

**Routes of drug administration. Syringes,
needles.**

Basic principles of local anaesthesia.

„Geometry” of local anaesthesia.

Arc, -Állcsont, -Szájsebészeti és Fogászati Klinika

2016

Anaesthesia is the most frequently used intervention in dental and surgical practice,

The key of a successful treatment.

„Divinum est opus sedare dolorem” =

Relieving pain is a godly act.

Patient's opinion of our craftsmanship:

No pain = good dentist

pain = „I won't come back here again”

The rate of pain intensity experienced is influenced by:

- The intensity of feeling
- Current psychological disposition
- Actual motivation
- Their previous experience
- Cultural background
- Ethnic background
- Drug effects

Routes of drug administration

	Area of application	Way of application
Enteral way	Mucosa of the gastrointestinal system	Oral (per os) perlingual sublingual Rectal
Parenteral way	Other mucose surfaces	nose lung conjunctiva (eye)
	skin	surface
	Injection	intracutan subcutan intramuscular intravenous intraarterial

Routes of drug administration

Intracutan (i.c.) - We inject the solution between the layers of the skin (slow absorption).

Subcutan (s.c.) - The solution is injected in the connective tissue. Very fast absorption. Use of sympathomimetics (e.g.: Adr.) helps the slower absorption and lowers the relative toxicity.

Intramuscularis (i.m.) - Solution is injected into the striated muscle. Slow absorption.

Intravenous (i.v.) - No resorption time because the medicine is in the blood circulation at once.

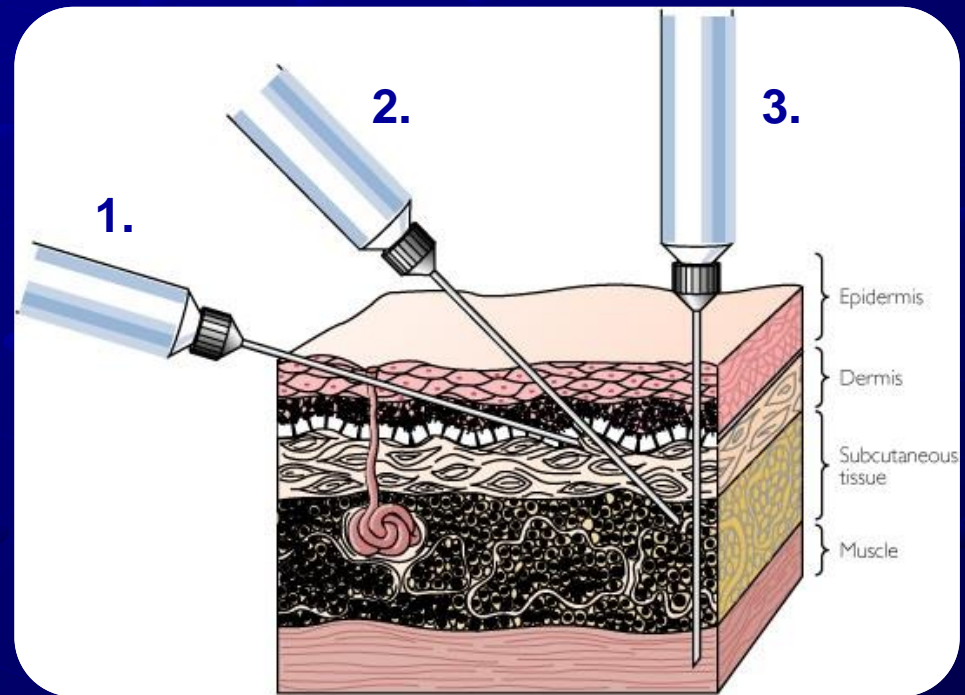
Routes of drug administration

1. Intracutan (i.c.)

2. Subcutan (s.c.)

3. Intramuscularis (i.m.)

4. Intravenosus (i.v.)



Terms of anaesthesia

- aisthesis (greek): feeling, sense
- algeo (greek): sg. hurt
- hyperaesthesia: hypersensitivity
- normaesthesia: normal sensitivity
- hypaesthesia: reduced sensitivity
- paraesthesia: abnormal sensation
- anaesthesia: lack of sense
- analgesia: lack of feeling pain

Anaesthesia

Local

Reversible hanging up of neurogenic transmission by using local anaesthetics.

General

Reversible hanging up of senses and consciousness by using drugs.

Attributes: analgesia, amnesia, lack of sensor and vegetative reflexes, relaxation

Indications of general anaesthesia:

- Extensive surgery
- Short, but very painful interventions
- In case of patients unable to co-operation

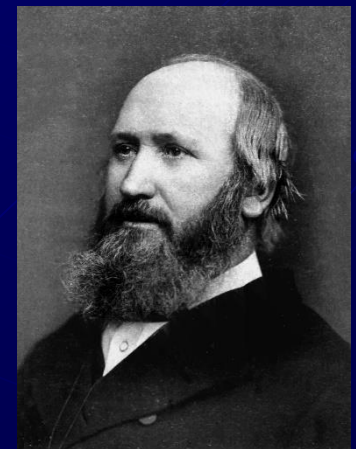
History of injection

- From the 1800s years

- Charles Pravaz:
1853 syringe



- Alexander Wood: first im. inj. 1853
„A New Method for Treating Neuralgia by the Direct Application of Opiates to Painful Points,,
Edinburgh Medical and Surgical Journal
(1855)



- Guido Fischer 1910 glass syringe
- Luer created a syringe that consisted of a piston-rod and a cylinder both made of glass (easy to clean and keep sterile)

syringe with conus

- Record created a bayonett lock syringe (consisted of many pieces) from metal and glass
- From 1970's disposable syringe and needle



Record



Luer



Szabó

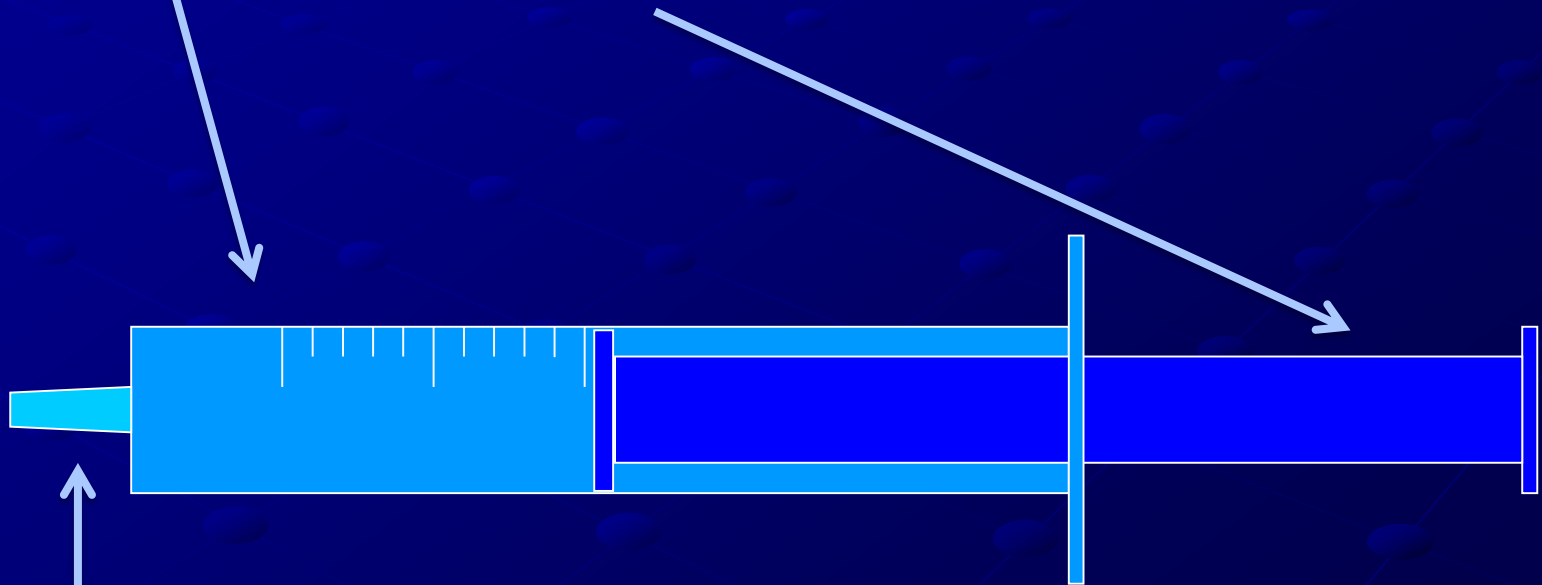


Fischer

Parts of the syringe

- cylinder – calibrated: 2 ml content, 1/10 scale

- piston – hermetically closes the cylinder



- conus – 2 types: record & luer

Parts of the syringe

In dental practice the most commonly used:
2 ml syringe

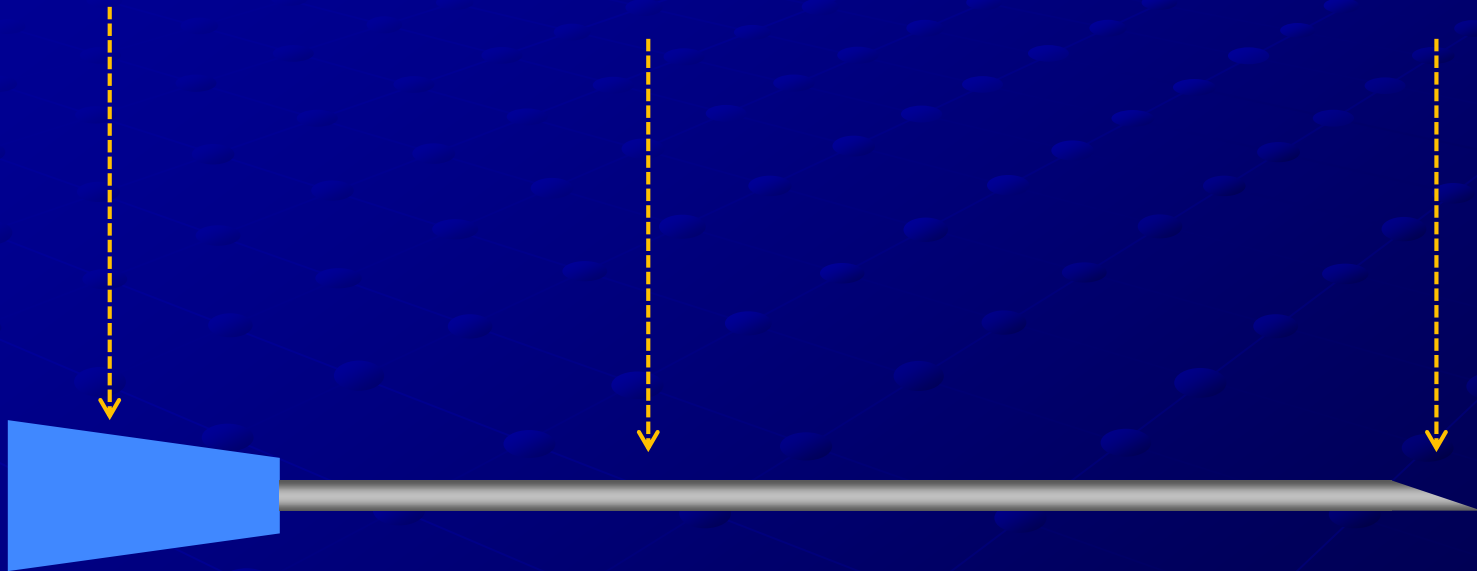


Parts of the needle

Manubrium

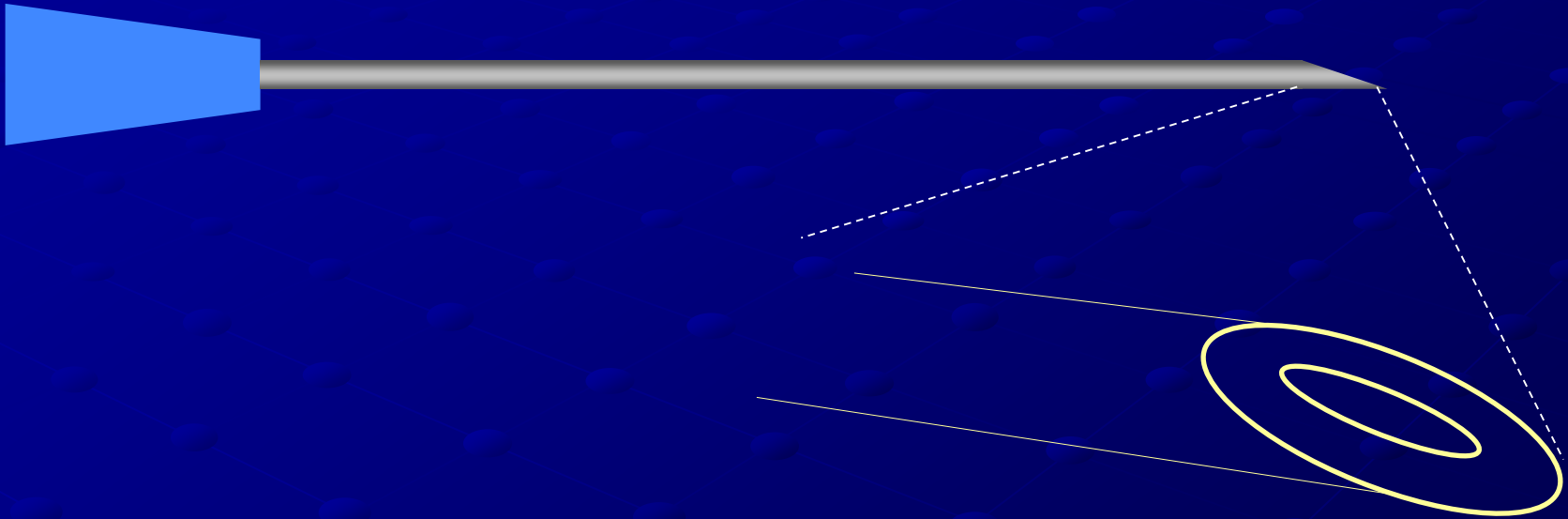
canule

working end (olive)



Parts of the needle

The olive



Olive: surface prepared sloped, the two sides form edges that meet in a pinpoint. Chiseling angle: 12-15%. In the middle of the surface the lumen can be found.

Parts of the needle

Needles used in dental anaesthesia

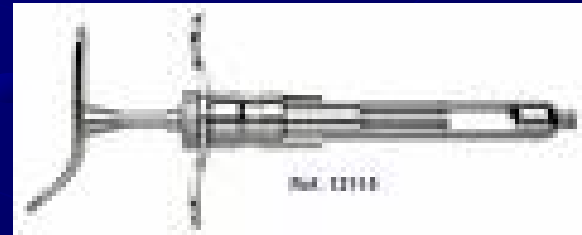
- Record needle – metal manubrium
- modern disposable needles – plastic manubrium
that fits the conus
- Carpule: invented by Harvey Cook in 1917
nowadays becoming more popular

The Carpule system

From the 1930s and today getting more commonly used

Parts:

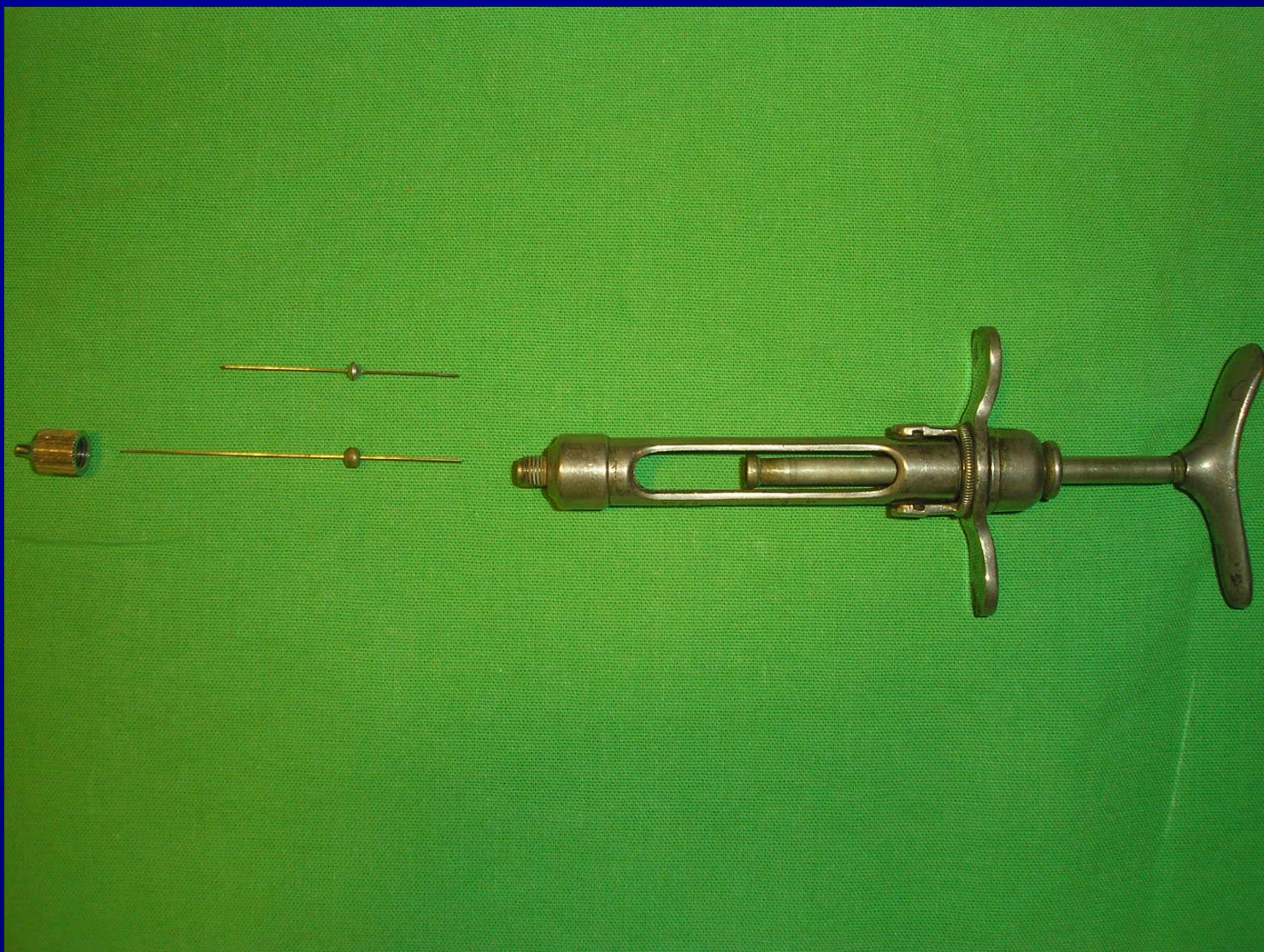
- ampule – contains the sterile solution
- piston lock
- needle – sharp on both sides



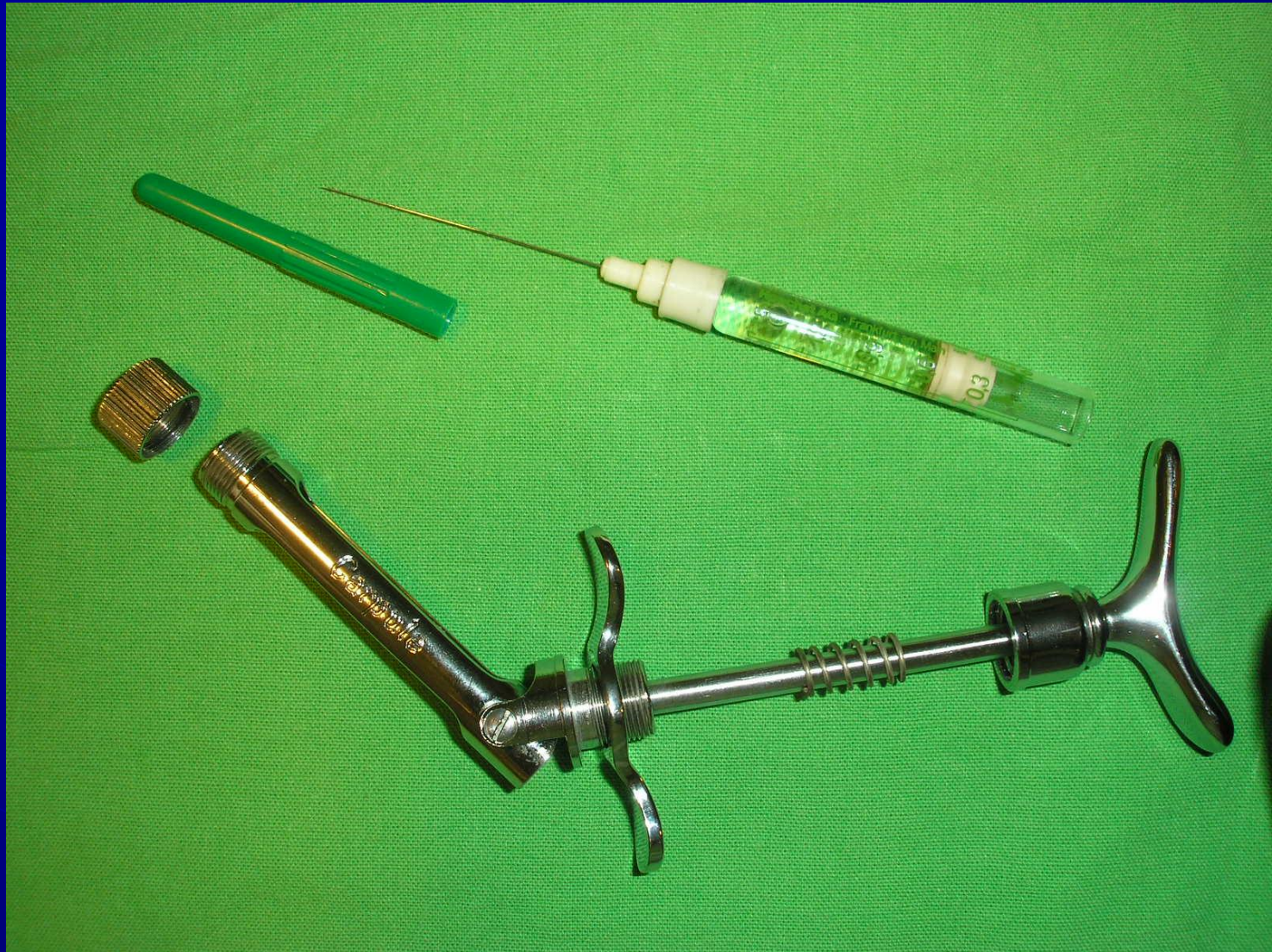
In the beginning there were sterilization problems, but at the end of the decade the disposable systems appeared (expensive).

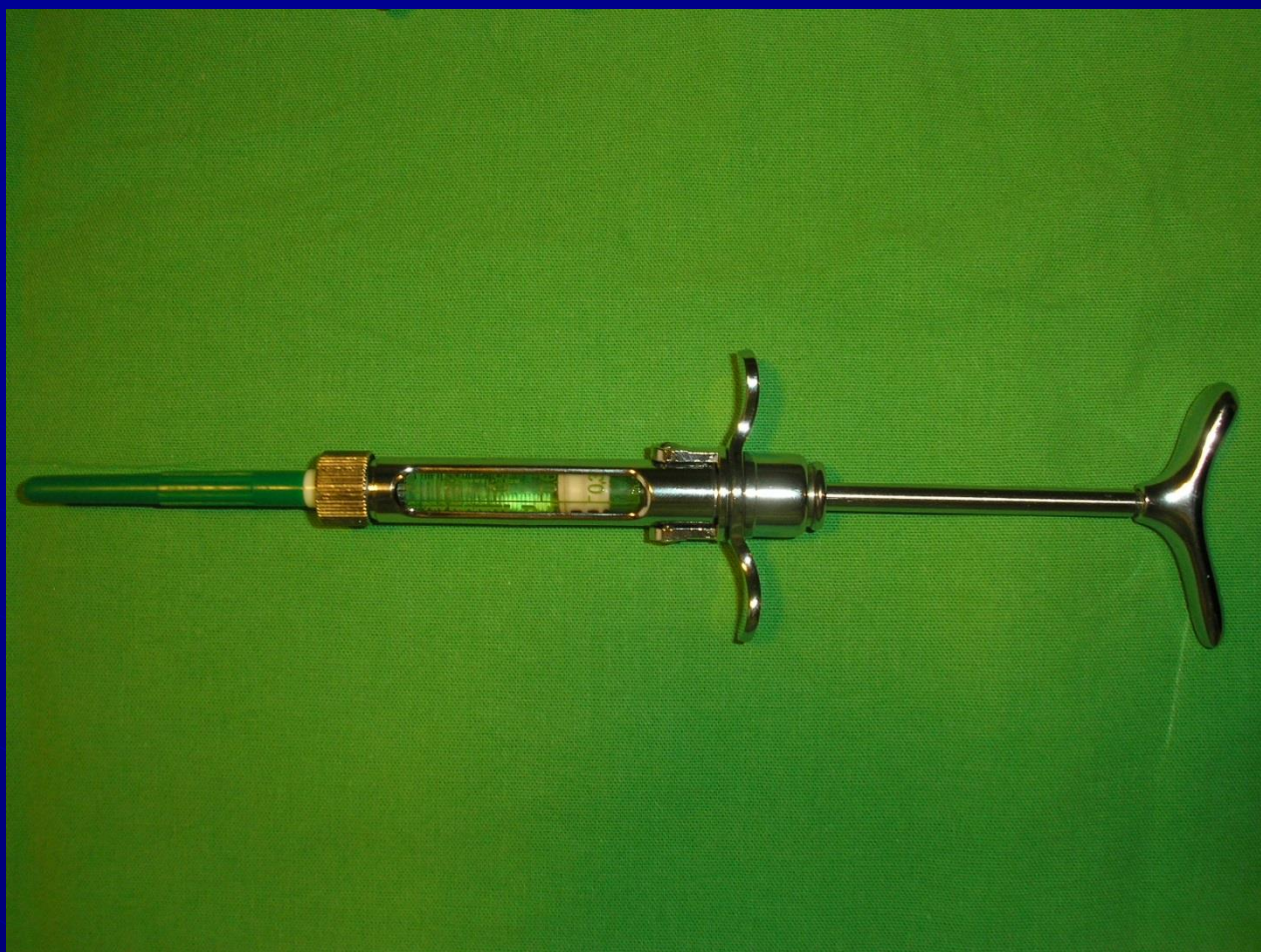


Carpule









Parts of the needle

Parameters of dental needles

- diameter: 0,45 – 0,5 mm
- length: 25 mm (short needle)
42 mm (long needle)

27G



26G



Rules of intraoral anaesthesia

1. Approaching from the less sensitive area

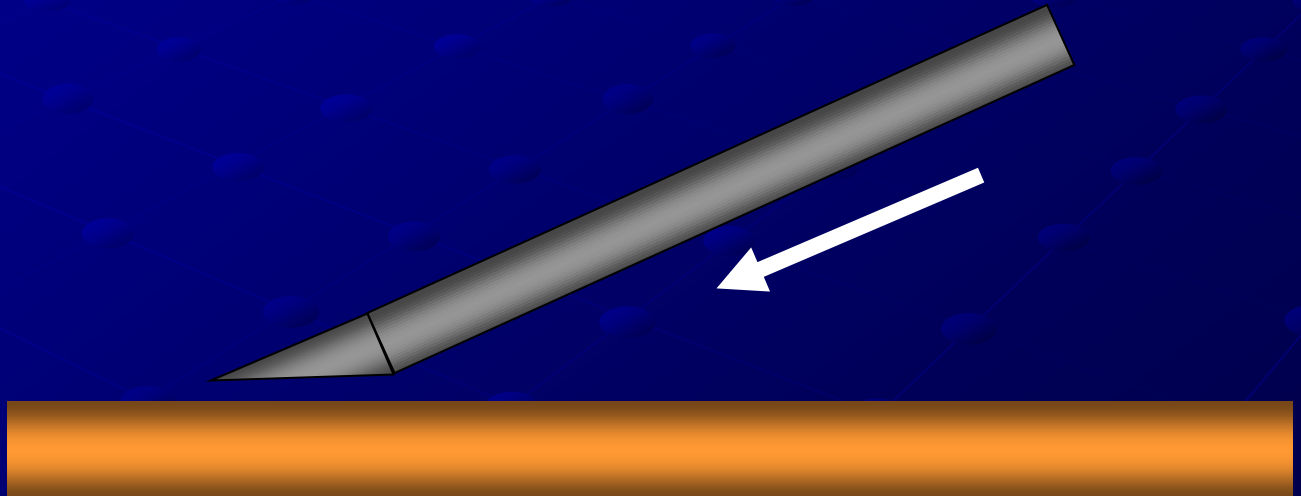
Most sensitive area: lips and the papilla
between the upper and lower incisors

Rules of intraoral anaesthesia

**2. Always inject where submucosa
can be found.**

Rules of intraoral anaesthesia

3. The olive faces to the bone surface.



Rules of intraoral anaesthesia

4. Continuous deponation during injection.

Reasons:

1. Decreases the sensitivity after insertion
2. Pushes the small vessels and nerves aside in the connective tissue.

Rules of intraoral anaesthesia

5. Deponate slowly with firm pressure.

2 ml



Half a minute (30 sec)

Special datas of injection (coordinates, geometry)

1. Insertion point.

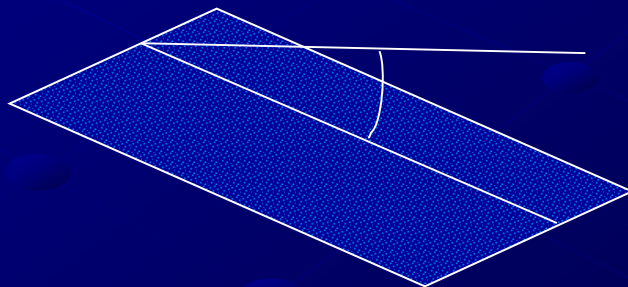
Insertion point is defined by the crossing of two lines.



Special datas of injection (coordinates, geometry)

2. The direction of the injection.

The direction is defined by a plane and an angle that is in that plane.



Special datas of injection (coordinates, geometry)

3. Depth of injection.

Depth = distance in mm

Types of anesthesia

General anesthesia

Local anesthesia

1. terminal

E.g.: superficial mucosal anesthesia, anesthesia intrapulpalis

2. conduction/block

2-3 mm accuracy is required in case 1,8-2ml injection!

Types of anesthesia

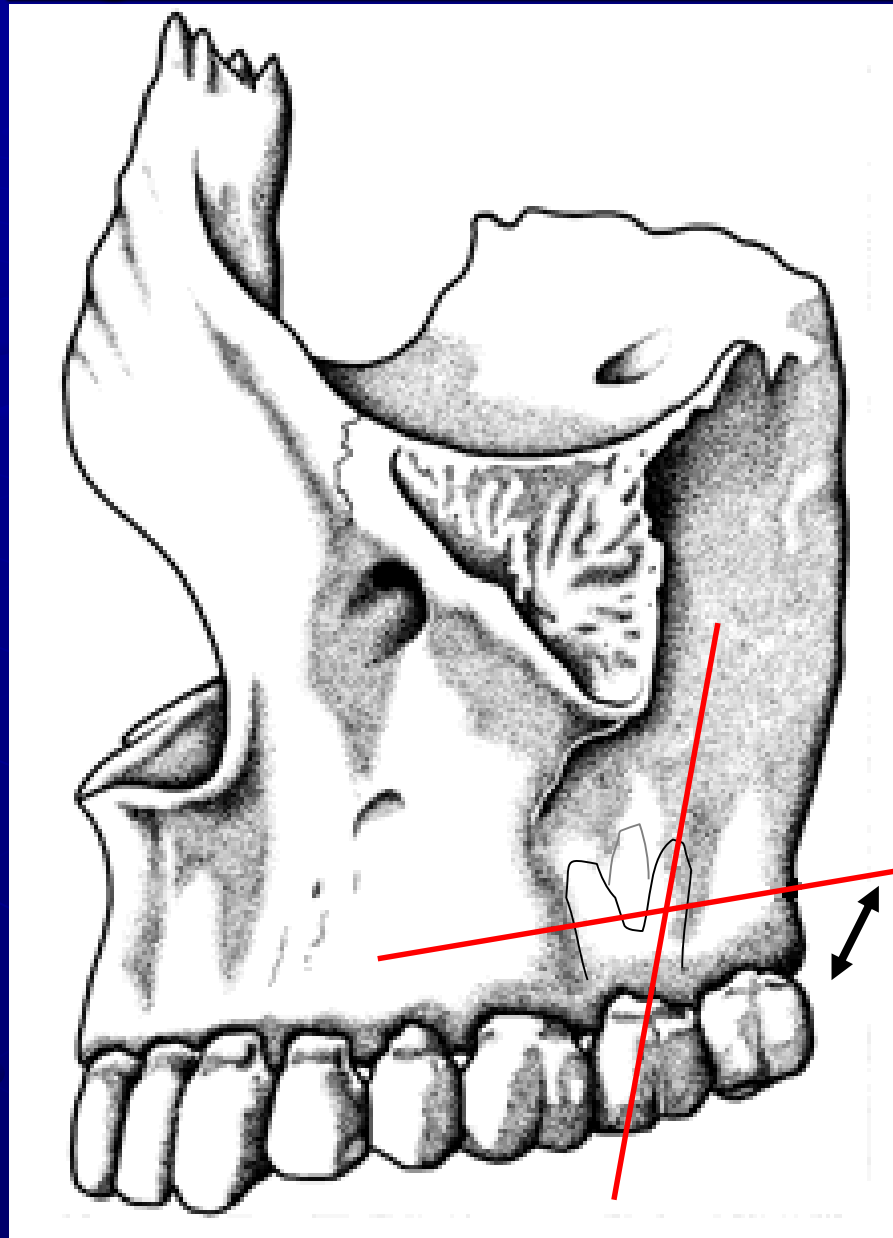
3. ganglion

In dentistry not really used

Soft tissue anesthesia

- By conduction anesthesia
- It may infiltration method.

E.g.: Tuberal anesthesia



6-8 mm

Thank you for your attention!