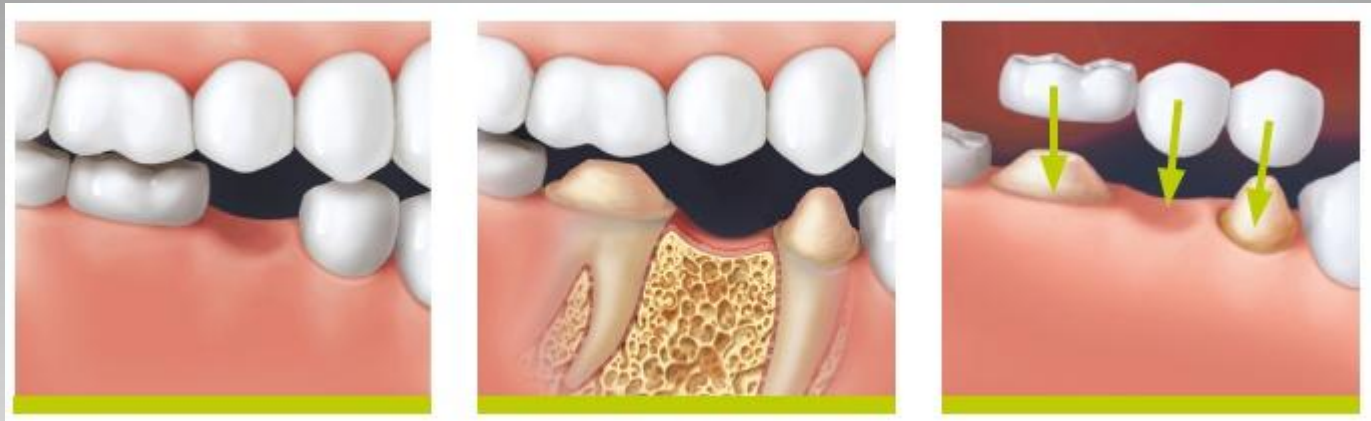
SUMPH “N. Testemitanu”

Prosthetics on intraosseous dental implants.

PhD Oleg Solomon
PhD Aureliu Gumeniuc

RELEVANCE

Classic dentures



Restoration with implants

RELEVANCE

- **Solid implants - functionally loaded directly in the early or later stages;**
- **Collapsible implants - functionally loaded in conventional terms.**

- **Relying only on implants or in conjunction with natural teeth**

BRIEF HISTORY OF THE ORAL IMPLANTOLOGY

The Evolution of Oral Implantology conditionally divided into 6 significant periods:

1. **Antique;**
2. **Middle Ages;**
3. **Fundamental;**
4. **Premodernism;**
5. **Modernism;**
6. **Modern.**

BRIEF HISTORY OF THE ORAL IMPLANTOLOGY

Antique period

Primitive evidence based on archaeological finds in Europe, Middle East, Africa, Central America, Egypt, the replacement of missing teeth with artificial different origin: mineral, animal, human.

BRIEF HISTORY OF THE ORAL IMPLANTOLOGY

The medieval period (1000 – 1799)

Dominated mainly replantation and transplantation of teeth.

Direct evidence of the use of dental implants in this period has`t been found.

BRIEF HISTORY OF THE ORAL IMPLANTOLOGY

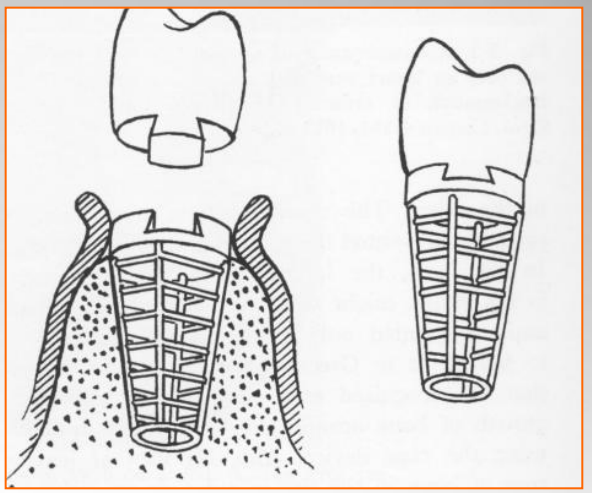
Fundamental period (1800 – 1910)

It rises with the advent Maggio management textbook of dental art (1809), which describes the first intramedullary implant is made of Au installed in tooth extraction alveoli. At this stage, the emphasis is on finding new implant materials.

BRIEF HISTORY OF THE ORAL IMPLANTOLOGY

Premodern period (1910 – 1930)

Starting with 1913, when the U. Greenfield introduced cylindrical implant of the Ir-Pt, covered with 24-carat Au in the form of the recessed-shaped cells. He offers the necessary tools for installation, thus being the founder of implant systems.



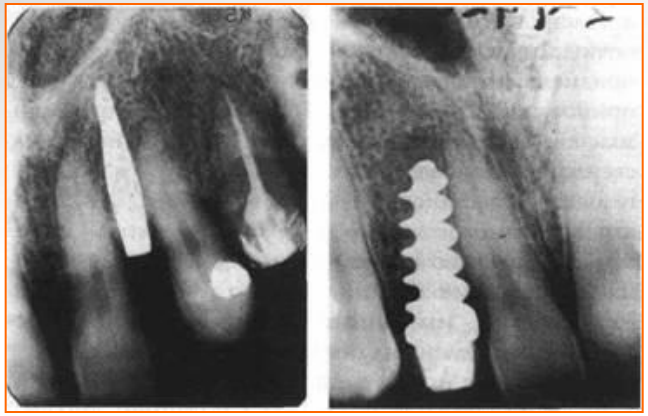
In 1914, W. Lane articulates one of the fundamental principles of implantation - "a positive effect can be achieved only through careful operation method."

BRIEF HISTORY OF THE ORAL IMPLANTOLOGY

Modernism Period
(1930 – 1978)

It is characterized by the study of various biomaterials, the introduction of new surgical and orthopedic innovations.

In 1936, C. Venable şi W. Stuck brought new alloy, virtually harmless to the body's tissues - Vitallium.



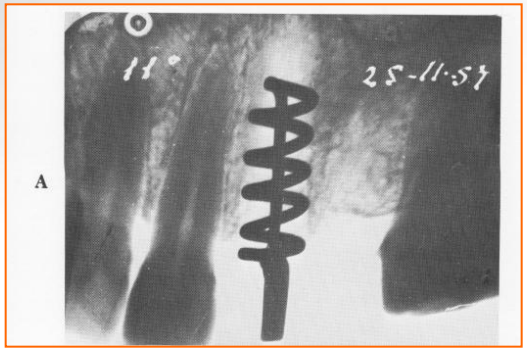
In 1939, AE. Stroke is developing a dental screw implant Vitallium.

BRIEF HISTORY OF THE ORAL IMPLANTOLOGY

Modernism Period (1930 – 1978)

In 1943, is invented transdental fixation of implants, which was successfully used for almost 20 years.

In 1947, A. Formaggini develops and offers helical implant.

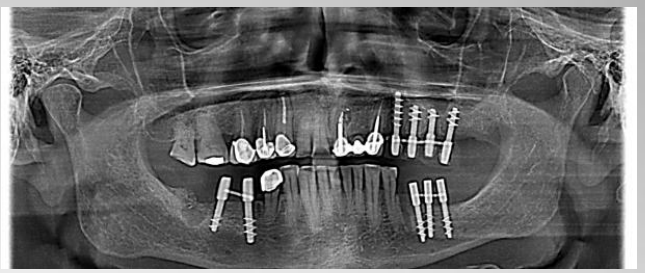


In the same year, H. Dahl offers subperiosteal implant

BRIEF HISTORY OF THE ORAL IMPLANTOLOGY

Modernism Period
(1930 – 1978)

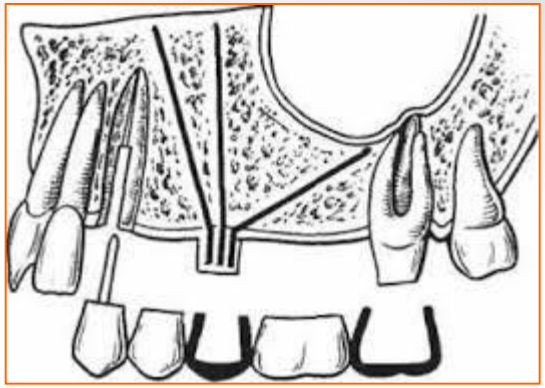
Period '50 -'60 years. It is an experimental development of new types of dental implants.



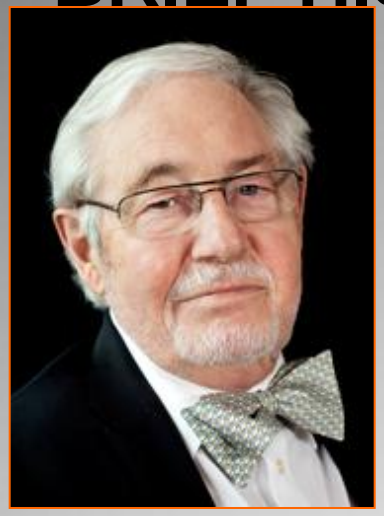
In 1959, S. Tramonte offers narrow corkscrew implants (2,5-3,0 mm).

In 1962, R. Chercheve corkscrew developing an implant with a double thread.

In the same year J. Scialom offers needle implant "on three legs".

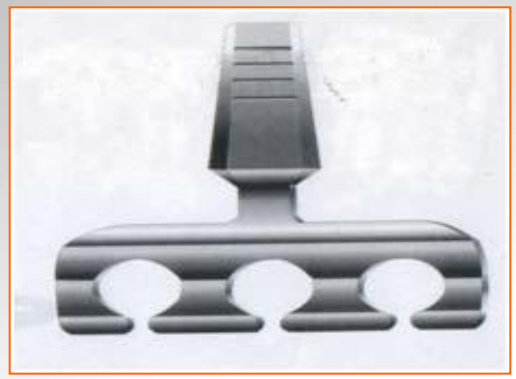


BRIEF HISTORY OF THE ORAL IMPLANTOLOGY



Modernism Period (1930 – 1978)

In 1965 g. P-I. Bränemark offers collapsible screw implants.



In 1967, Leonid Linkov suggested Plate-implant.

In 1968, H. Bosker and L. van Dijk offer transmandibular implant.

BRIEF HISTORY OF THE ORAL IMPLANTOLOGY

Modern period

It originates in the late '70's.
Conditionally divided into two periods:
Branemarks period;

It introduced the concept of osseointegration formulated (1985) as "a direct structural and functional connection between living bone and the surface of the functionally loaded implants"

- **Post-Branemarks period** the beginning of '90

)replaced by "revolutionary sentiments" comes the evolutionary period of development of implantology.

INDICATIONS

- dental defects, limited intact teeth;
- primary defects of dentition;
- instability of dentures;
- functional discomfort because of wearing dentures;
- psychological rejection of wearing dentures, even if there is a good fixation and stability;
- parafunction that reduce the stability of the prosthesis;

INDICATIONS

- location and insufficient remaining supports (natural and / or artificial);
- the lack of support for non-removable prostheses;
- requirements of conservative treatment (refusal of teeth preparation limiting defect, regardless of their clinical status);
- specific requirements for prostheses connected with the peculiarities of the profession, age, gender (actors, singers, presenters, youth).

INDICATIONS, CONTRAINDICATIONS, RISK FACTORS

CONTRAINDICATIONS

Absolute:

- heart disease with high risk;
- uncontrolled systemic disease;
- patient age (young patients in the period of growth).

Relative:

- weak quantitative and / or qualitative indicators of bone;
- failure of prosthetic space;
- mental disorders;
- alcoholism and drug addiction;
- risk patients (excessive smoking, etc.).

INDICATIONS, CONTRAINDICATIONS, RISK FACTORS

SYSTEMIC RISKS

- Cardiovascular system - infective endocarditis;
- Circulatory system - blood clotting disorder; The nervous system - epilepsy associated with convulsions and loss of consciousness;
- Endocrine system - diabetes, osteoporosis;
- The respiratory system - chronic bronchitis, emphysema, may pose risks during operation;
- Gastro-intestinal system - dry mouth and gastro-oesophageal reflux can affects healing of the mucosa;
- Malignancies.
- Irradiation alters of the vascularization, which affects the process of osseointegration;
- The skin and mucous membranes - lichen planus, erythema, lupus, can affect the process of soft tissue healing.

INDICATIONS, CONTRAINDICATIONS, RISK FACTORS

Local risks

- Smoking (identified for one piece implants with a smooth surface, and in any case a contraindication);
- Alcohol (for comparison, the drinkers bone loss is greater than in smokers);
- Bruxism (does not affect the period of osseointegration is likely to be a risk factor for complications of prosthesis);
- Infectious endodontic or periodontal focus (at the clinical level, is not a contraindication, provided background antibiotic);
- Age-related risk factors;
- The psychological profile of the patient (psychotic syndromes dysmorphophobia syndromes normal or senile brain degeneration;
- Drug dependence.

FEATURE IMPLANT SYSTEMS

IMPLANT CLASSIFICATION

Regarding the bone bed:

- **intramucosal (intramusozalnye);**
- **submucosal (submucous) - magnets;**
- **subperiosteal (subperiosteal).**
- **Intraosseous (endosseous):**
- **Transosseous (transbones);**
- **Combined:**
- **endodonto-endosseous;**
- **endosome-subperiosteal.**

*** Most often used in practice are intraosseous implants.**

IMPLANT CLASSIFICATION

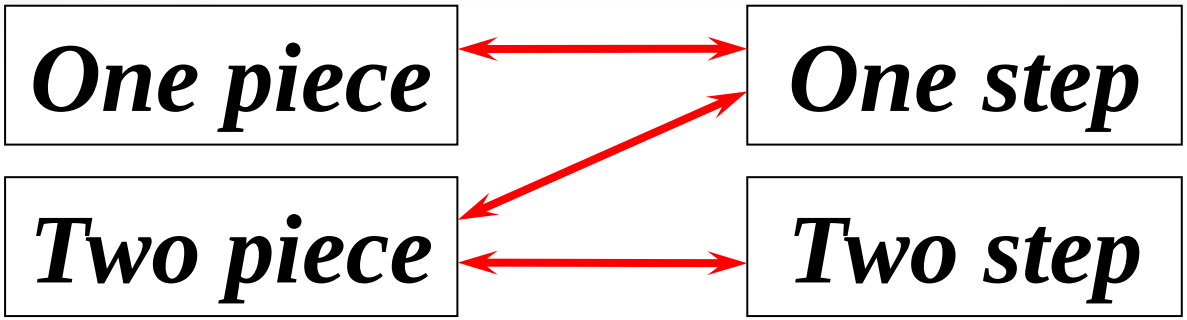
The shape of intraosseous implants can be:

- **Tapered:**
- **screw;**
- **cylindrical;**
- **combined (screw + cylinder).**
- **The plate.**
- **Needle "on a tripod."**
- **Combined.**

FEATURE IMPLANT SYSTEMS

IMPLANT CLASSIFICATION

Regarding the structure, the implants can be: not collapsible or monolithic (one-piece, submersible, one piece);
collapsible (in two parts, submersible, two piece).
Regarding the installation method:
Single-phase (one-step implantation, a public method, the One step);
The two-phase (two-stage implantation, two step).



FEATURE IMPLANT SYSTEMS

IMPLANT CLASSIFICATION

Regarding the time of implantation:

Direct (immediate).
Directly-deferred.
Late (delayed)
primary delayed;
second-delayed

Regarding surgical approach:

Intraoral (on the alveolar ridge)
vertical;
lateral.

Extraoral (transmandibulyarny).

Regarding the production of materials:

Metallic (steel, Cr-Co, Ti and its alloys, etc.);
Metallic: polymer (PMMA); ceramic; composite; other materials (C, sapphire, Zr dioxide).

FEATURE IMPLANT SYSTEMS

Components of the implant

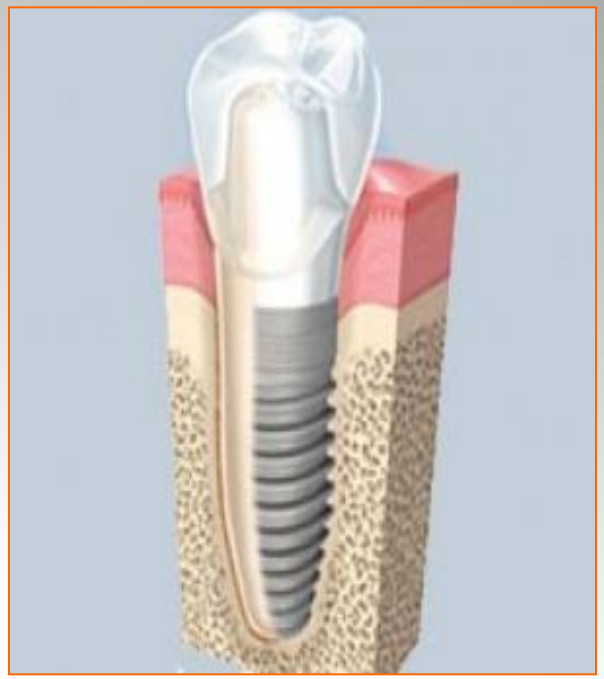
Regardless of the type of implant, any restoration on the implant consists of:

infrastructure - part of a system designed for integration into bone tissue;

suprastructure - directly prosthetic restoration;

mesostructure - binding element between infrastructure and superstructure;

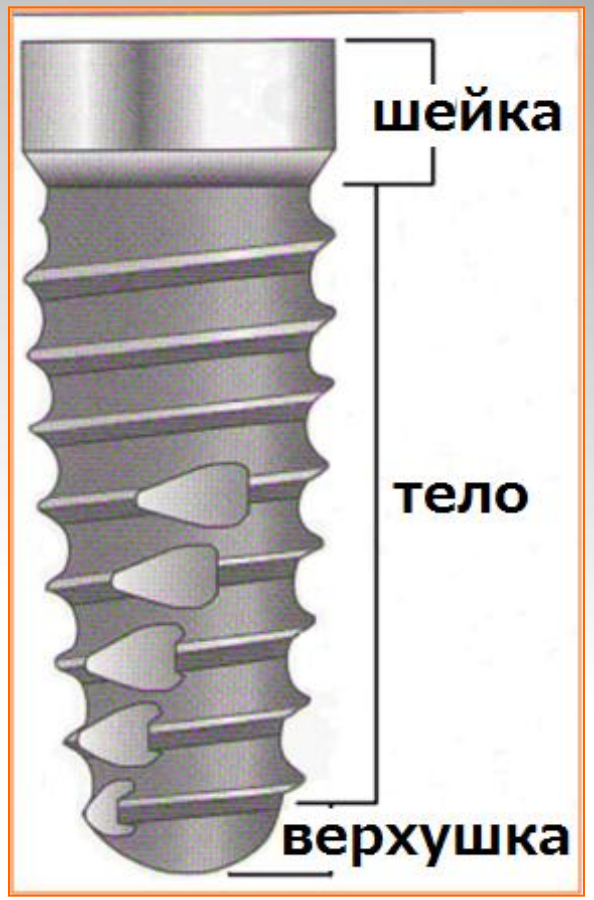
ekzostructure - element with a variable height hangs from the gum thickness (gingival unit).



FEATURE IMPLANT SYSTEMS
Components of the implant
ENDOSSEOUS ELEMENTS

The intraosseous part of the screw implants consist of:

- **neck - a crystal module:**
- straight;
- expansive;
- straight and wide;
- integrated (platform-switching);
- transgingival.
- **body - main part:**
- cylindrical;
- multi-level;
- conical (apical, oral).
- **tip:**
- rounded, aggressive;
- transversal for tapping.



FEATURE IMPLANT SYSTEMS
Components of the implant
ENDOSSEOUS ELEMENTS

- **Implant Surface:**
  - Smooth;
  - Cured:
  - Additive method:
  - plasma-spray Ti (Plasma-pollination)
  - hydroxyapatite;
  - anodic oxidation.
  - Subtractive methods:
    - sandblasting;
    - pickling acids.
- **The length and diameter**
- Sealed implants: length - 10,0-25,0 mm; diameter - 1.8-4.0 mm.
- Collapsible implants: length - 6.0-8.0 mm; diameter - 3.0-8.0;

Implantation connections: external hexagon; Allen; polygons; slices; star.

FEATURE IMPLANT SYSTEMS

Components of the implant

1. Screw cap (cover screws);
2. Healing Abutment (healing caps);
3. The head of the implant and the abutment (prosthetic abutment);
4. Impression module or transfer (impression coping);
5. An analogue of the implant (implant analog);
6. Additional features or accessories.

FEATURE IMPLANT SYSTEMS

Classification of prosthesis on implants

According to the method of fixing:

- Fixed.
- Removable.
- Hybrid (fixed + removable).

According to the method of deduction:

- Relying only on implants: single, multiple.
- With the combined support: tooth + implant, the implant + gums.

FEATURE IMPLANT SYSTEMS

Classification of prosthesis on implants

Regarding the fixing method:

- Cemented.
- Folding (conditionally-removable): direct or indirect.
- Combined: teeth + implants.

Regarding the appointment of:

- Transient or transient.
- Temporary.
- Constant.

FEATURE IMPLANT SYSTEMS

Types of prosthesis with implant support

Fixed prosthesis:

- single crowns.
- crown block.
- partial fixed prosthesis (with or without the console).
- circular partial fixed prosthesis (with or without the console).

Dentures:

- on ball-attachment.
- on special support systems of retention and stabilization.

Hybrid prostheses

Thank you for your attention