

# Chifa

## Endodontics



A set of endodontic micro instruments for removing broken canal instruments  
by Dr Gończkowski

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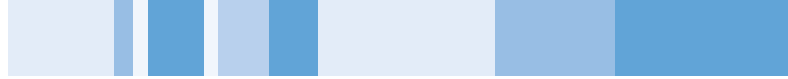
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**Doctor of Medical Sciences, dental surgeon,  
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A graduate of Jagielloński University in Kraków . In the years 2001 – 2008 , he worked as an assistant lecturer and lecturer at the Institute of Dentistry CMUJ ( the Faculty of Introduction to Noninvasive Dentistry and Integrated Dentistry , Laboratory of Noninvasive Dentistry and Endodontics ). Since 2001 ,he has been working in a private dentistry practice in Kraków. In 2005, he was awarded the title of Doctor of Medical Sciences , and in 2008 he was awarded the title of the specialist in Noninvasive Dentistry and Endodontics . Twice he travelled to Germany on scientific scholarships : at Koln University and Munich University . Since 2005, he has been giving lectures and conducting practical trainings for dental surgeons in Poland and around the world ( he lectured in over 30 countries in Europe, Asia, and Africa ) on endodontics, anesthesia and medical rescue . He is a member of Polish and international scientific societies: PTS ( Polish Dentistry Society ), PTE ( Polish Endodontics Society ), IADR (International Association for Dental Research), ERC ( European Resuscitation Council ). He has published over 35 scientific papers in Polish and foreign dentistry magazines . He has received numerous awards for his scientific research . Among others ,he was two times awarded CED Travel Stipend ( IADR ) and Expertise Talent Award Europe for Young Scientists . In 2010, he designed a system of endodontic micro instruments for removing broken instruments from root canals ( FRS - File Removal System ® ,Chifa ). He is one of the authors of ENDO – STATION ® system ( Cerkamed ) meant for the washing of root canals.

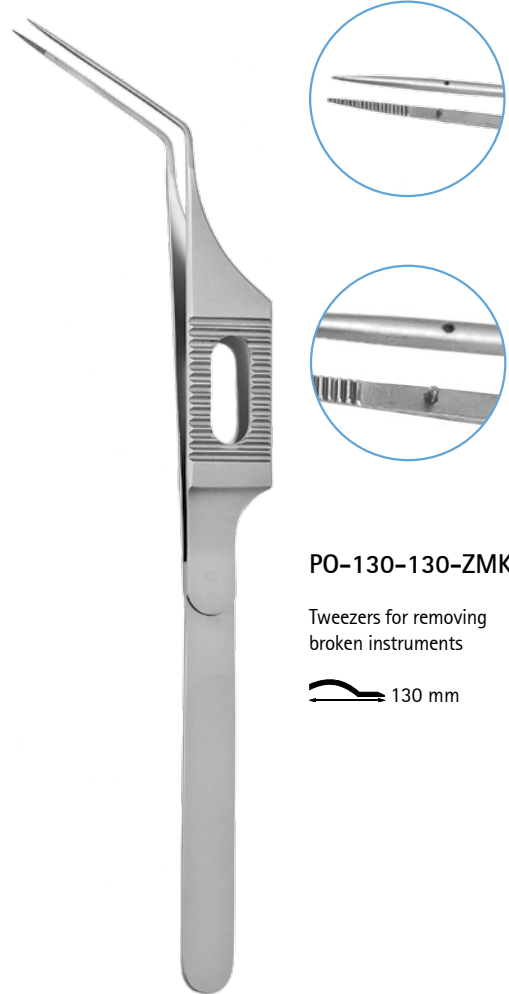


Removing a piece of a broken endodontic instrument, or a crown-root inlay is one of the most difficult operations performed by dental surgeons. A commonly used method of removing fragments of endodontic instruments is the ultrasound method. This method consists in unblocking and mobilizing the removed fragment of the instrument by use of a vibrating ultrasound tip, without water cooling and by inspecting it through magnifying glasses or a surgical microscope. The biggest drawback of this method is the lack of possibility to directly seize the broken instrument. It very often happens that after breaking the old material filling the root canal and mobilizing the fragment of the endodontic instrument, it is technically impossible to remove the foreign body, for example: because it is located deep inside the narrow root canal. Therefore, using specially designed micro instruments together with a set of endodontic micro chisels enables to remove the broken instrument extremely quickly and easily, without any risk of complications, like e.g. perforation of the root canal wall.

Four clamp micro instruments and five micro chisels have been designed and produced. They account for the principles of work ergonomics with a surgical microscope, and they use the highest class of surgical steel alloys. Working with the system of FRS micro instruments - File Removing System® according to the design by Dr Gończkowski is based on a few simple principles:


1. Initial identification of the place where is the broken endodontic instrument by use of RVG and/or CBCT
2. Performing the operation inspected through magnifying glasses, or better by use of an endodontic microscope
3. Obtaining a possible, widest access to the broken instrument by use of the ultrasound system and/or by use of special endodontic chisels (e.g. Munca)
4. Unblocking and mobilizing the broken fragment of an instrument by use of ultrasound and/or by use of endodontic micro chisels of FRS system

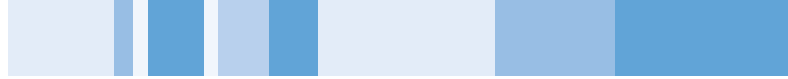
5. Seizing and removing the broken fragment of an instrument by use of a clamp Micro instrument of FRS system - the type of a micro instrument is selected depending on how deep the operation is performed, the inside diameter of the root canal, and the blocking strength of the broken fragment.



**PO-130-130-ZMK**

Tweezers for removing  
broken instruments

 130 mm



## Endodontic micro tweezers

Total length : 130 mm

Length of tips : 25 mm

Length of serrated working part : 5 mm

Diameter of working part with tips closed : 0,6 ÷ 0,8 mm

Force of pressure : 100 ÷ 500 G

### Parameters of usage:

- Thin and long tips bent at 60° against the handle enabling the introduction of the instrument deep into the root canal , as well as comfortable work under the microscope without covering the field of vision .
- The pointed and serrated working part makes it easy to firmly seize the broken instrument in the root canal.
- Right behind the serrated working part , there is a micro pin stabilizing the position of tips when they are closed. Thanks to that , the repeatability of the position of both the serrated working parts against each other was obtained , and the frequent occurrence of the tips passing each other was eliminated.
- The wide middle part of the handle with anti-sliding carvings.
- Two pins stabilizing the position of the handles against each other and preventing deformation of the delicate serrated working part by too strong clamping of the instrument.
- Specially designed holes in the handle which make it easy to hold the instrument in a stable position.

### Application:

To remove fragments of broken endodontic instruments from root canals after first being unblocked by use of ultrasound systems. Thanks to the suitably shaped profile of the very thin and long serrated working part , the instrument enables the surgeon to reach the broken endodontic instruments at considerable depths , as well as their firm seizing and removing from the root canal.

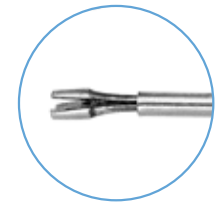
### Technique:

The identified fragment of a broken endodontic instrument should first of all be unblocked by use of an optional ultrasound system equipped with the right endings. It concerns both broken endodontic instruments blocked in empty root canals ,and fragments of instruments blocked by old material filling a root canal ( e.g. cement or Endomethason ). Only some loose fragments of broken endodontic instruments can be removed by use of micro tweezers. Releasing the blocked fragment of a broken endodontic instrument , or an attempt to pull it out by force from the old filling material , without the use of ultrasounds , may result in the micro tweezers being irreparably damaged.



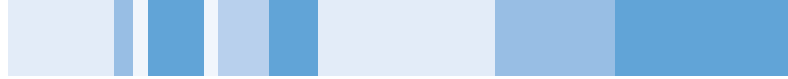
SP-118-180-PMK

170mm



SP-018-180-PMK

170 mm



## SP-118-180-PMK Endodontic micro forceps

Total length :170 mm

Length of tips: 30 mm

Length of serrated working part: 5mm

Diameter of working part with tips closed : 1,2 mm

Strength of pressure : 200 ÷ 300 G

### Parameters of usage:

- Thin and long tips bent at 90° against the handle enable the instrument to be introduced deep into the root canal as well as they ensure comfortable work under a microscope without covering the field of vision.
- The working part with three handles and serrated jaws at the top enables an unusually strong and firm seizing of a broken instrument inside the root canal in any configuration – the removed instrument positioned centrally between the serrated edges of the three jaws ,or on the side in the slit between two jaws.
- Three-part jaws of the micro forceps are tightened thanks to a sliding over tube ,yet not like a lever , thanks to which the opening angle is minimal , and the instrument itself can be introduced deep into a root canal under a microscope . This mechanism also eliminates the adverse phenomenon of tips " passing" each other.
- Springs in the handle allow for automatic opening of forceps when pressure is released.
- The ergonomic and comfortable handle is carved to stabilize the grip.

## SP-018-180-PMK Endodontic micro forceps

Total length :170 mm

Length of tips: 30 mm

Length of serrated working part: 5mm

Diameter of working part with tips closed : 0,8 mm

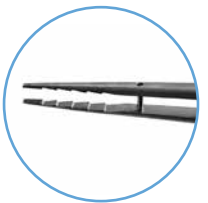
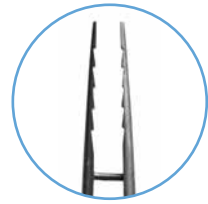
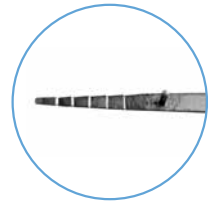
Strength of pressure : 200 ÷ 300 G

### Application:

For removing from root canals fragments of broken endodontic instruments after their earlier release by use of ultrasound systems , or in case of soft materials ( e.g. Endomethason ) for direct removing of broken fragments without the use of ultrasounds . Thanks to a suitably shaped profile , very thin and long serrated working part , this instrument enables the surgeon to reach the broken endodontic instruments at considerable depths , to firmly seize the broken fragments and to remove them from the root canal.


### Technique:

The identified fragment of a broken endodontic instrument must first of all be unblocked by use of any optional ultrasound system equipped with the suitable endings. It concerns both broken endodontic instruments blocked in empty root canals , and fragments of instruments immobilized by hard material filling a root canal ( e.g. cement ). This micro instrument takes advantage of a unique concept of three moving jaws blocked by a tube sliding over . This allows for an extremely strong and firm seizing of the broken instrument. The strength with which a broken instrument can be removed from a root canal is so big that in case of soft materials ( e.g. Endomethason ) it is possible to remove the instrument without the initial application of ultrasounds. A broken fragment of an instrument can be seized centrally between three moving jaws , or on the side in a slit between jaws.

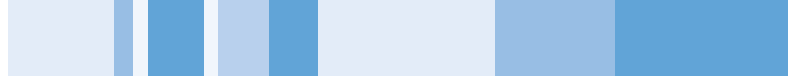


**SP-118-125-ZMK**

Forceps for removing  
broken instruments

 125 mm





## Endodontic forceps

Total length : 125 mm

Total length of tips : 20 mm

Length of serrated working part : 5 mm

Diameter of working part with tips closed : 0,8 mm

Strength of pressure : 150 ÷ 200 G

### Parameters of use :

- Thin and long tips bent at 60° against the handle enable the instrument to be introduced deep into the root canal as well as ensure comfortable work under a microscope without covering the operation area.
- The pointed and serrated working part enables a firm seizing of a broken instrument, or a silver pin in the root canal. The forceps have been equipped with a special set of serrated edges positioned at an acute angle to the inside of the instrument, instead of at the right angle like it is in classically serrated parts.
- The long pivot of the forceps is double bent and has got the shape of letter S, to enable the surgeon to move the instrument round the corner of the mouth and to freely handle the instrument under the microscope without covering the field of vision.
- The spring in the handle allows for automatic opening of the forceps when pressure is released.
- The ergonomic and comfortable handle is all covered with a material which is possible to be sterilized and is flexible when touched.

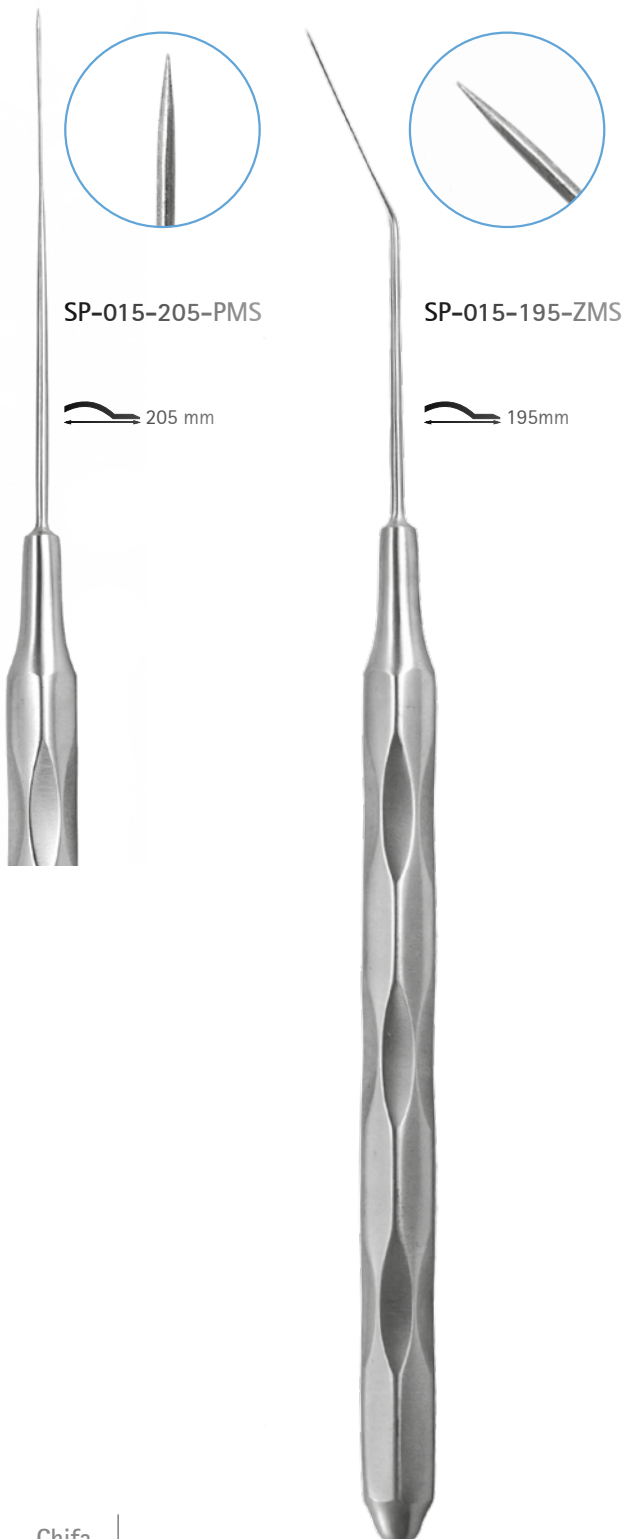
### Application:

For removing from root canals fragments of broken endodontic instruments after first being unblocked by use of ultrasound systems, and for removing silver pins. Thanks to a suitably shaped profile, and its unusually thin and long serrated working part, the instrument enables a surgeon to reach the broken

fragments of endodontic instruments at considerable depths, to seize them and to remove them from a root canal. The special arrangement of serrated edges directed to the inside and a bigger thickness of the tips make it possible for the instrument to remove not cemented silver pins without the use of ultrasounds. Silver pins are relatively soft, which significantly limits the application of ultrasounds for their removing (a high risk of breaking a part of a pin where the ultrasound ending is touching).

### Technique:

The identified fragment of a broken endodontic instrument must first of all be unblocked by use of any optional ultrasound system equipped with the suitable endings. It concerns both broken endodontic instruments blocked in root canals, and fragments of instruments immobilized by old material filling a root canal (e.g. cement or Endomethason). Due to a bigger strength of pressure than in case of micro tweezers and the special arrangement of serrated parts which get blocked in the soft silver alloy, this instrument is especially recommended for removing silver pins.



### Endodontic micro probe – bent and straight

Total length :205 mm (straight) , 195 mm (bent)

Length of working part : 30 mm

Diameter of working part : 0,5 mm

#### Parameters of use:

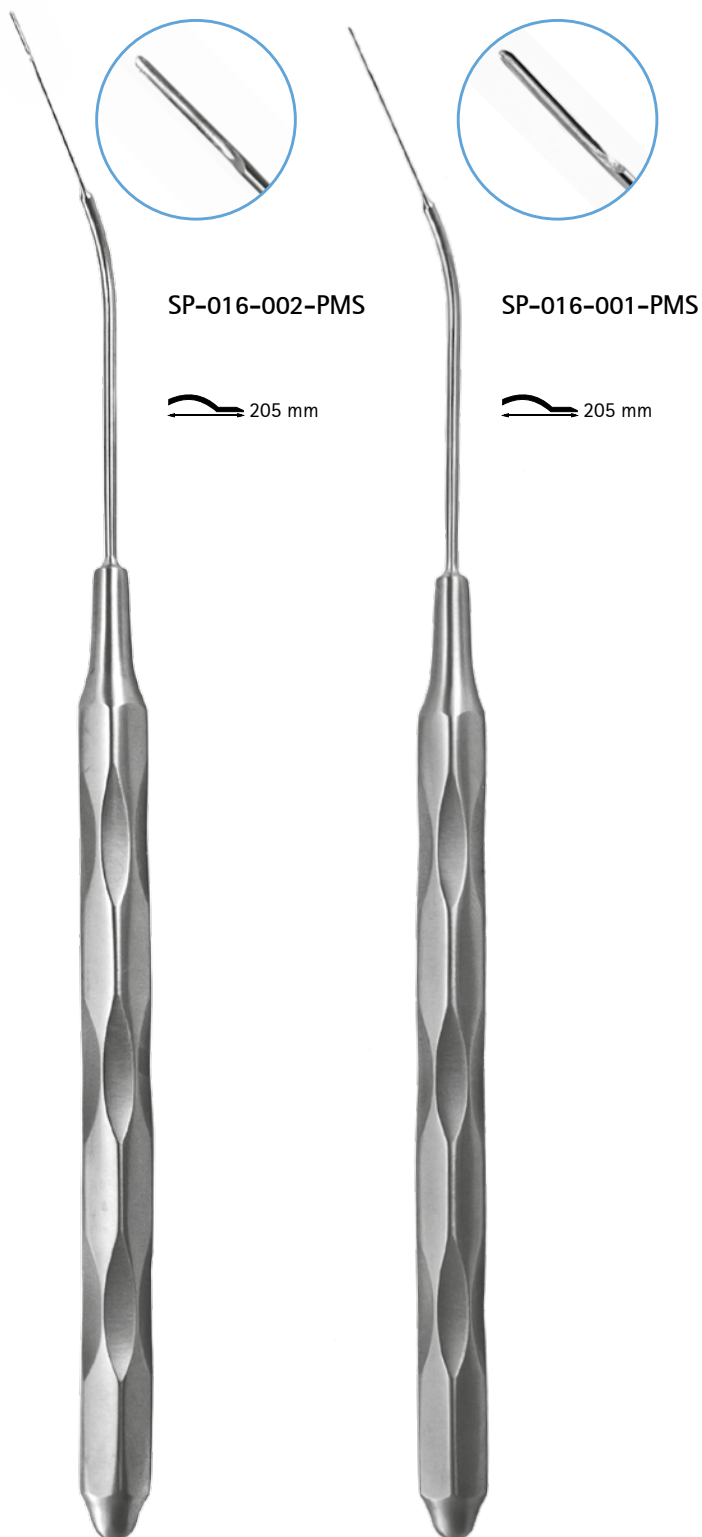
- Stainless steel with plastic properties which enable to bend the micro probe to fit the shape of a root canal.
- The long and sharply pointed working part allows for the micro probe to be introduced deep inside the root canal without covering the field of vision in the microscope.
- The light and ergonomic anti sliding handle of a large diameter with shaped profiles of cuts to facilitate a stable grip of the instrument.

#### Application:

For the identification of access into root canals, and to establish the position and the blocking force of broken endodontic instruments ,as well as of silver pins in root canals.

#### Technique:

In order to ensure free access to the operational field under the microscope, the probe has to be suitably bent - e.g. by use of a special bending tool for canulas with liquid gutarka or by use of an endodontic line , by Dentspy Maileffer equipped with two pins used to bend endodontic instruments - to fit the shape of the root canal.



## Endodontic inwards and outwards micro chisel

Total length 205 mm

Length of working part : 7 mm

Width of working part : 0,6 mm

### Parameters of use:

- Stainless steel with plastic properties which enable to bend the micro probe to fit the shape of a root canal.
- The long and sharply pointed working part allows for the micro probe to be introduced deep inside the root canal without covering the field of vision in the microscope.
- The working part in the shape of a micro chisel : semicircular cross section and a sharp cutting edge at the top.
- The light and ergonomic anti sliding handle of a large diameter with shaped profiles of cuts to facilitate a stable grip of the instrument.

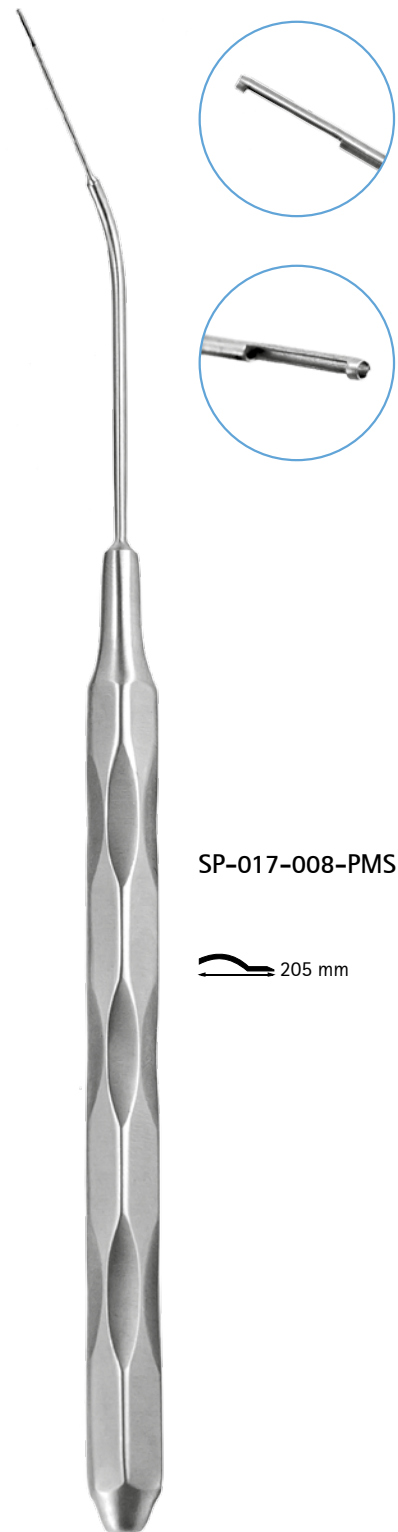
### Application:

For unblocking and releasing broken fragments of endodontic instruments or silver pins in root canals.

### Technique:

The working part of the micro chisel is introduced between the wall of a root canal and the broken and blocked fragment of an endodontic instrument. The micro chisel should be directed with its concave surface towards the removed instrument.

# CHIFA



SP-017-008-PMS

205 mm

## Endodontic micro lever

Total length : 205 mm

Length of working part : 7,5 mm

Diameter of working part ( rounded cutting edge ) : 0,6 mm

### Parameters of usage:

- Stainless steel with plastic properties enabling the micro lever to be bent to fit the shape of a root canal.
- The long and thin working part allows for the micro lever to be introduced deep inside a root canal without covering the field of vision under the microscope .
- The working part in the shape of a half open tube with a sharp cutting edge at the top. The rounded cutting edge about 1mm further changes into a cone which becomes narrower towards the handle and which is responsible for blocking the released fragment of a broken endodontic instrument. Above the cone there is a small window , through which it is possible to watch under the microscope the depth of introducing the micro lever on the broken instrument.
- The half open tube enables the working part to be cleaned with mandryl to remove retention material ( depending on the expected bonding power : sticky wax , or glassiomic cement ) . It enables the broken instrument to be blocked with an endodontic micro probe or to introduce a piece of thin endodontic wire in the shape of a loop when using the method "lasso".
- The light , ergonomic and anti sliding handle of a large diameter with shaped to profile cuts facilitating a stable grip of the instrument.

For removing fragments of broken endodontic instruments from root canals after first being unblocked by use of ultrasound systems.

### Technique:

A retention material is applied onto the working part of the micro lever on the side of the cutting edge ( the top of the instrument ) . Depending on the expected bonding power it is possible to use sticky wax or glassiomic cement. Having been so prepared, the working part is put on the broken, first unblocked , fragment of an endodontic instrument . After waiting for the period of bonding time of glassiomic cement , or immediately, in case of using sticky wax ,the micro lever should be taken out of the root canal together with the seized broken instrument . After finishing the operation ( before sterilization ) , it is necessary to carefully clean the working part to remove the remains of the retention material ( e.g. ultrasound washer and mandryl ) . Alternatively, it is possible to use the wedging technique of the broken fragment of an endodontic instrument with a simultaneous use of the micro lever and the micro probe . It is also possible to use the "lasso" technique , which consists in seizing the broken instrument by tightening a loop of a piece of thin orthodontic wire.

### Application:



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