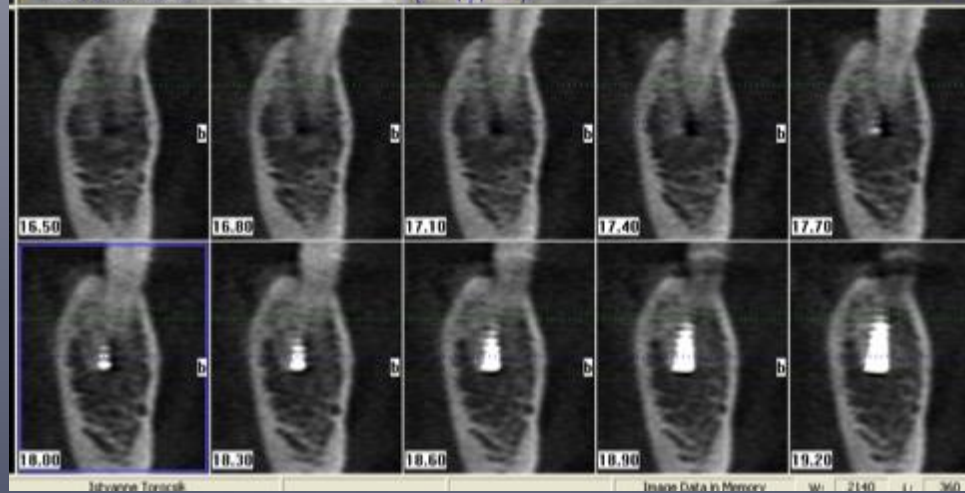
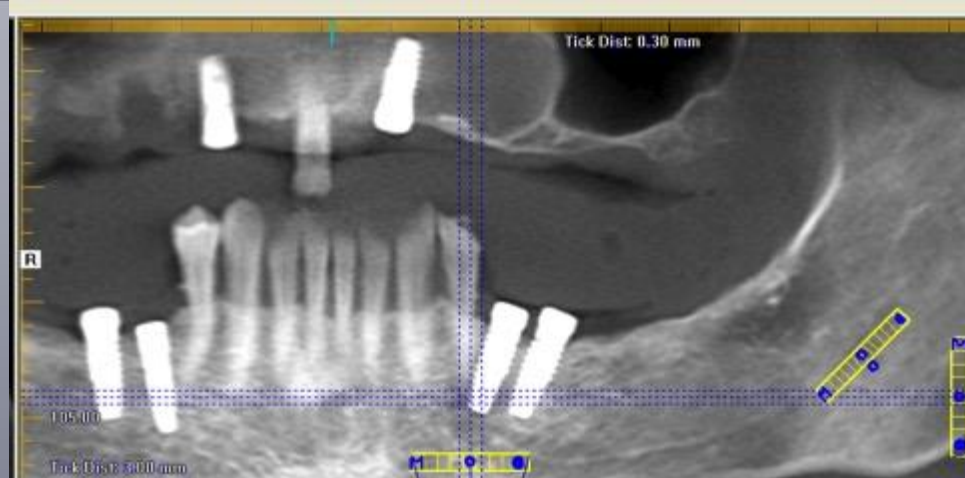






Incorrect position, axis





Early complications

During surgery

- ***Damage to the neighboring anatomical structures***

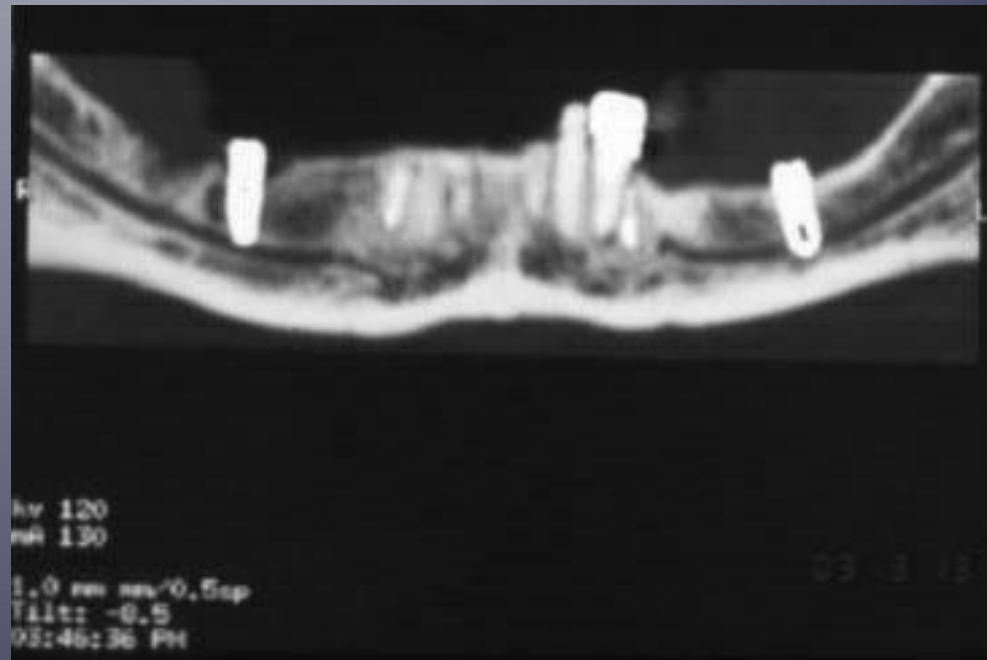
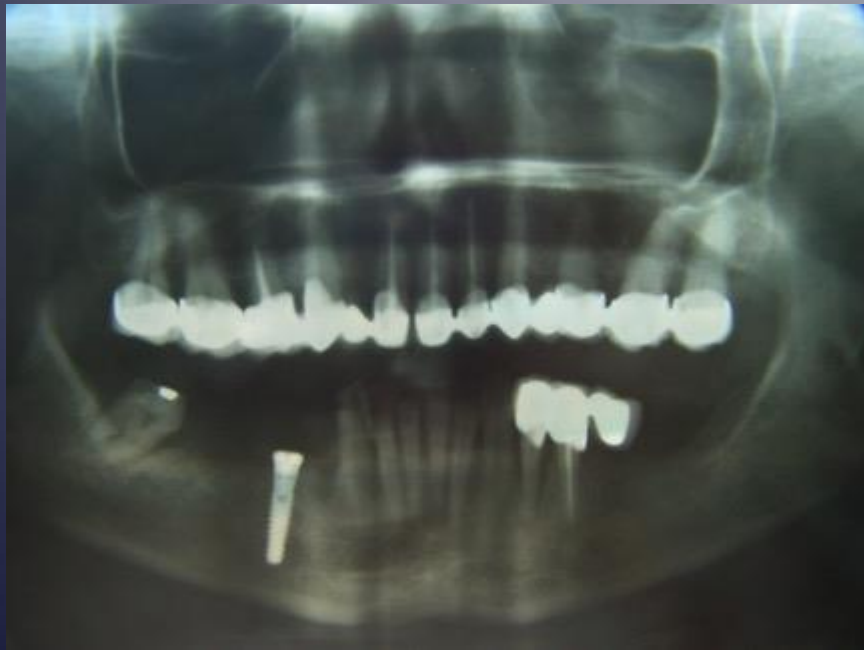
(maxillary sinus, nasal cavity, inferior alveolar nerve, mental nerve, neighbouring teeth, lingual cortical plate perforation)

- Errors in surgical technique

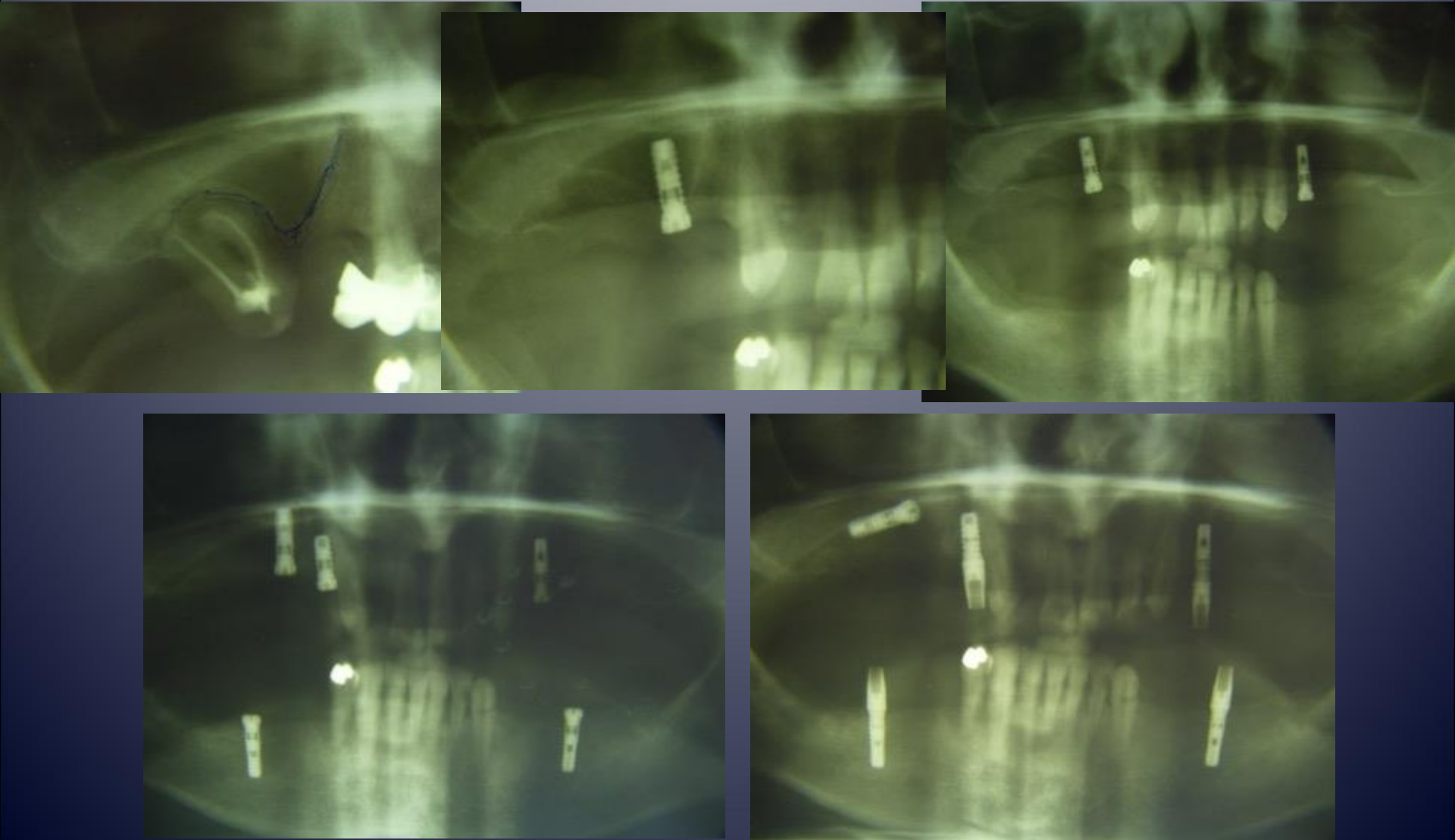
Position, irrigation, implant size, primary stability

- Inflammation
- Surgical drill bur or implant fracture

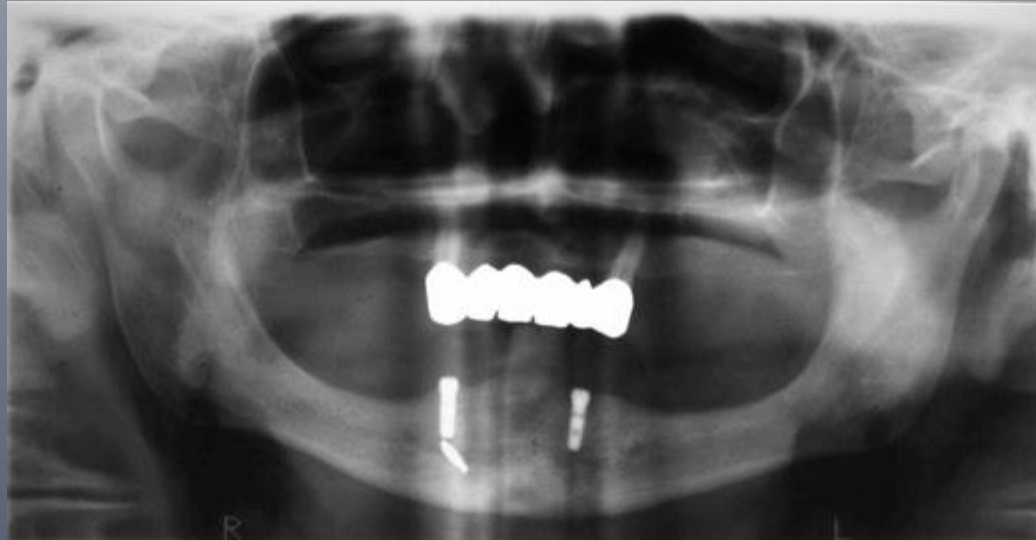
Damage to the inferior alveolar and mental nerve



Implant in the maxillary sinus



Instrument fracture



Late complications

Biological complications (inflammation)

- Exposure of an implant due to dehiscence of mucosa in postoperative healing phase
- Peri-implant inflammation
 - Mucositis
 - Periimplantitis

Late biological complication

Mucositis

- Inflammation of peri-implant gingiva without bone loss

usually due to poor oral hygiene

can be treated by improving oral hygiene, use of disinfectants

Periimplantitis

Periimplantitis

Inflammation of mucosa

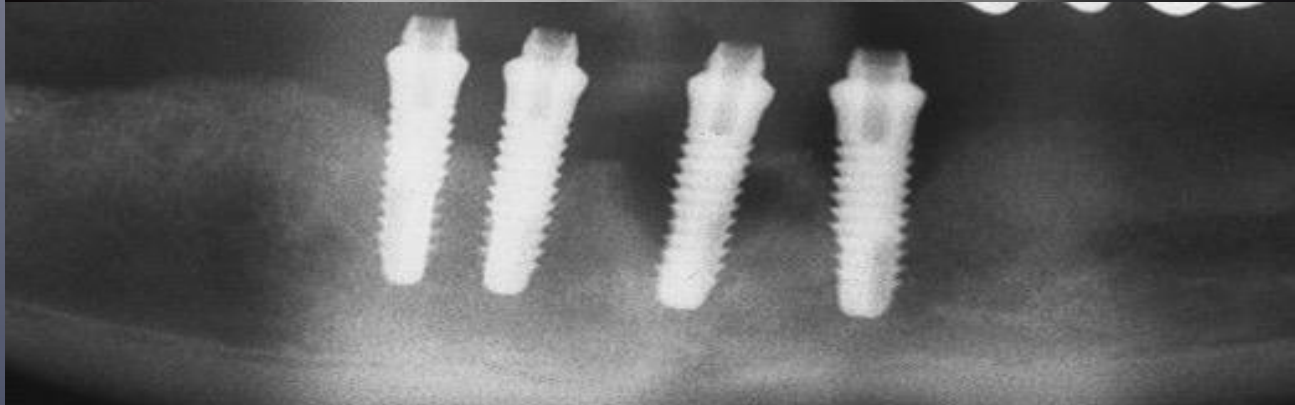
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Bone loss (V-shape) around an implant

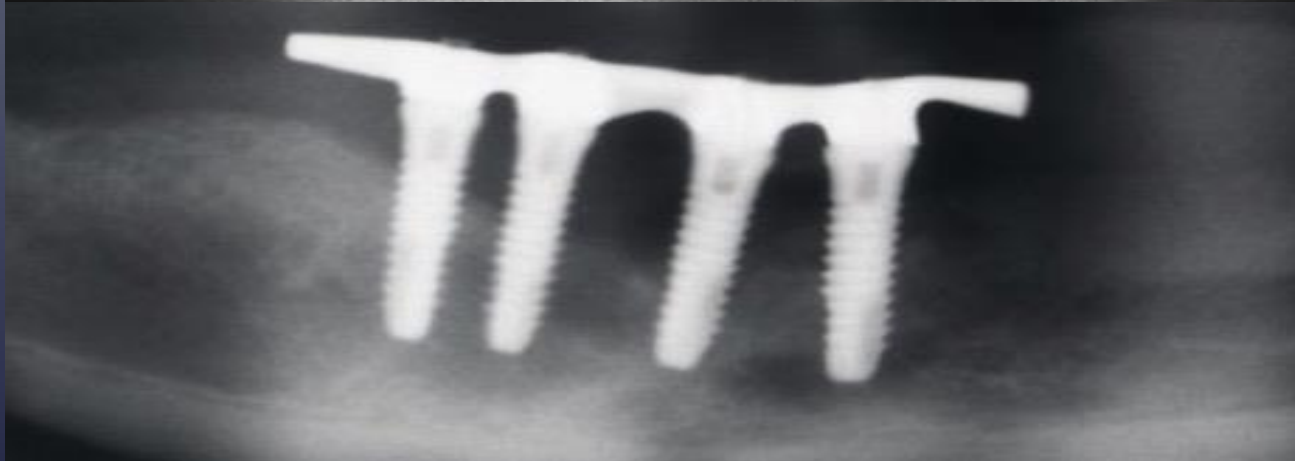
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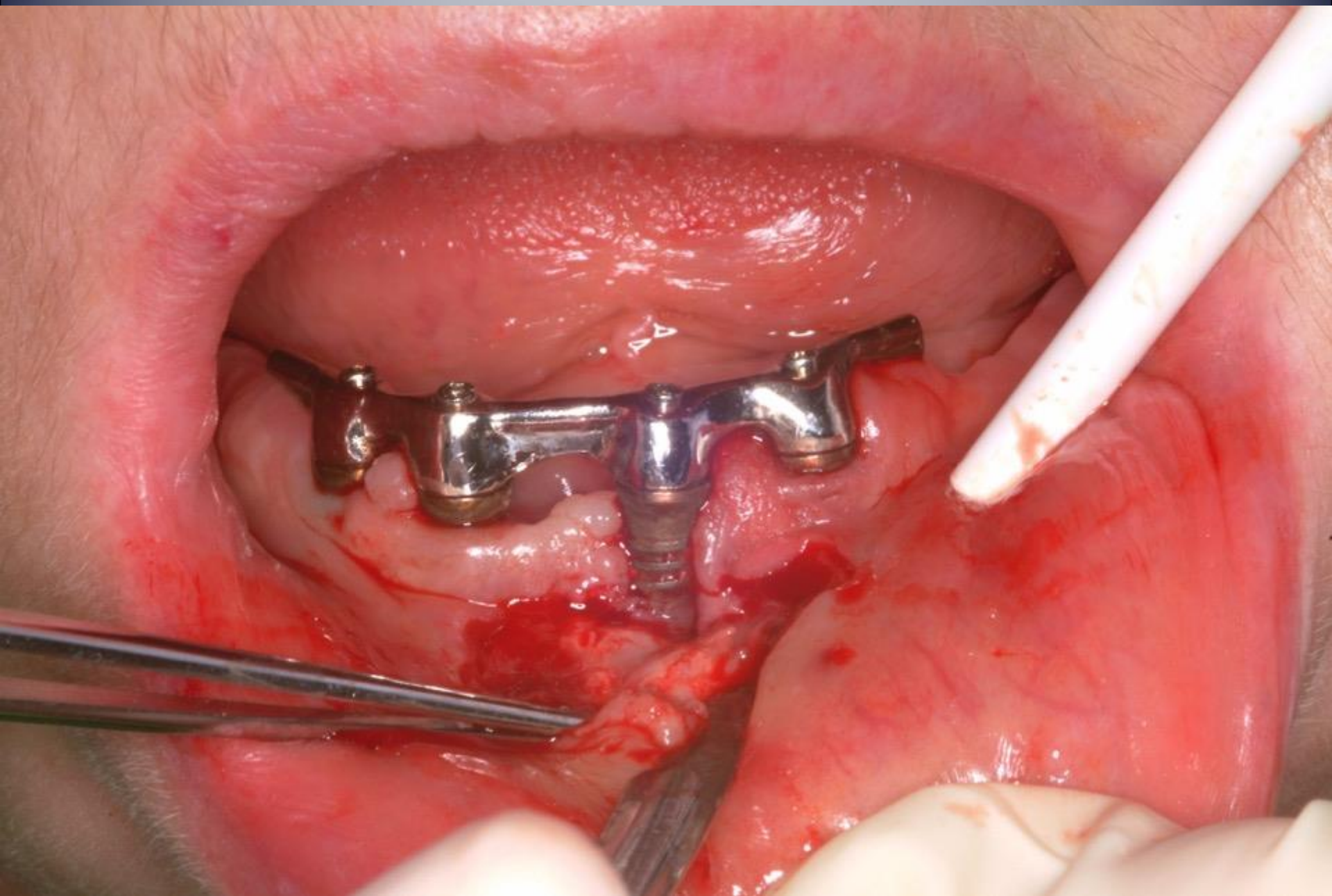


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Causes of periimplantitis

- Overloading - incorrect surgical and prosthetic planning - insufficient implant surface area, biomechanically unfavorable prosthesis
- Poor oral hygiene
- Absence of attached gingiva
- No loading



Periimplantitis

Treatment:

- Conservative
- Surgical
- Regenerative therapy
- An implant removal

Periimplantitis

Treatment:

- **Conservative**
 - Scaling, oral hygiene improvement
 - Disinfection
 - Correction of overloading
- Surgical
- Regenerative
- An implant removal

Periimplantitis

Treatment:

- Conservative
- Surgical
 - + Surgical curettage – debridement with use of disinfecting solutions without regenerative procedures
 - + Implantoplasty
 - + Use of local and systemic antibiotics
- Regenerative
- An implant removal

Periimplantitis

Treatment:

- Conservative
- Surgical
- **Regenerative**

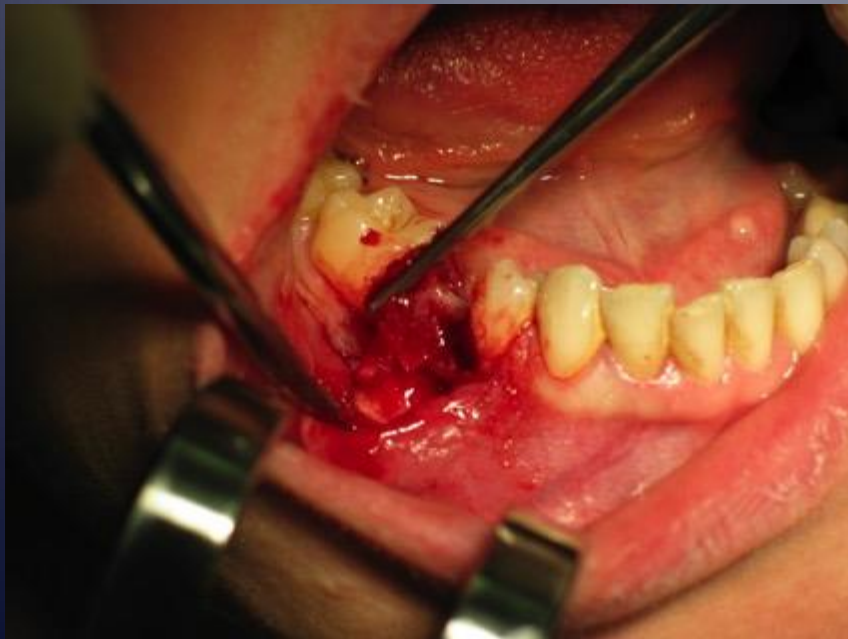
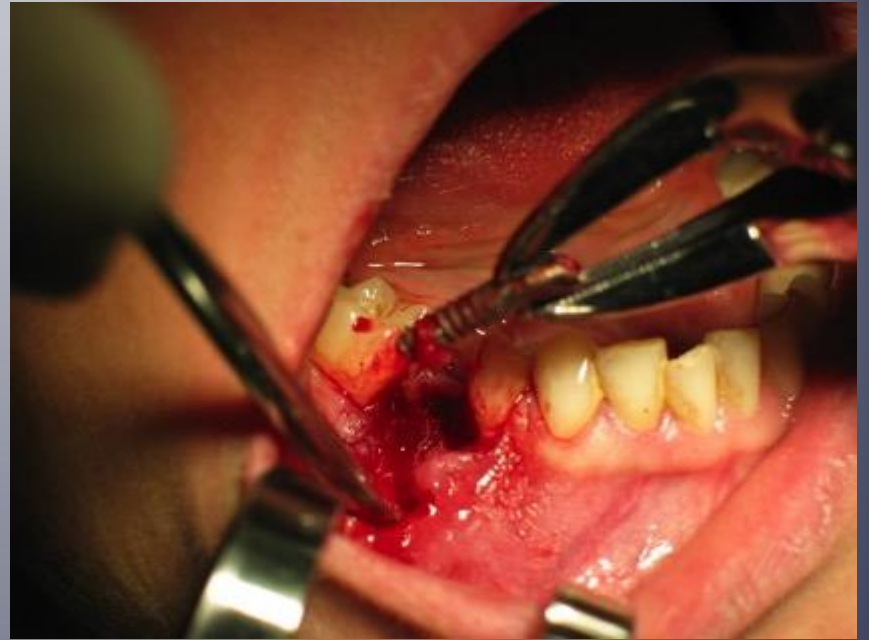
After treating acute inflammation surgical curettage, implantoplasty + autologous bone + membrane + soft tissue graft.

- An implant removal











Late complications

Mechanical complications

(fractures: implant, screw, abutment, prosthesis)

- Implant system errors
- Treatment planning errors, overloading
- Material wear

Optimal load distribution

Maximum implant surface area

- more implants, large diameter implants
- sufficient number of implants in respect to number of teeth to be replaced
- molar region – large diameter implants

Optimal load distribution

From biomechanical point of view:

Prosthesis should be supported only by **implants**,

or

In case of mixed implant and dental support
connecting elements should allow some degree of
movement

Overloading, rigid connection between an implant and tooth can lead to:

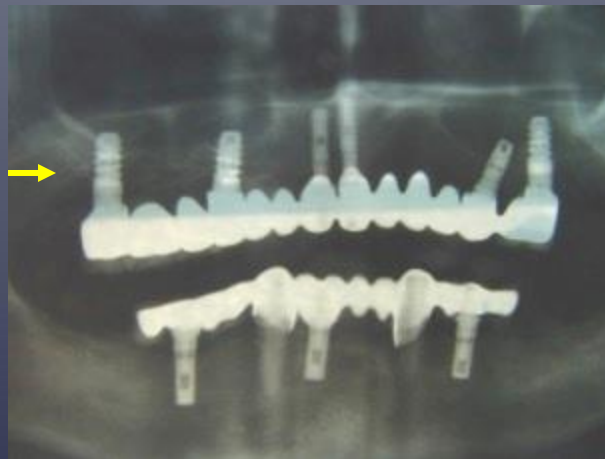
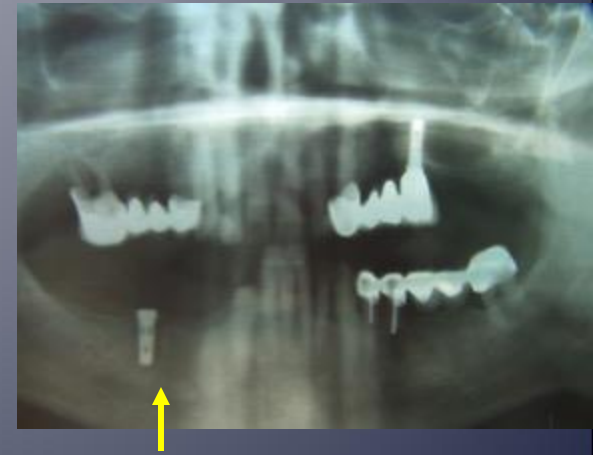
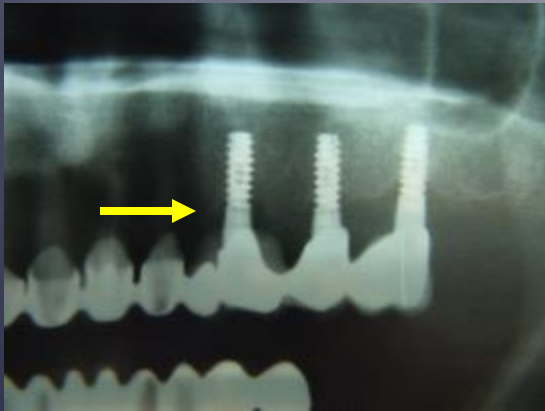
- Prosthesis fracture
- Porcelain layer fracture
- Abutment fracture
- Implant fracture (rare)

Aftercare

To maintain osseointegration

- An oral hygiene and peri-implant soft tissue control – removal of dental plaque and prevention of peri-implant inflammation
- Radiological control
- Prevention of overloading – occlusion control

Skipping control check-ups – A warning sign of neglect!!!



Aftercare

The role of the patient:

- Maintain plaque control at 85% or better
- Use interdental brushes
- Dip brushes in Chlorhexidine solution
- Use floss dipped in chlorhexidine
- Chlorhexidine mouthwash

Aftercare

The role of the hygienist:

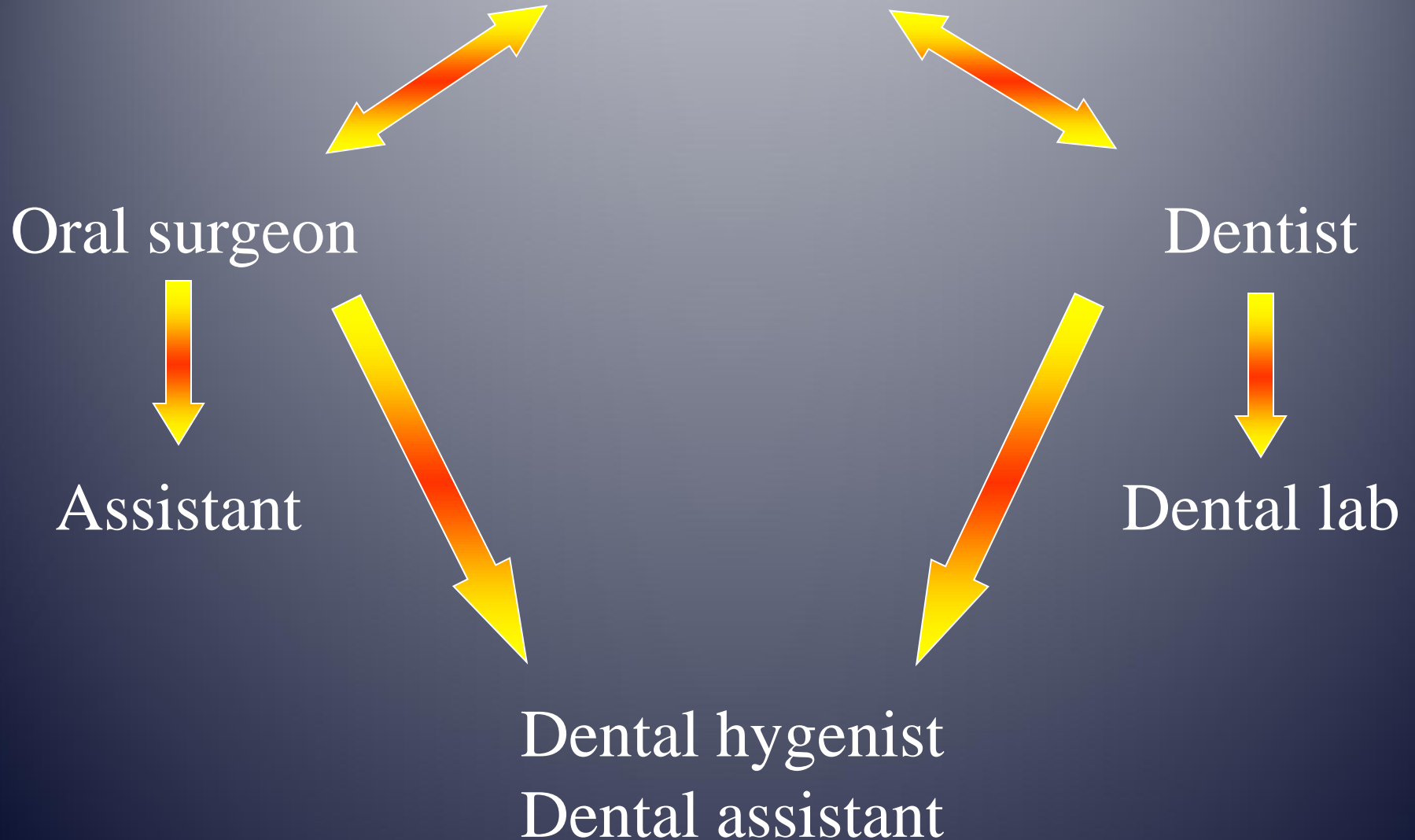
- Check plaque control effectiveness (85%)
- Check for inflammation
- Supragingival scaling
- Check for problems like broken screws, loose superstructures, soar spots
- Patient education

Aftercare

The role of the doctor:

- Check patient every 3-4 months (*implant patient is a periodontal patient!*)
- Check for 85% plaque control effectiveness
- Control radiographs every 12-18 months if no pathological condition is present , otherwise as needed
- Periimplantitis should be treated
- After reparative procedure implant should not be fully loaded for 10-12 weeks

Team work



**Thank you for your
attention!**