
an **introduction** to the
preservation and **restoration**
of **tooth structure**

prepared and edited by
Dr. Graham J Mount

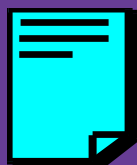
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Preservation and restoration of tooth structure

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Chapter 1 : Tooth structure

Authors : WR Hume, GC Townsend

It is essential to have a good understanding of tooth structure in order to understand both the nature of the defects and the diseases that can occur and to then make rational decisions on their prevention, treatment and repair.

Teeth are composed of four different tissues : enamel, dentine, dental pulp and cementum. Each of these is made up of structural elements found elsewhere in the body, but arranged in unique ways.

In the brief description that follows, a basic knowledge of the embryology and histology of the developing tooth is assumed. Readers interested in further information are referred to the reading list at the end of this chapter.

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Chapter 2 : The nature and progression of dental caries

Author : JW McIntyre

This chapter emphasises the modern concept of dental caries. For many years it was thought to be a one way, progressive demineralisation of the enamel crystallites followed by degeneration of dentine, leading to ‘cavity’ formation. Theories concerning the actual cause of the degradation have varied but it has always been regarded as primarily of bacterial origin.

In the present concept, the emphasis is on a demineralisation/remineralisation cycle of the chemical reaction that occur on tooth structure. This model assists the dentist to guide the patient to independently maintain a high level of control over the disease.

This approach is not inconsistent with models which focus on the concept of caries as an infectious disease. However, the “demin/remin” approach provides greater emphasis on the aspect of enhancement of the natural host protective factors rather than simply aiming to control bacterial plaque infection.

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Chapter 3 : Management and control of caries

Author : JW McIntyre

Using an understanding of the “demin/remin” cycle discussed in the previous chapter, patients can be advised on strategies to prevent or reverse the problem. It is necessary to determine for each patient which is the dominant factor or factors causing the disease. It could be a highly cariogenic diet, poor plaque control or a serious depletion of natural protective factors causing an otherwise acceptable diet to result in caries.

Irrespective of the cause, it will be necessary first to educate the patient and then to gain control by either :

- reducing the demineralisation process
- enhancing the protective factors

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Chapter 4 : Non-carious changes to tooth crowns

Authors : JA Kaidonis, LG Richards, GC Townsend

Apart from dental caries and iatrogenic modification such as cavity preparation by a dentist, the main processes that can change the morphology of a tooth during its lifetime are abrasion, attrition, erosion and fracture. Modern dentistry has evolved into an art and science aimed at restoring the broken down dentition to its newly-erupted morphology on the assumption that the unworn tooth has the ideal functional form.

A variety of geometric concepts of occlusion have evolved over the years and occlusal reconstruction has tended to follow formal guidelines regardless of the great variability that exists in the architecture of the stomatognathic system within, and between, populations as well as in the same individual over time. Fossil records, anthropological research and studies in comparative anatomy, show that the processes responsible for tooth reduction have acted on teeth since prehistoric times. It is therefore reasonable to recognise and accept tooth wear as a normal physiological process, no different from aging. Changes to masticatory structures as a consequence of wear often represent adaptation and not pathology. Only when the adaptive capabilities of the individual are surpassed will pathology become evident.

This broader concept modifies to some degree, the philosophy of clinical dentistry. By recognizing progressive change in tooth form as a physiologically dynamic process, premature and unnecessary dental intervention may be avoided.

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Chapter 5 : Disease dynamics of the dental pulp

Authors : WR Hume, WLK Massey

An understanding of the events which occur in the pulp following insults enables the dentist to both protect the tissue, and to provide appropriate treatment when it is damaged. Interceptive therapy may make the difference between pulp survival through healing and pulp death. Various therapies may also reduce or eliminate pulpal pain.

In very general terms, the pulp responds to damage in ways similar to the other connective tissues, i.e. it can undergo various forms of inflammation, it can heal, or it can die. However, the pulp is unique among connective tissues in that it is entirely enclosed in dentine and it has processes which extend throughout the dentine so that pulp and the dentine should be regarded as a single entity.

Any trauma or therapy applied to the dentine should be regarded as trauma or therapy applied to the pulp. Insults, such as the caries process and tooth restoration, are unlike those found elsewhere in the body and will change the pulp. It is not surprising therefore, that some aspects of the pulp's response to insults are unique. Some therapies used to treat the dental pulp are also unique.

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Chapter 6 : Cutting instruments used in tooth restoration

Author : GJ Mount

The stage may be reached in the progression of dental caries where preventative therapy and remineralisation techniques will no longer be successful. In the presence of frank cavitation in both enamel and dentine, it will no longer be possible to eliminate plaque. It then becomes necessary to surgically debride the lesion and restore the tooth to original anatomy to prevent further breakdown. It is also necessary to shape and restore broken teeth and to remove defective restorations and replace them. Each of these actions requires cutting the tooth tissues or hard restorative materials.

Enamel is the hardest material in the body. Some restorative materials are of similar hardness and dentine is only a little softer. Rotating cutting instruments travelling at various speeds are the most effective means of reducing both tooth tissue and restorative material. However, refinement of cavity margins is not always possible with rotary instruments because of difficulties of access and final removal of softened carious dentine may be best carried out using a degree of tactile sense. Under these circumstances hand instruments remain useful.

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Chapter 7 : Basic principles for restorative dentistry

Author : GJ Mount

When a carious lesion has progressed to the point where it is not possible to remineralise, it is necessary to remove that part which is broken down and place a restorative material. This chapter discusses the basic principles which must be understood to ensure proper placement and retention of the various restorative materials available.

No material is universal, and correct selection is important to ensure longevity. In the following chapters these materials will be discussed in sufficient detail to enable the clinician to make a logical choice as to which material to select for each restorative problem.

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Chapter 7 : Basic principles for restorative dentistry

Author : GJ Mount

Adhesion

There are essentially two types of adhesion available in the oral cavity. A micro-technical union can be readily developed between composite resin and enamel simply by etching the enamel and applying an unfilled resin. A similar union has been attempted with dentine but there remains some doubt about the the longevity because of the presence of a positive dentine fluid flow.

A chemical union can be developed between the hard tooth tissues and glass ionomer materials because of the polyalkenoic acids which provide an ion exchange as well as a chemical union with collagen. A similar adhesion with composite resin is being explored.

Retention

In the absence of adhesion there needs to be some form of mechanical interlocking between the restoration and the tooth structure. This is generally provided through the use of ditches and grooves but occasionally self-threading pins may be indicated.

Protection

As the cavity enlarges the strength of the remaining tooth structure becomes compromised and it may be necessary to offer some degree of protection against the future development of cracks at the base of a cusp.

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Chapter 8 : Glass-ionomer materials

Authors : GJ Mount, RW Bryant

Glass-ionomer was developed in England and was first reported by Wilson and Kent in 1972. At that time it was recommended for the restoration of Class V abrasion lesions but the early versions lacked aesthetics and translucency. Subsequent development and research by the manufacturers has evolved a number of very useful materials in this class which can be used for a variety of functions in restorative dentistry including luting restorative materials, lining and basing cavities prior to the placement of other restorative materials as well as as an aesthetic translucent restoration in its own right. Since their development, glass-ionomers have increasingly become an essential part of the dentist's armamentarium for providing treatment that conserves tooth structure and assists in its remineralisation and at the same time maintains aesthetics.

Of the glass-ionomer's numerous attractive characteristics, the most significant are the ability to bond chemically to dentine and enamel through an ion exchange mechanism; long-term fluoride release without high solubility; and the ability to re-absorb fluoride ions and therefore act as a fluoride reservoir. The principal negative feature at this point, is susceptibility to brittle fracture - the material is unable to withstand undue occlusal/incisal loading.

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Chapter 8 : Glass-ionomer materials (continued)

Authors : GJ Mount, RW Bryant

Glass-ionomers

This section deals with the detail of the basic properties and clinical handling of glass-ionomer materials. It is essential that they be properly understood if they are to succeed in the oral environment. The basic rules are not difficult and they can be very useful as long as they are not subject to undue occlusal load.

Type II.2 restorative reinforced

The type II.2 glass-ionomers identify the reinforced restorative classification which to date have been represented mainly by the so-called cermets. These materials have a layer of fine silver particles sintered to the surface of the glass particles leading to an enhanced wear resistance. In future the new auto-cure cements with high physical properties are more likely to be used in situations where the cermets have been used in the past.

Lamination

Because the fracture resistance of the glass-ionomers is limited, it is necessary on occasion to support and protect them against undue occlusal load. Also, the ion exchange with dentine is at present the preferred method for providing adhesion between composite resin and dentine.

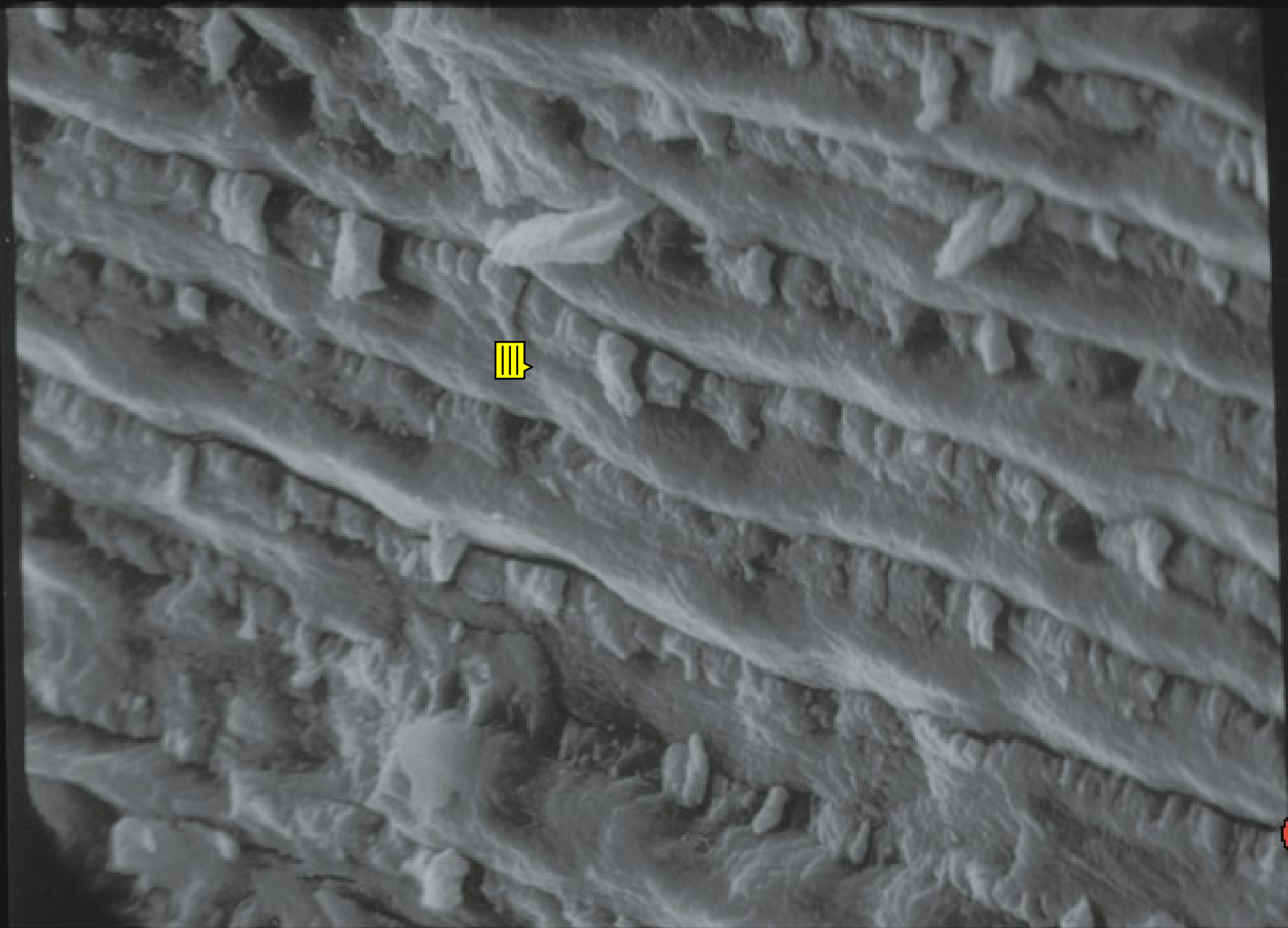
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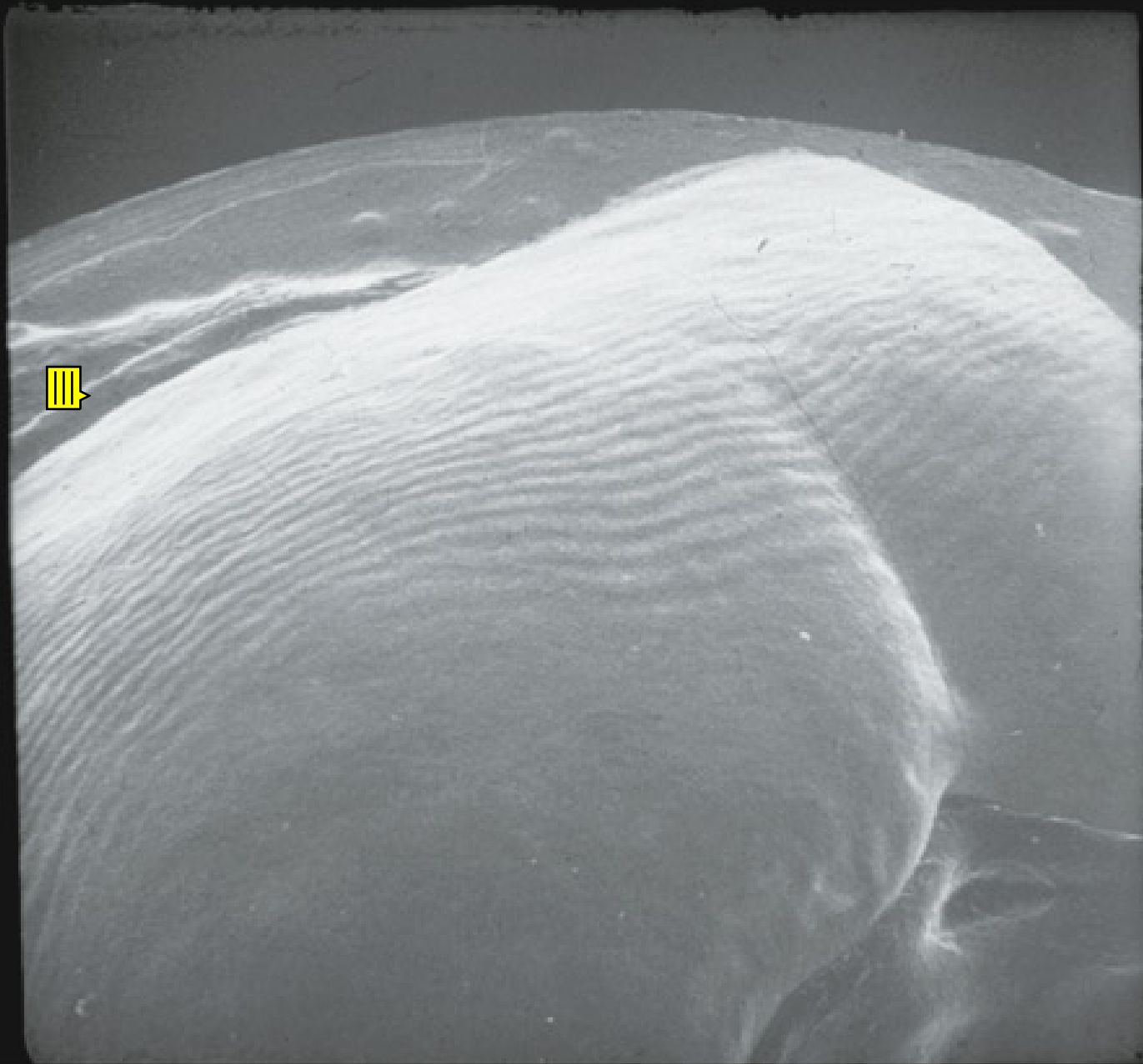


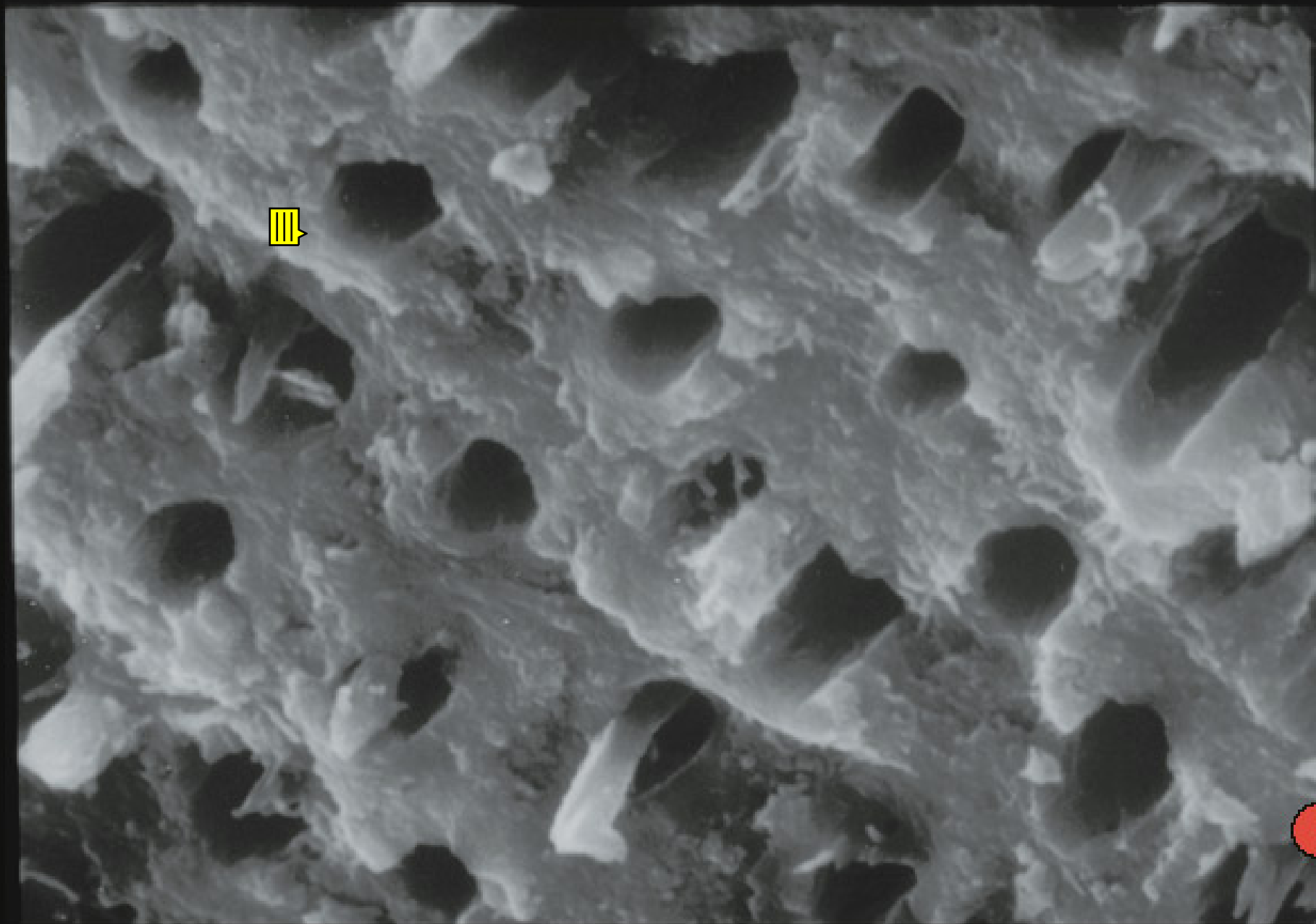




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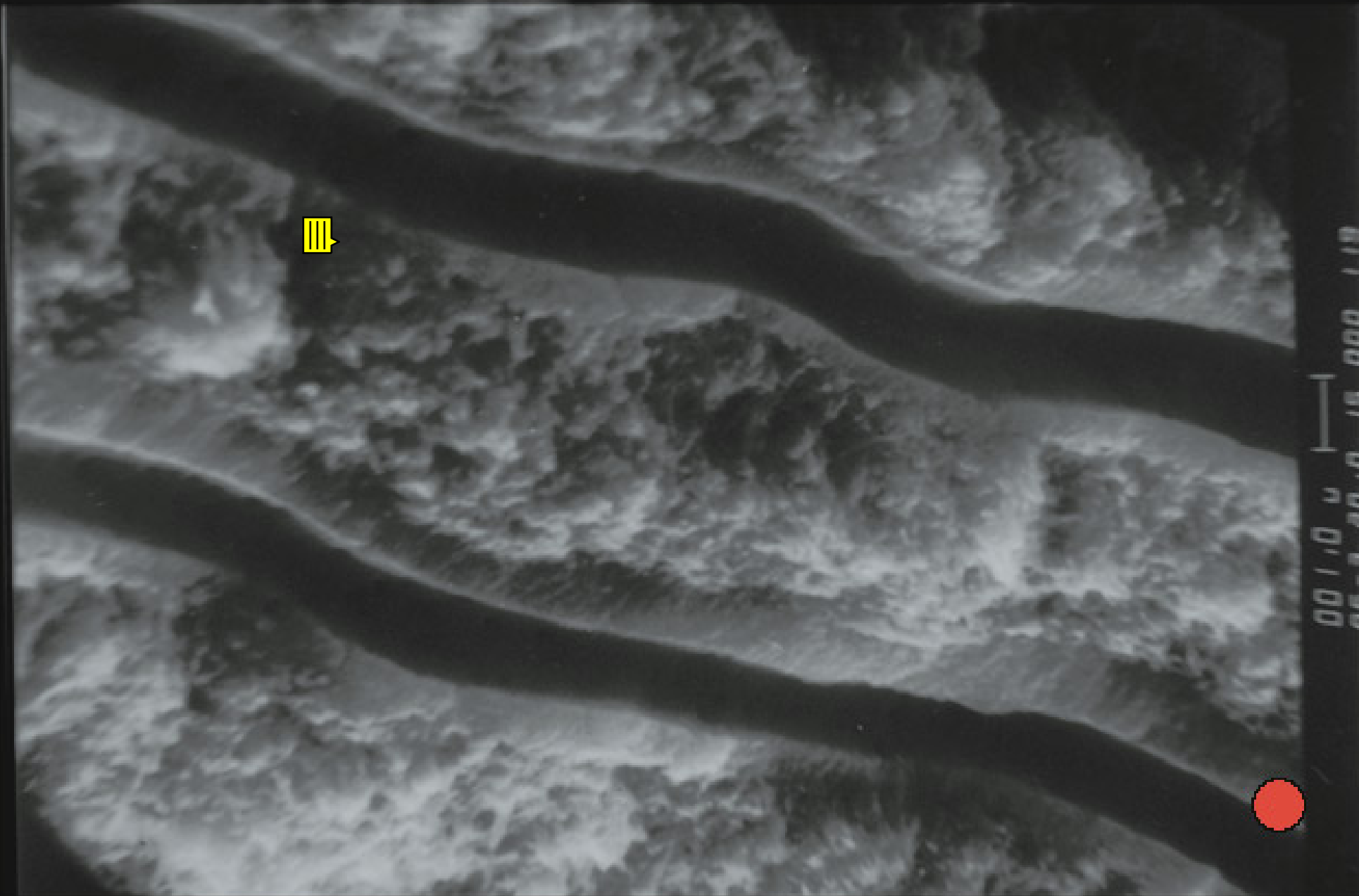




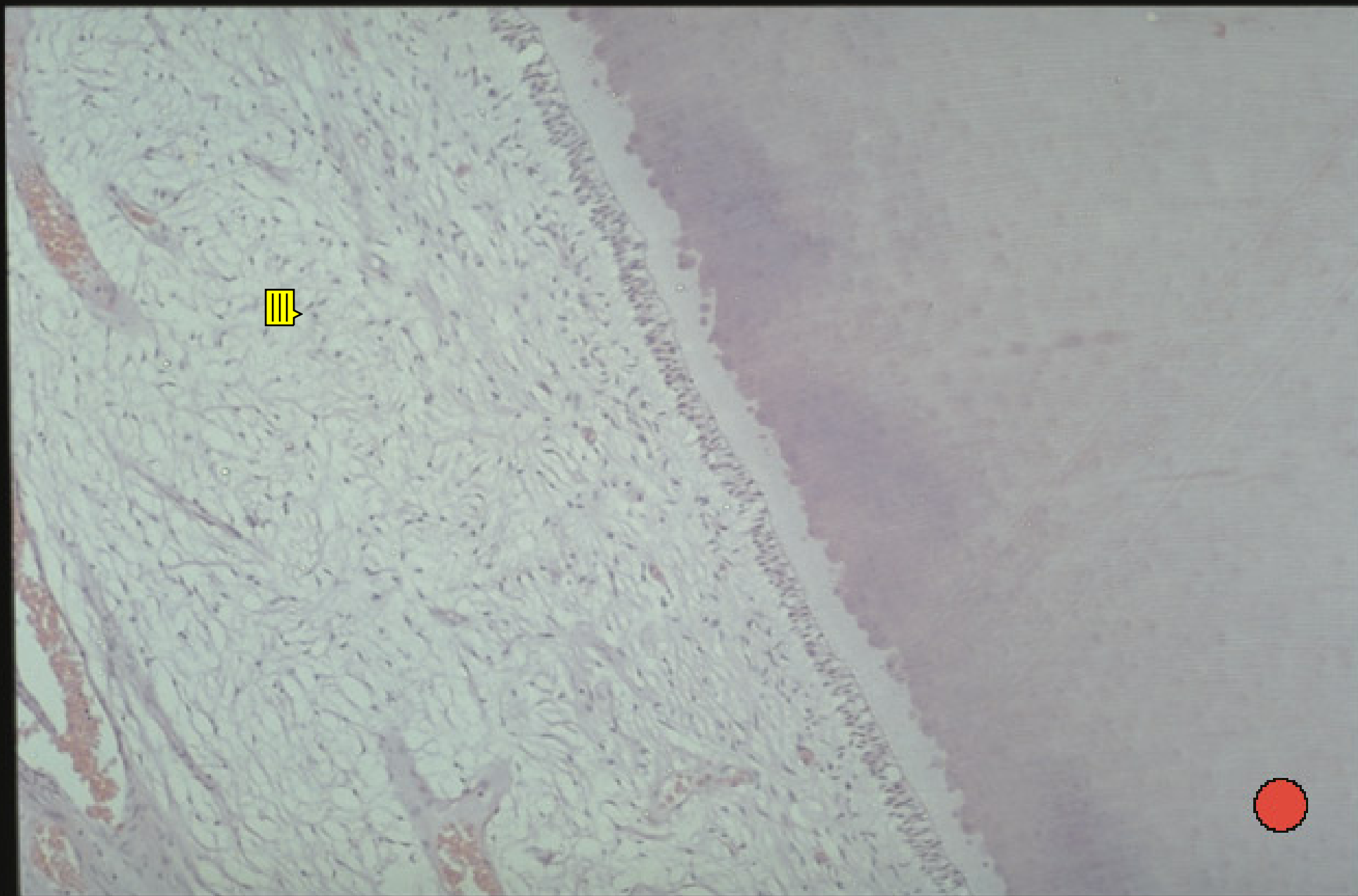


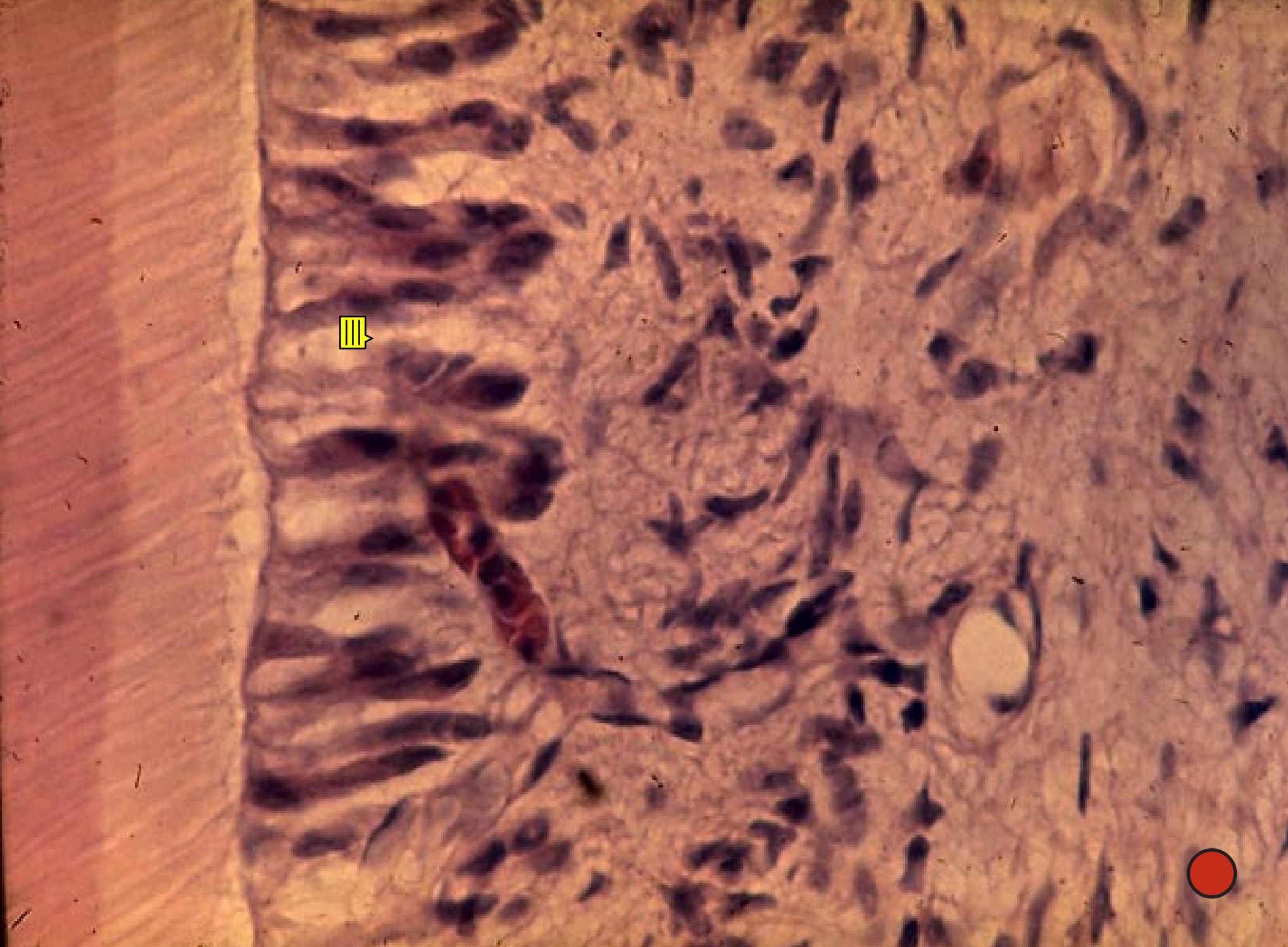
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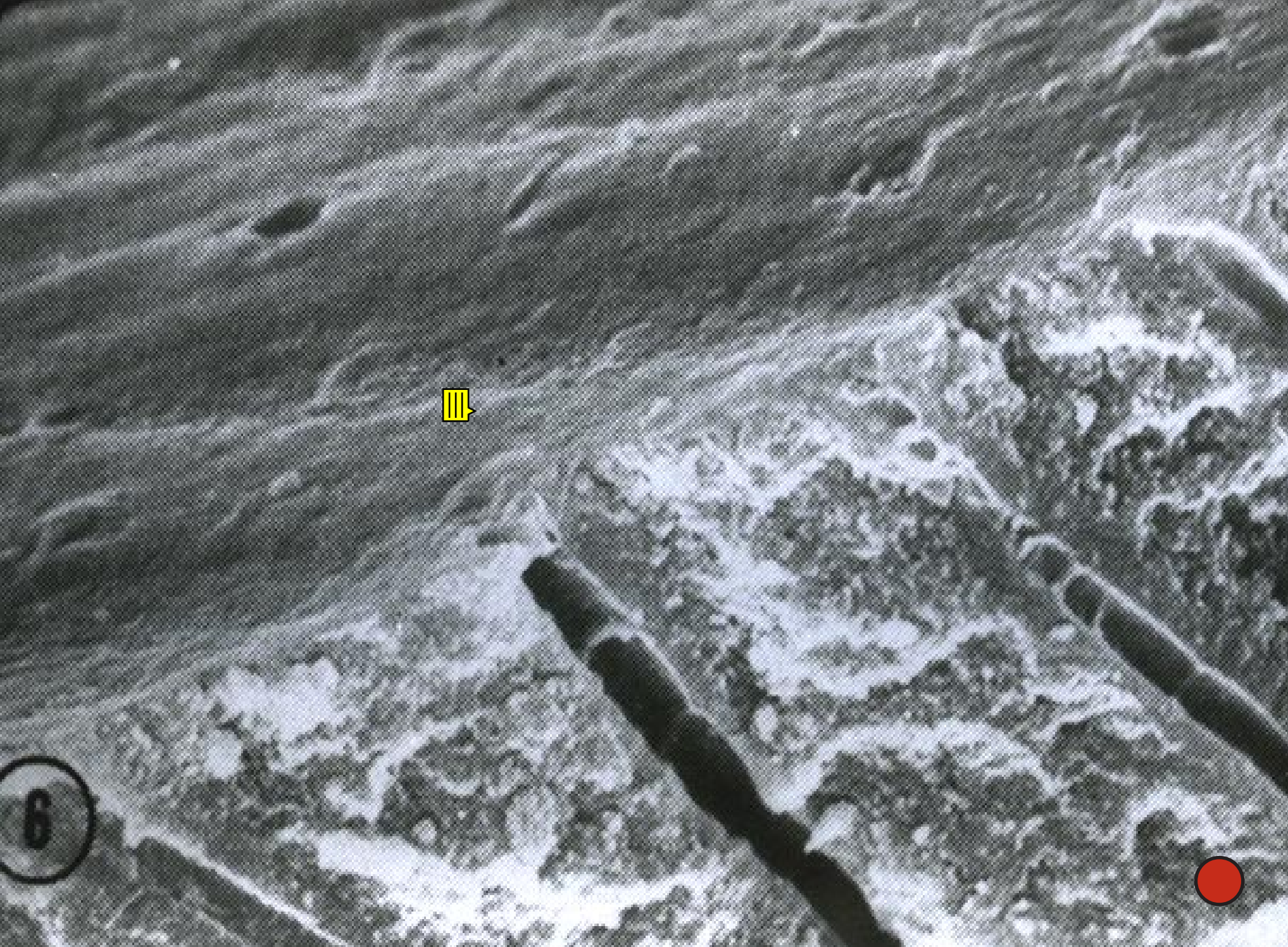


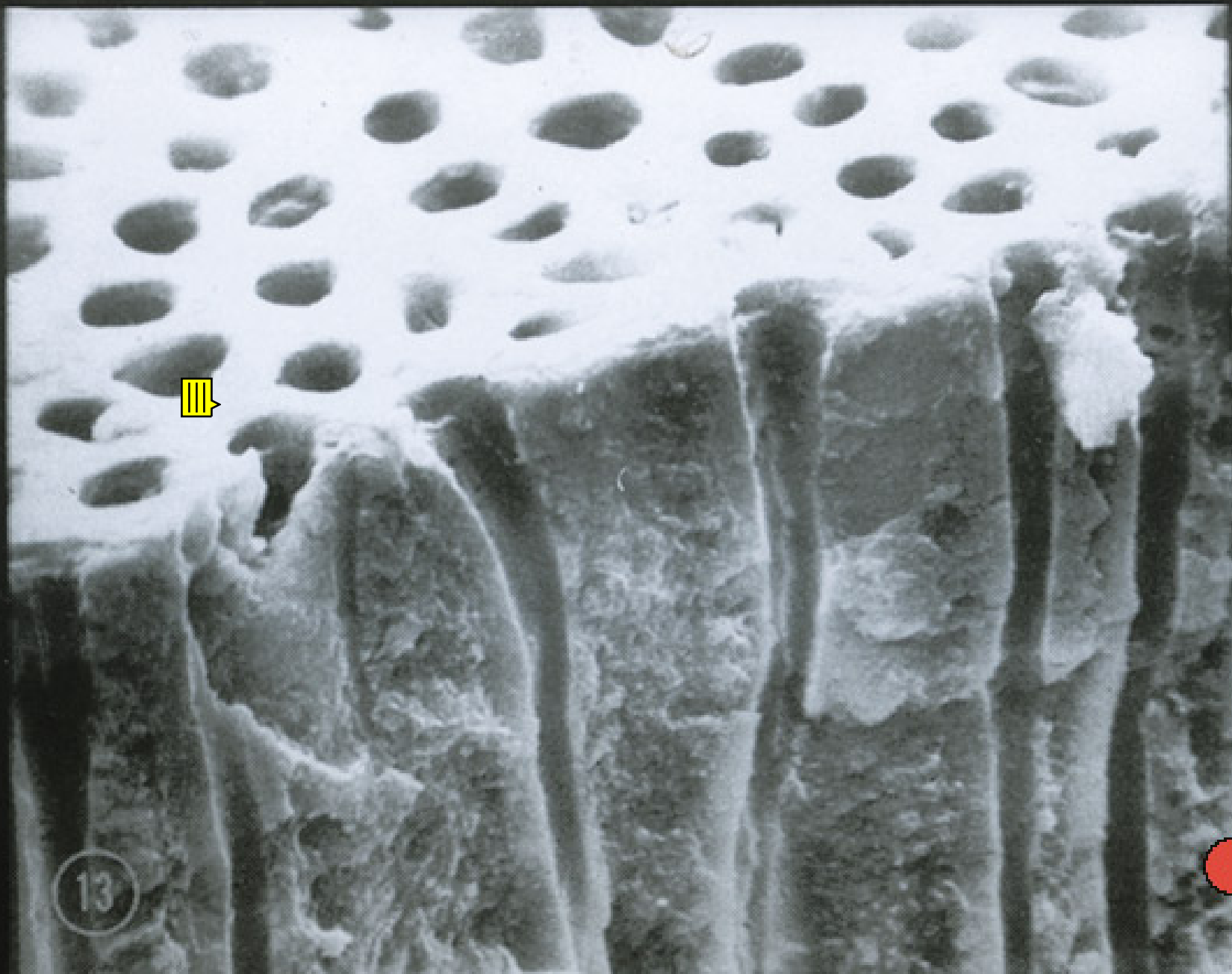


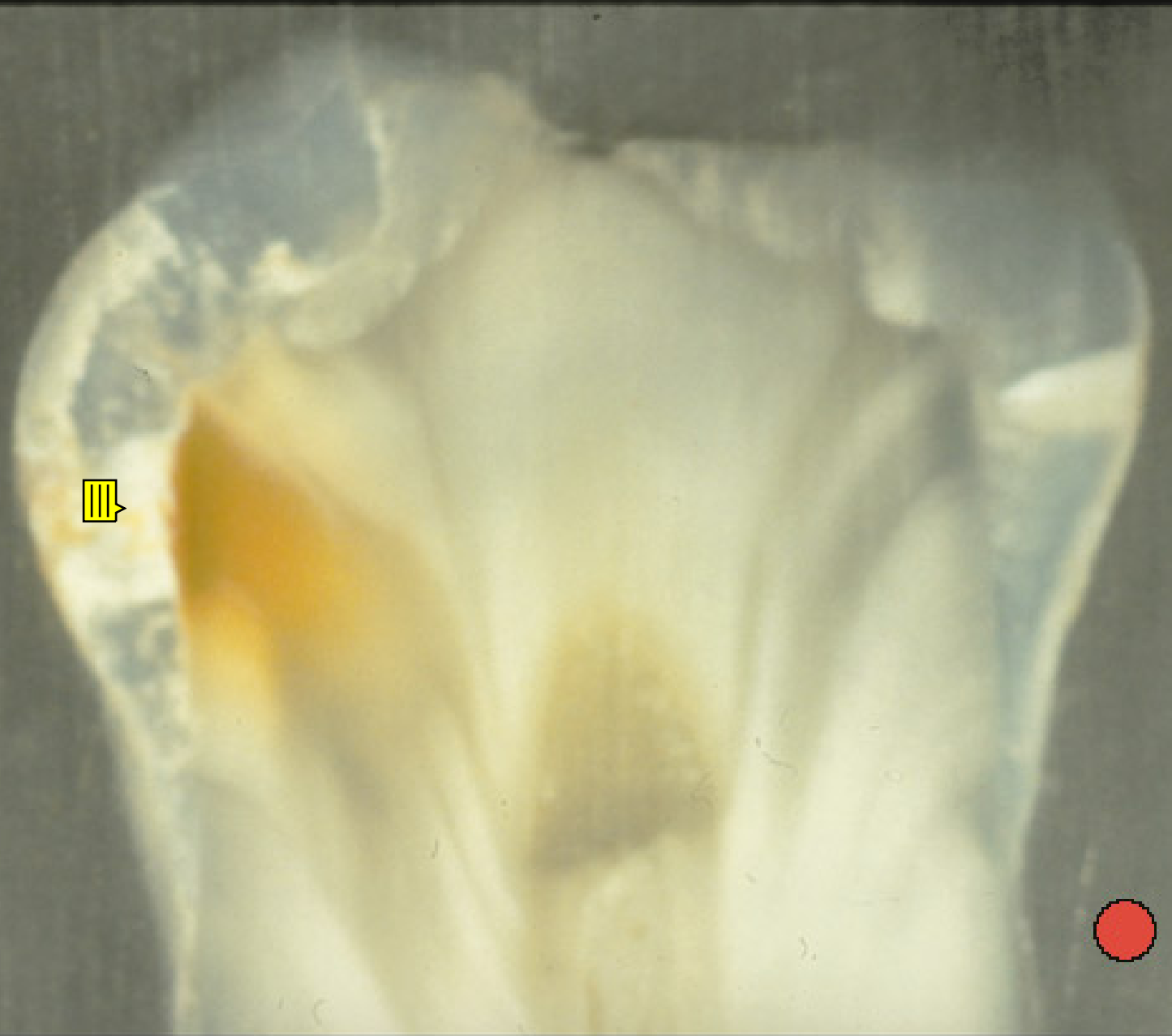
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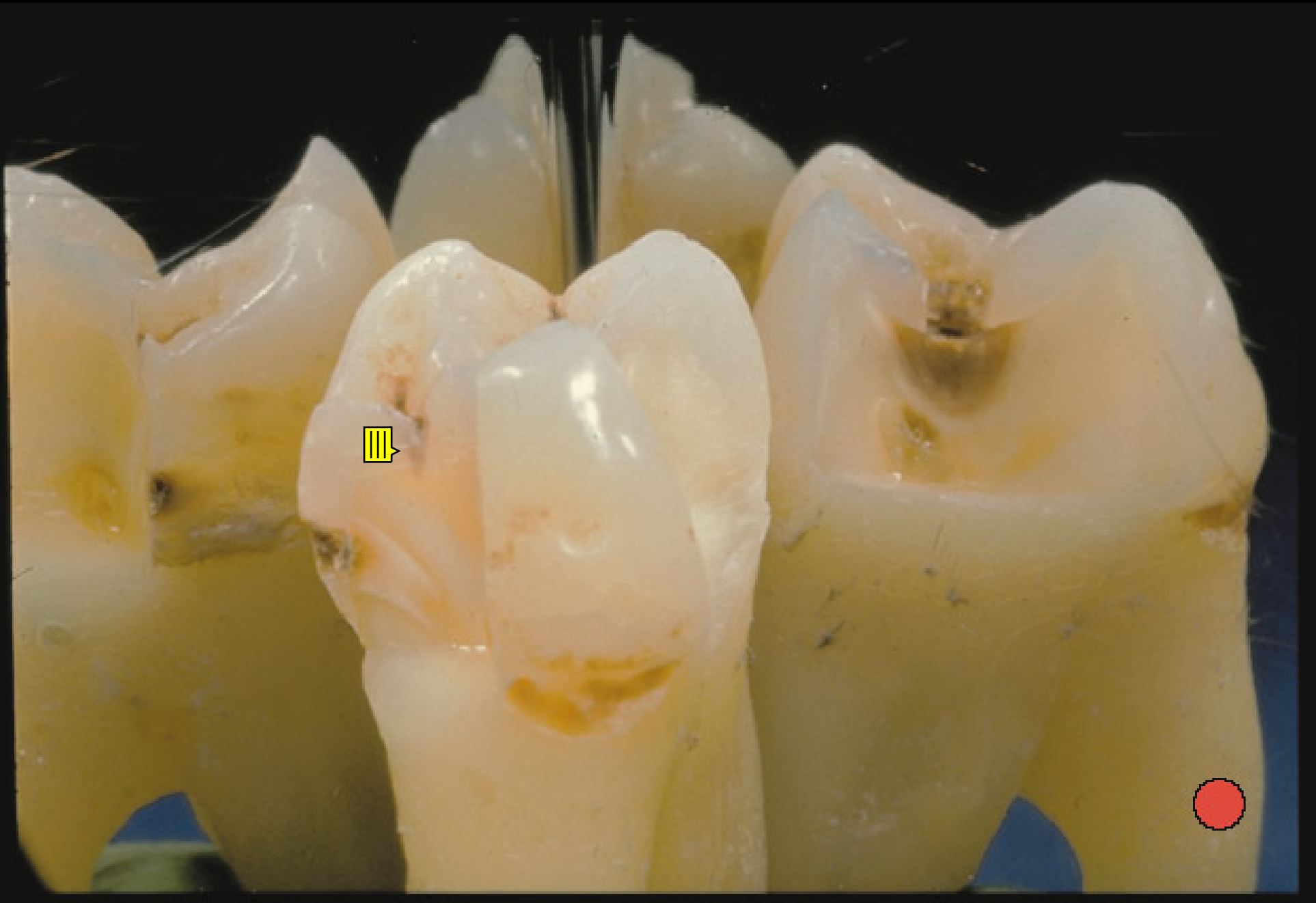




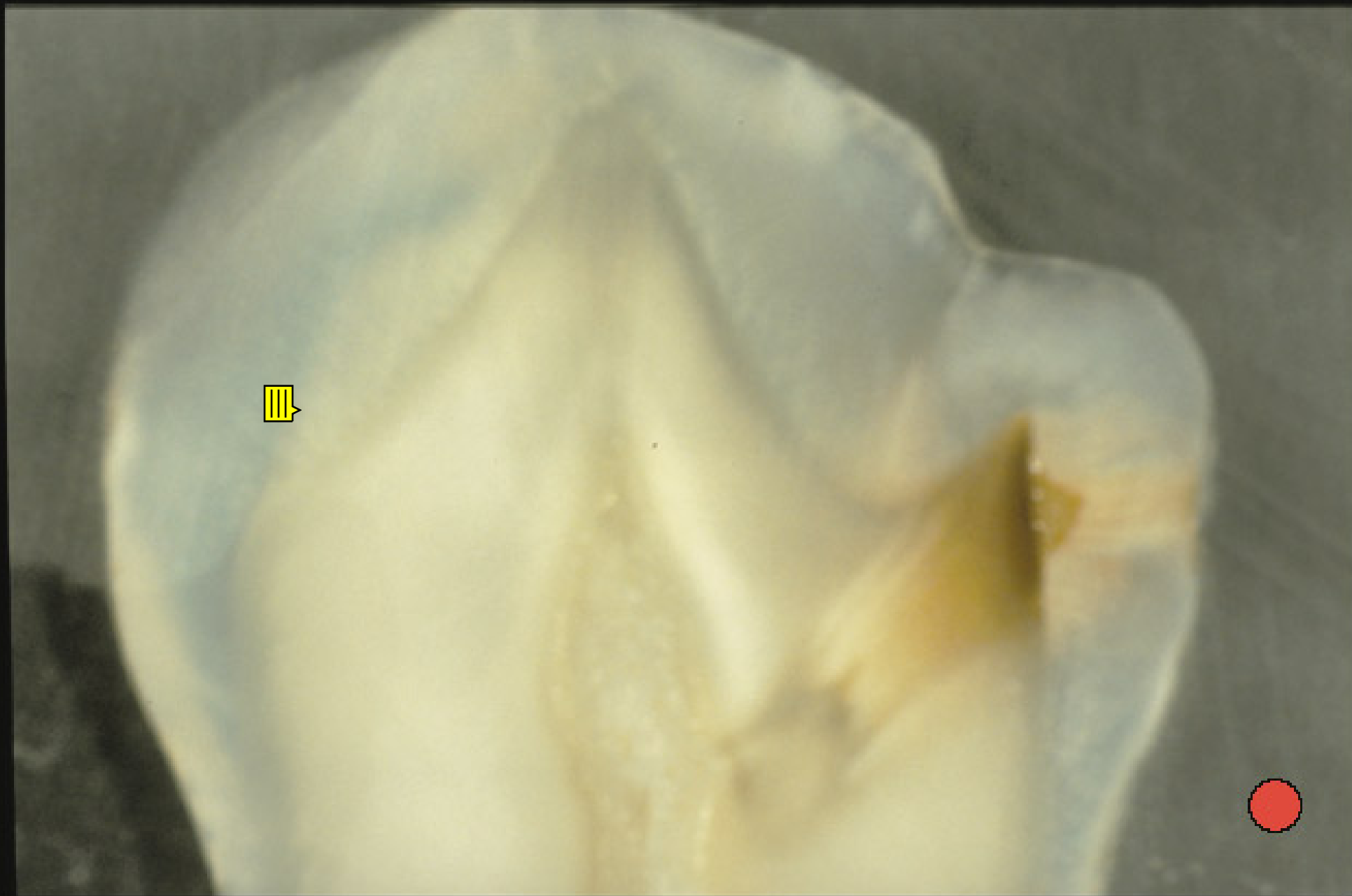














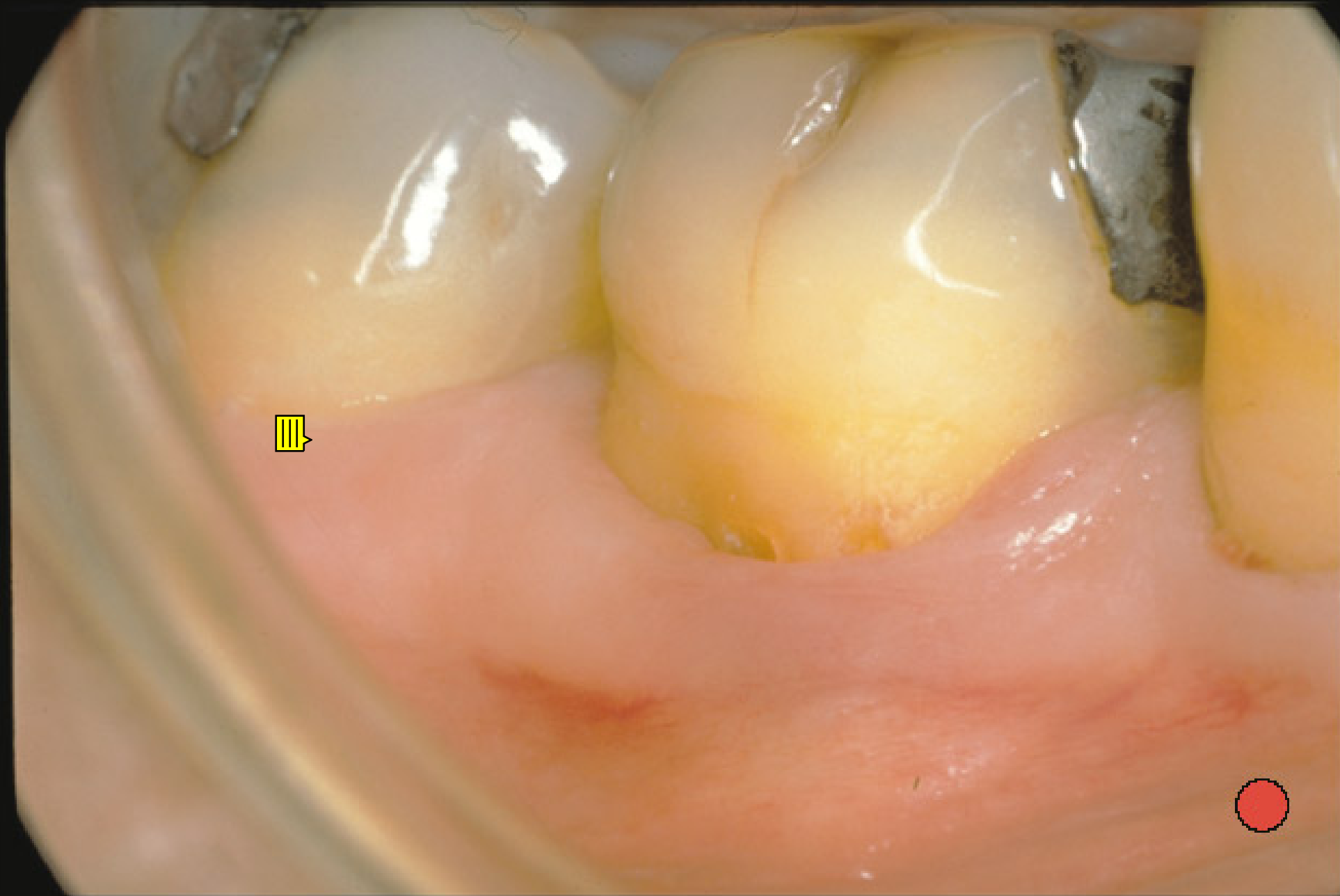




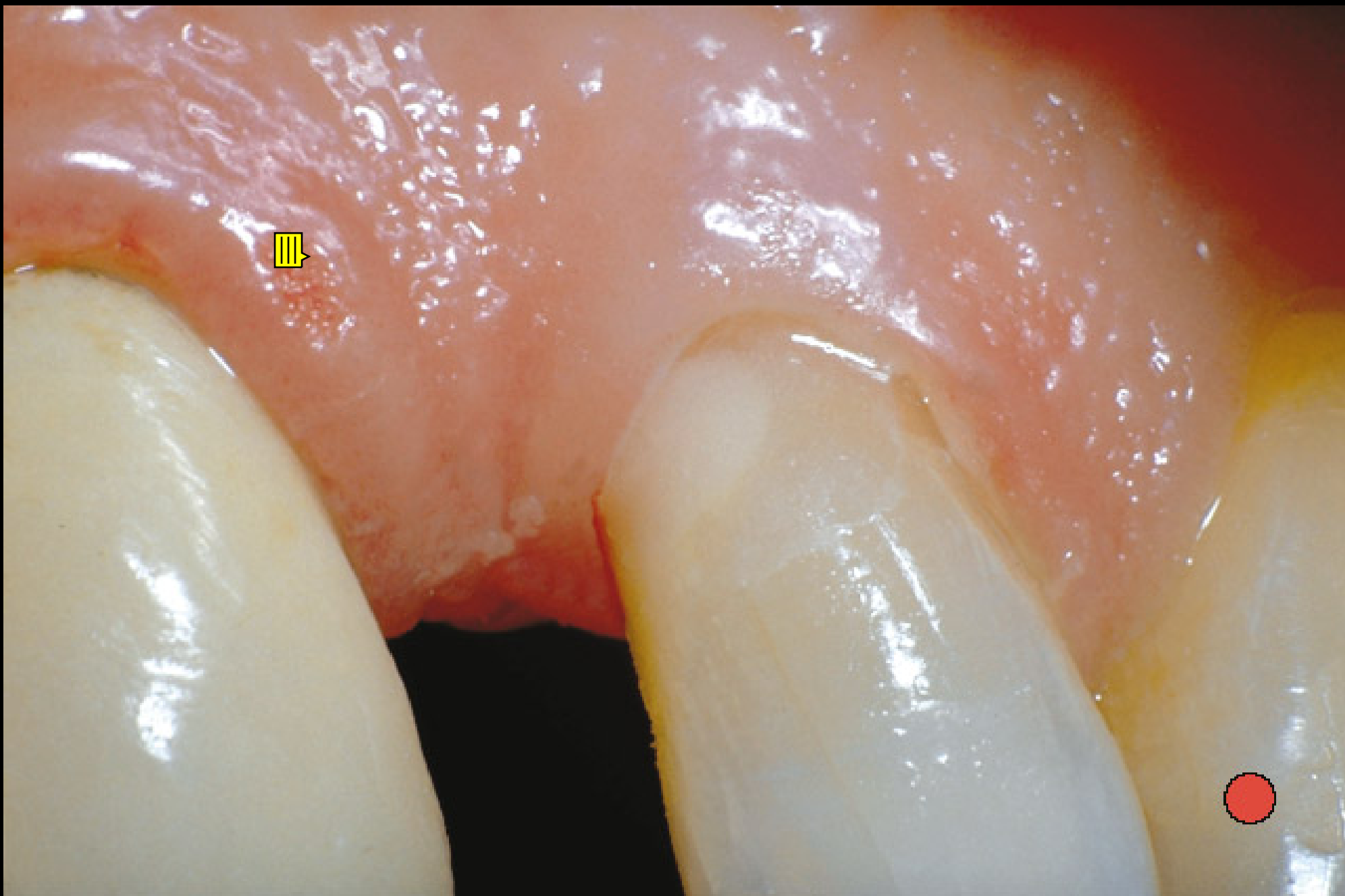


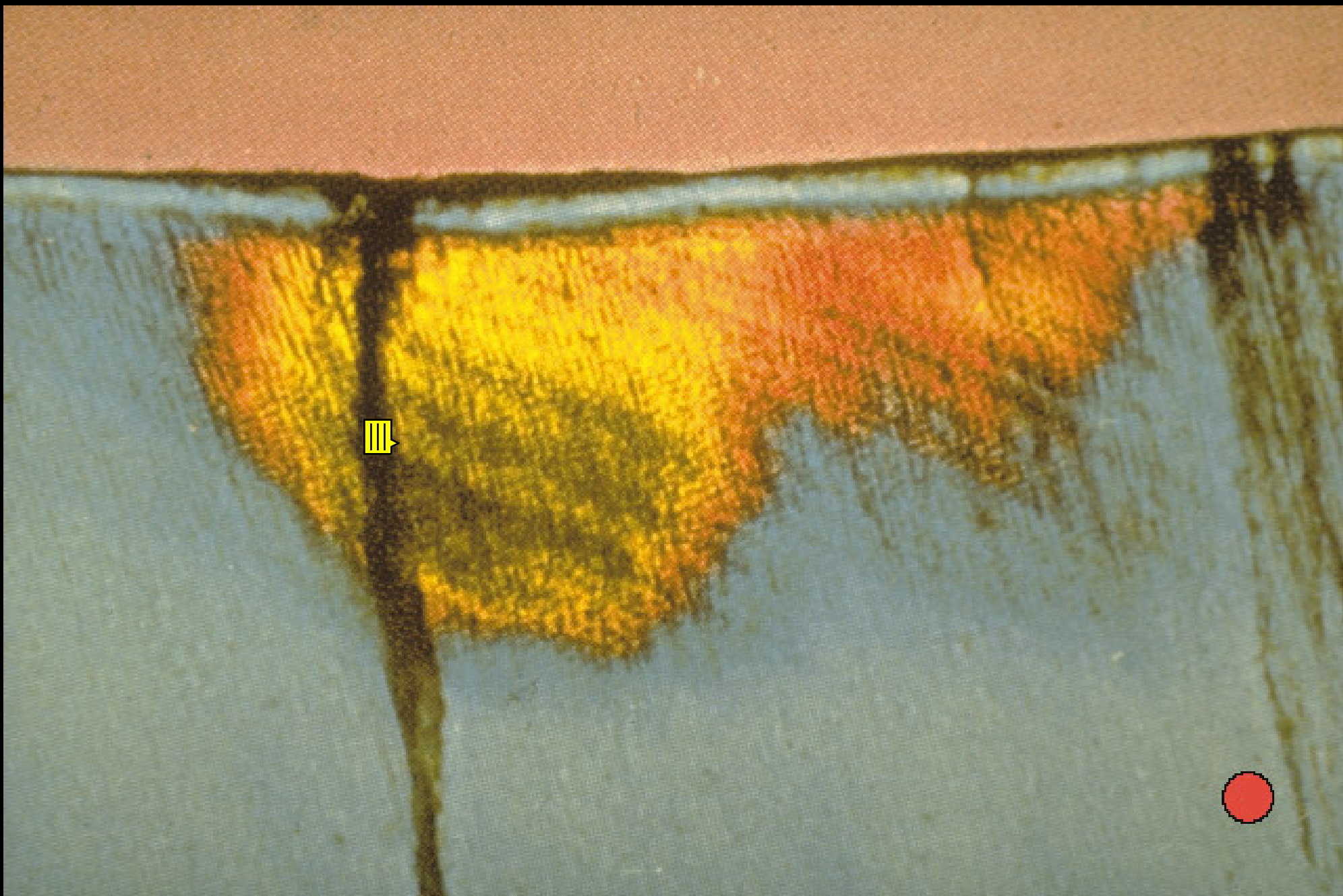


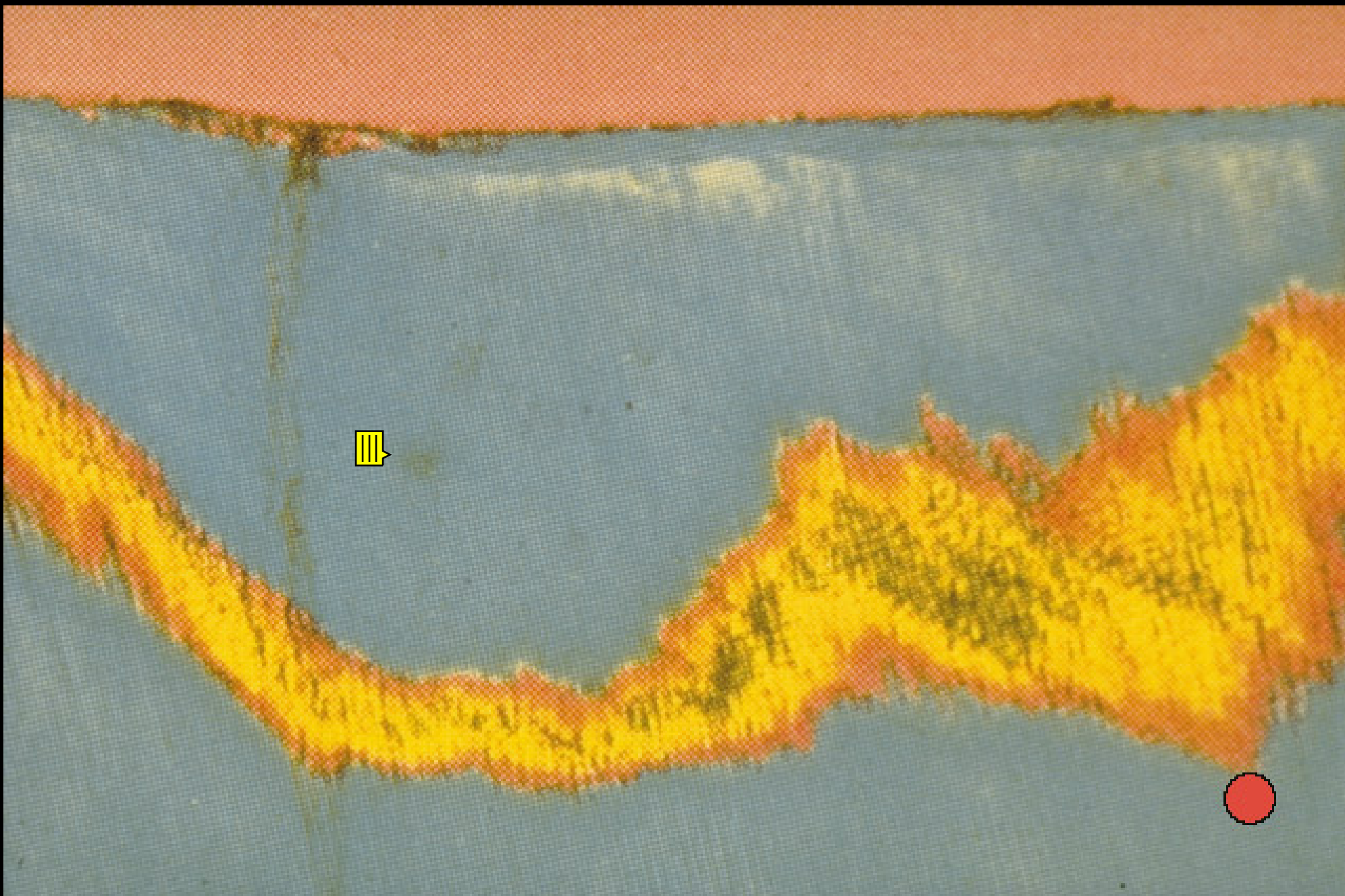


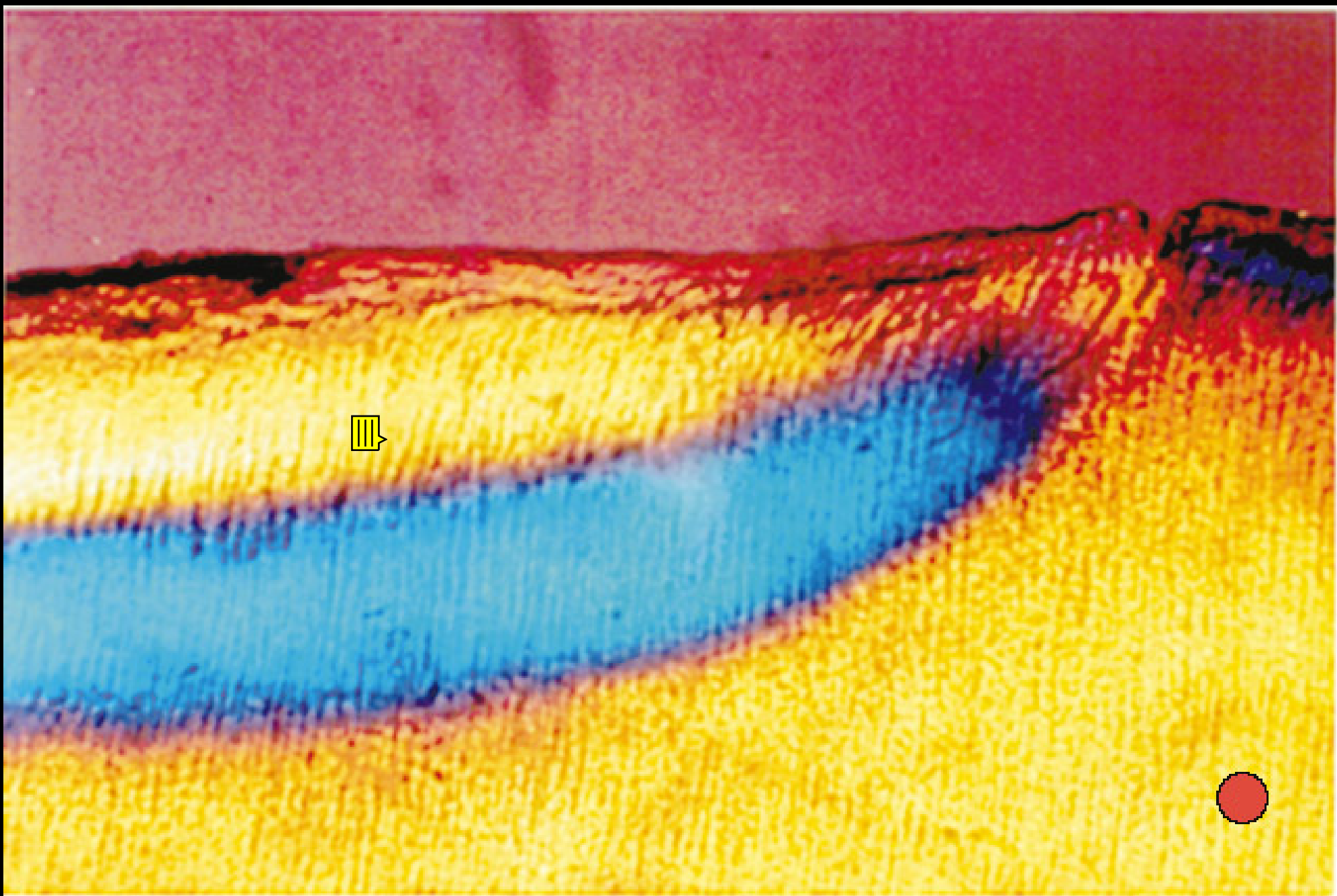


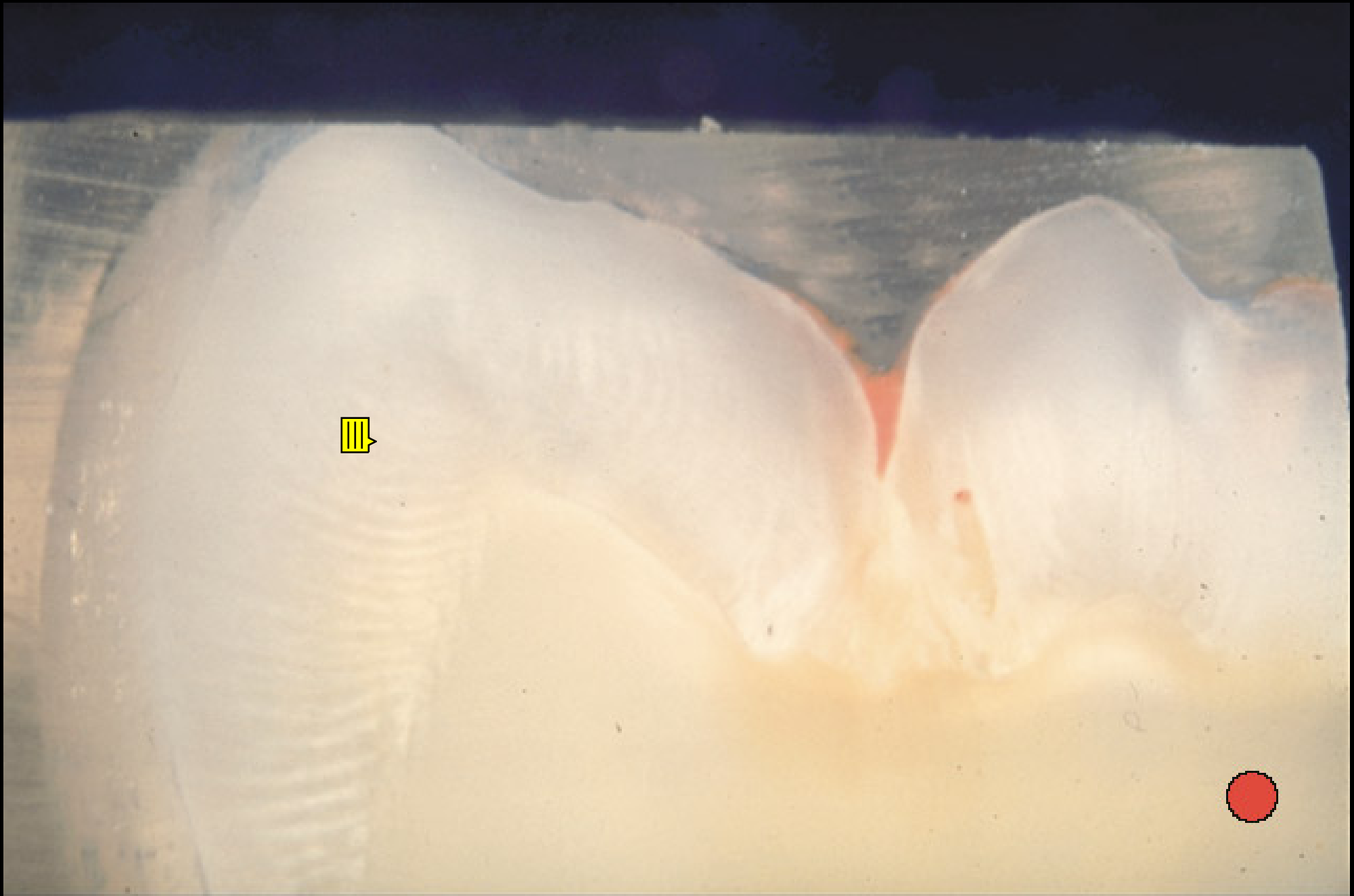


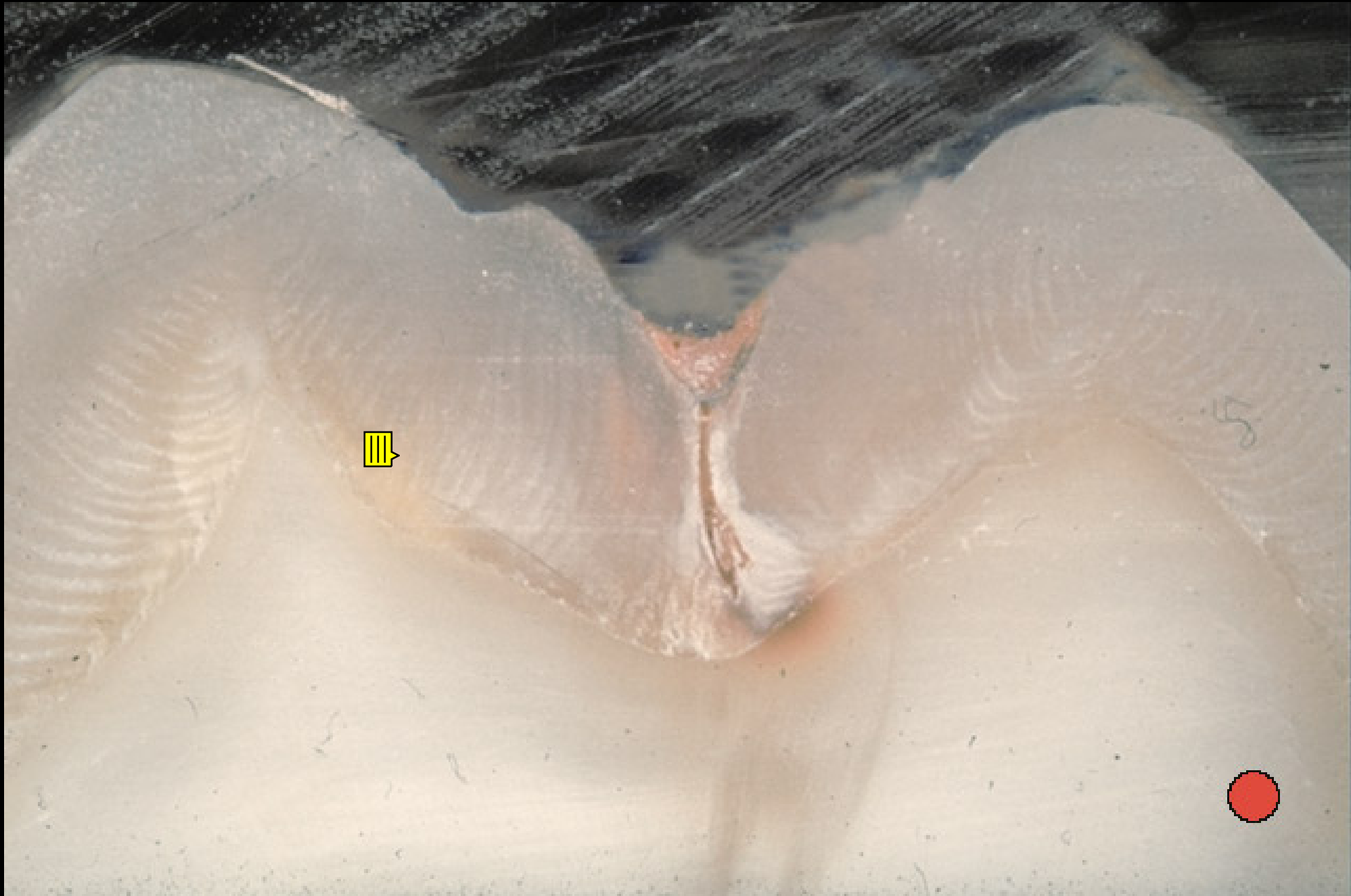


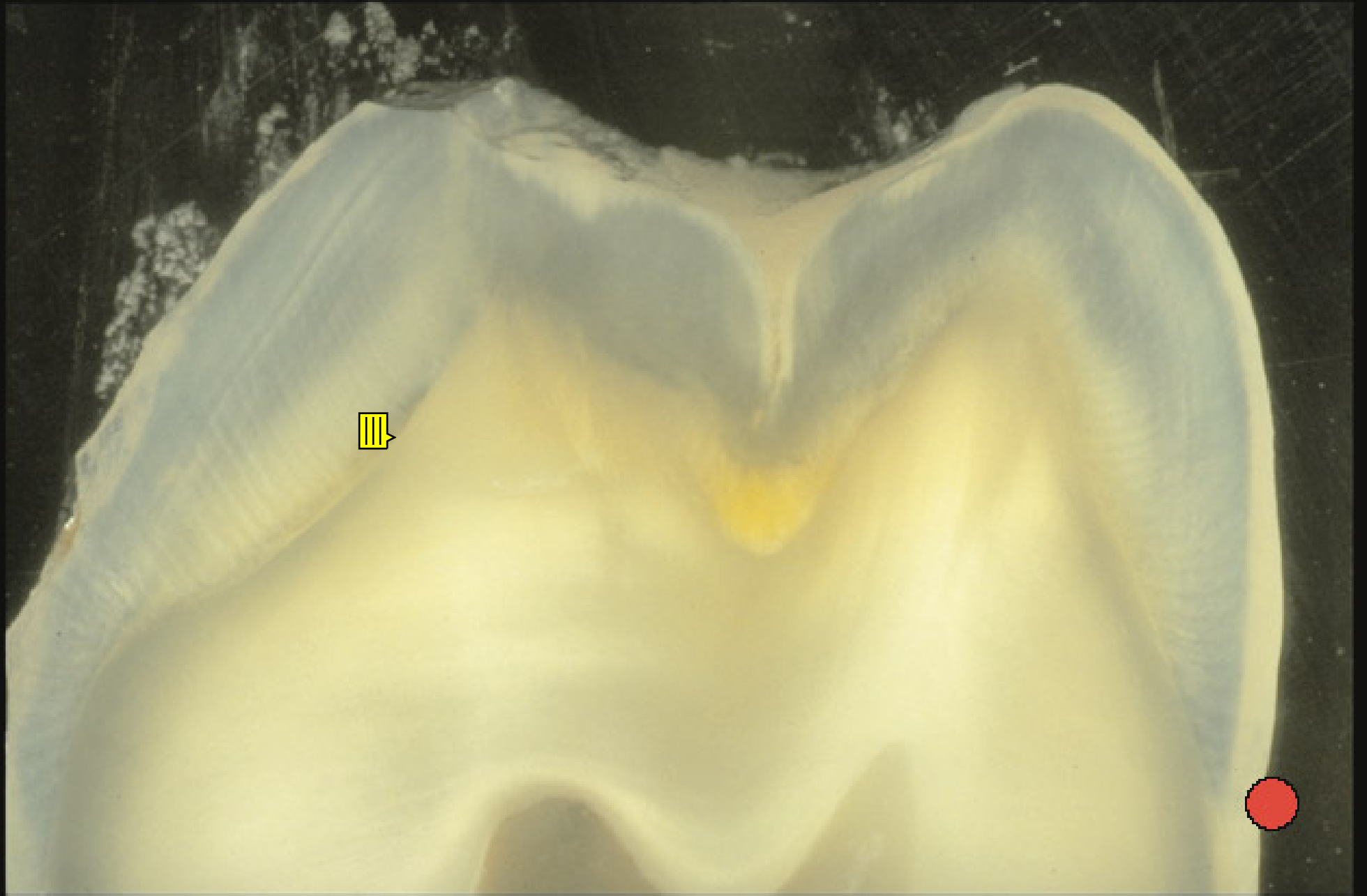


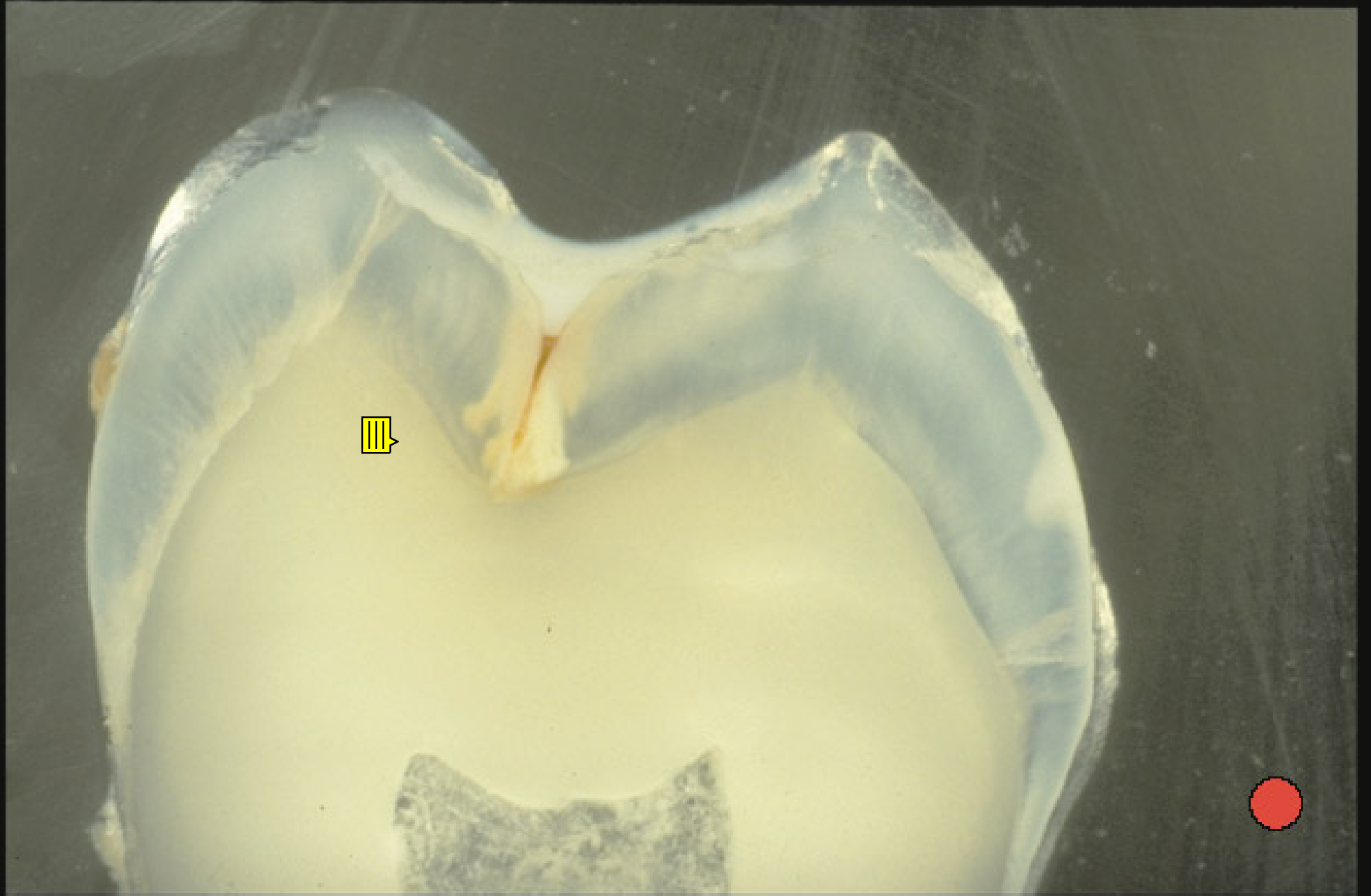


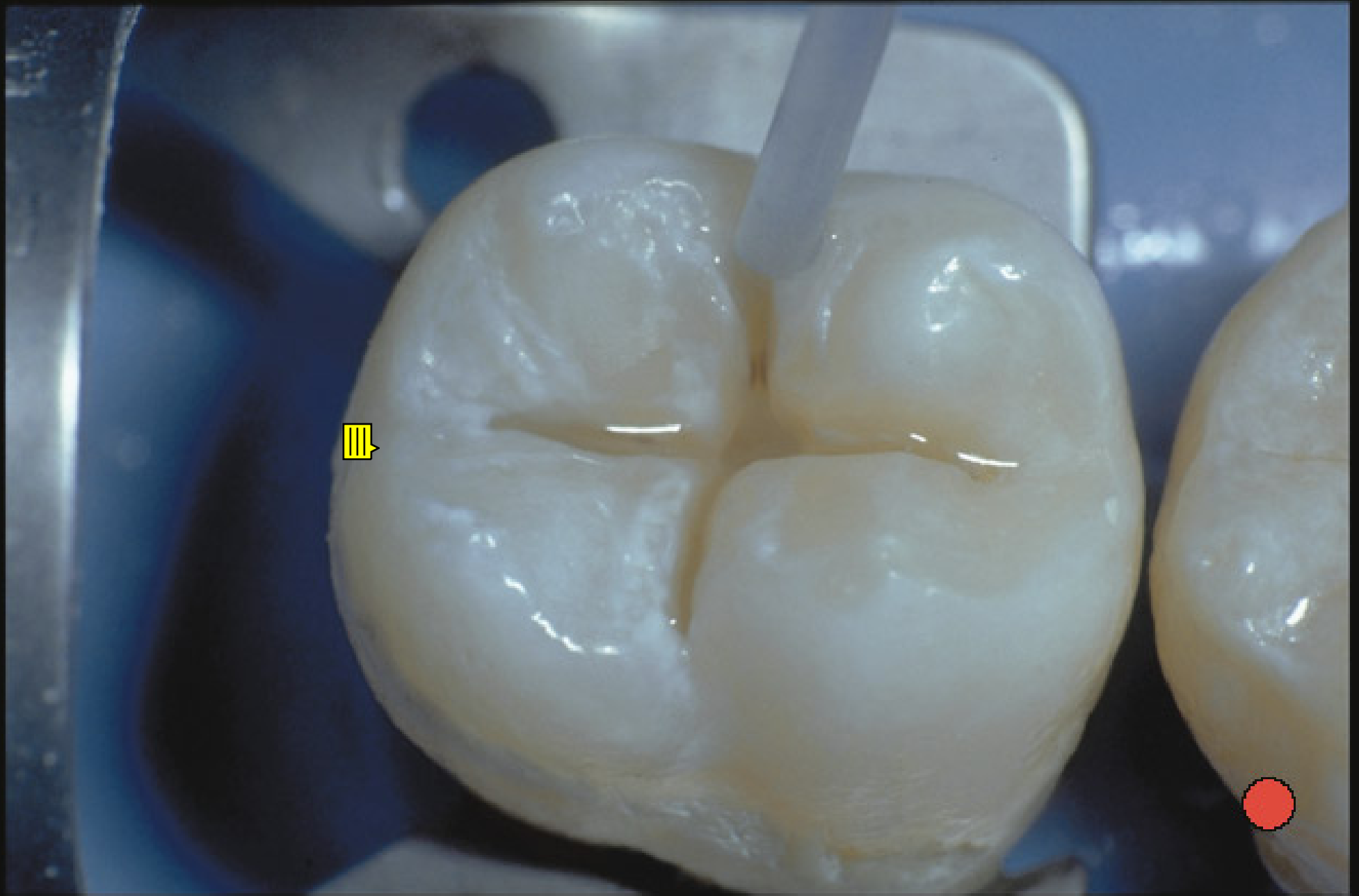


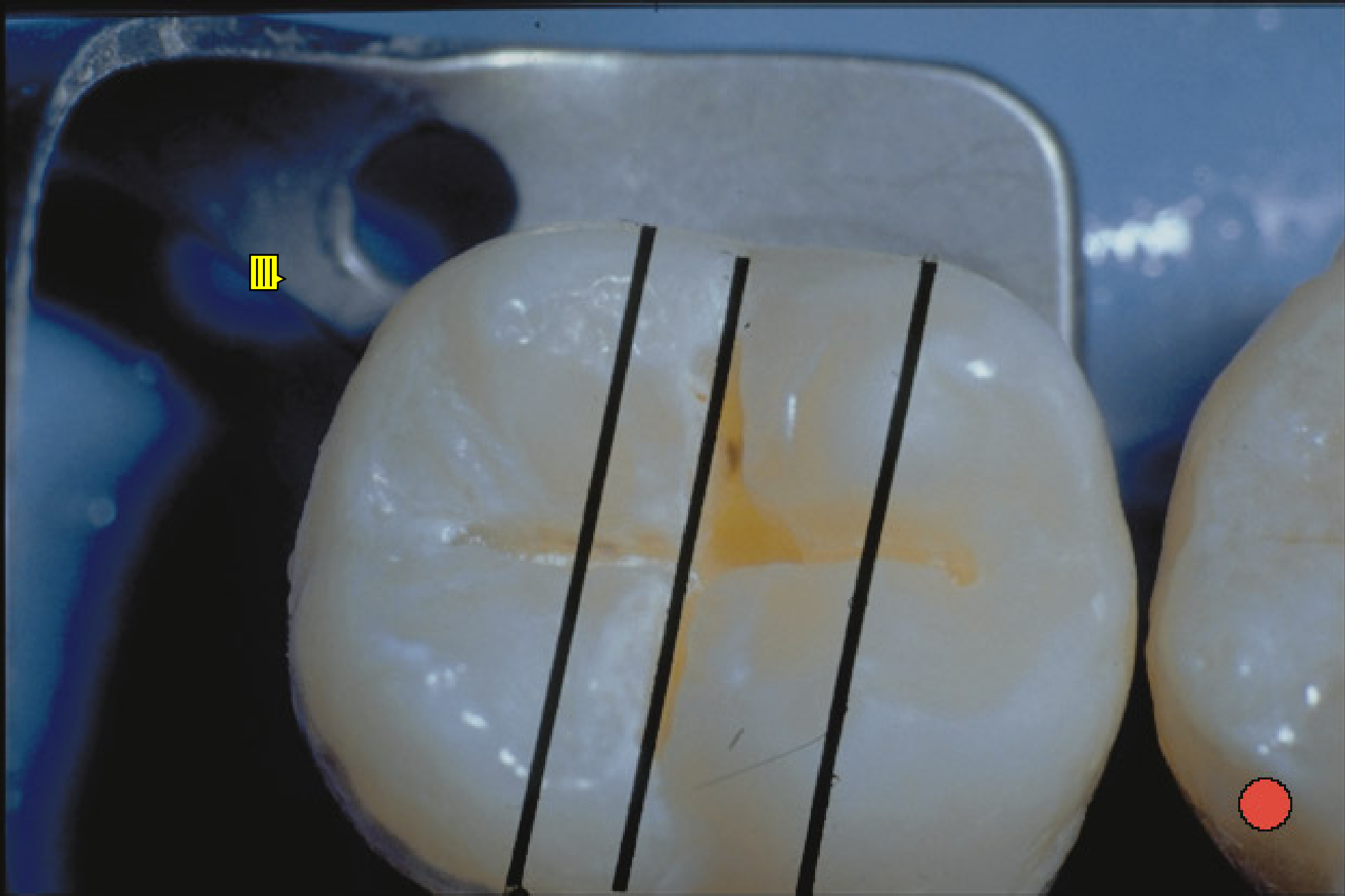


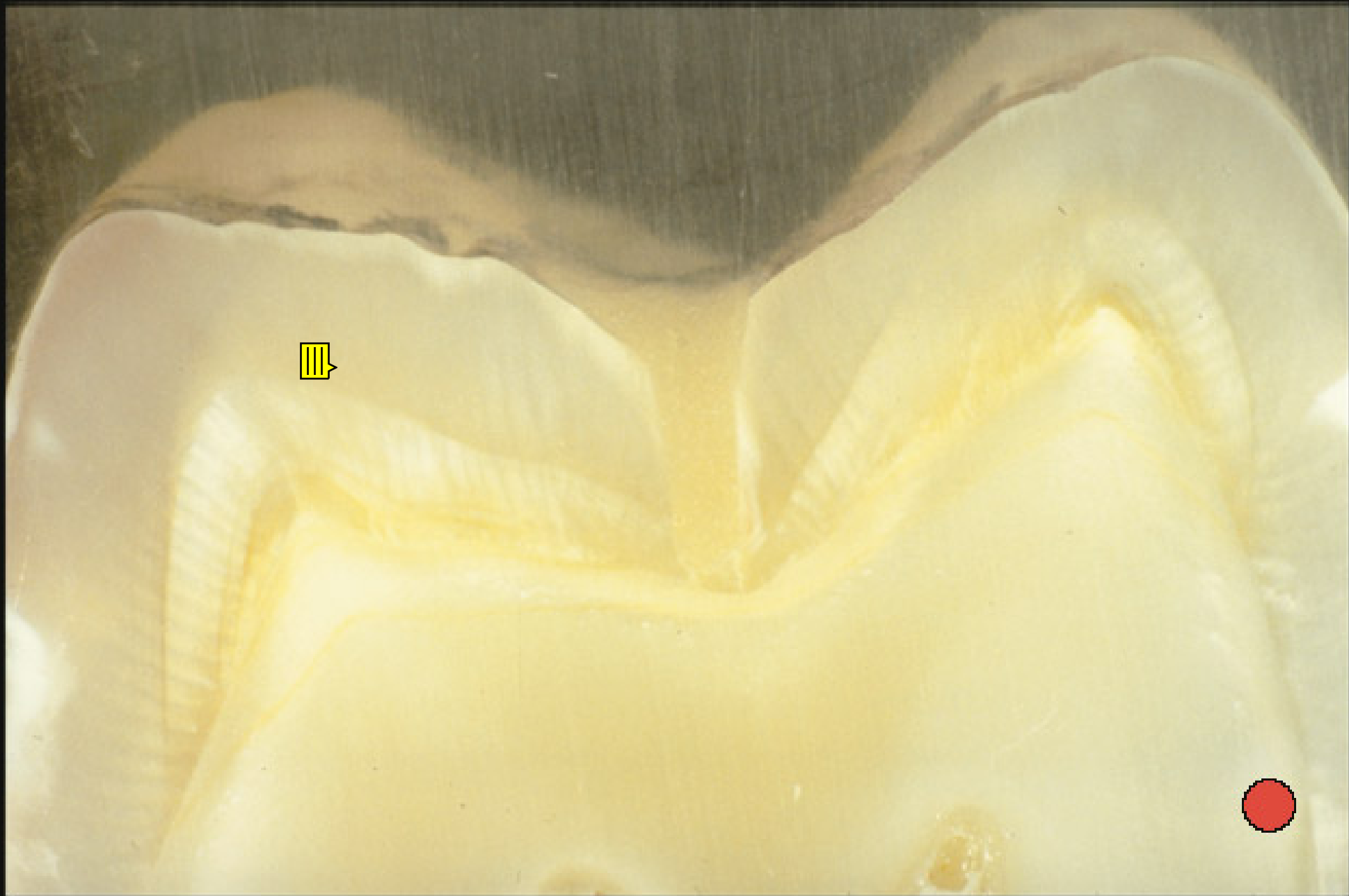


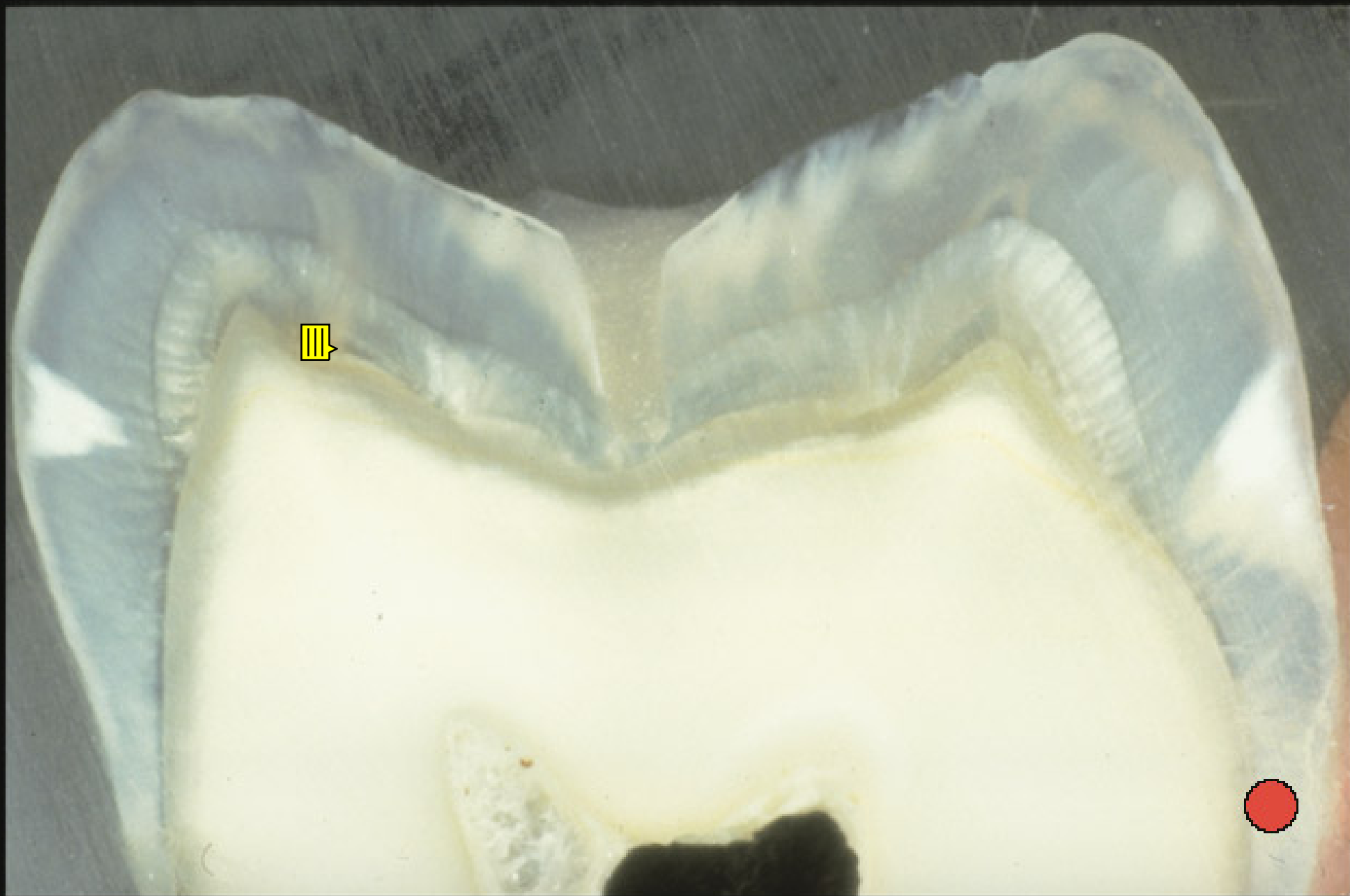






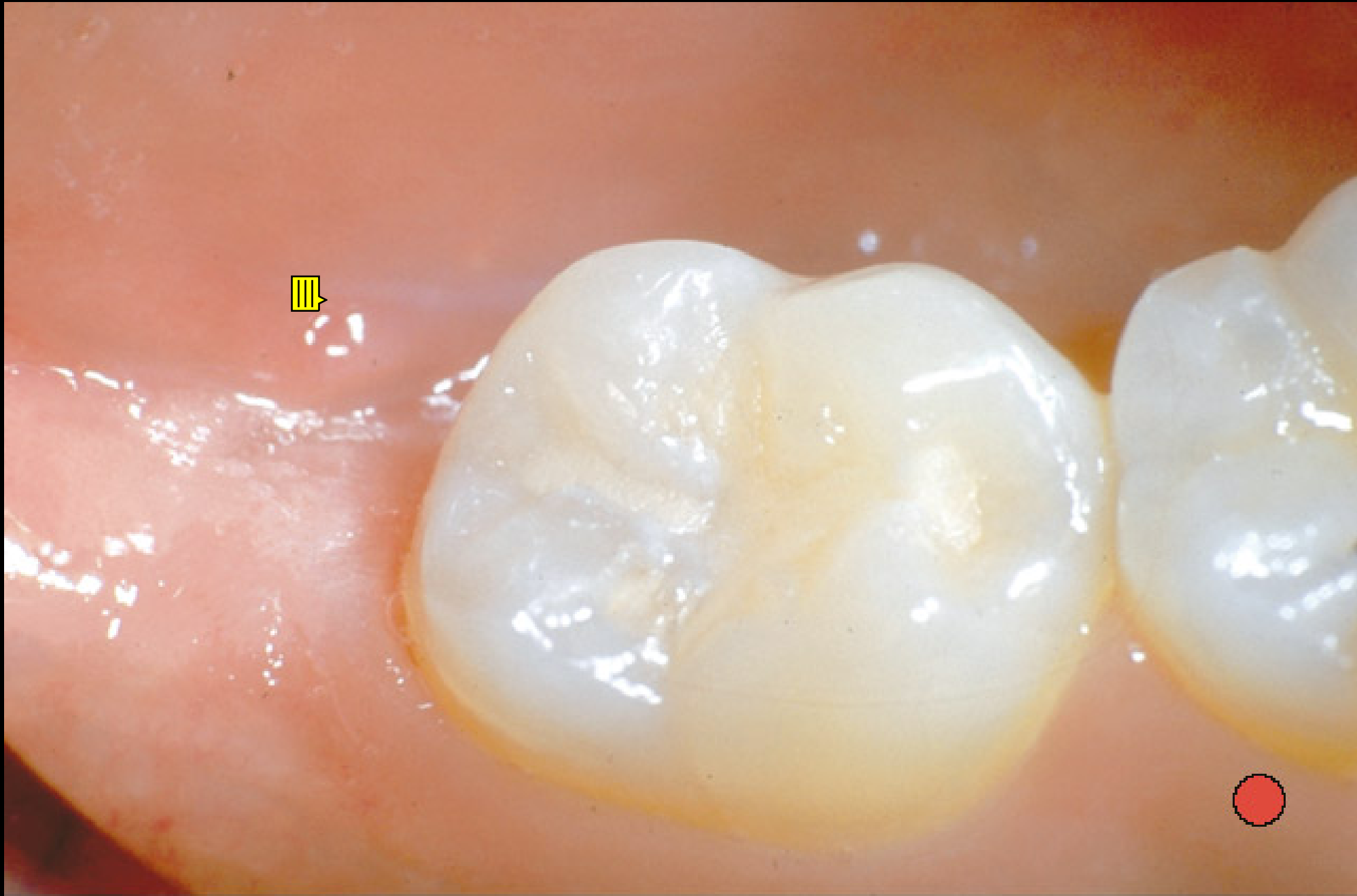




















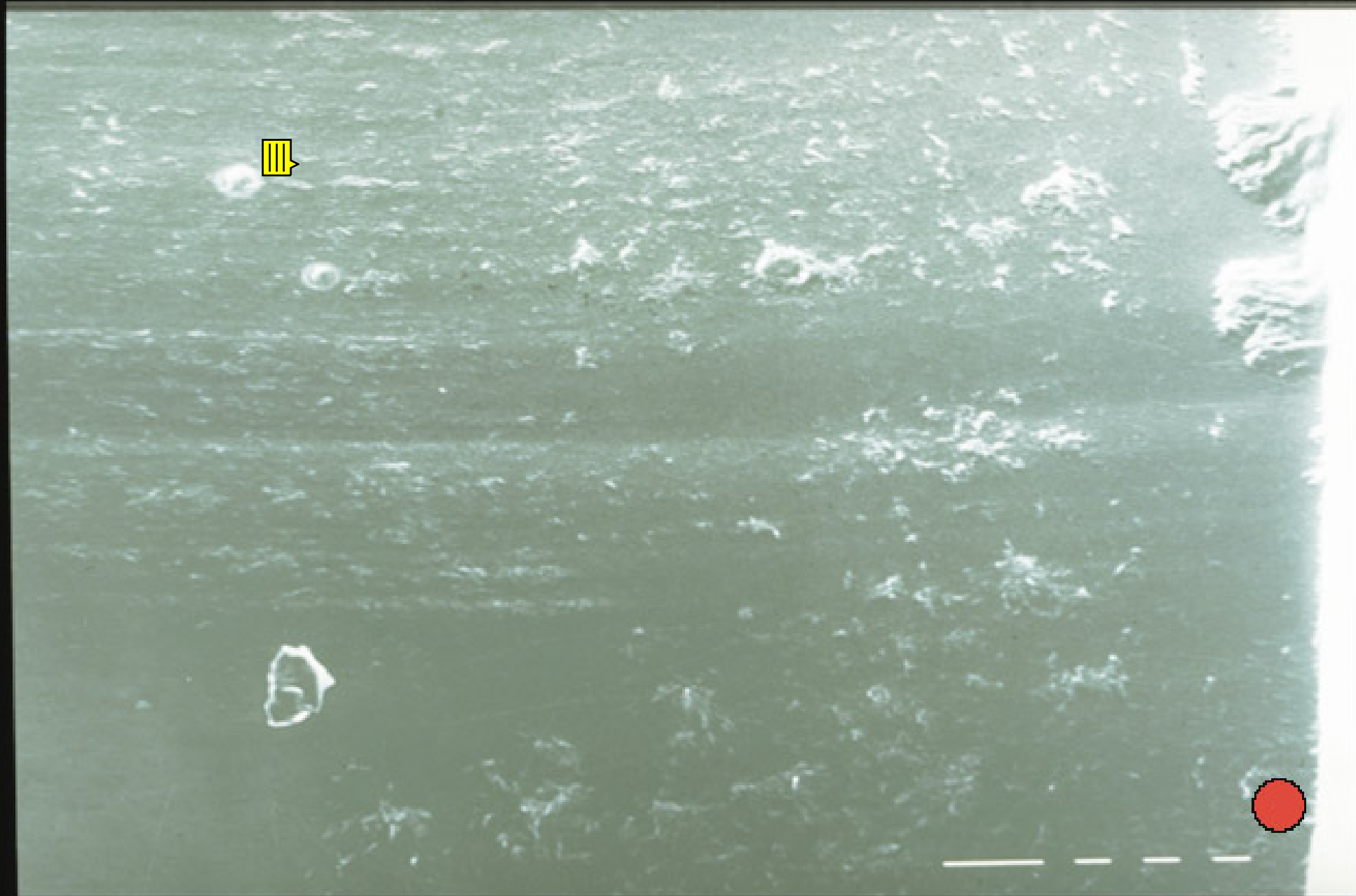


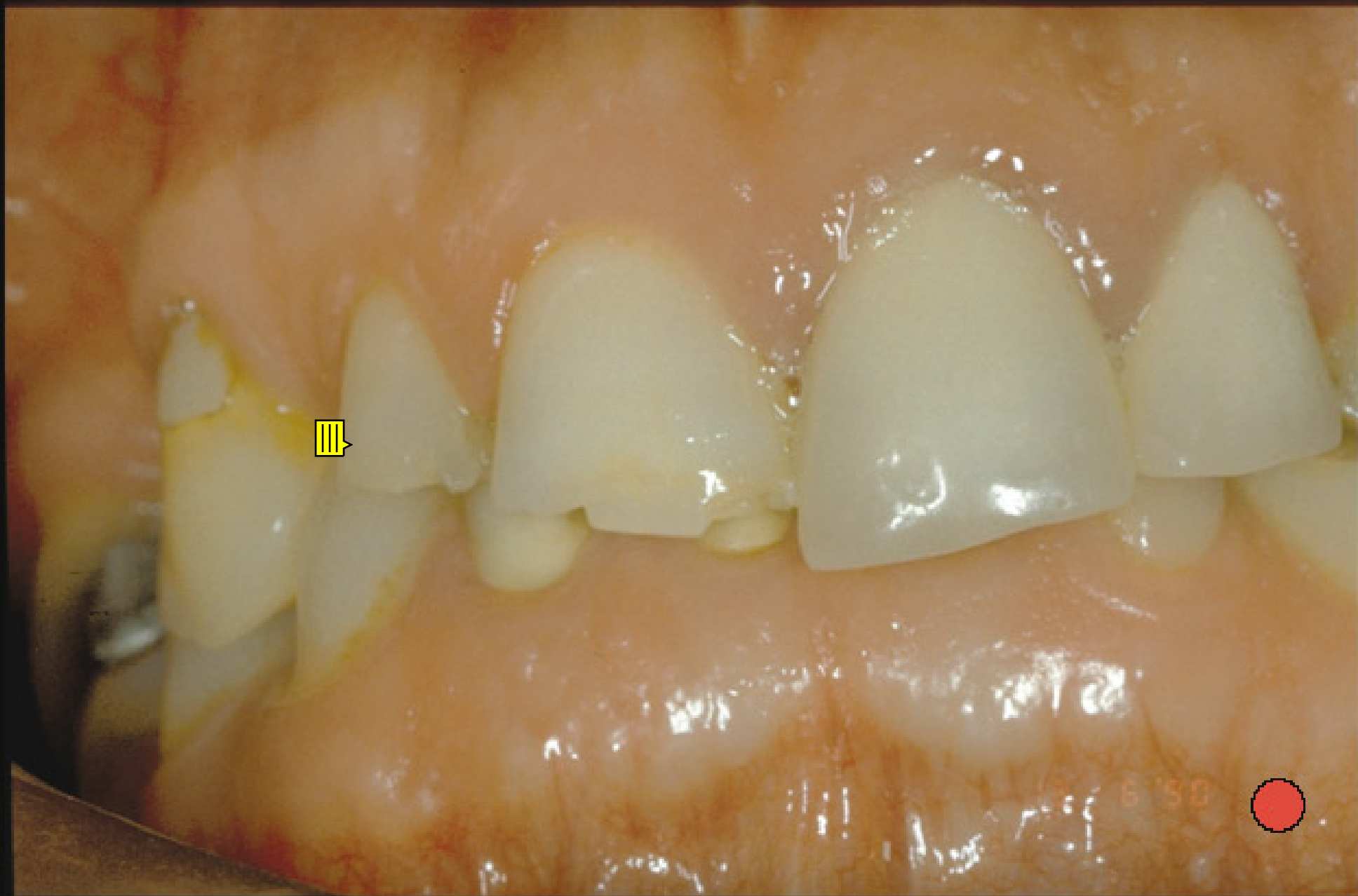






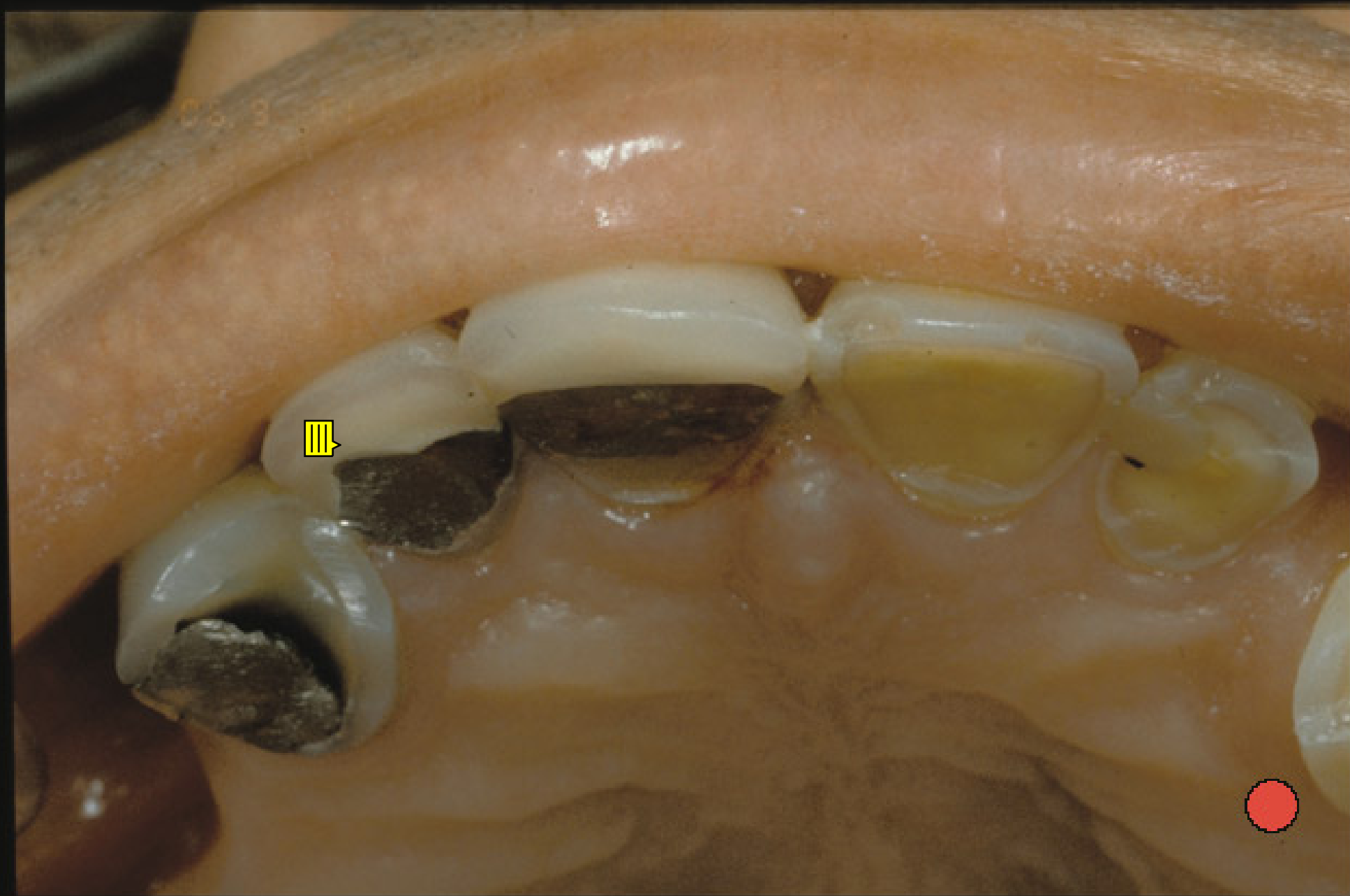
















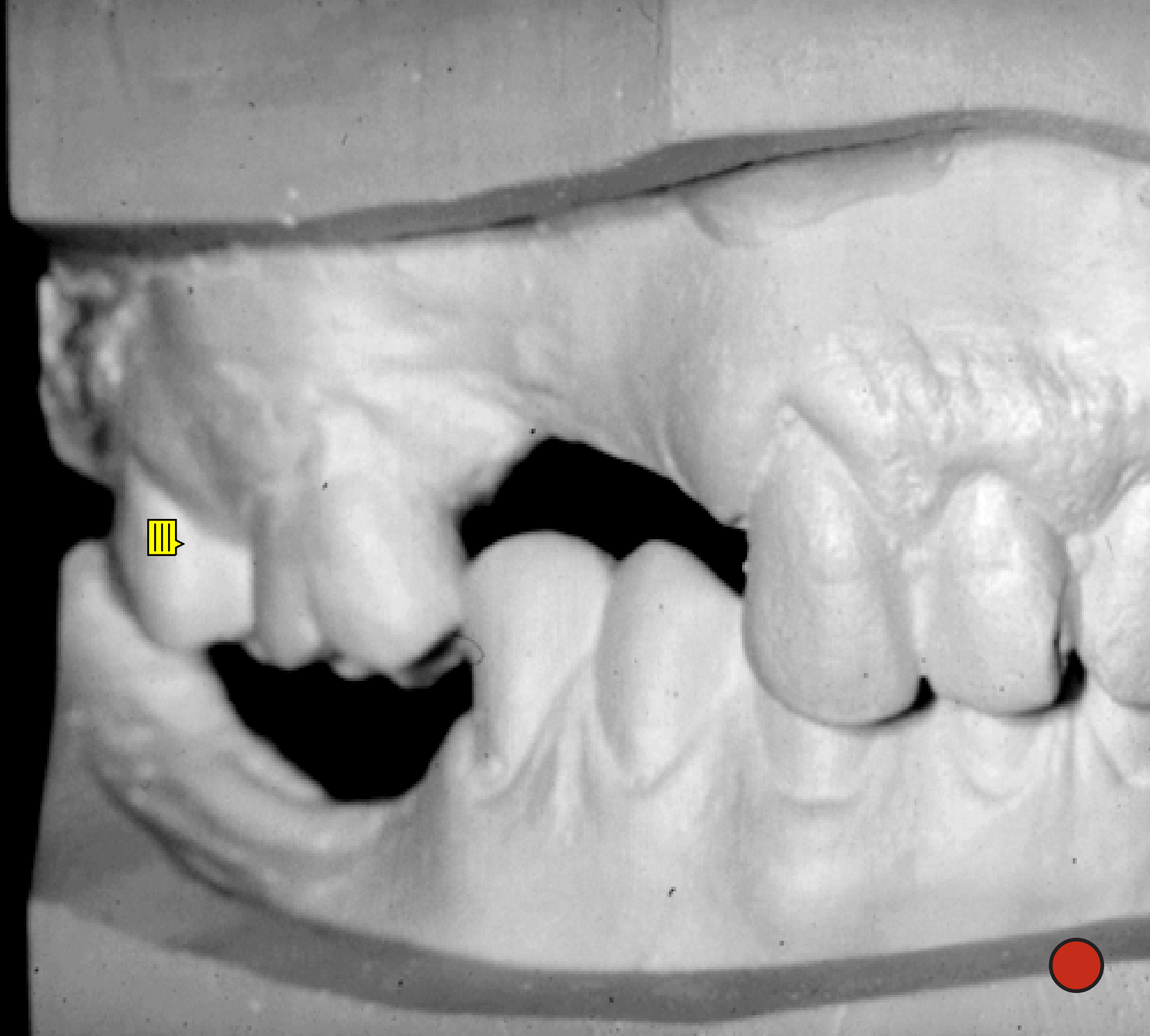




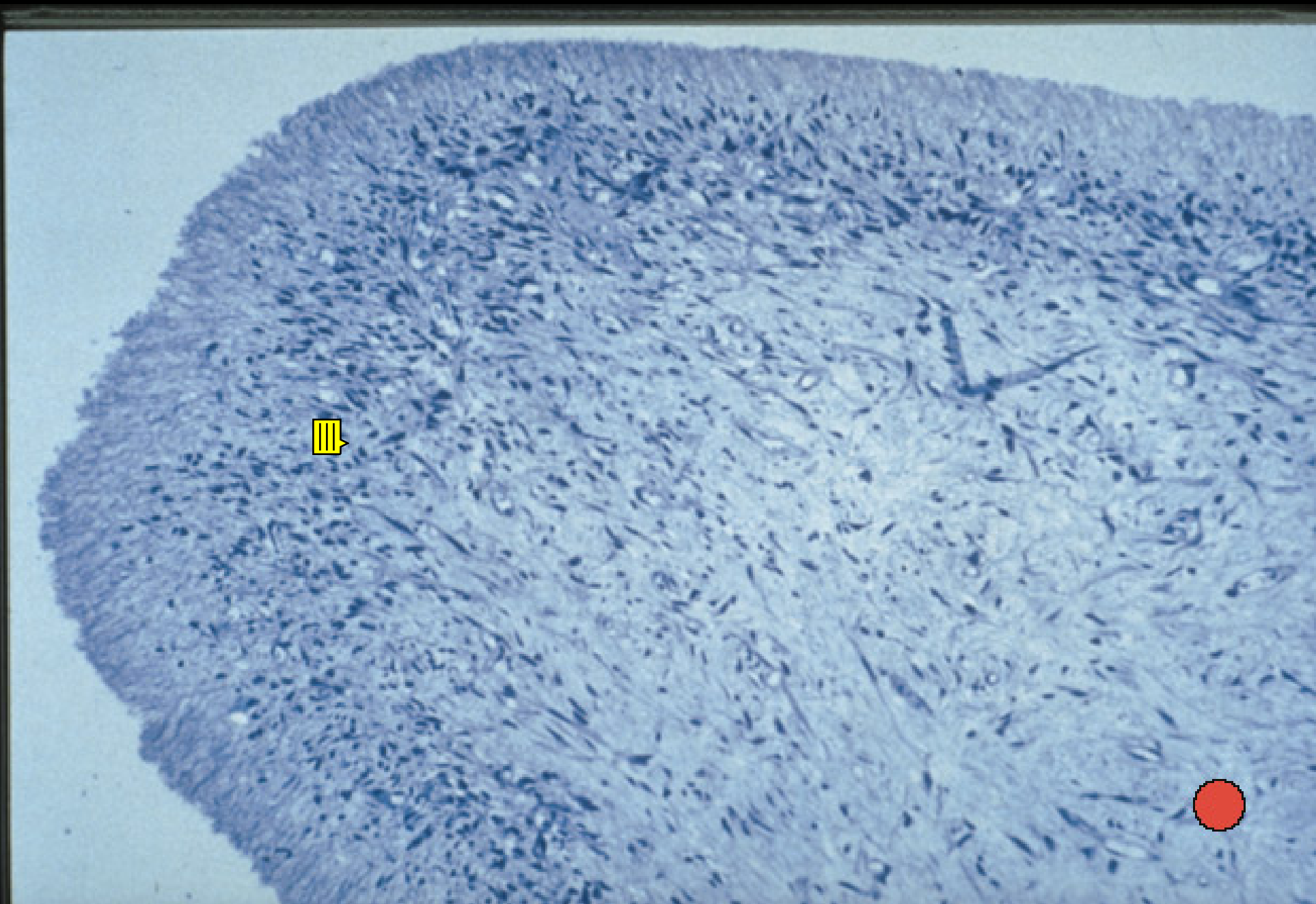


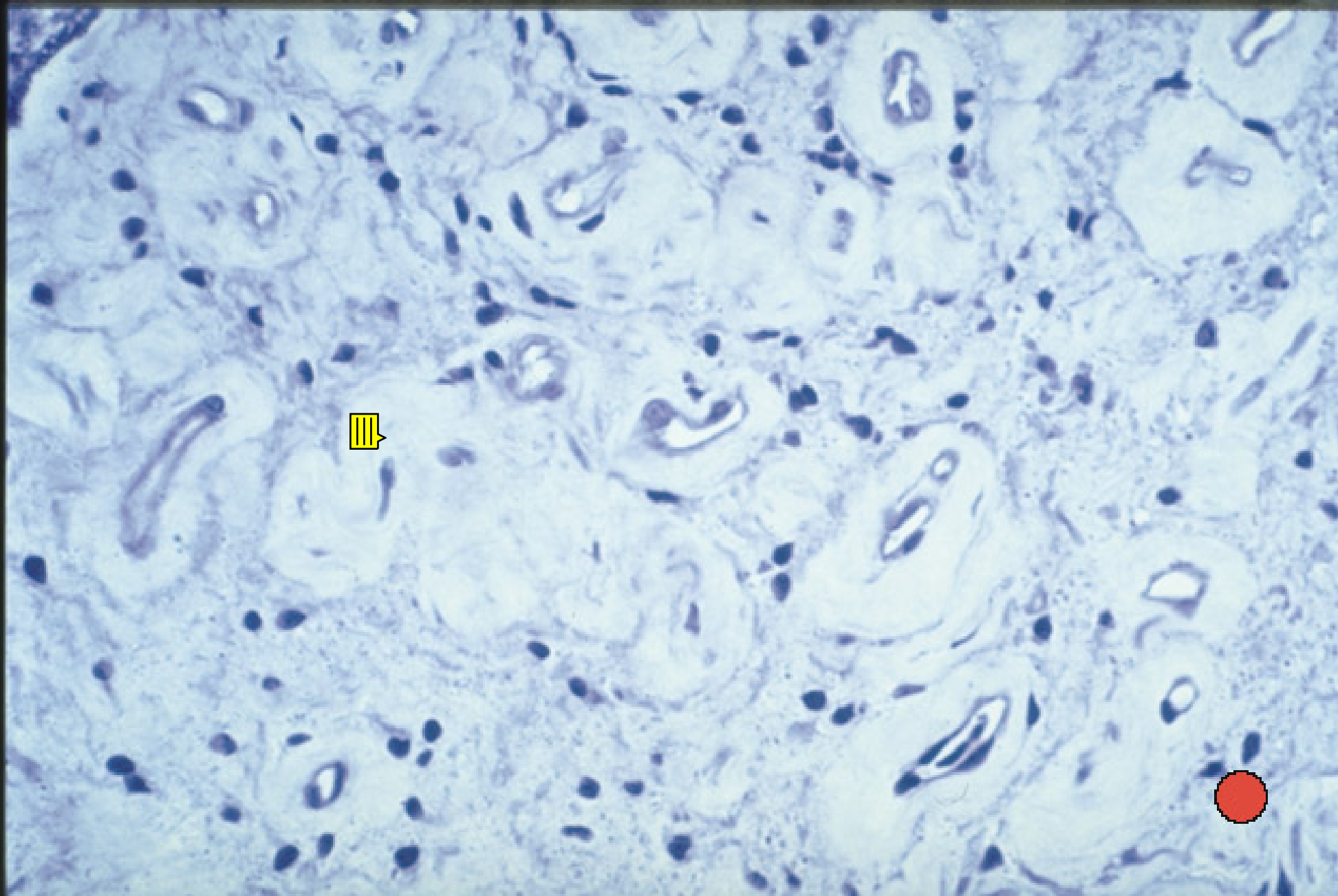


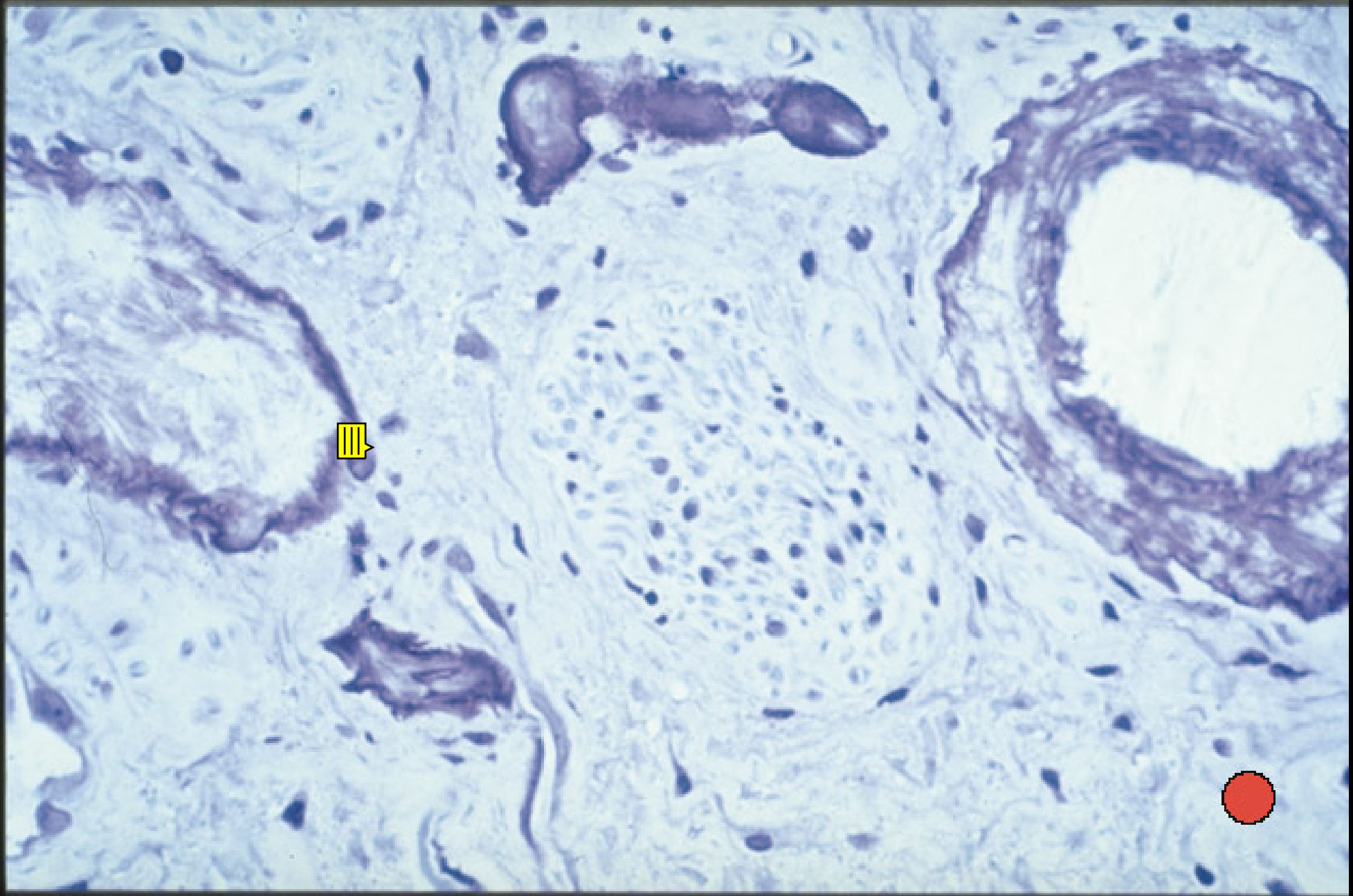


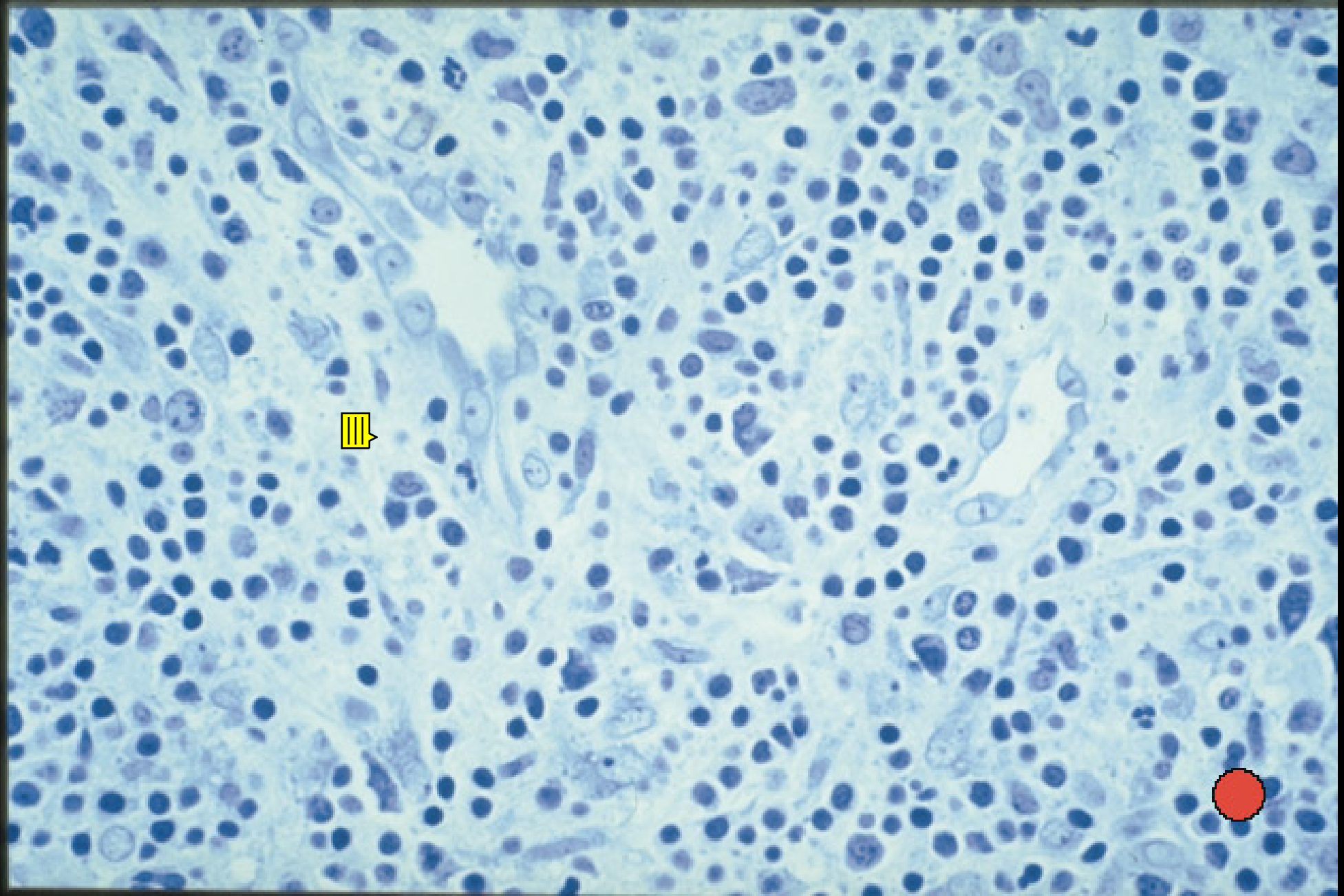


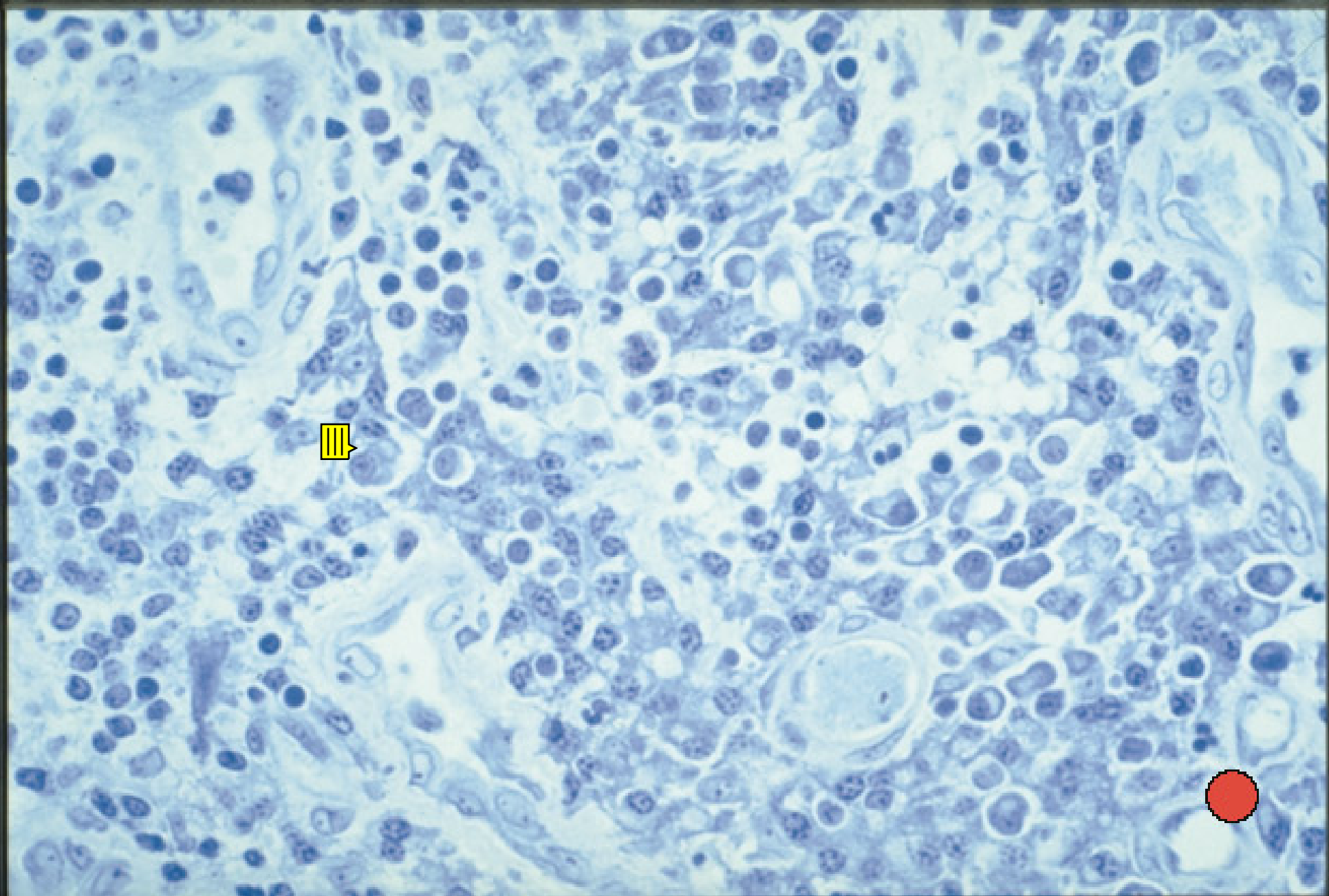


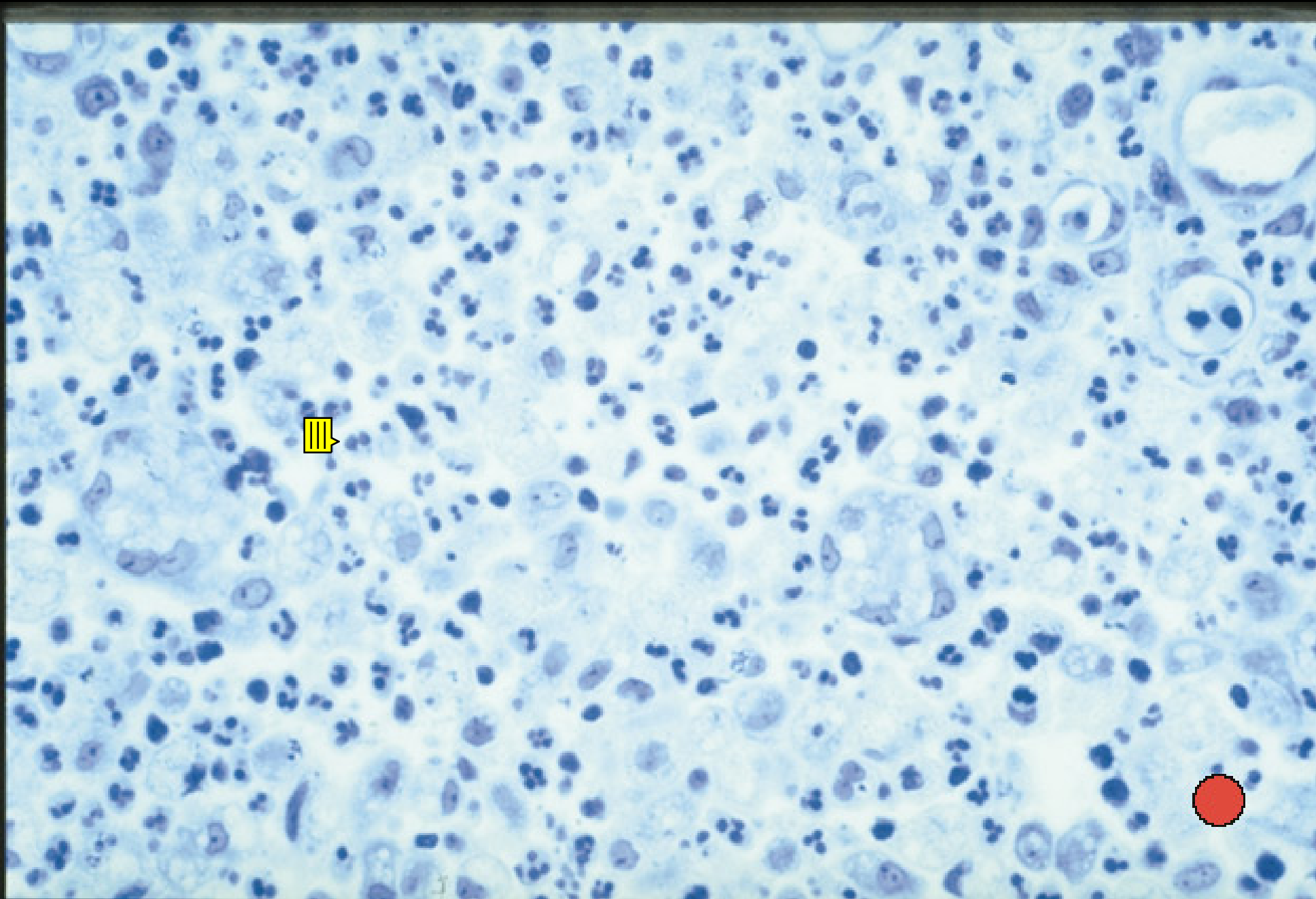


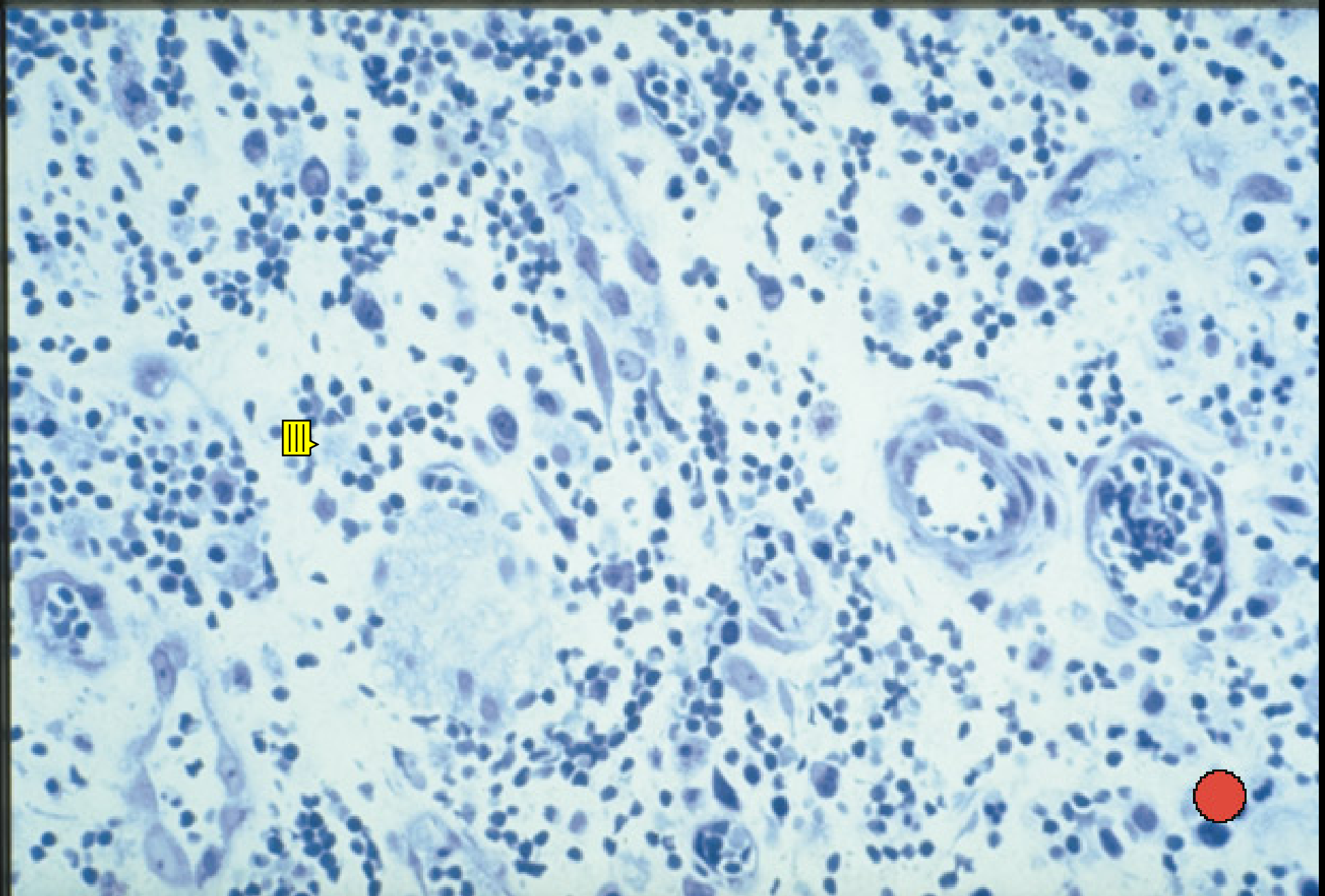


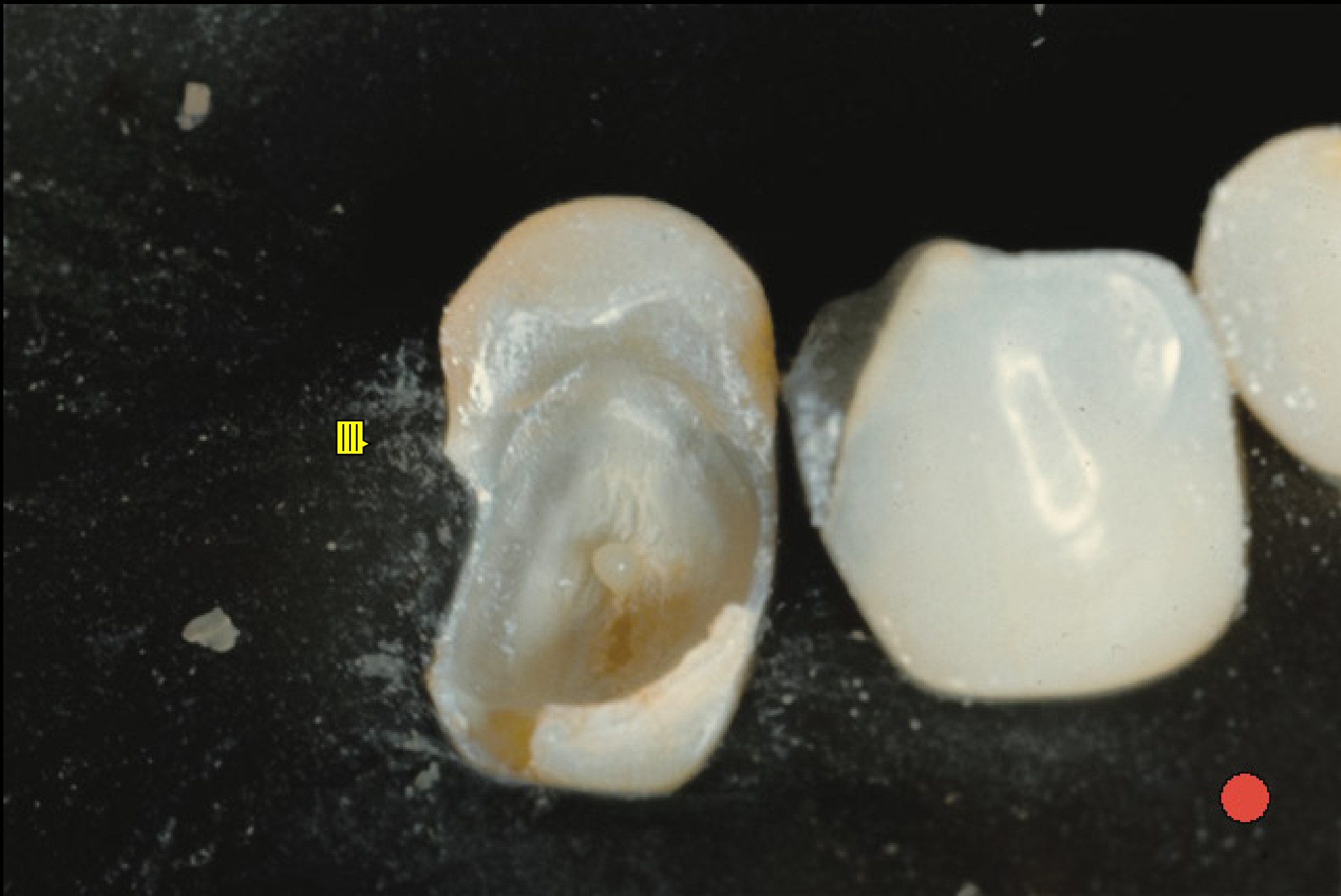


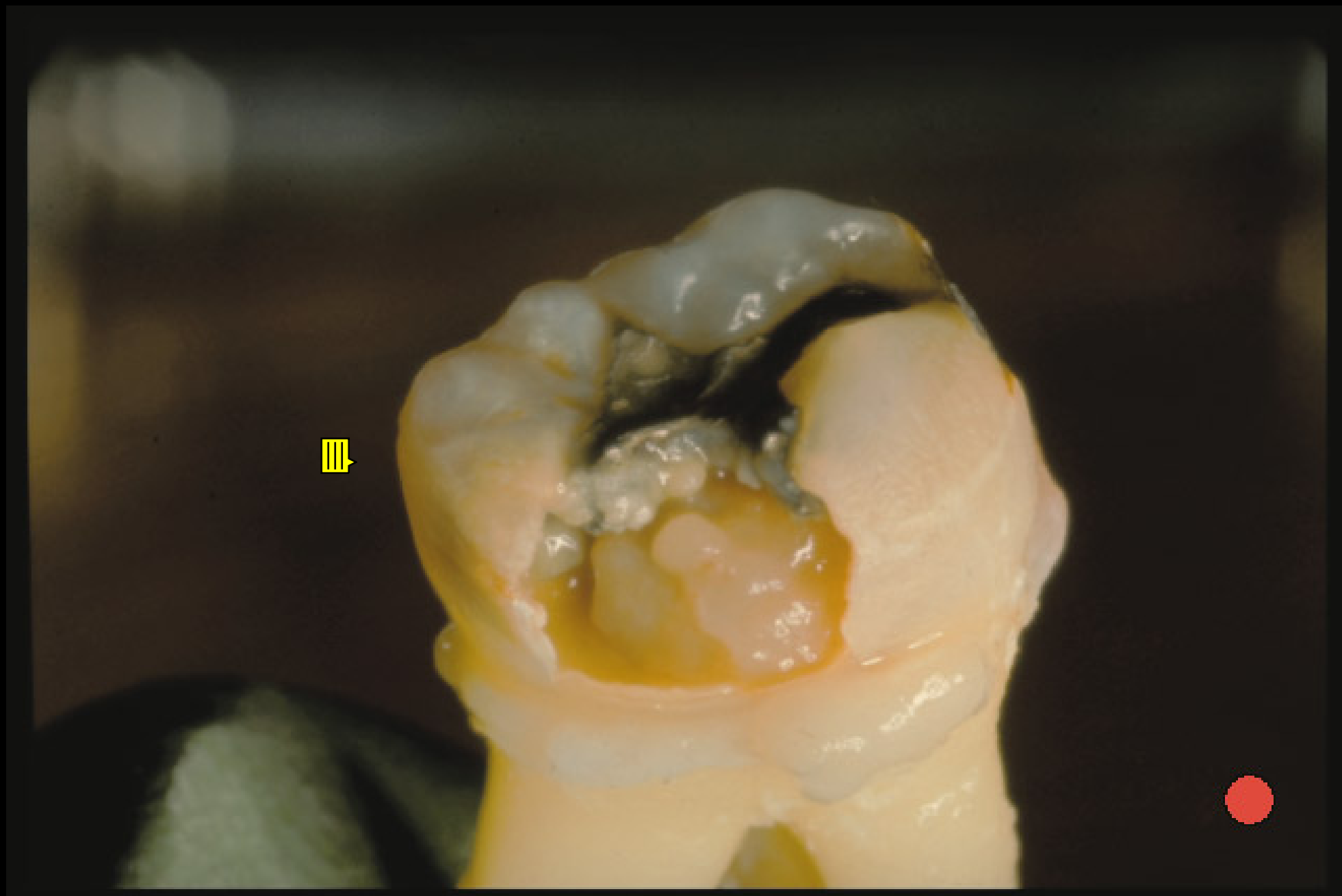




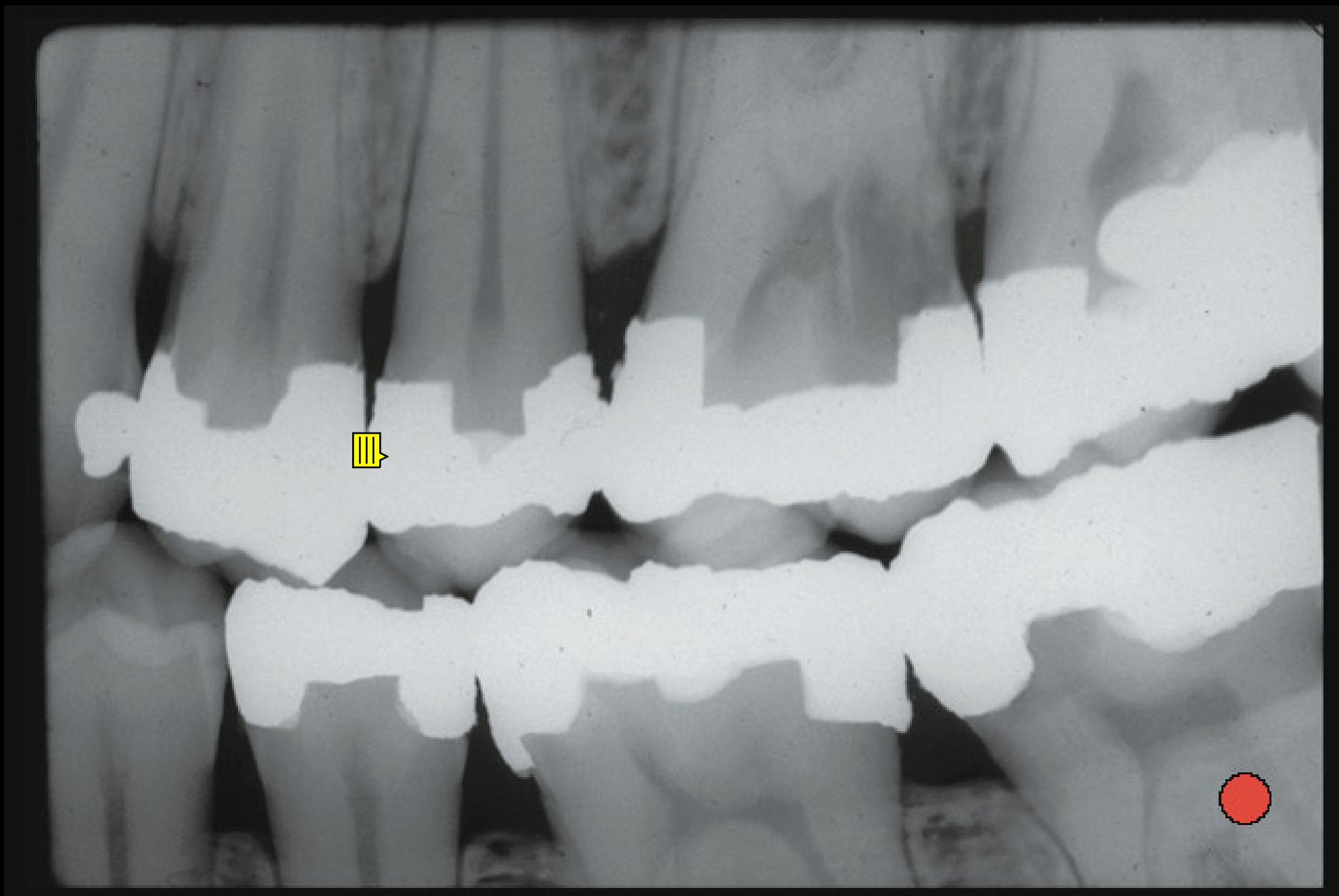




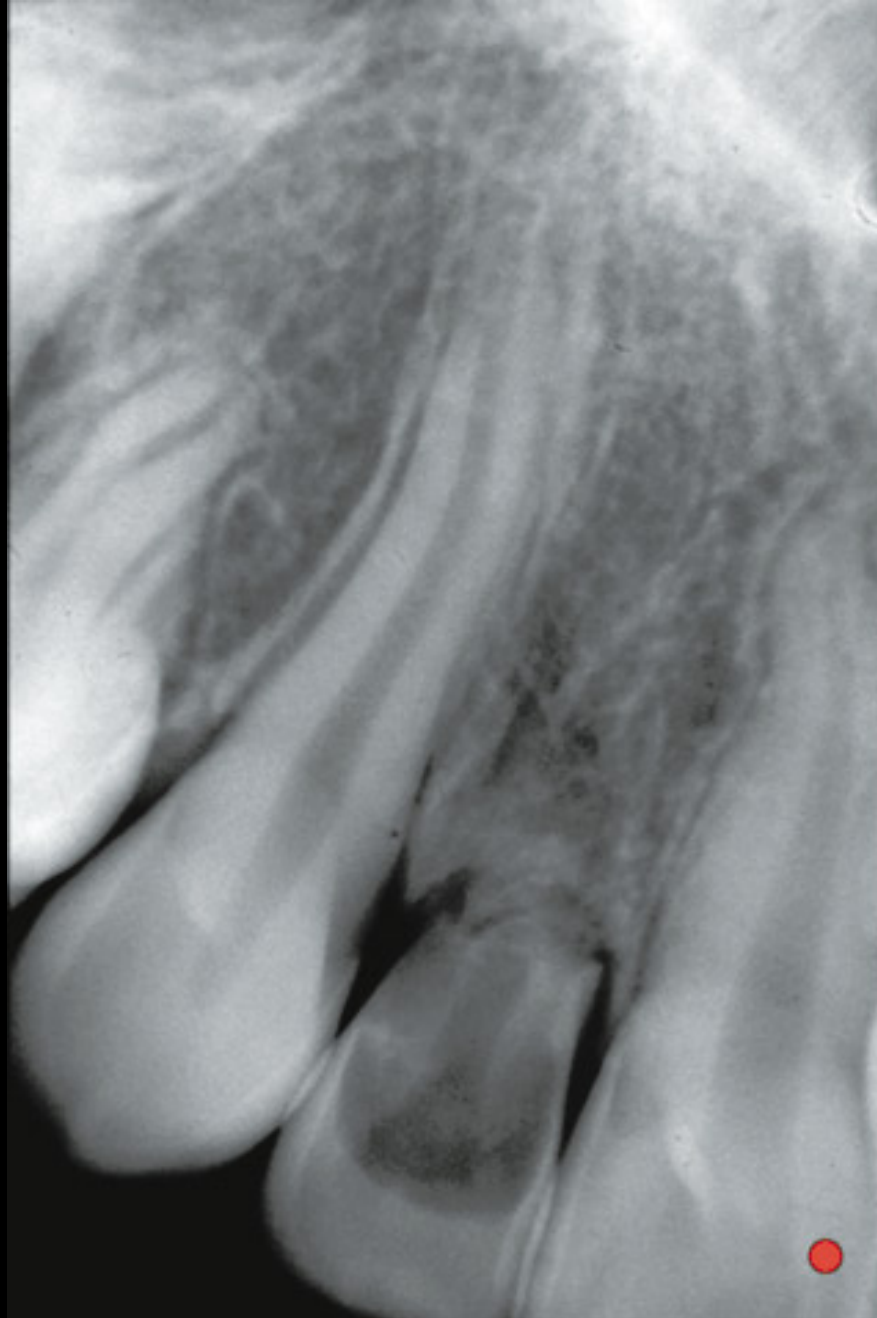


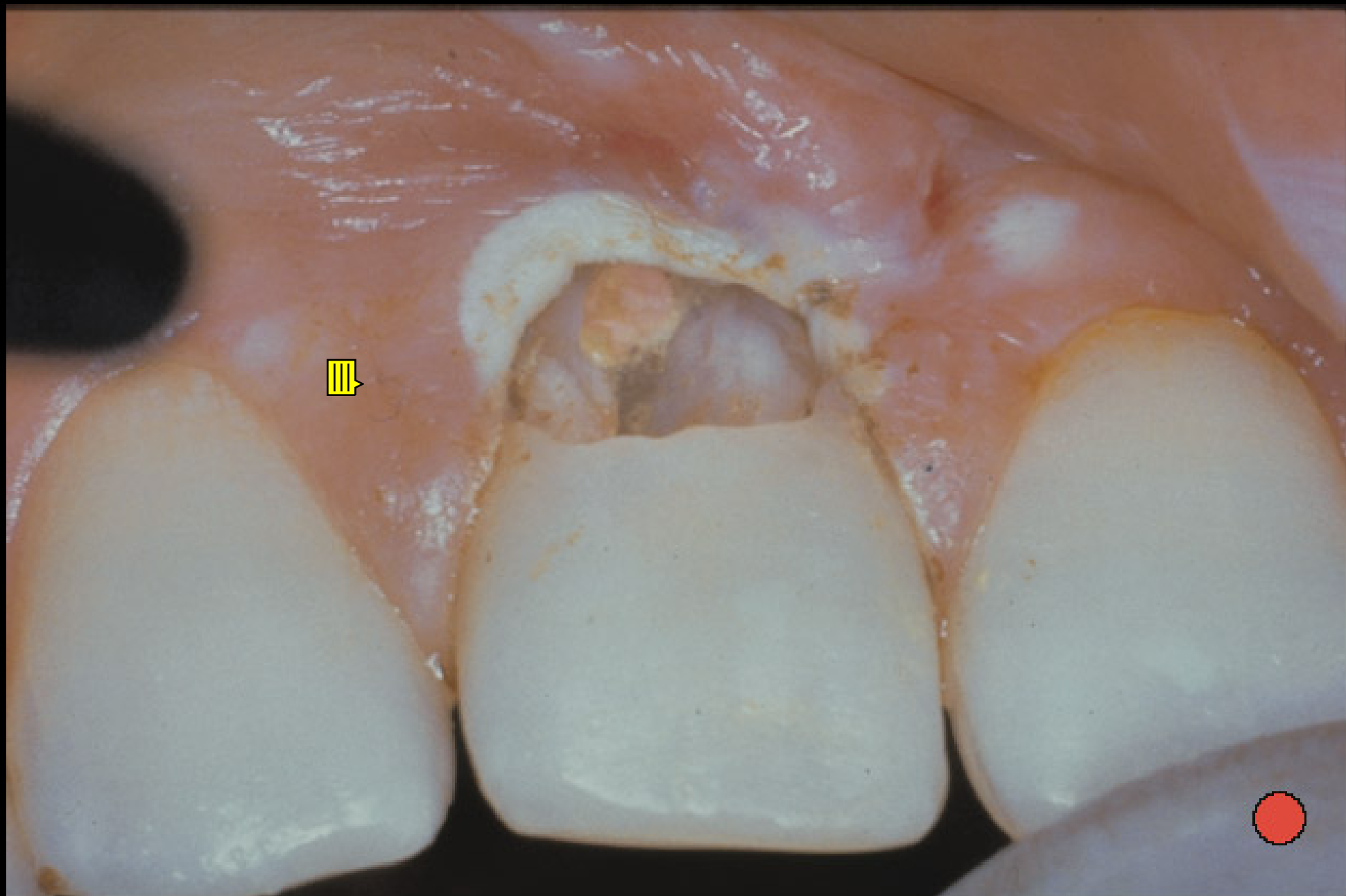


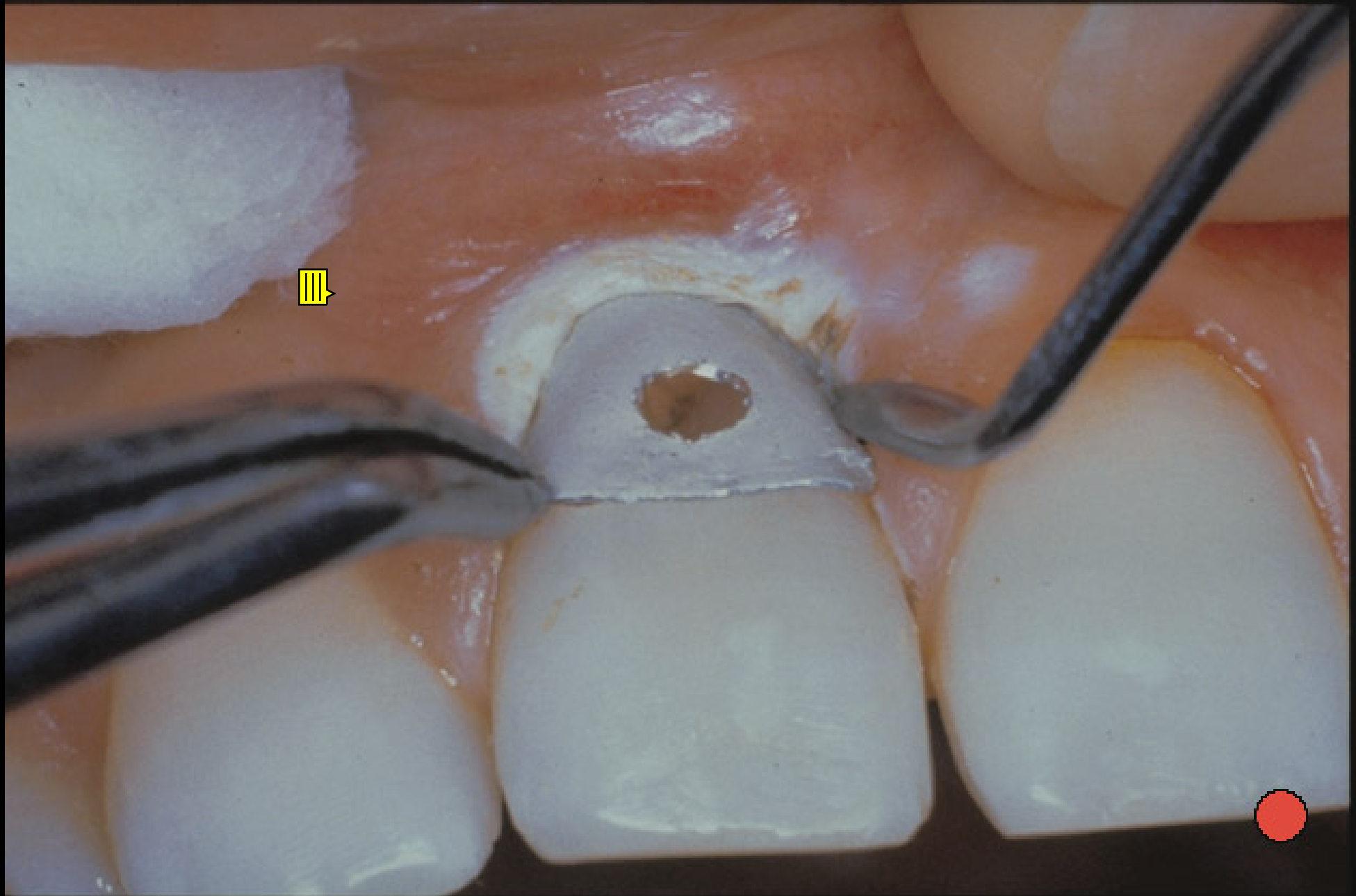


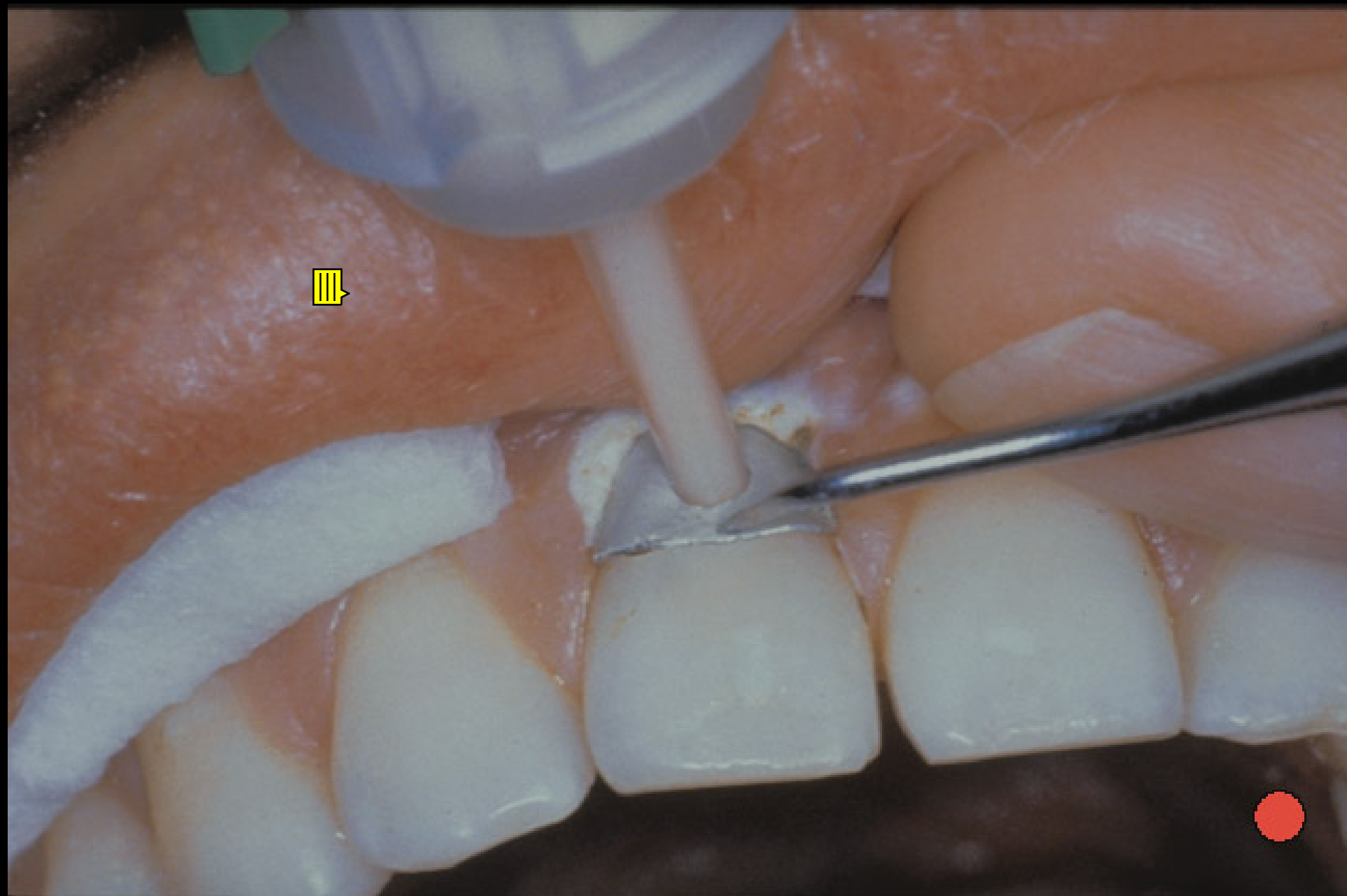




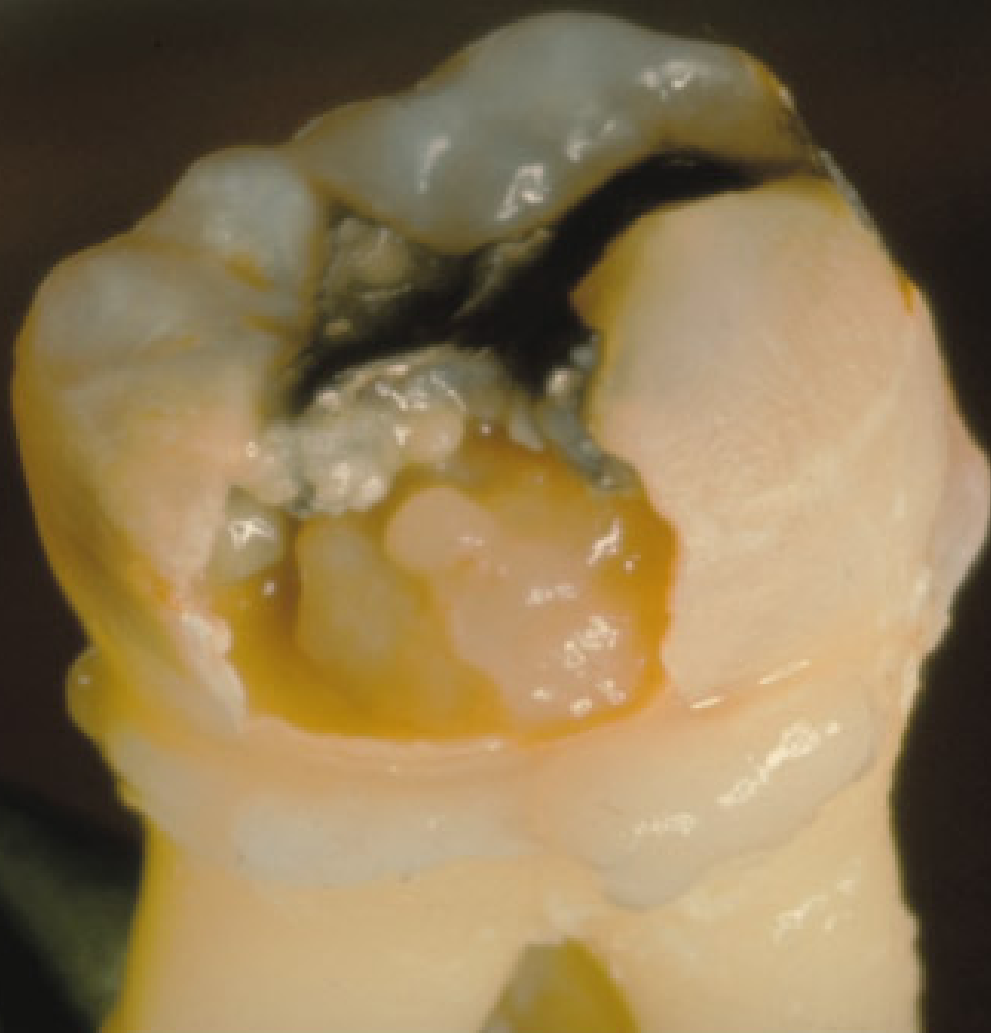






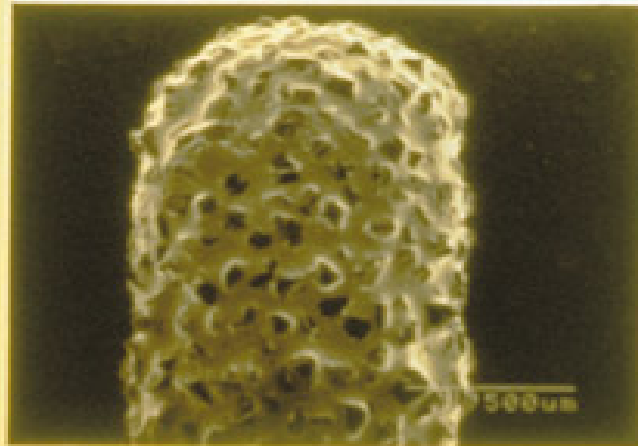




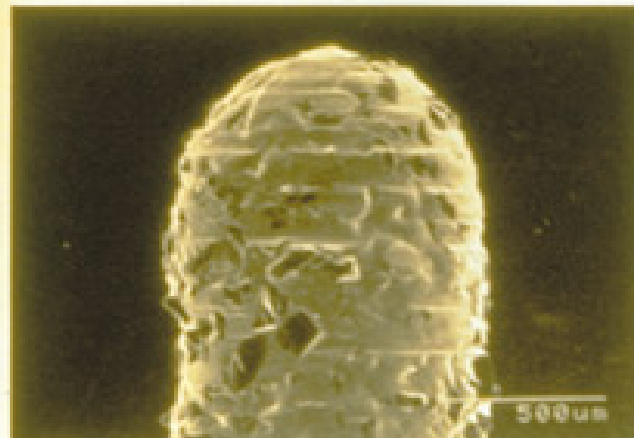




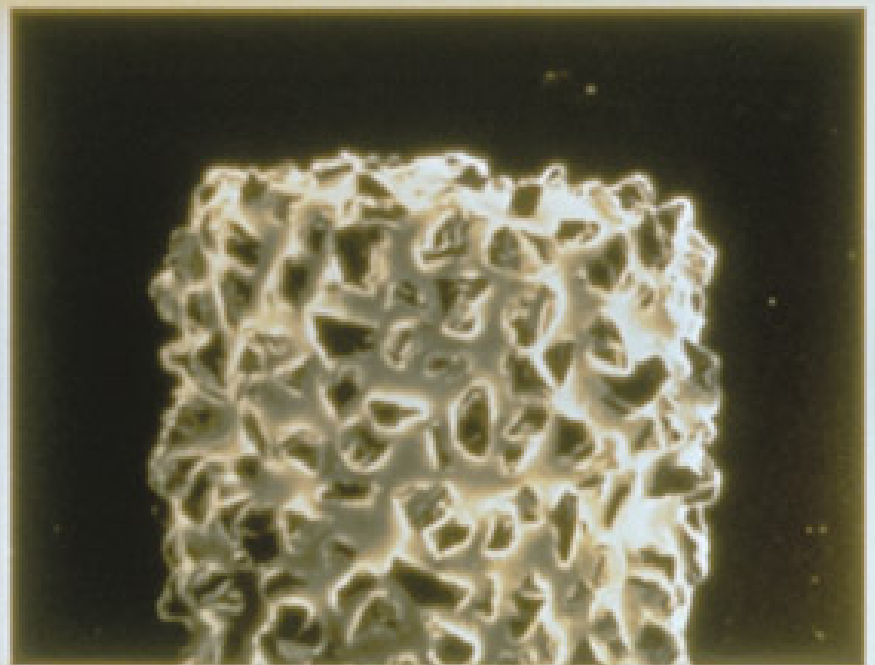
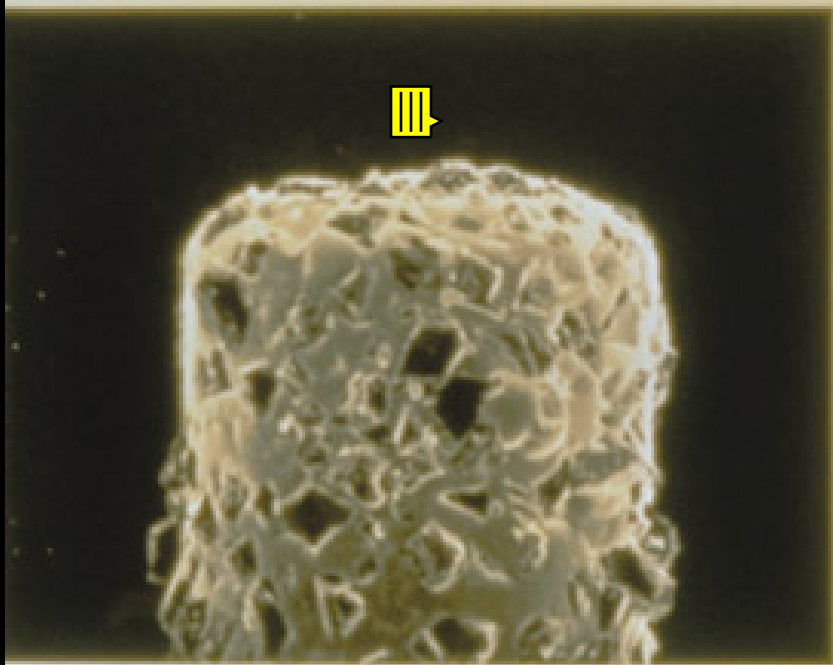
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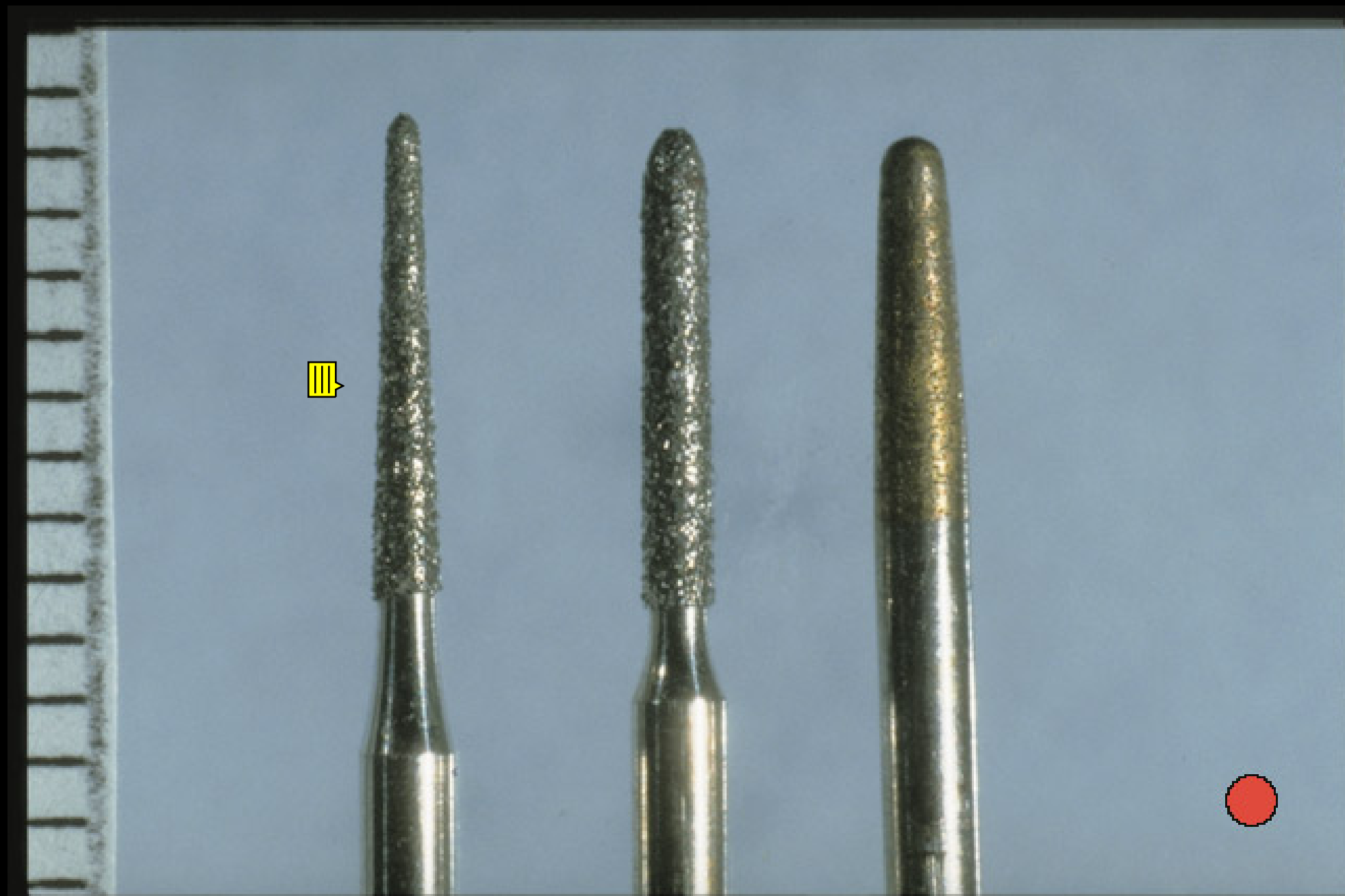
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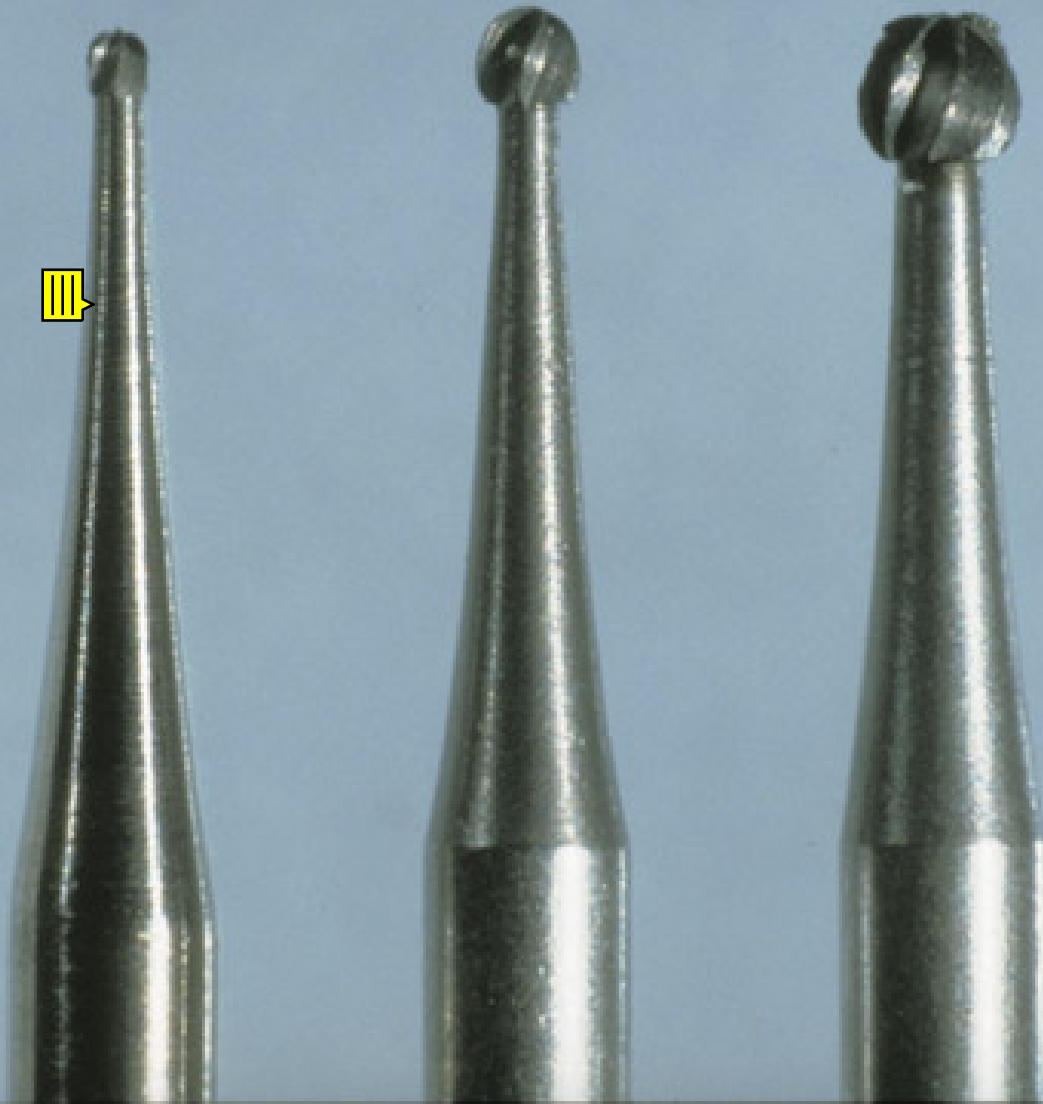


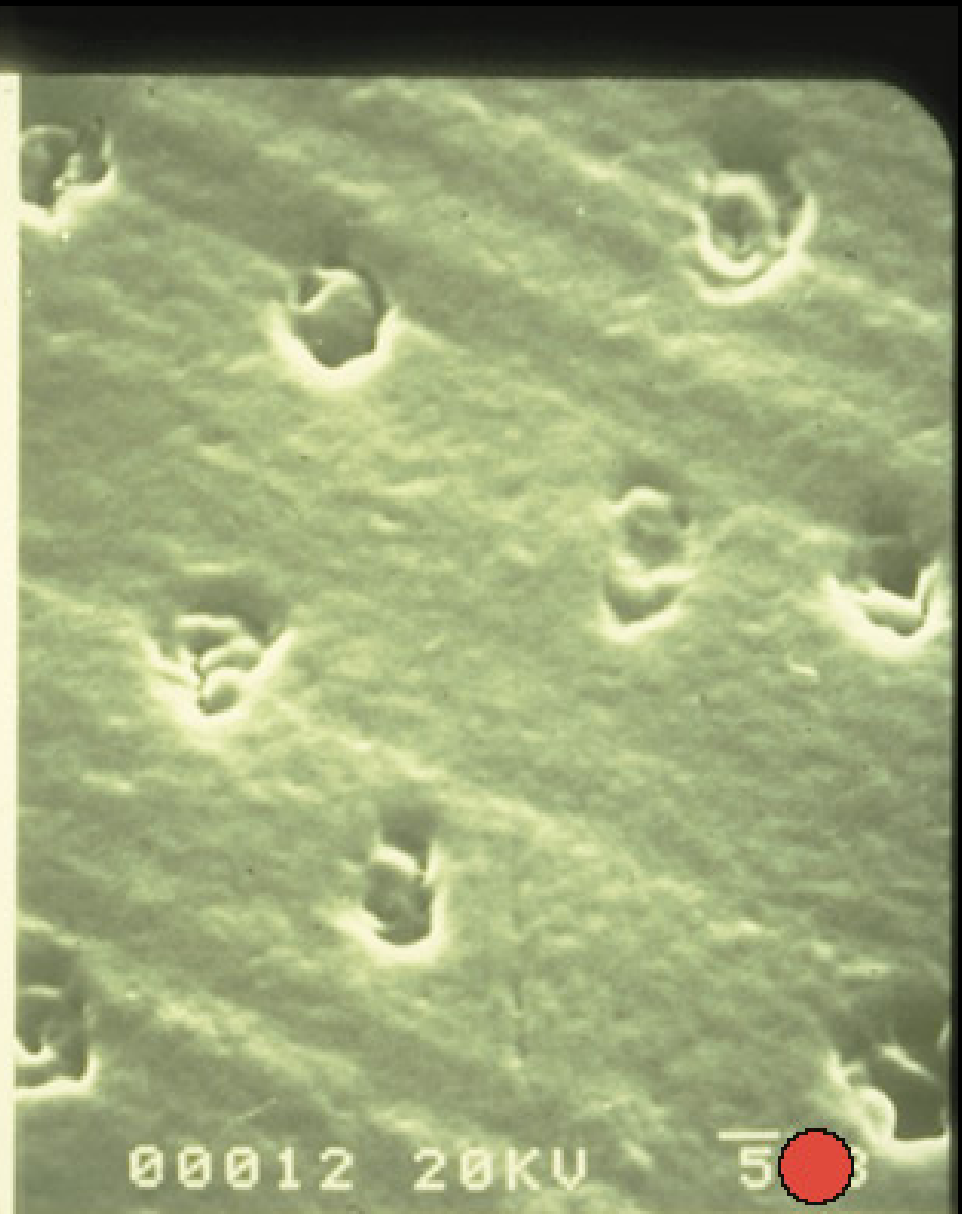
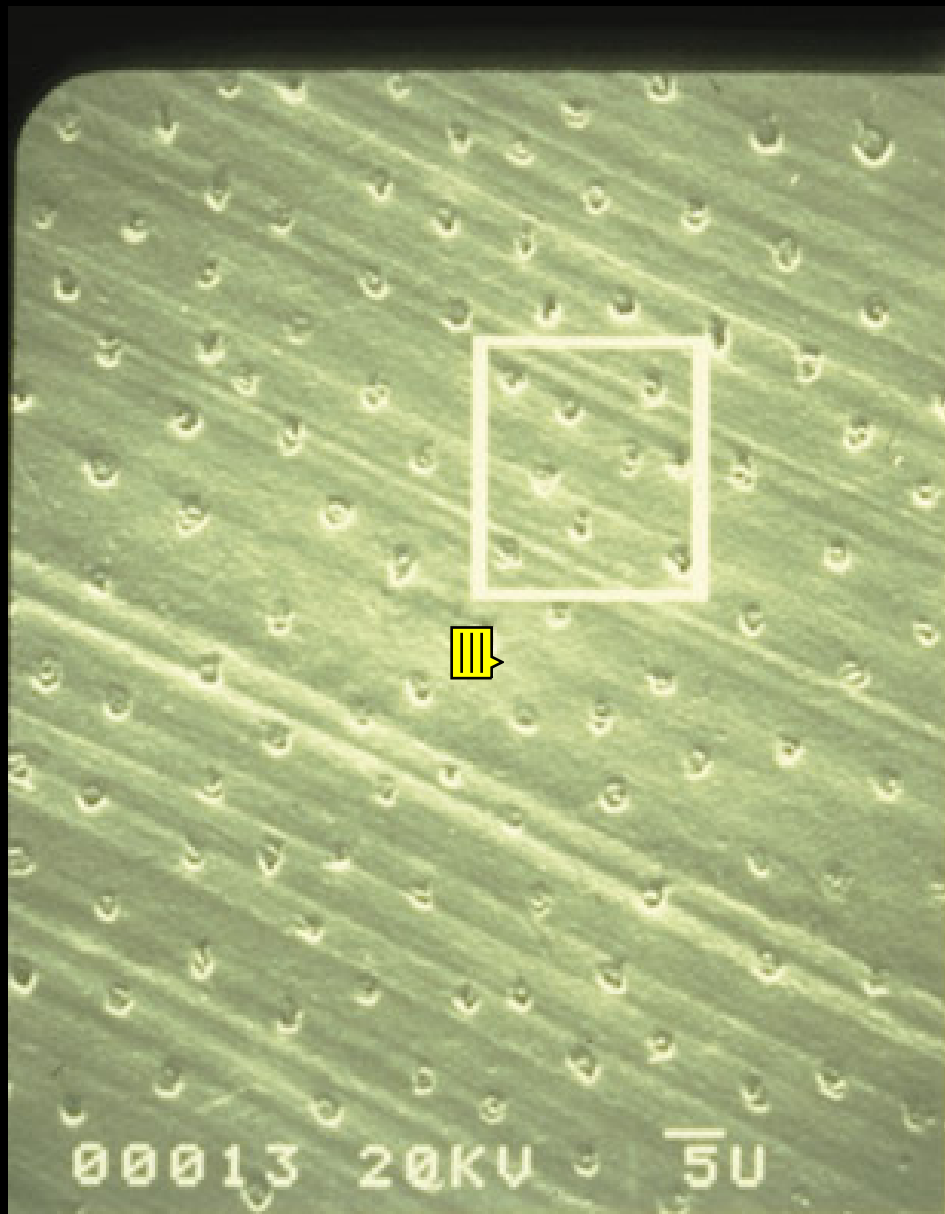


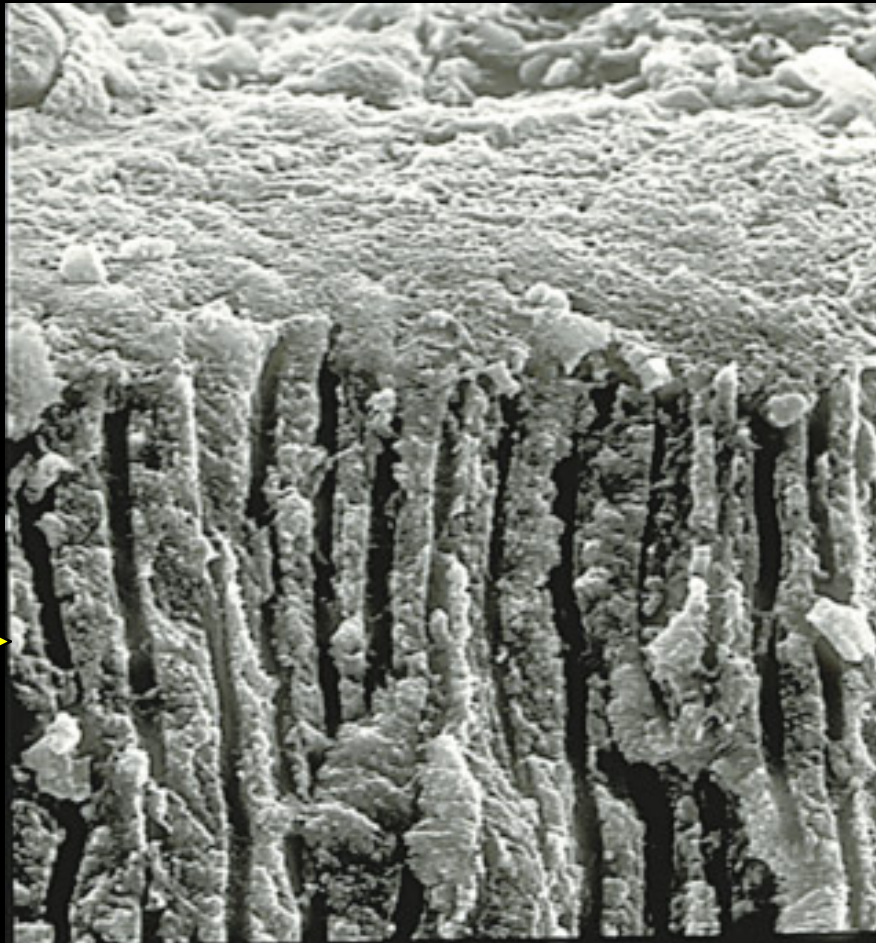










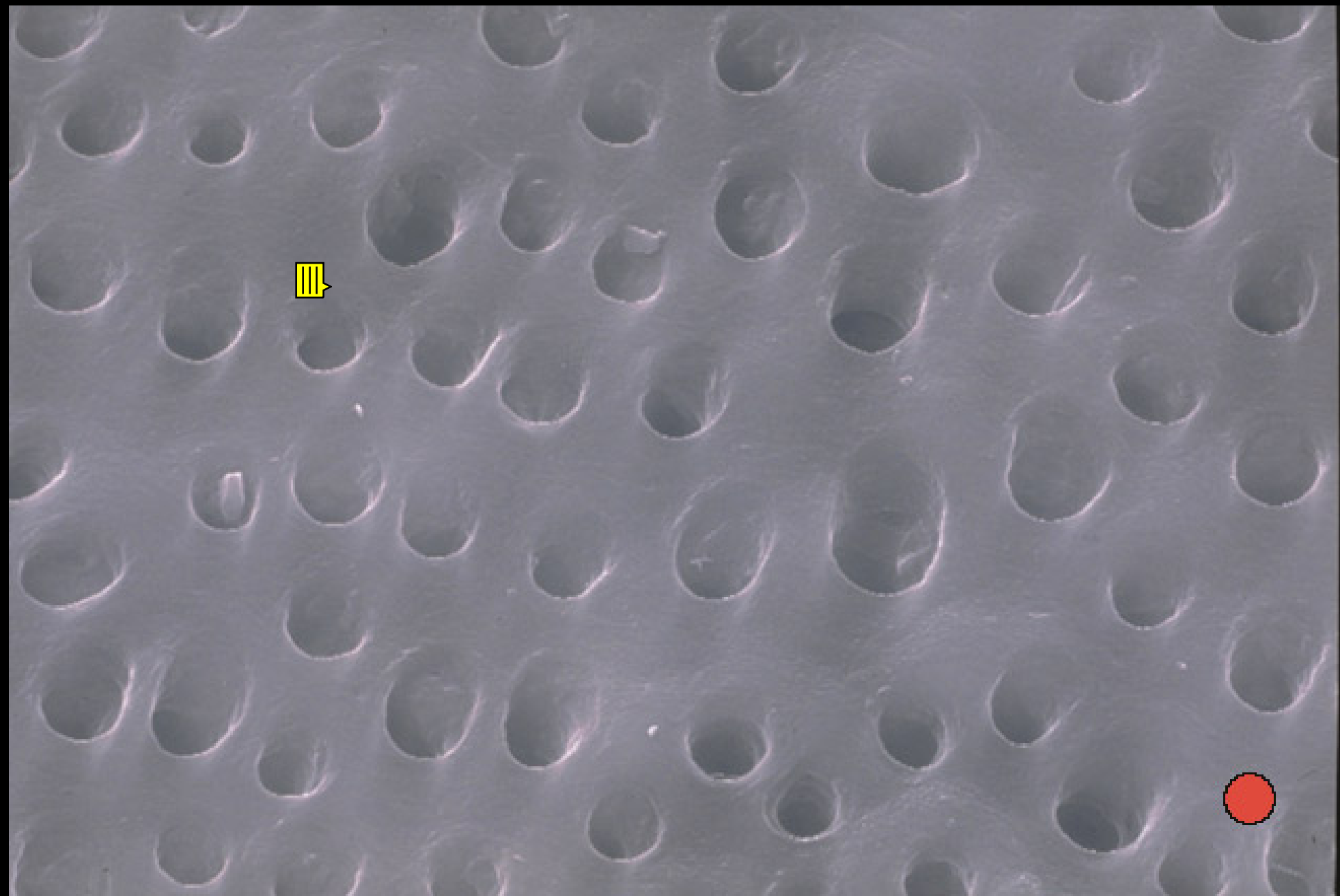


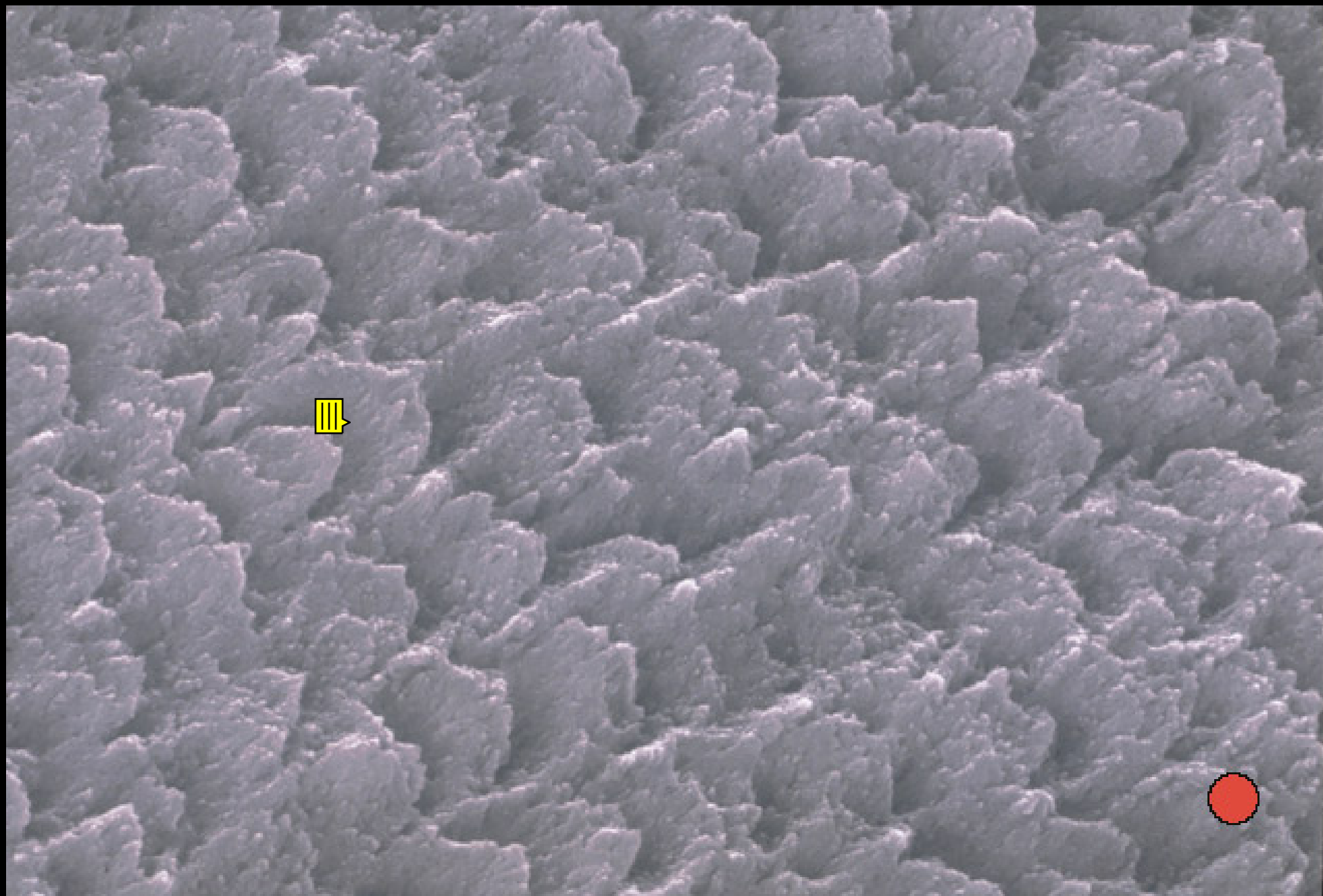
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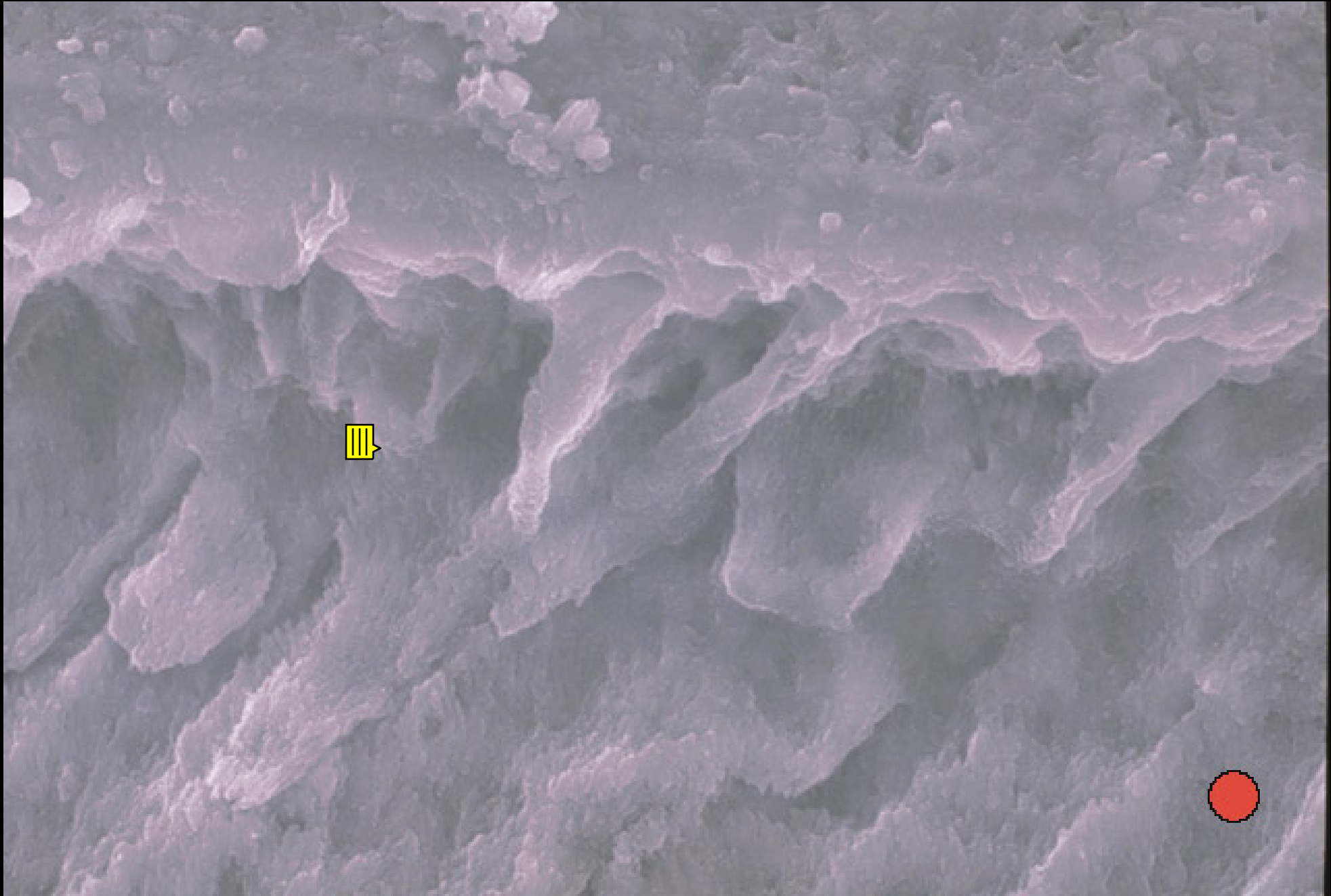


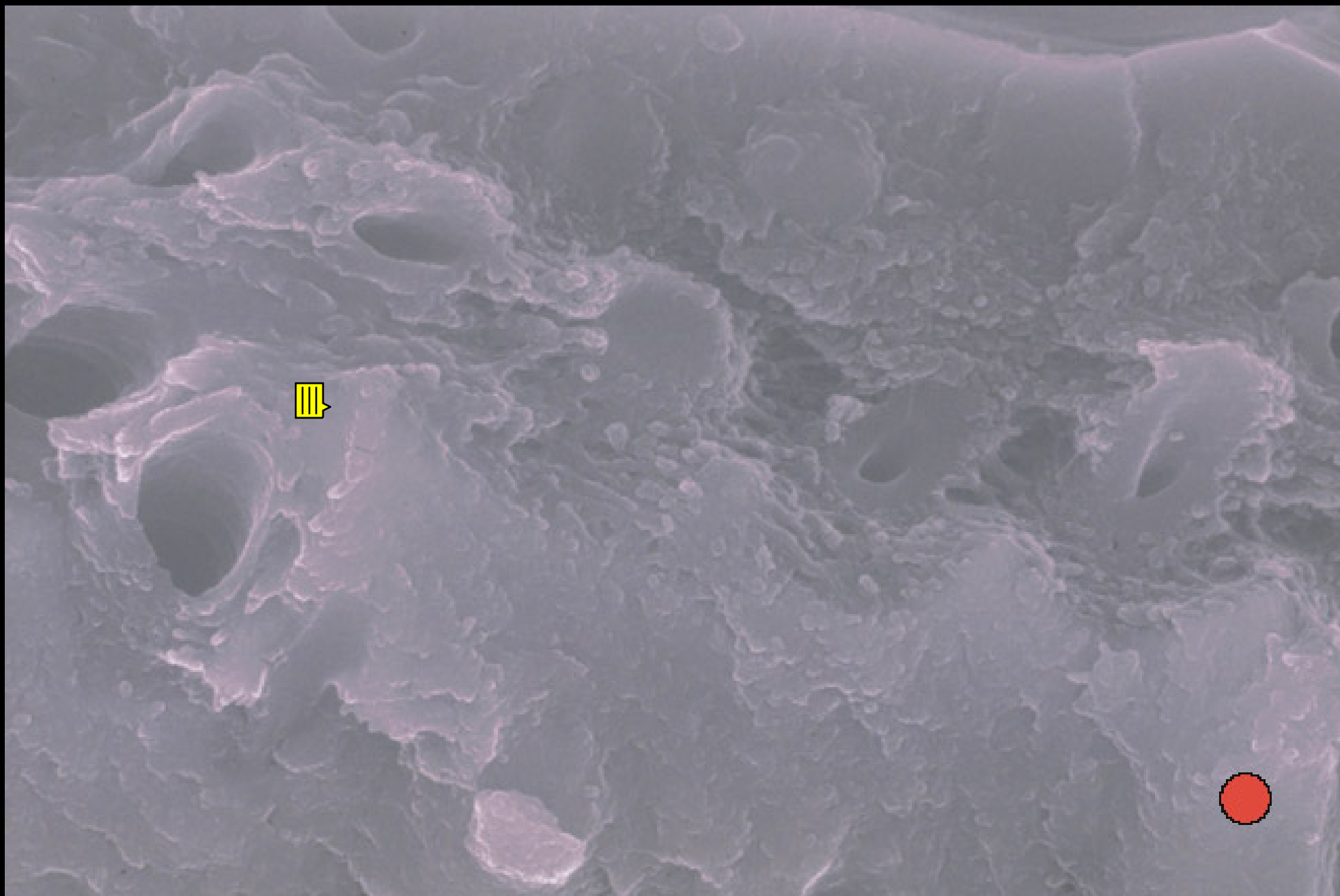


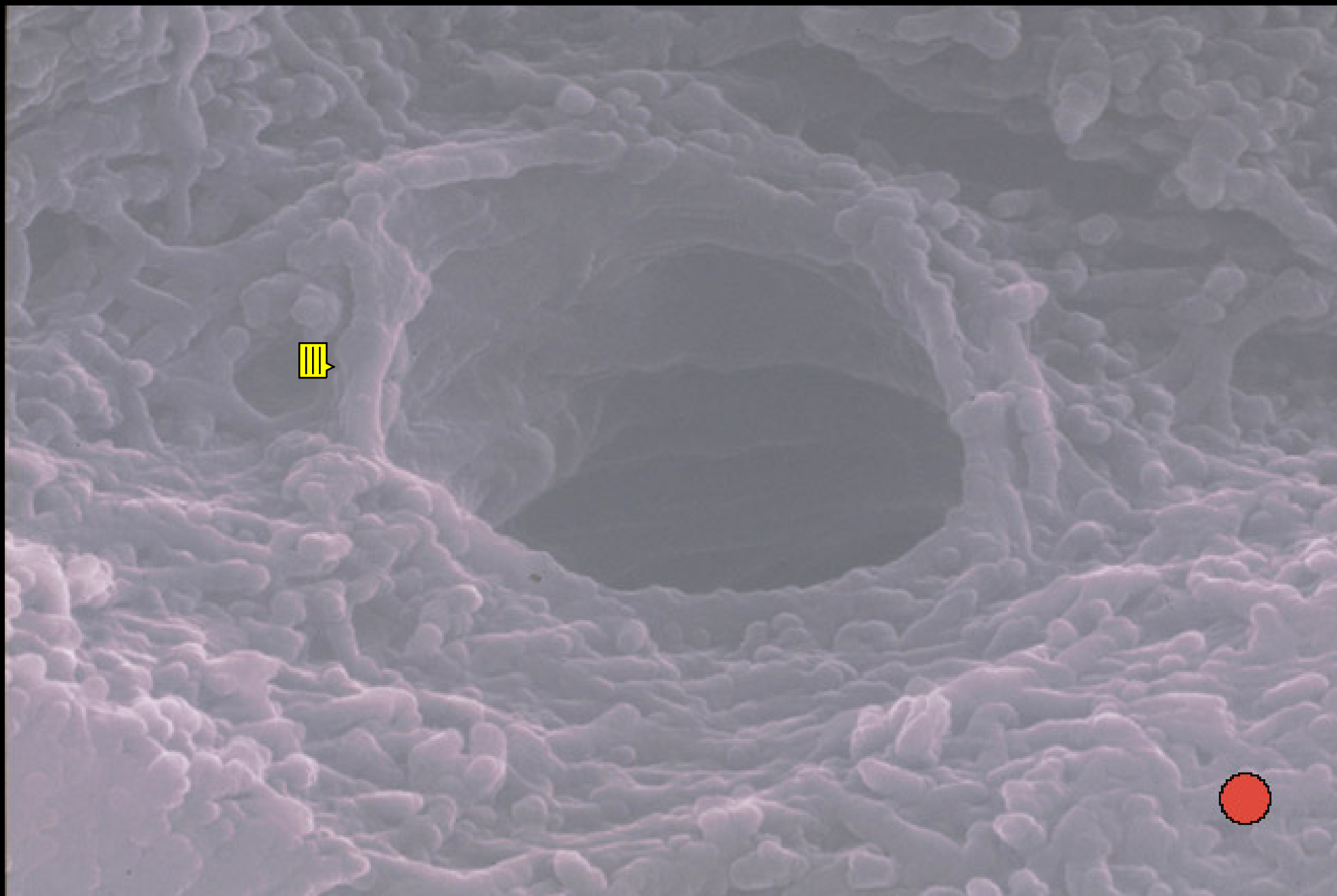
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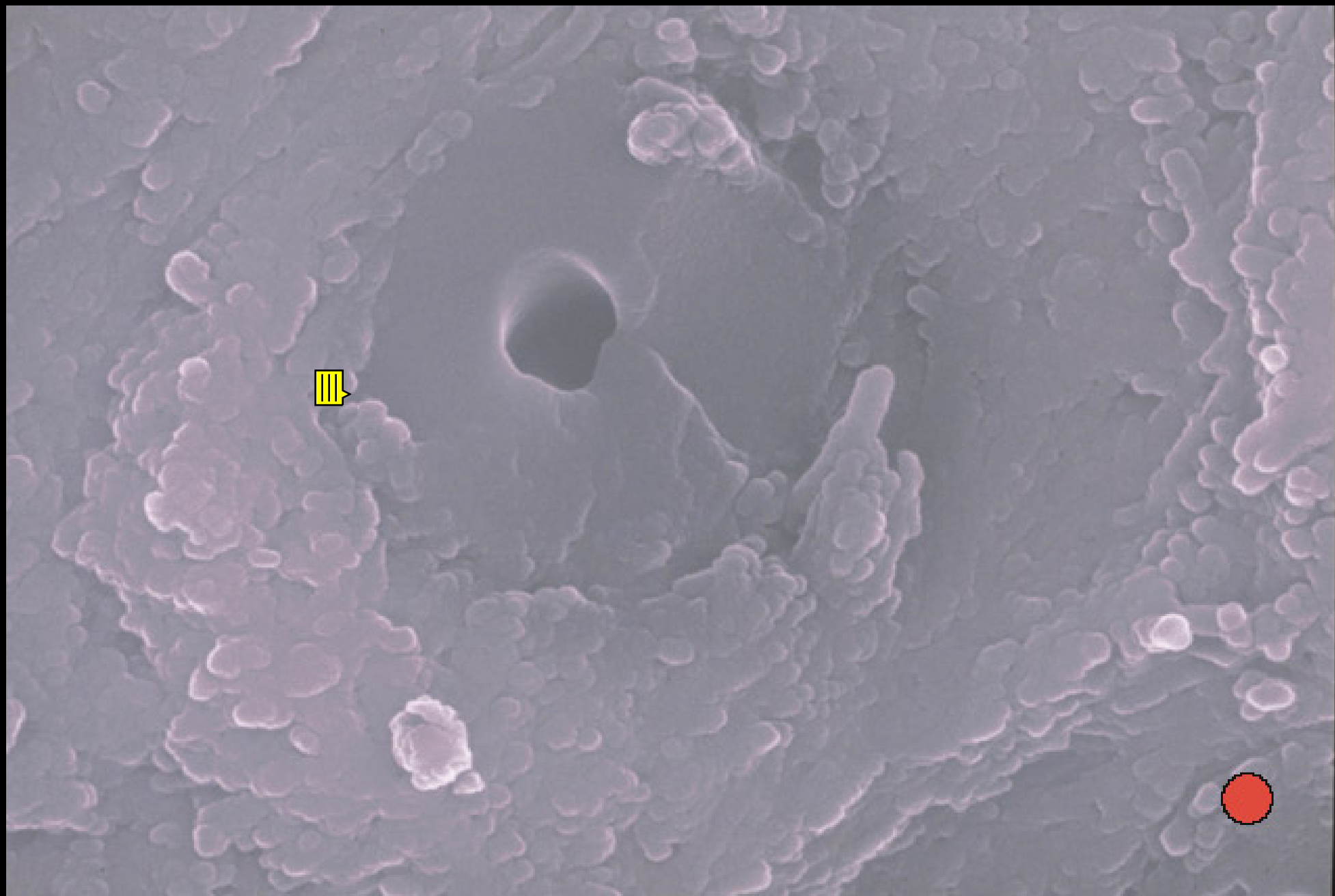


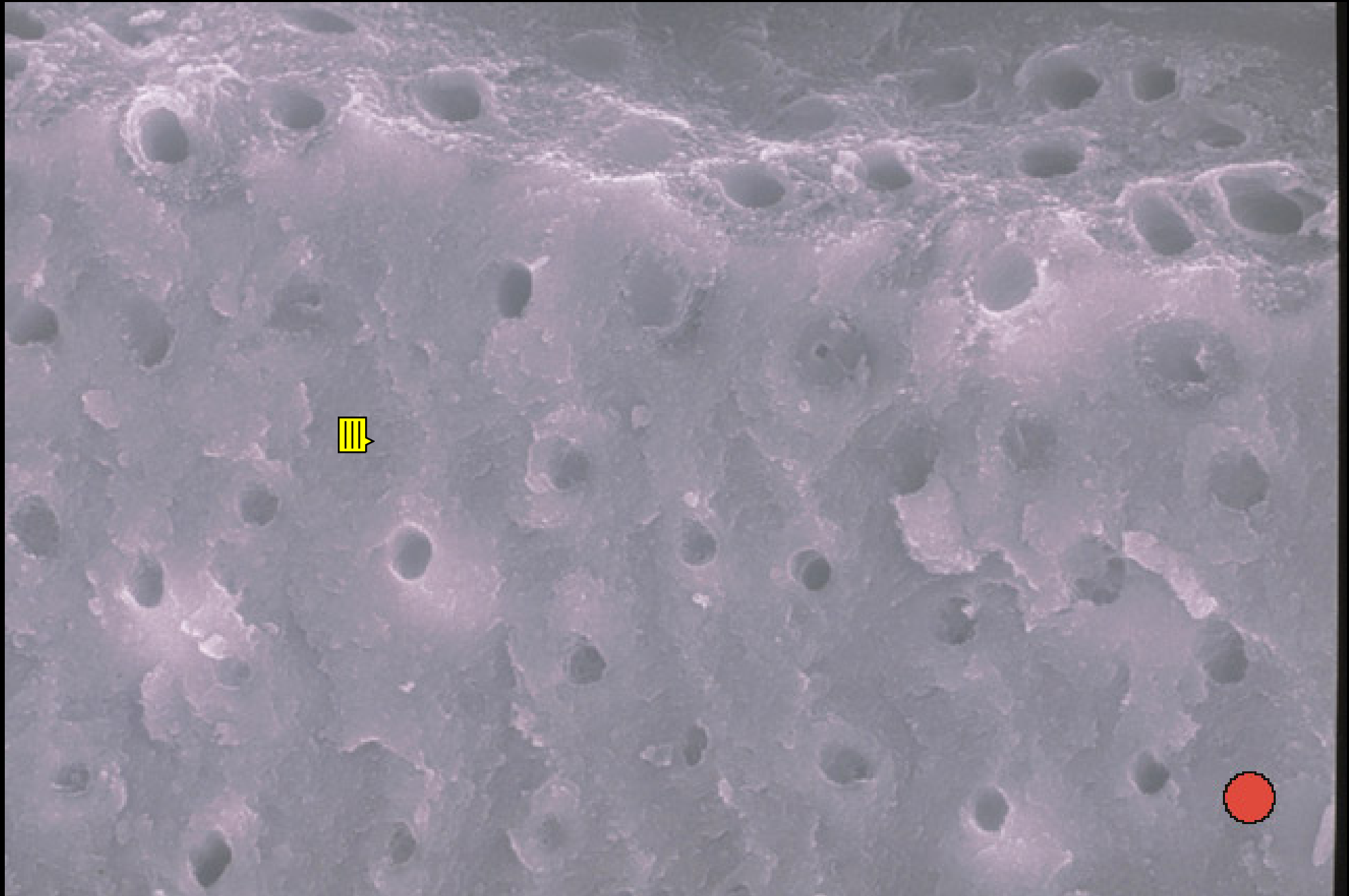


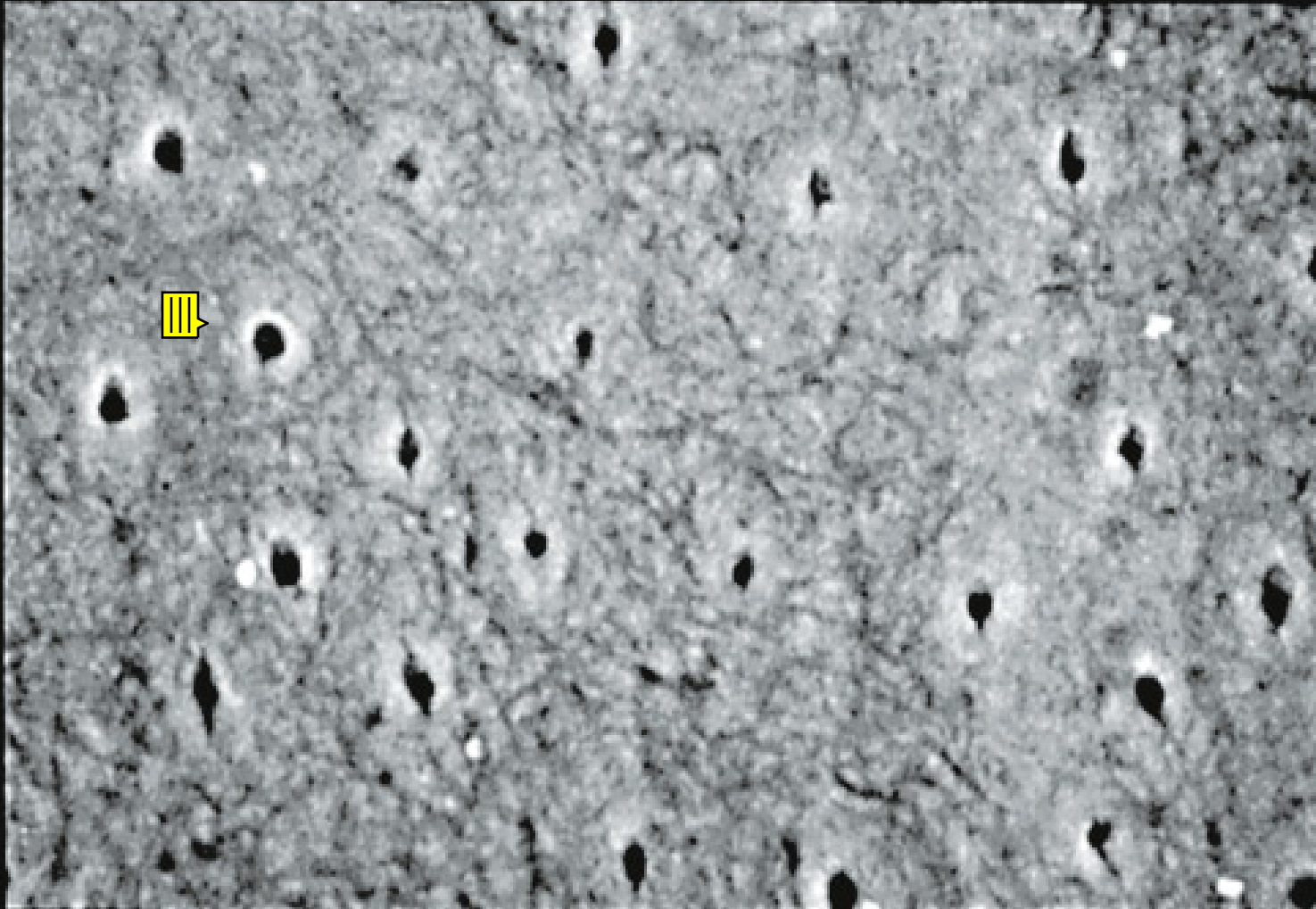


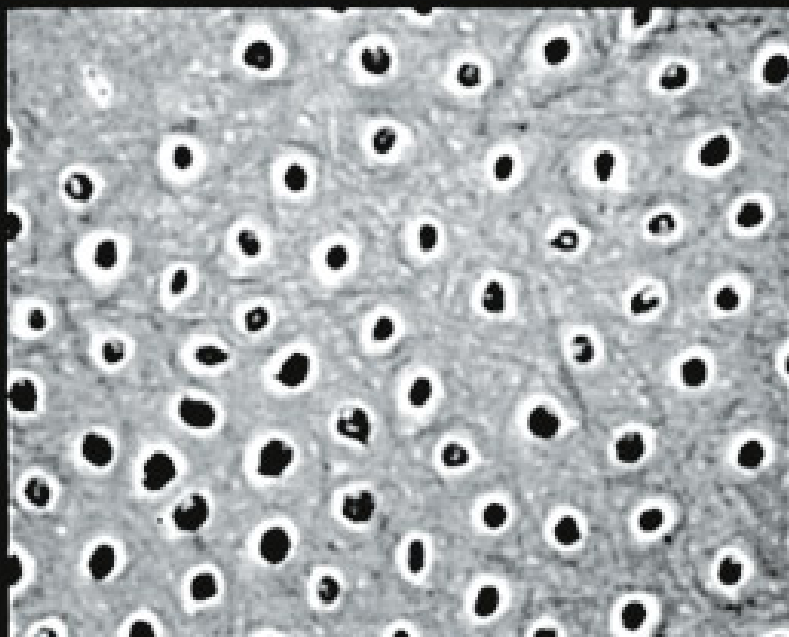






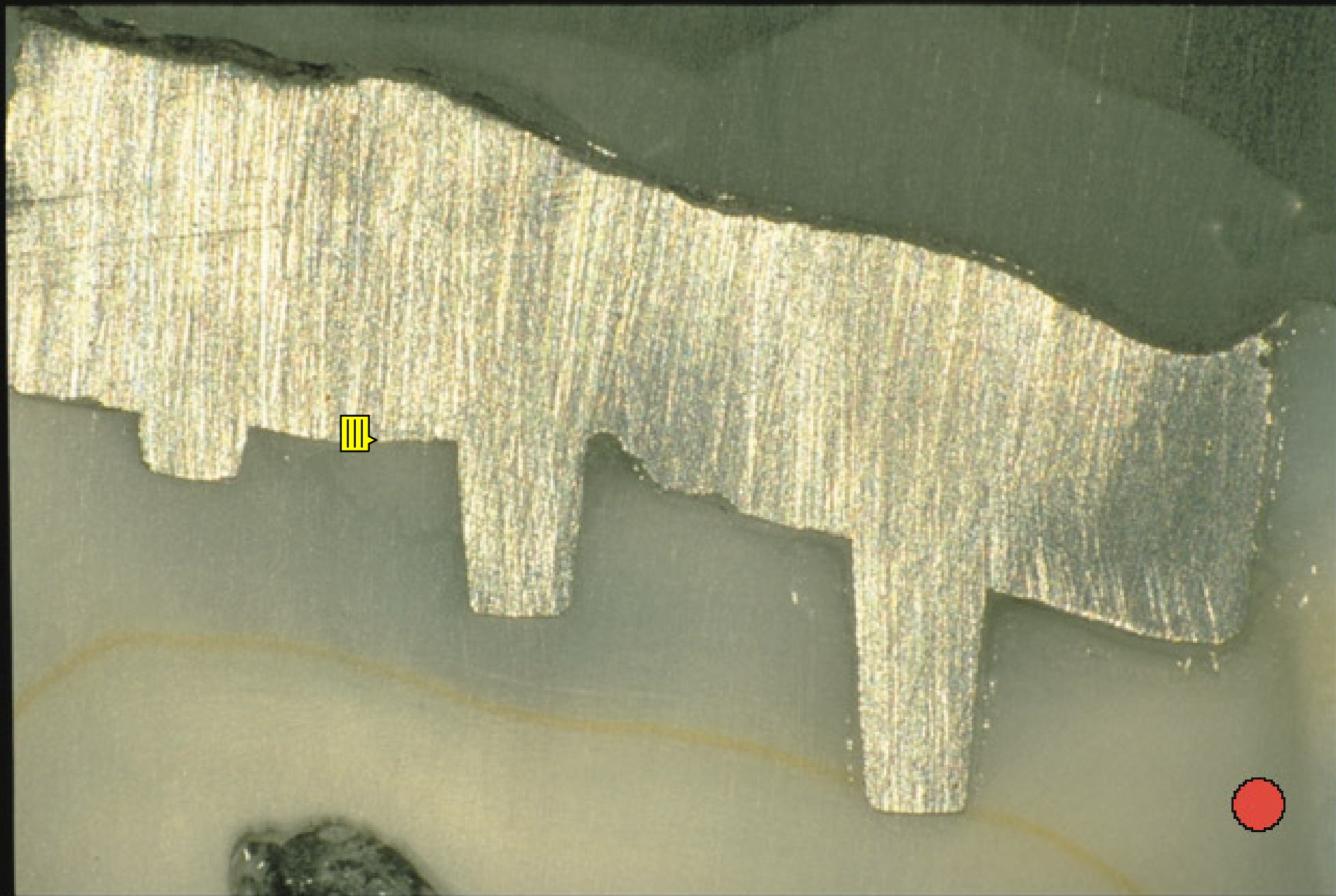


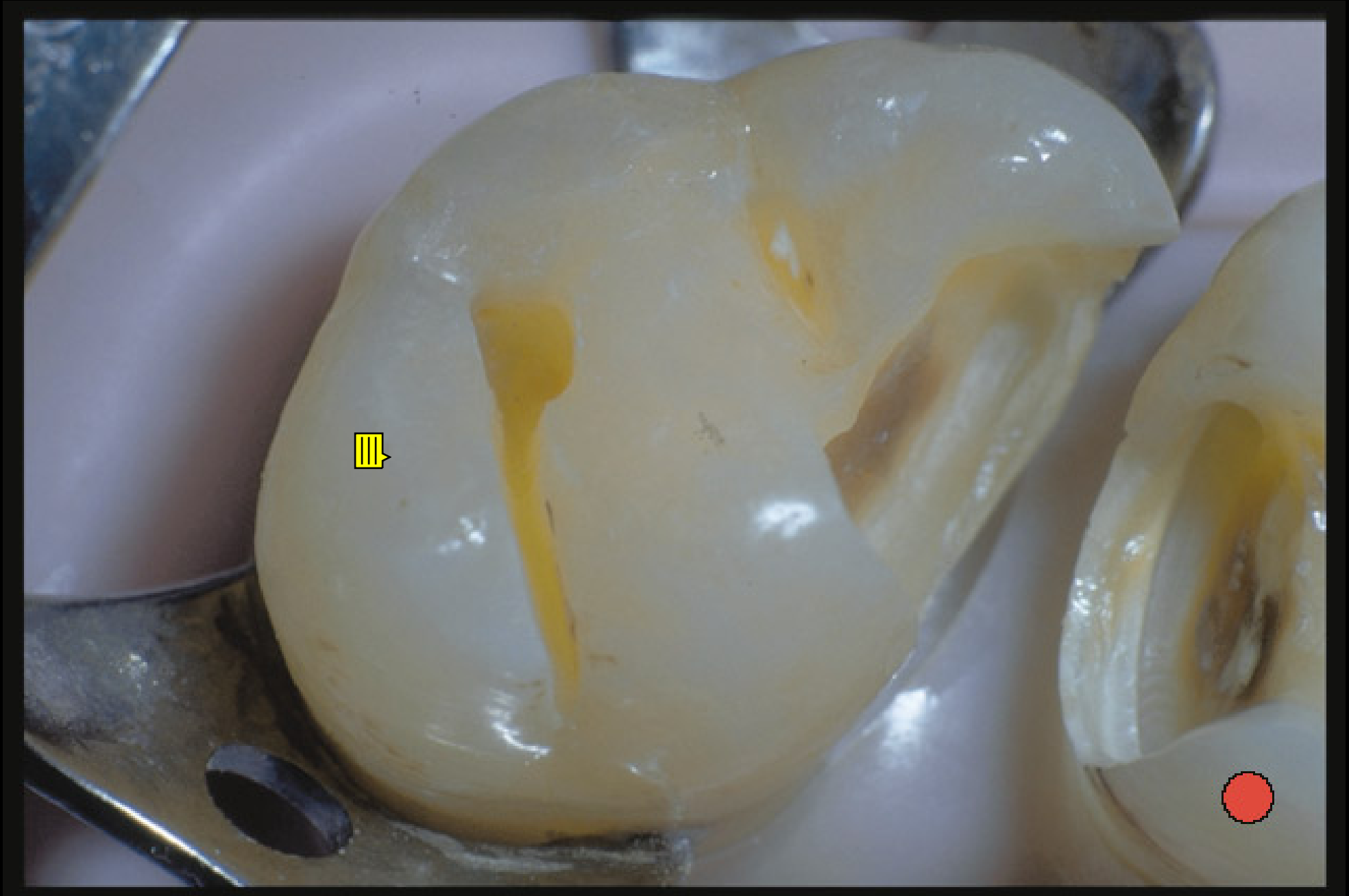


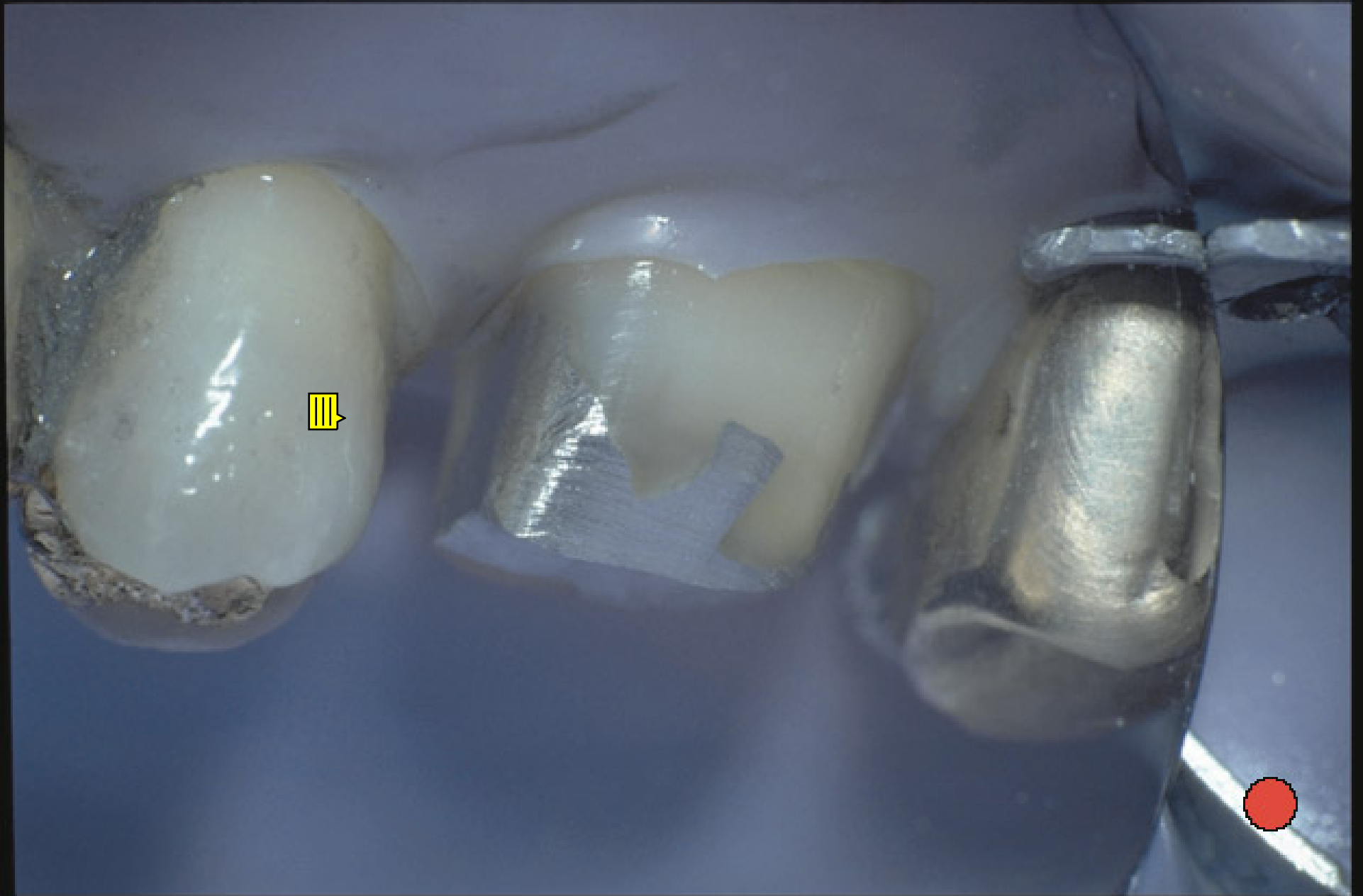




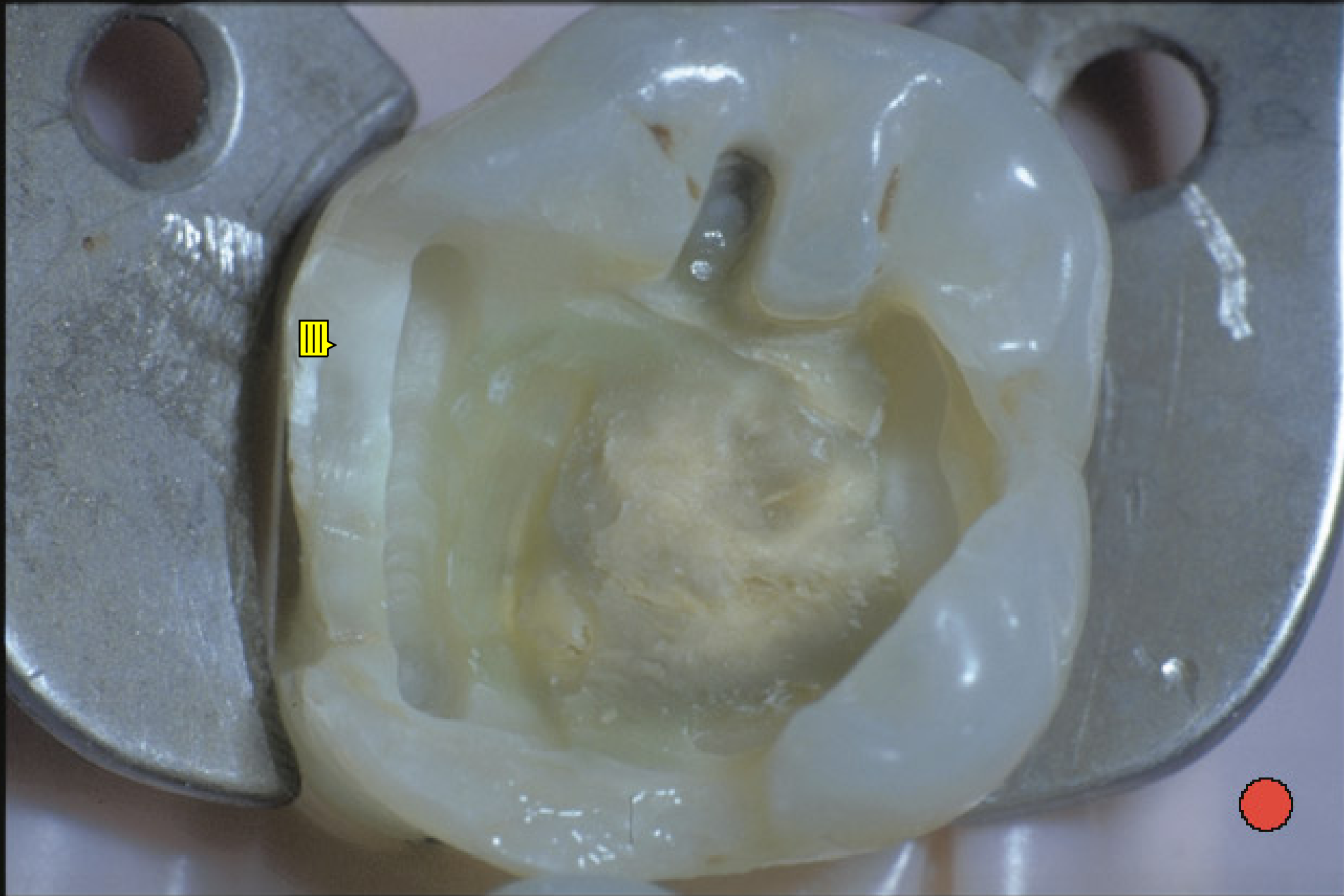




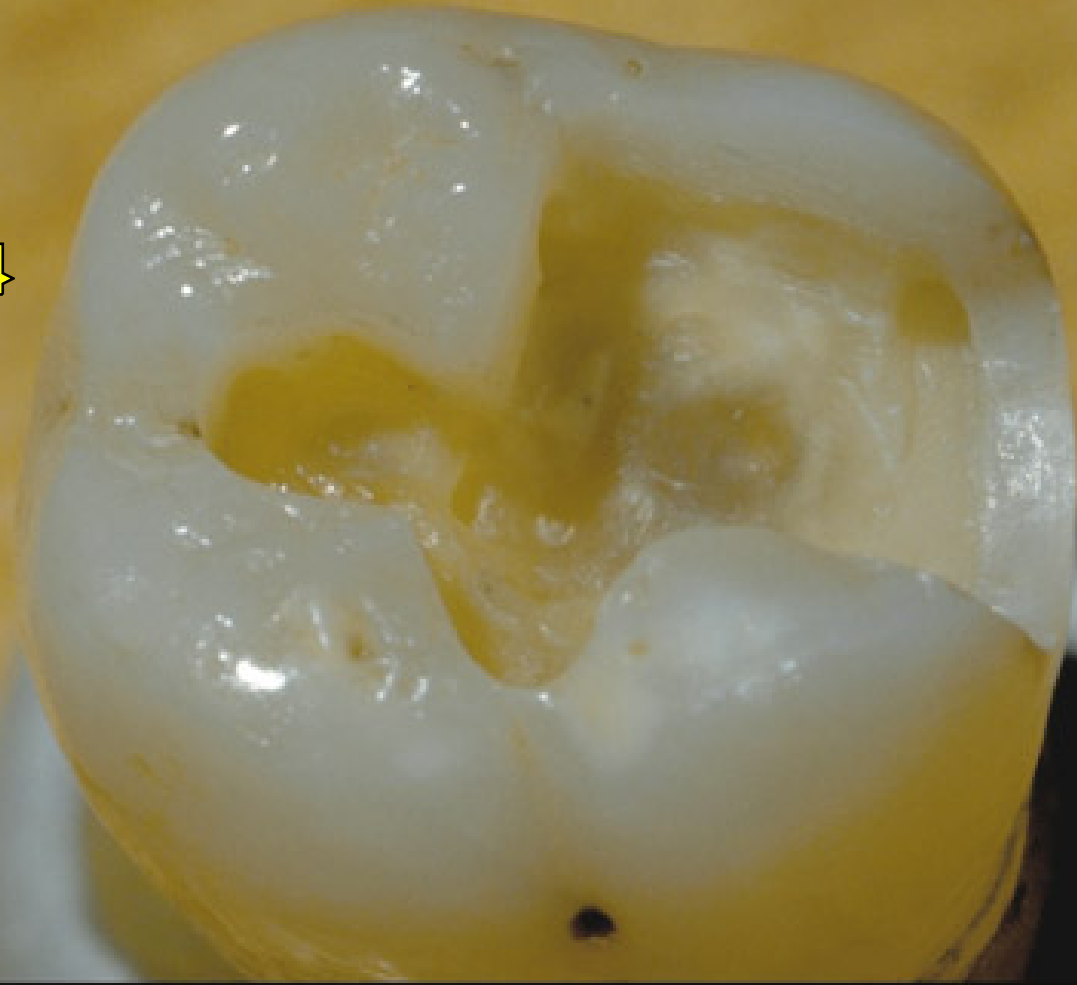








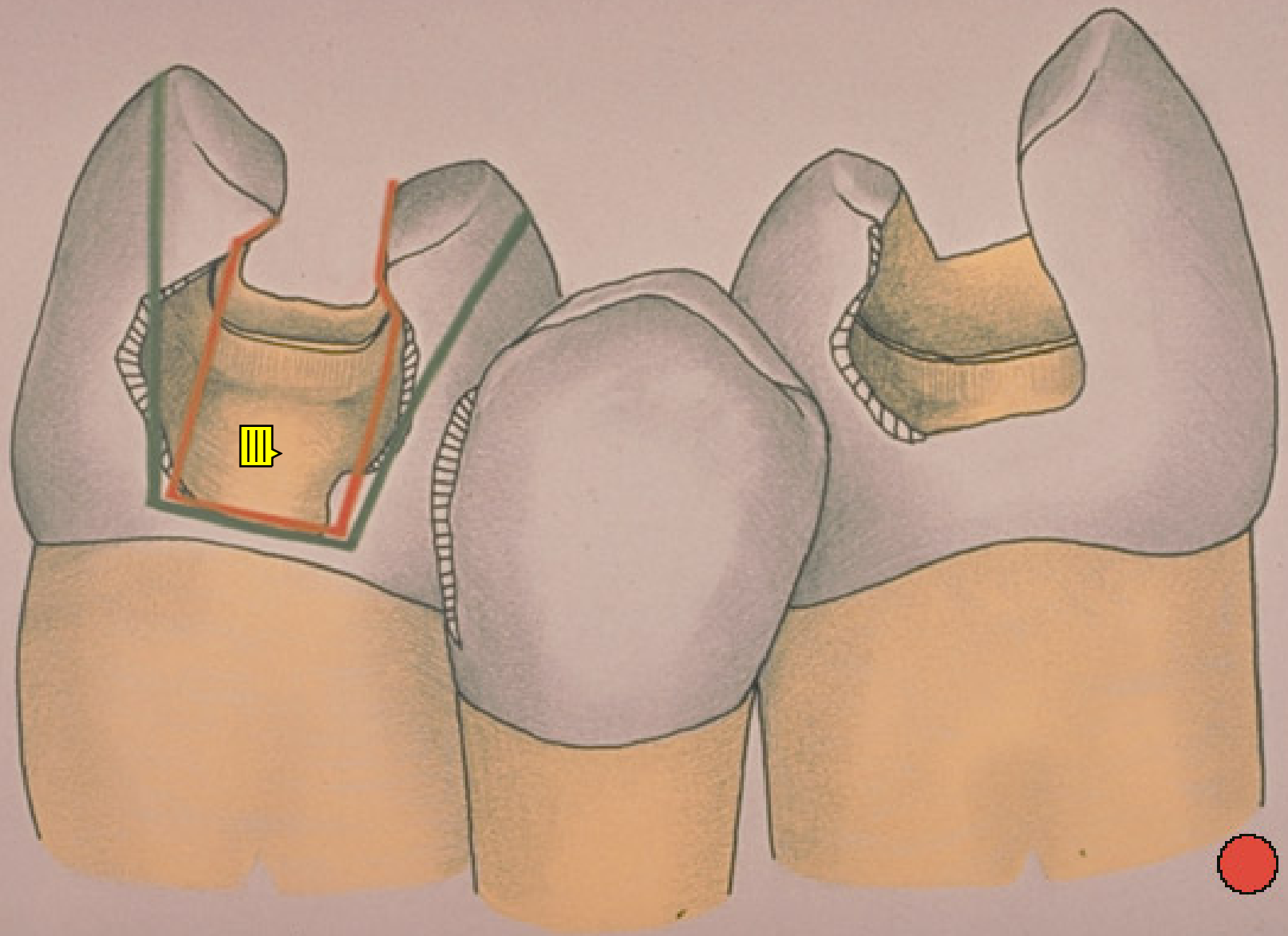


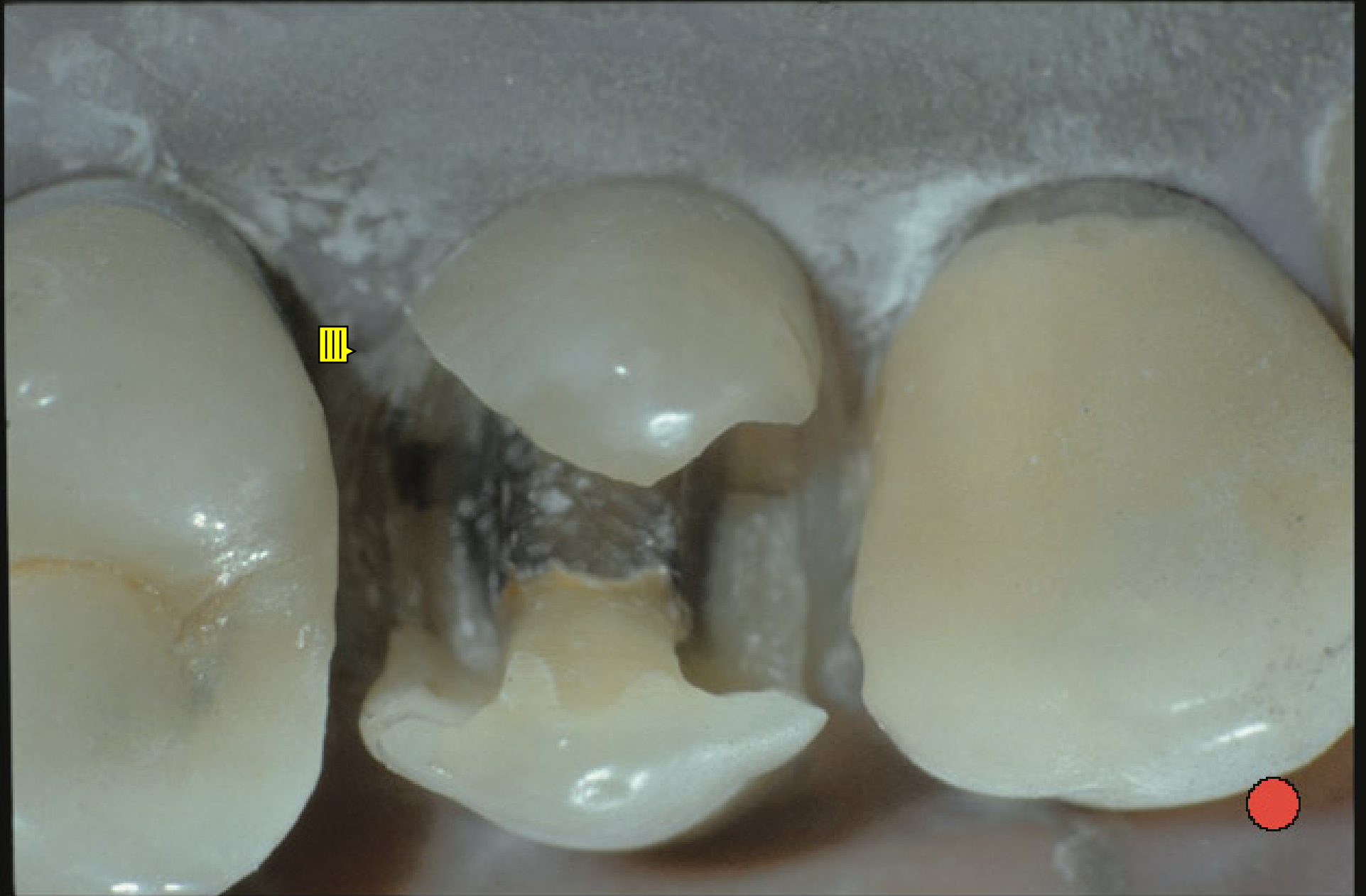




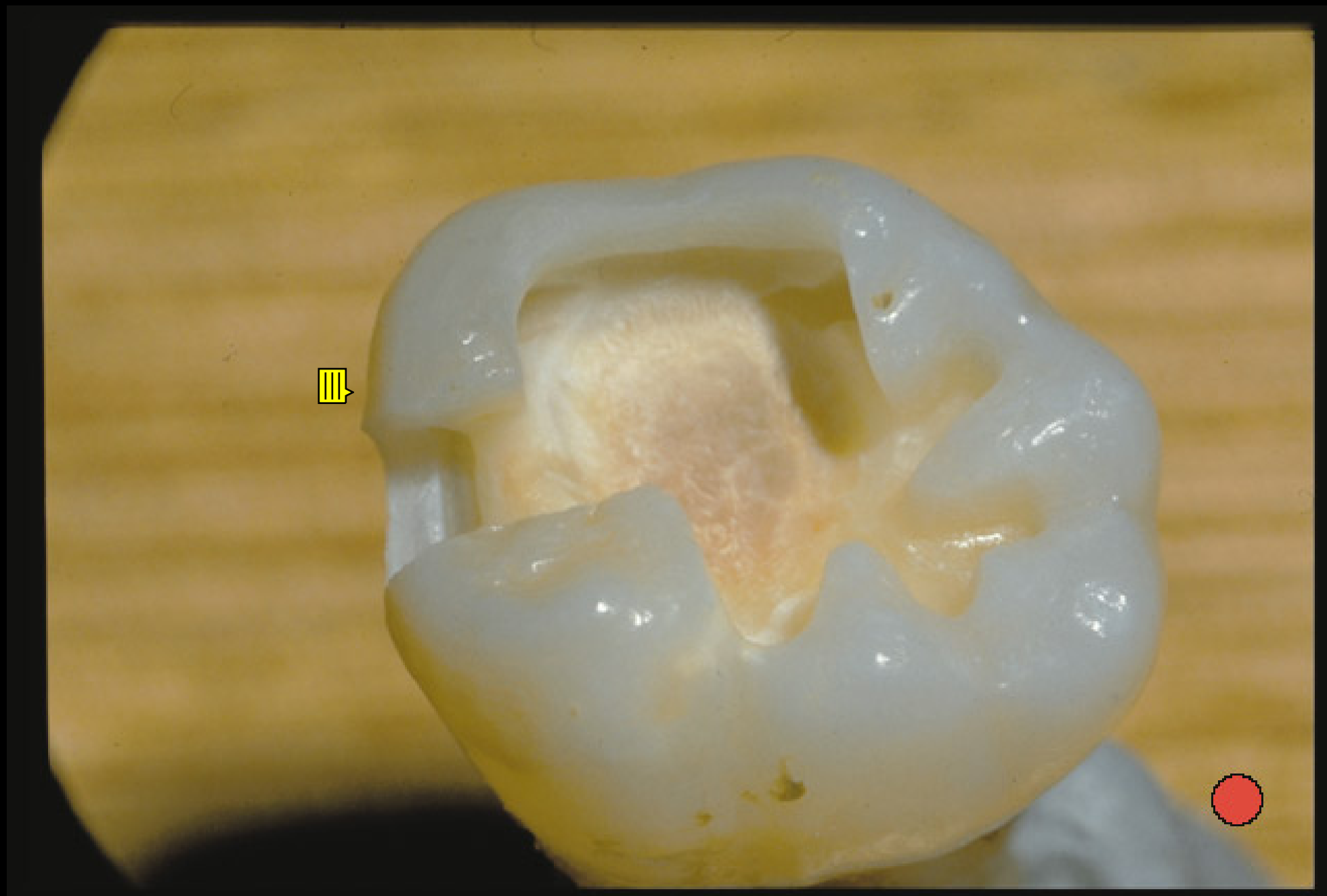




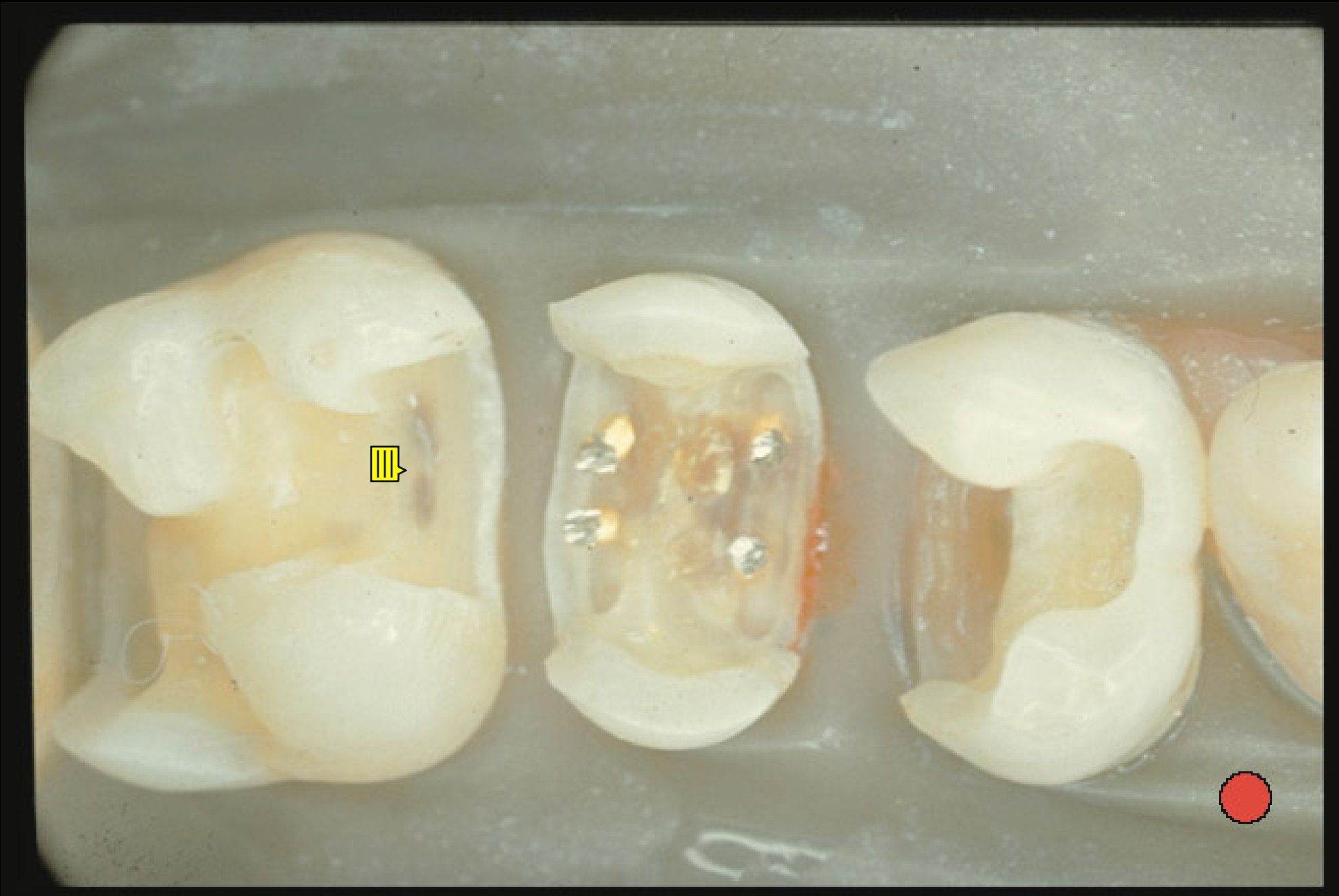


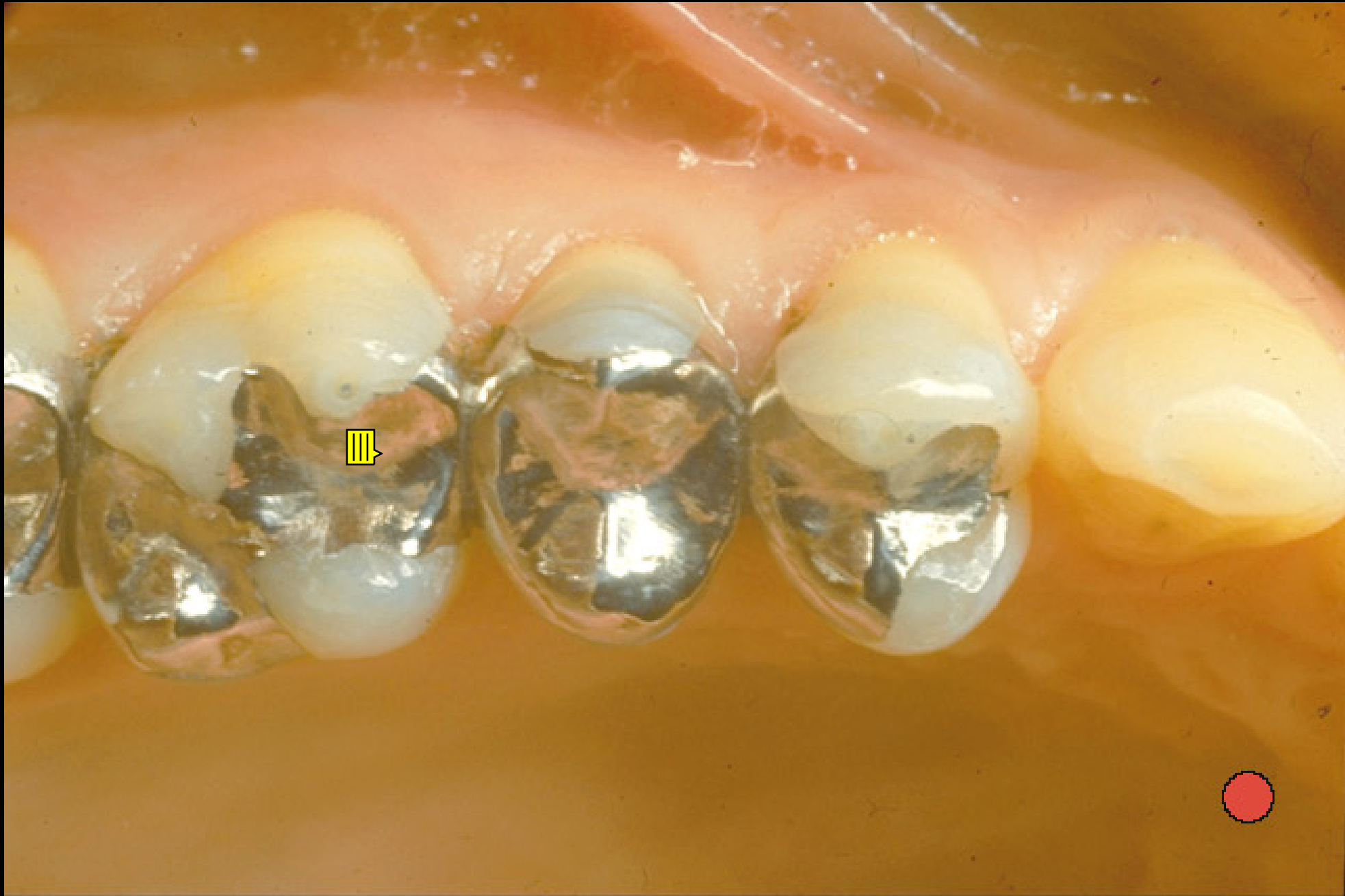












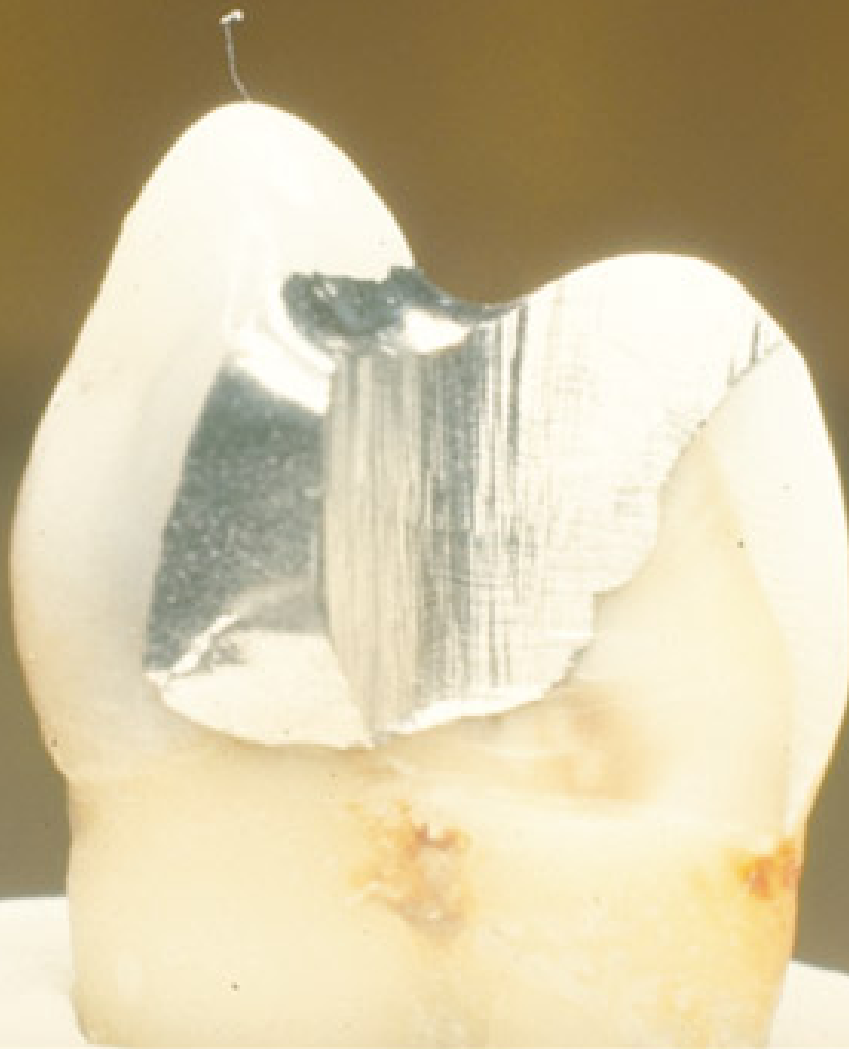












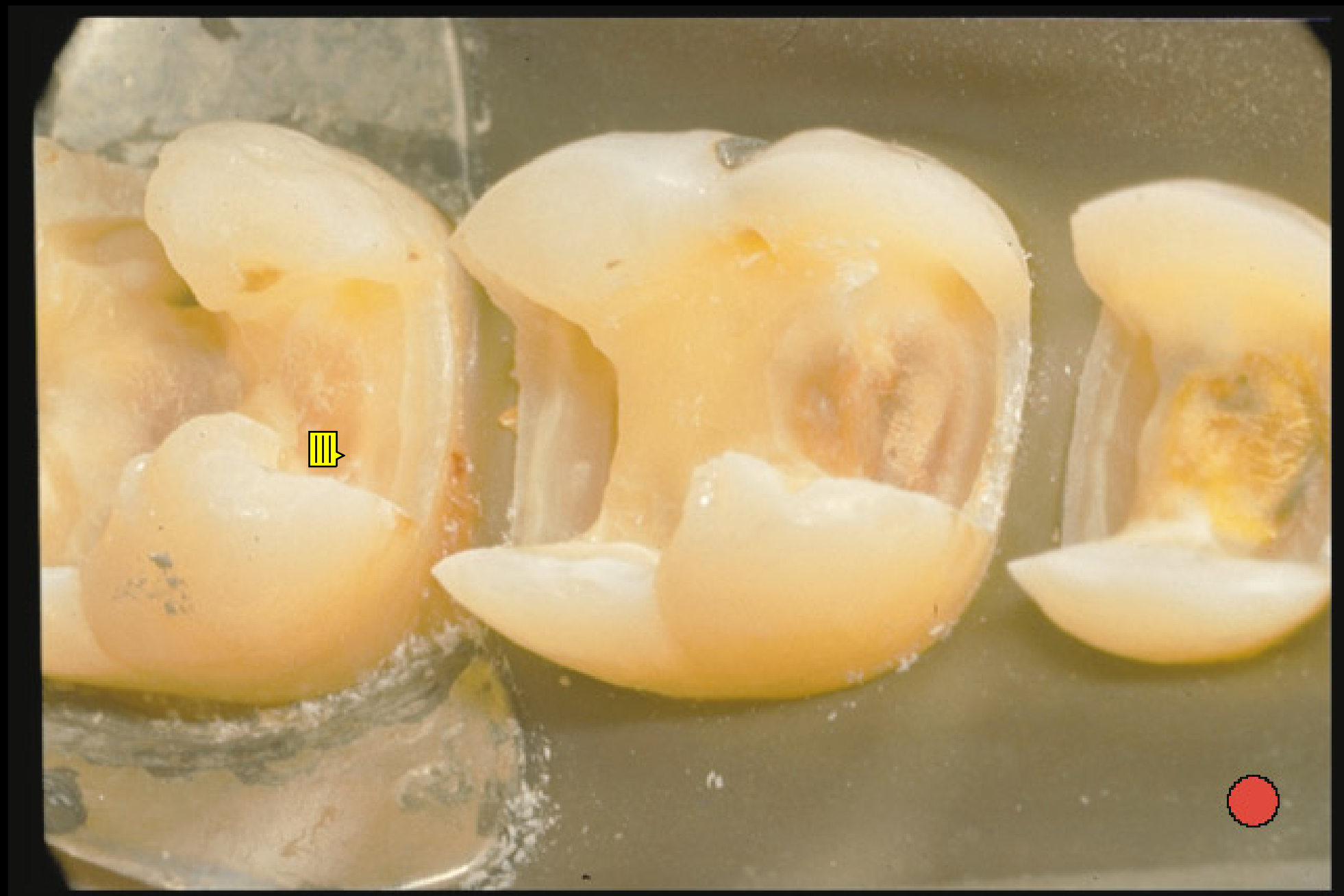










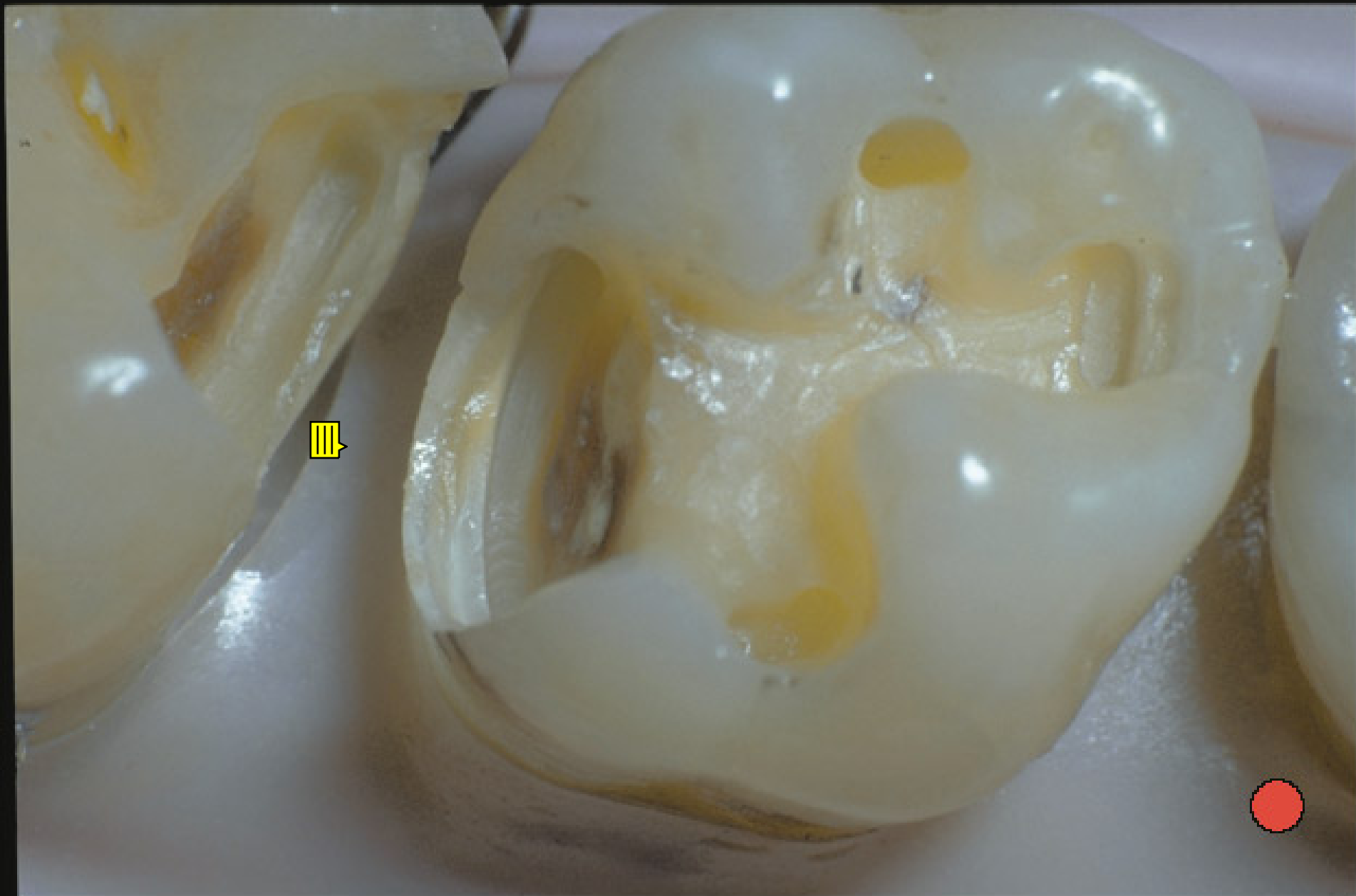


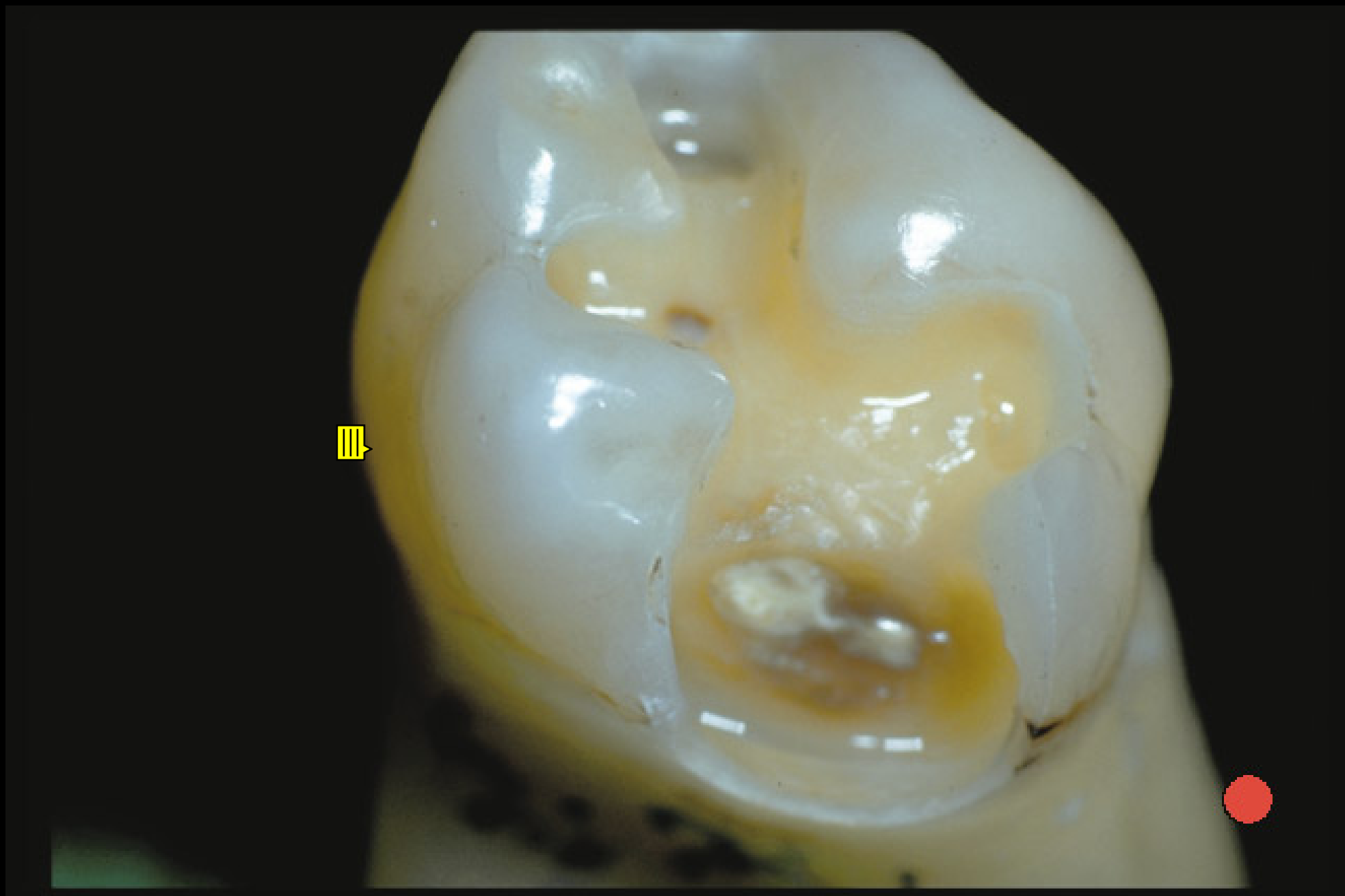












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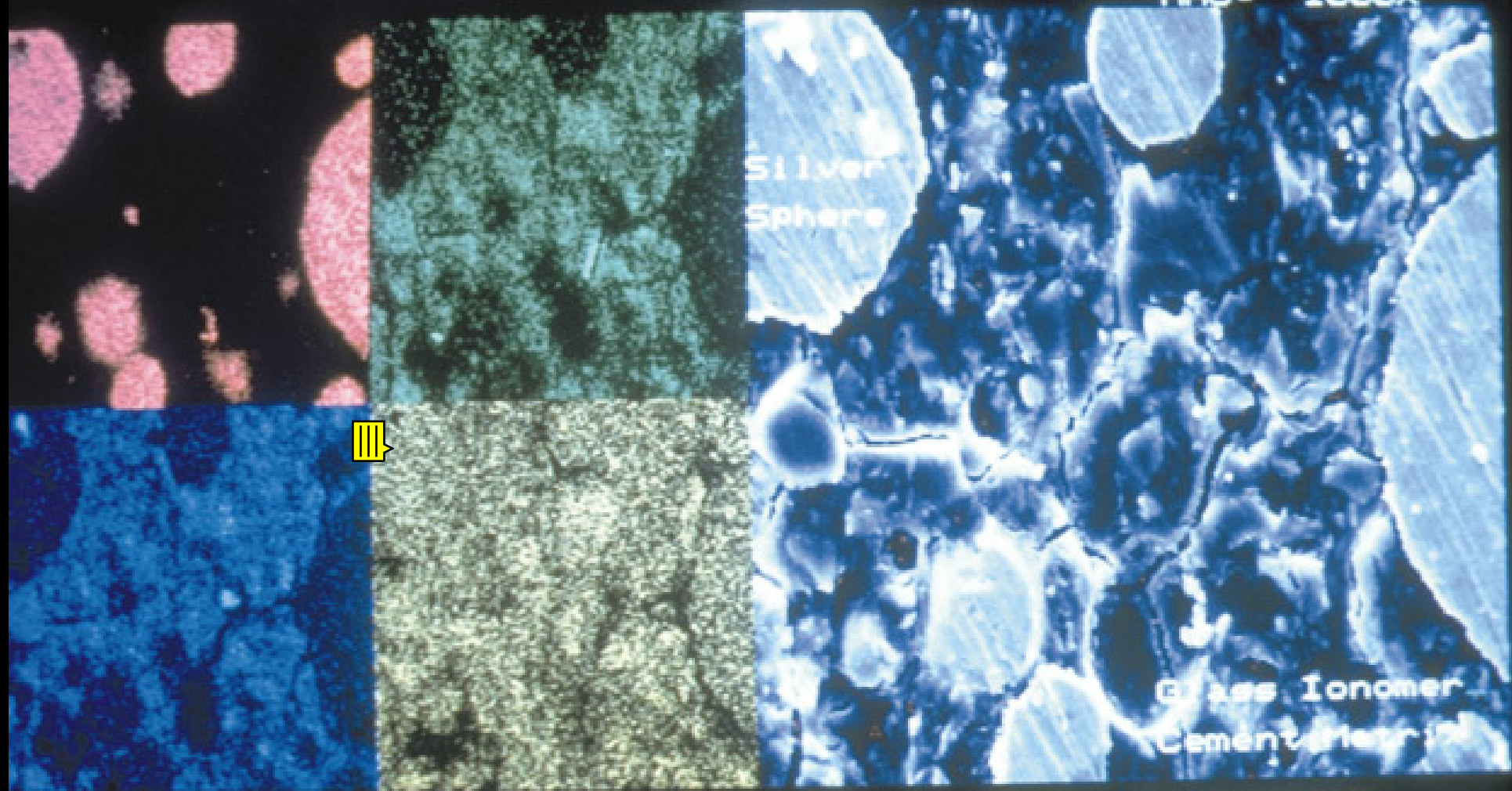
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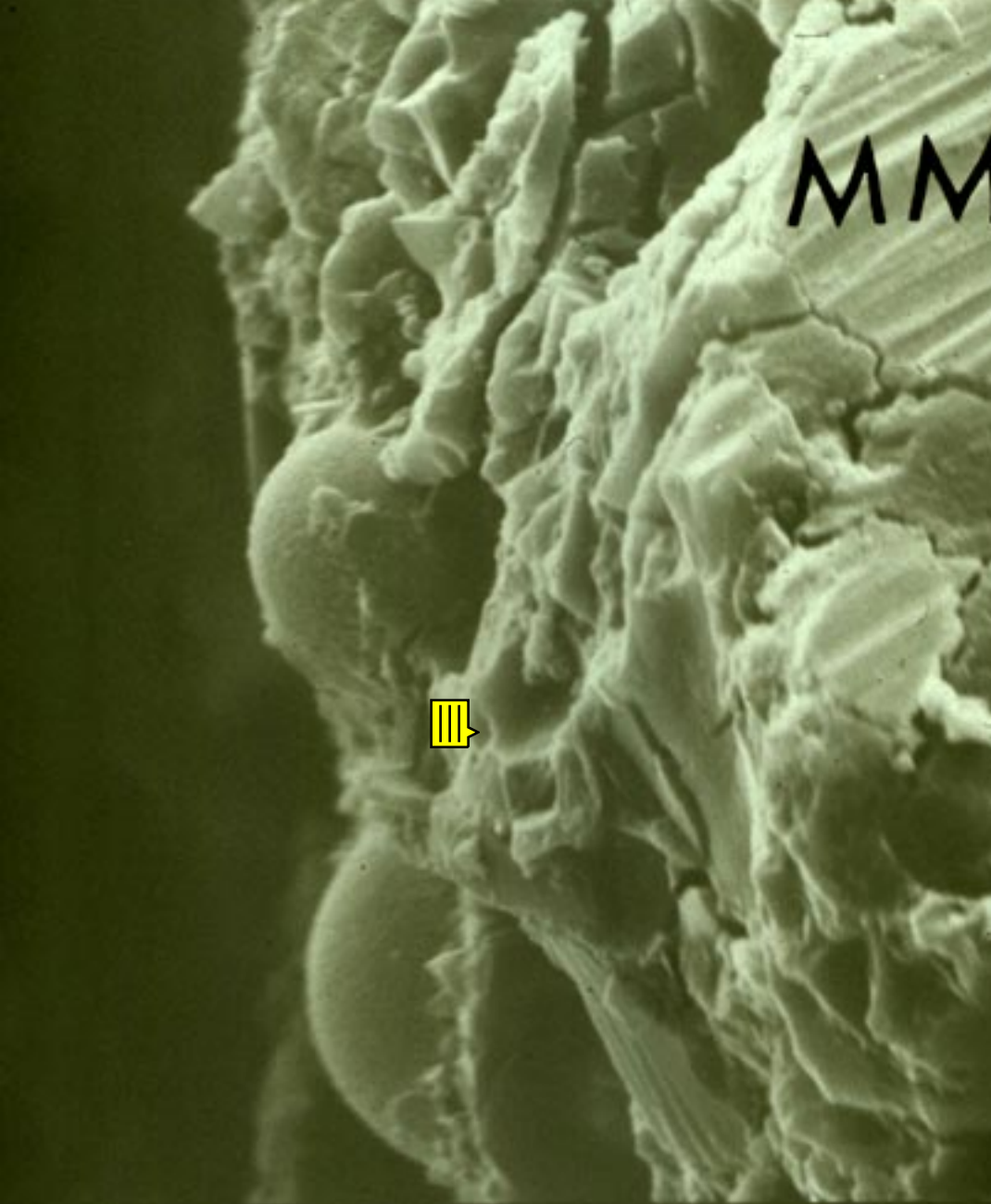
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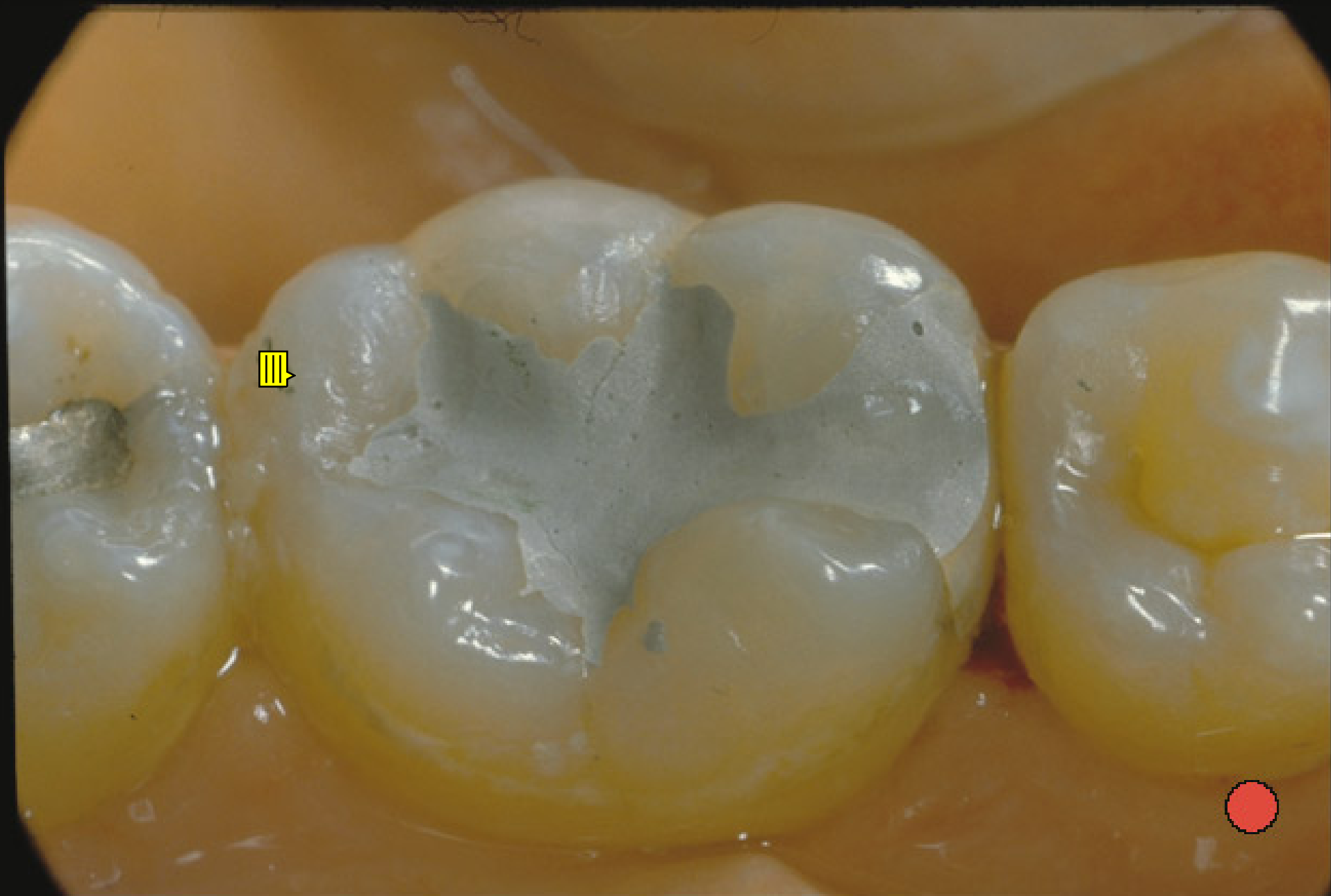
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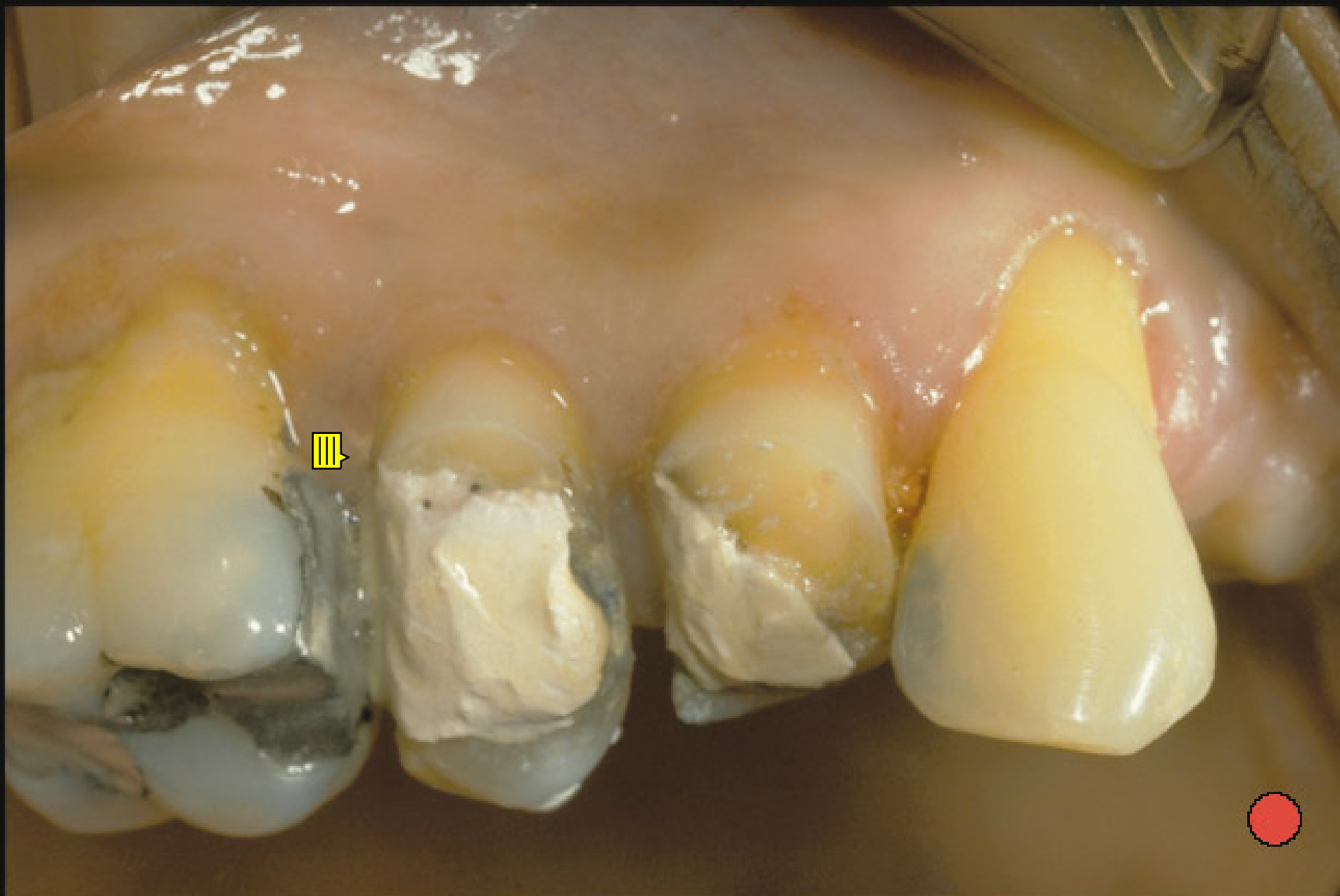




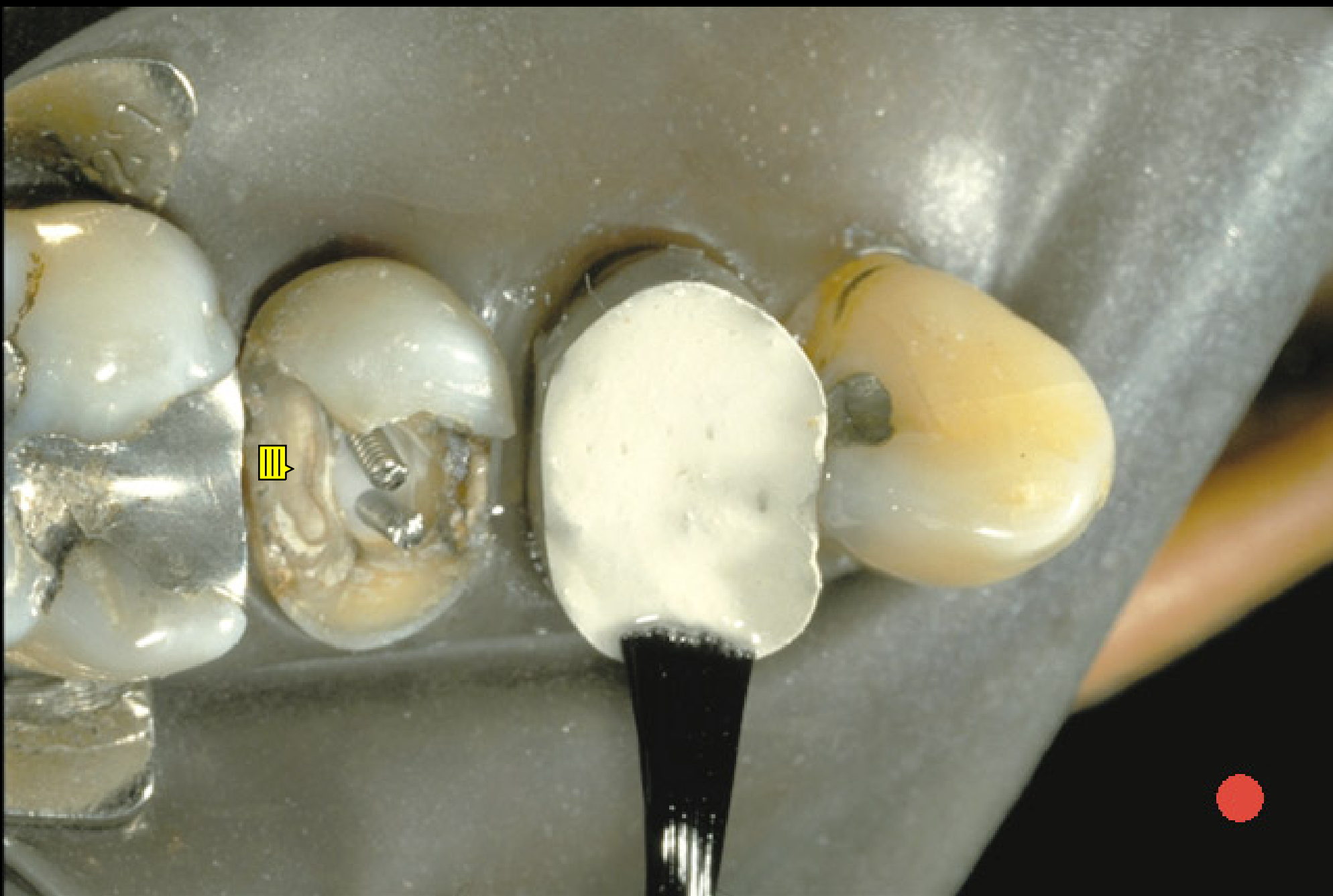


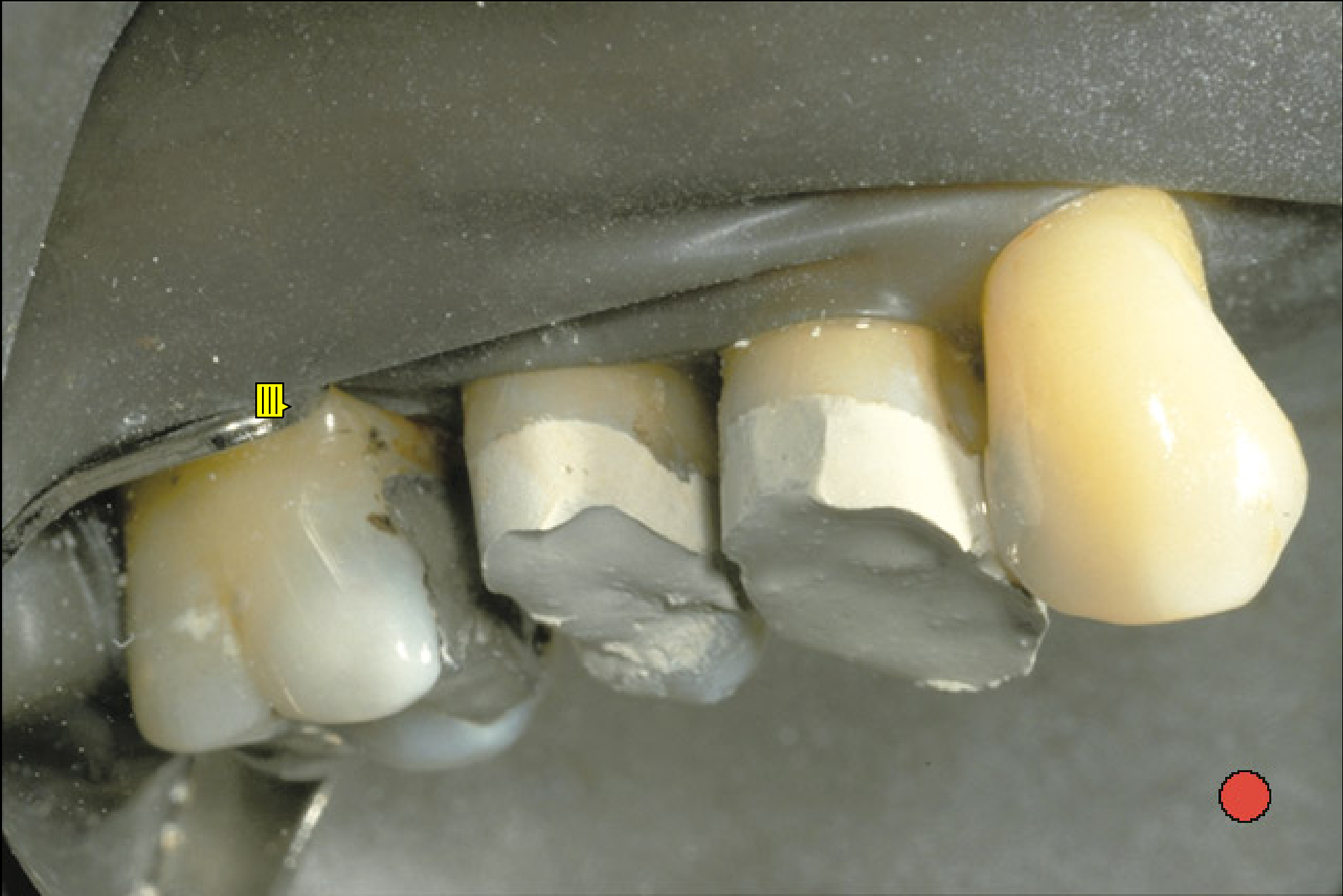














Chapter 9 : Composite resins

Author : RW Bryant

Dental composite resins were introduced commercially in the mid 1960s. The addition of inorganic fillers to synthetic resins created "composite" (or "filled resins") with substantially better strength and colour and considerably less shrinkage than unfilled resins.

Mechanical bonding of resins to enamel through acid-etching had already been developed in the 1950s and became common usage in by the mid 1970s. Activation of the polymerisation by intense visible light, developed in the late 1970s increased the range of clinical uses of these materials.

Chemically activated (auto cure) materials are still available and dual-activated composites, activated both chemically and by light, are available for luting purposes.

The principal use for composite resins is for direct placement into a prepared cavity or for lamination over the outside of a tooth to improve aesthetics. However, it can be also be used indirectly using a technique where a composite resin inlay is fabricated and then luted into a prepared cavity with a resin luting agent.

Each chapter has a series of photographs that supplement the text and illustrations in this book. By double clicking on the folder symbol (see the icon at right) you will be able to read a caption or commentary for that picture.



To go to the next image, click once on the red button. At the end of a sequence this button will return you to the chapter menu.



Chapter 10 : Dental Amalgams

Author : RW Bryant

An amalgam is an alloy of one or more metals with mercury.

"Dental amalgam" refers to a particular type of amalgam and it is the most commonly used and one of the oldest dental restorative materials. It is the product of an amalgamation reaction between particles of an alloy, containing essentially varying amounts of silver, copper and tin, with mercury.

There is still no adequate, economic alternative for dental amalgam as a restorative material for a moderate sized carious lesion in a high load bearing area. The combination of reliable long-term performance in load bearing situations and cost per unit restoration is unmatched by any other dental restorative material.

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Chapter 11 : Tooth preparation for restoration with plastic materials

Author : GJ Mount

When preventative measures and remineralisation fail and a carious lesion has progressed into the dentine there is a need to remove the infected dentine, and possibly some of the affected dentine as well, to eliminate cavitation and avoid further accumulation of plaque.

In most situations this will involve removal of a certain amount of enamel to achieve access but it must be noted that both enamel and dentine are capable of being remineralised and therefore conserved.

The principal of minimal extension is encouraged to allow maximum preservation of natural tooth structure. The proposed cavity classification is designed to make the most of the potential for healing, although it is accepted that a considerable proportion of restorative dentistry is carried out to replace failed restorations. In this case cavity design is complicated.

continue



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Chapter 11 : Tooth preparation for restoration with plastic materials (continued)

Classification - site and size

Site 1. Size 1 (#1.1)	minimal pits and fissures
Site 1. Size 2 (#1.2)	moderate pits and fissures
Site 1. Size 3 (#1.3)	pits and fissures requiring enlarging to support remaining tooth structure
Site 1. Size 4 (#1.4)	originally pits and fissures but extensive loss of tooth structure including cusp loss
Site 2. Size 1 (#2.1)	minimal interproximal lesion
Site 2. Size 2 (#2.2)	moderate interproximal lesion
Site 2. Size 3 (#2.3)	interproximal lesion requiring enlarging to support remaining tooth structure
Site 2. Size 4 (#2.4)	originally interproximal lesion but extensive loss of tooth structure including cusp loss
Site 3. Size 1 (#3.1)	minimal cervical lesion including erosion or minor caries
Site 3. Size 2 (#3.2)	moderate cervical lesion with active caries
Site 3. Size 3 (#3.3)	cervical lesion involving two surfaces particularly root surface lesions
Site 3. Size 4 (#3.4)	cervical lesion involving three or more surfaces

continue



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Chapter 11 : Tooth preparation for restoration with plastic materials (continued)

Author : GJ Mount

The **THREE SITES** of carious lesions

Carious lesions occur in three sites on the crown or root of a tooth.
That is in those areas subject to the accumulation of plaque.

These are :

SITE 1 : pits, fissures and enamel defects on occlusal surfaces of posterior teeth
or other smooth surfaces.

SITE 2 : approximal enamel immediately below areas in contact with adjacent teeth.

SITE 3 : the cervical one-third of the crown or, following gingival recession,
the exposed root.

continue



Each chapter has a series of photographs that supplement the text and illustrations in this book. By double clicking on the folder symbol (see the icon at right) you will be able to read a caption or commentary for that picture.



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Chapter 11 : Tooth preparation for restoration with plastic materials (continued)

Author : GJ Mount

The **FOUR SIZES** of carious lesions

Taking into account the progress of the carious lesion, described before, it is possible to consider restoration in **FOUR SIZES** regardless of the **SITE** of origin of the lesion :

SIZE 1 : MINIMAL involvement of dentine just beyond treatment by remineralising alone.

SIZE 2 : MODERATE involvement of dentine. Following cavity preparation remaining enamel is sound, well supported by dentine and not likely to fail under normal occlusal load. The tooth is sufficiently strong to support the restoration

SIZE 3 : the cavity is ENLARGED beyond moderate. Remaining tooth structure is weakened to the extent that cusps or incisal edges are split, or are likely to fail if left exposed to occlusal load. The cavity needs to be further enlarged so that the restoration can be designed to provide support to the remaining tooth structure.

SIZE 4 : EXTENSIVE caries or bulk loss of tooth structure has already occurred.

continue



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Chapter 11 : Tooth preparation for restoration with plastic materials (continued)

Author : GJ Mount

The Classification of Carious Lesions

	SIZE 1 minimal	SIZE 2 moderate	SIZE 3 enlarged	SIZE 4 extensive
SITE 1 Pit or fissure	1.1	1.2	1.3	1.4
SITE 2 Contact area	2.1	2.2	2.3	2.4
SITE 3 Cervical	3.1	3.2	3.3	3.4

Pick a number to view pictures for that site

Each chapter has a series of photographs that supplement the text and illustrations in this book. By double clicking on the folder symbol (see the icon at right) you will be able to read a caption or commentary for that picture.



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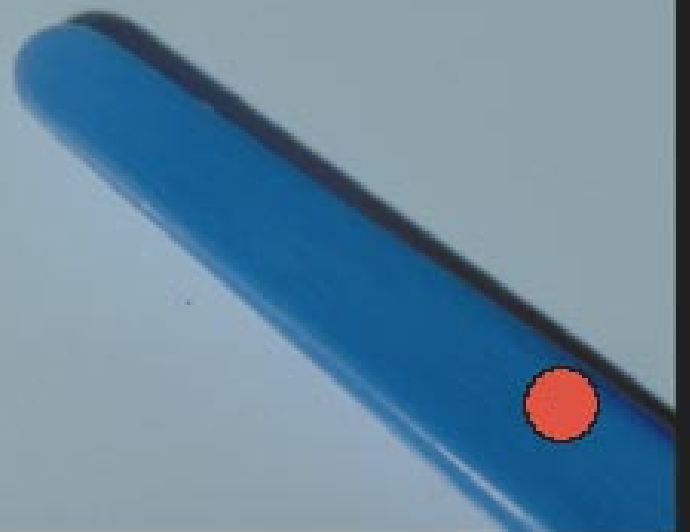




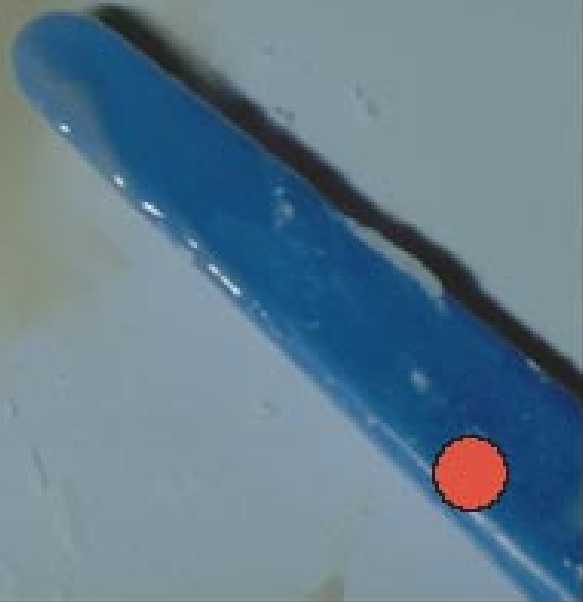




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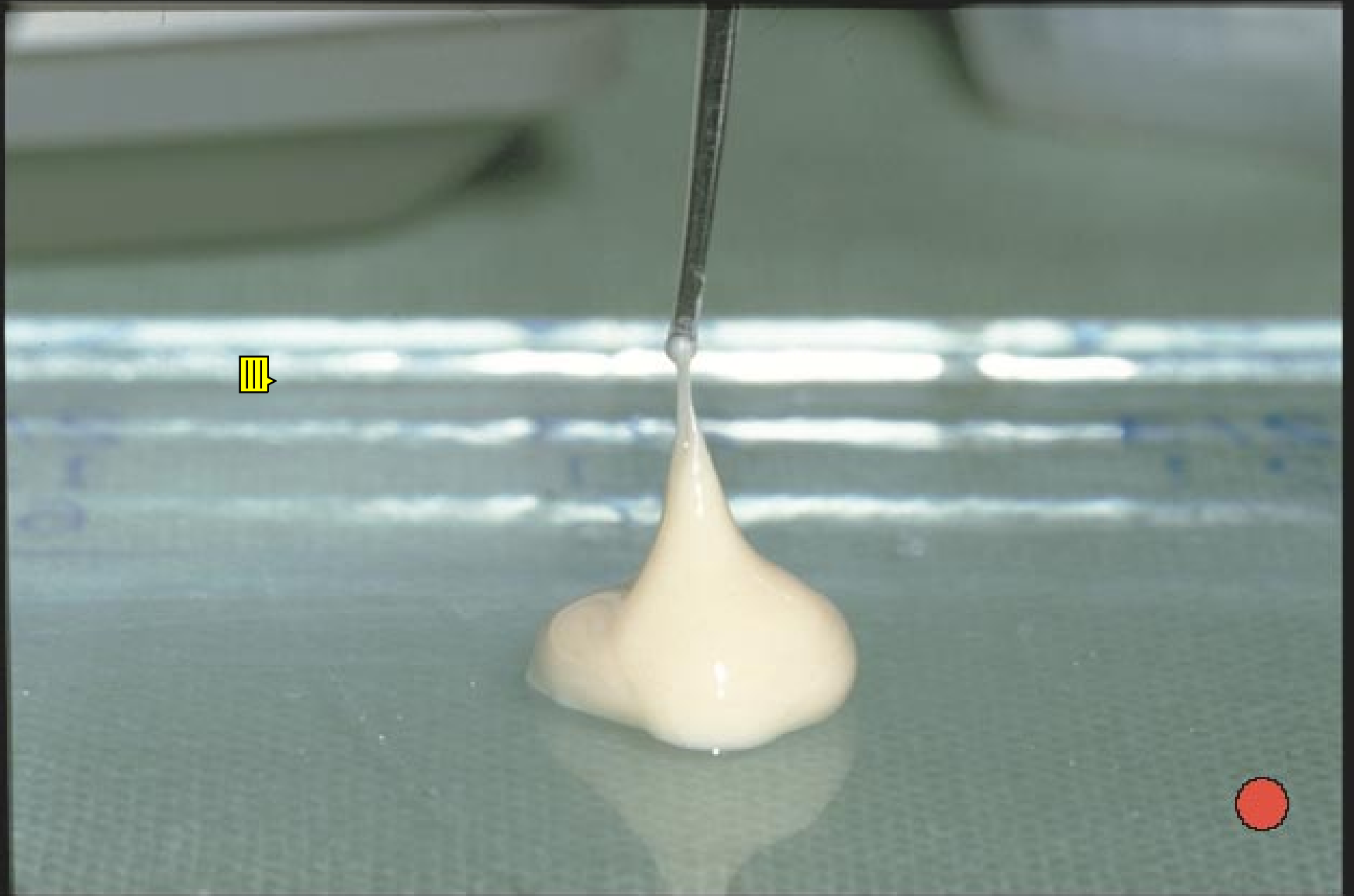
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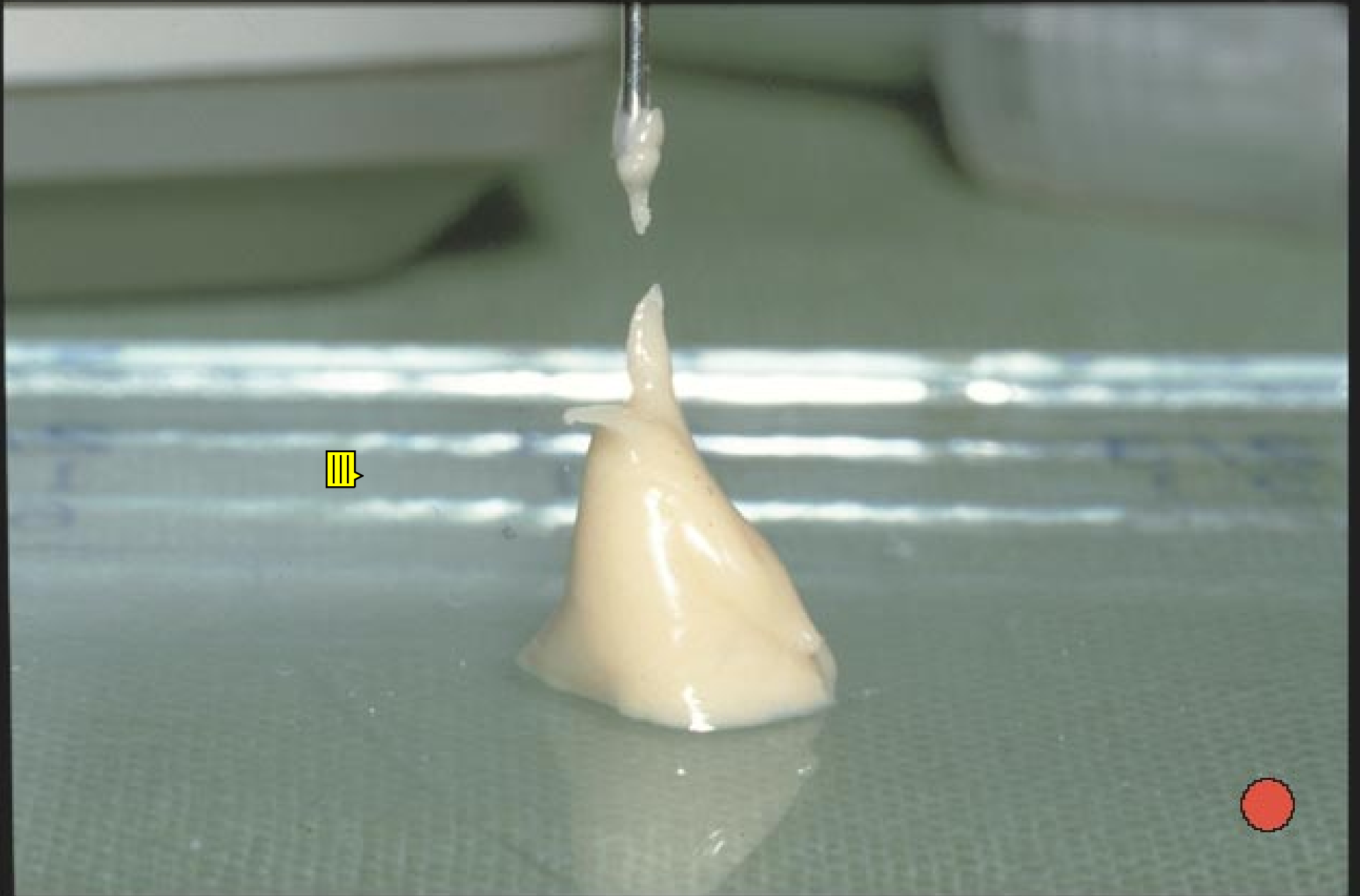


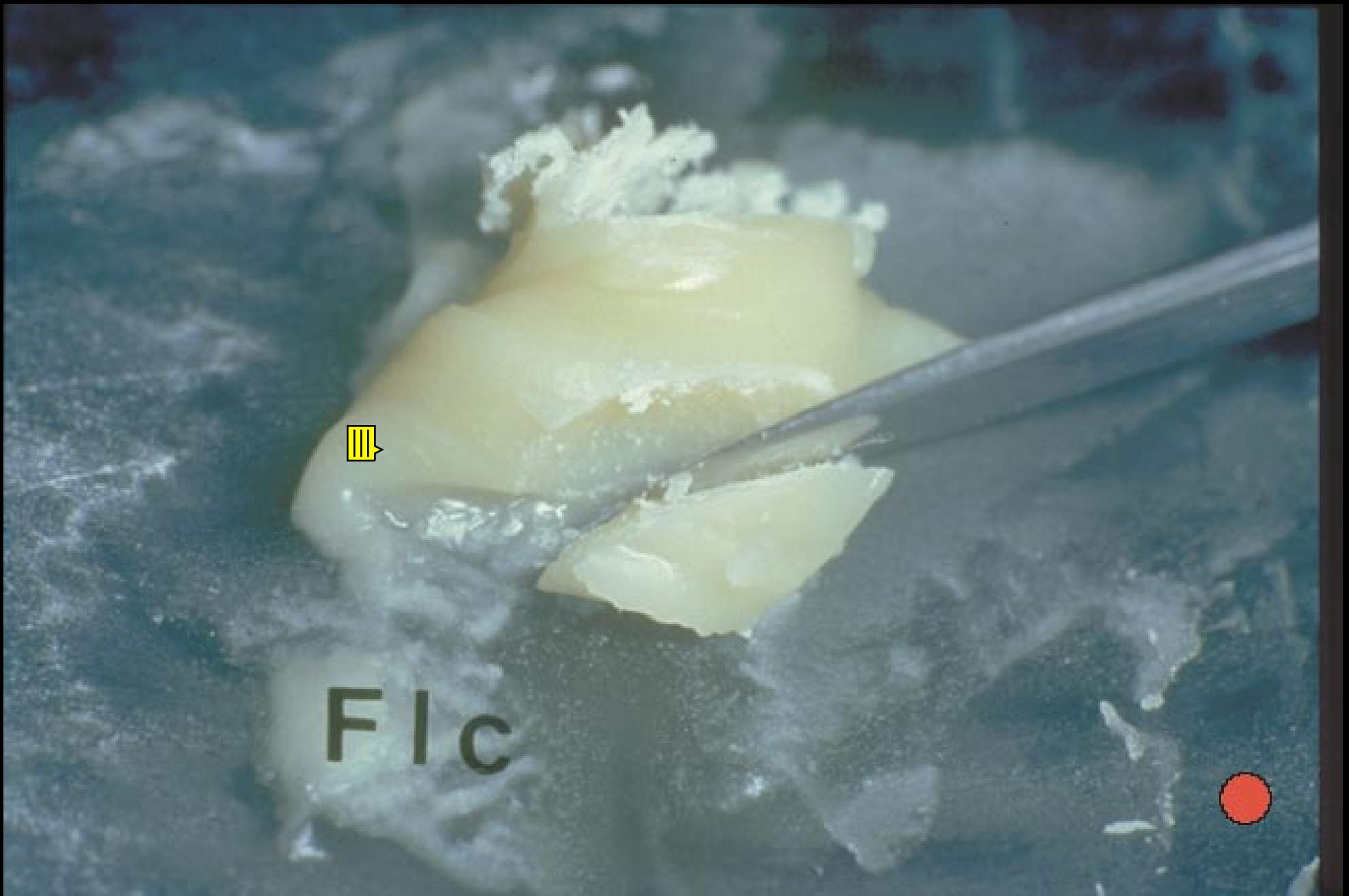


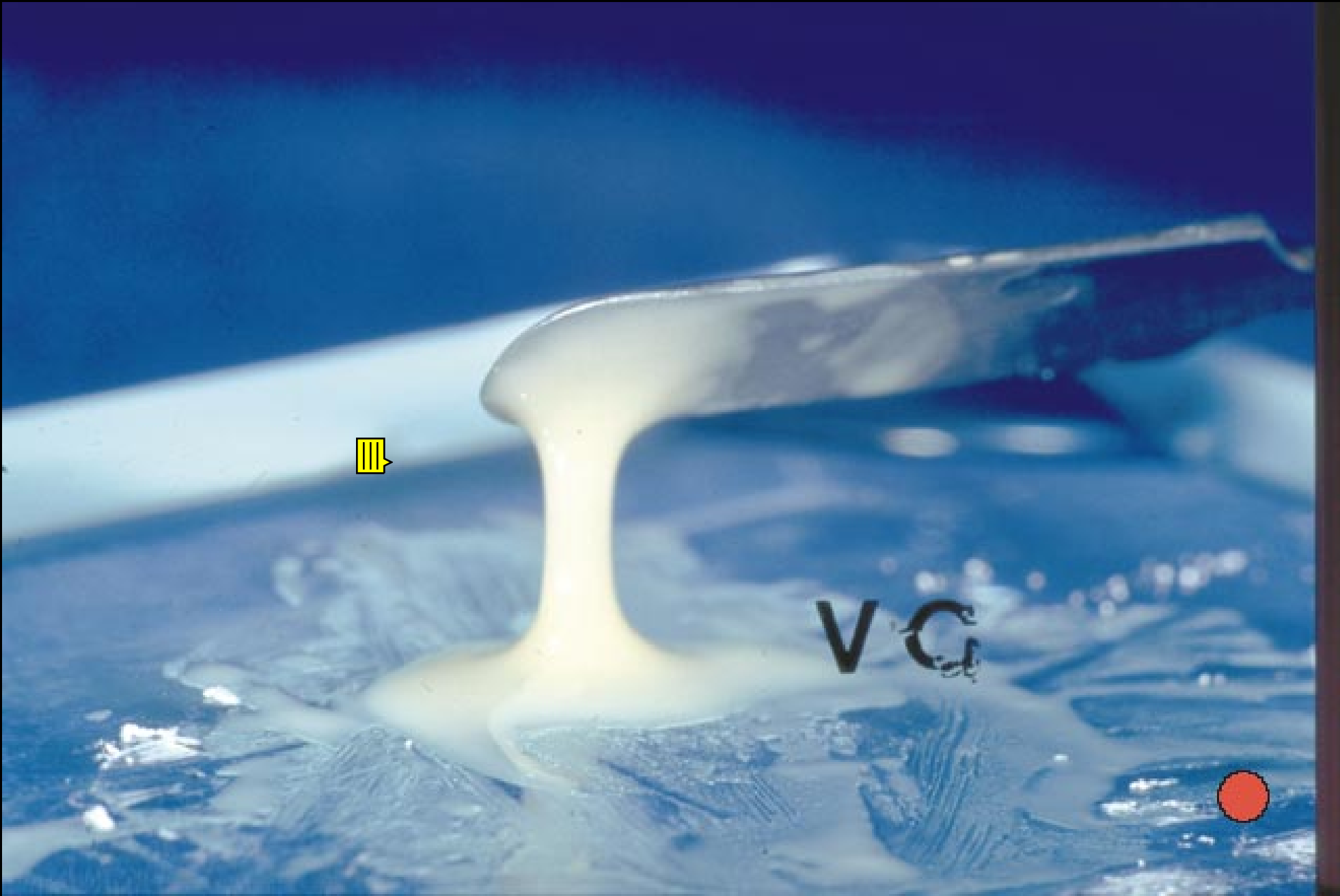


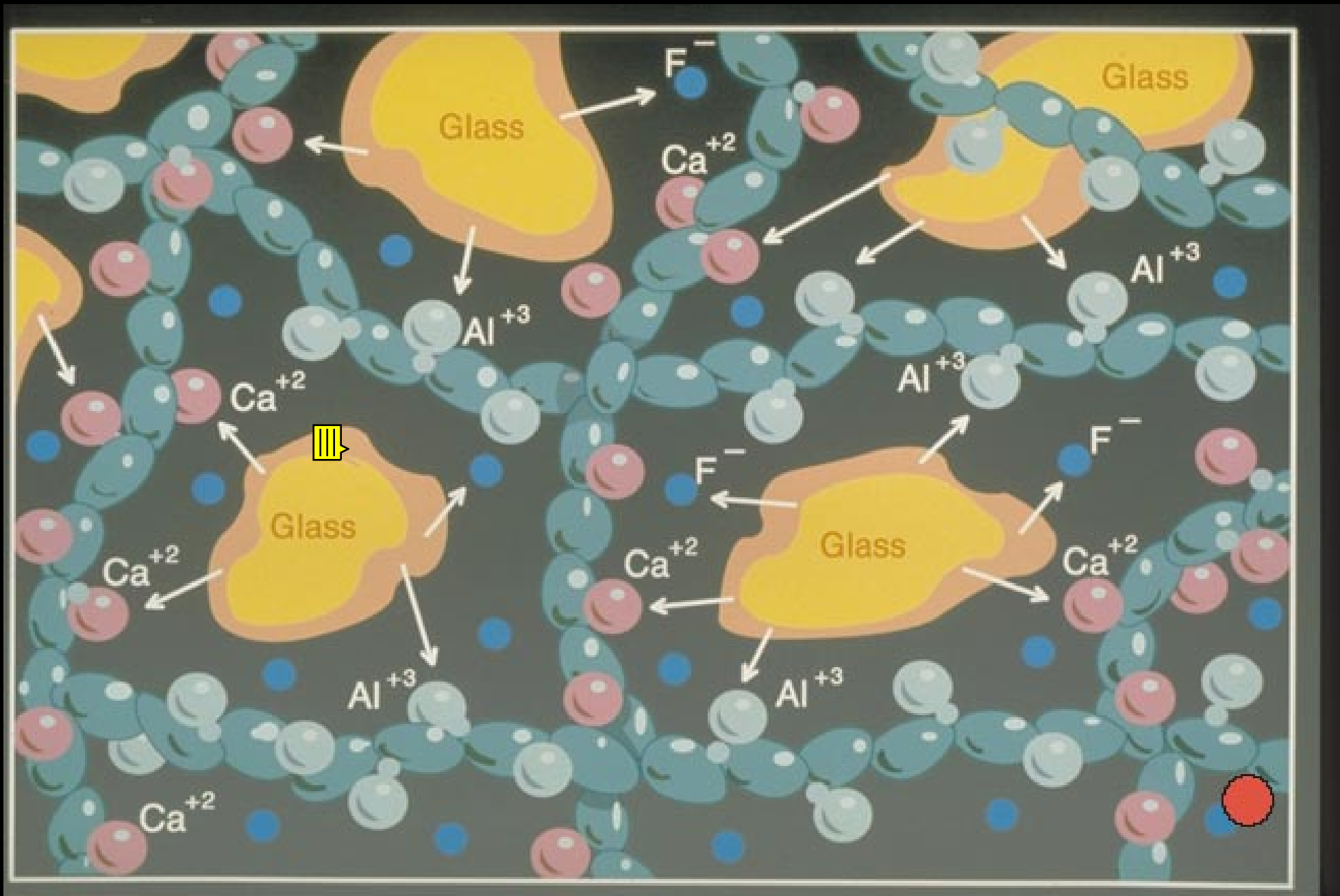


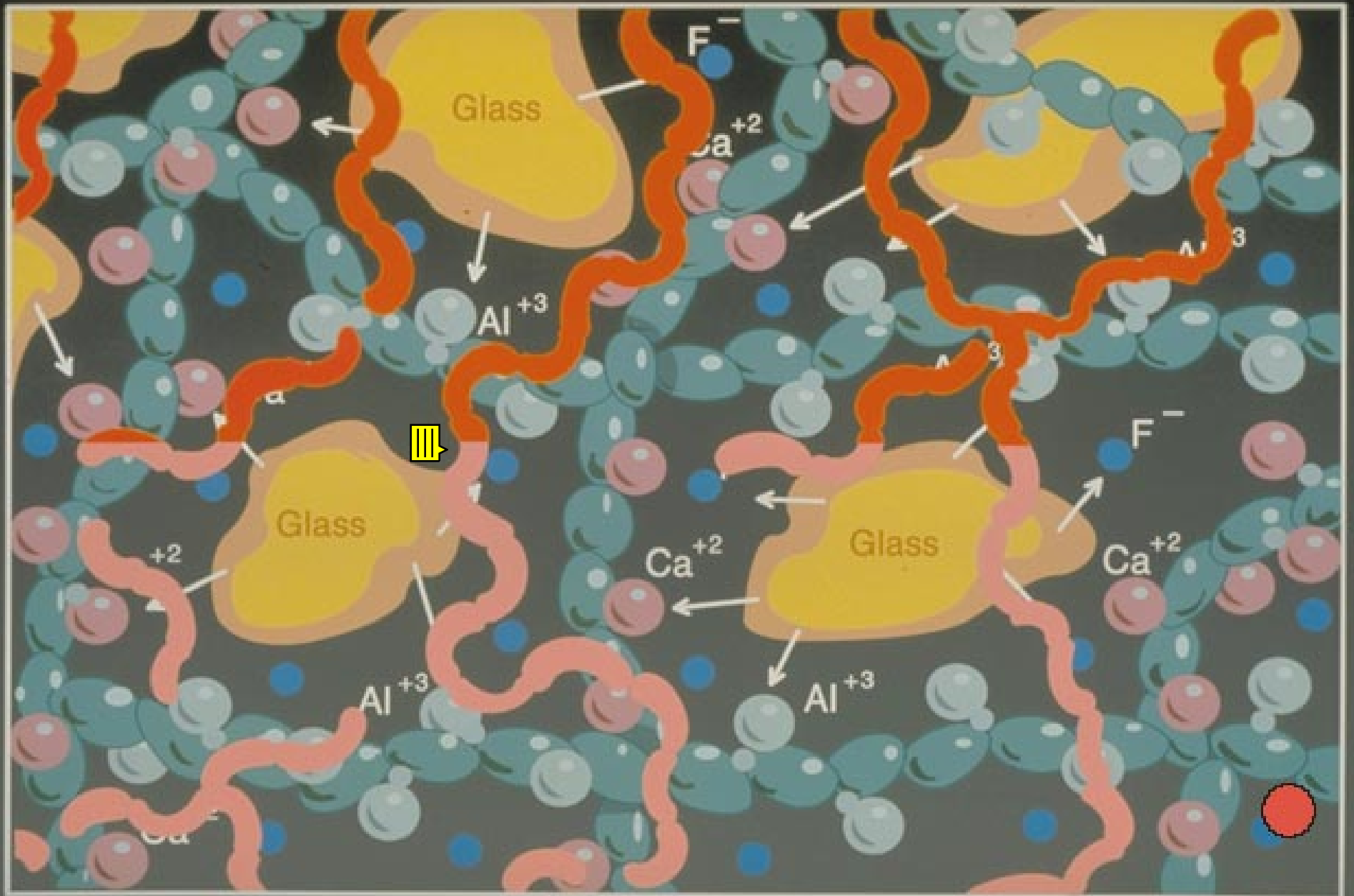


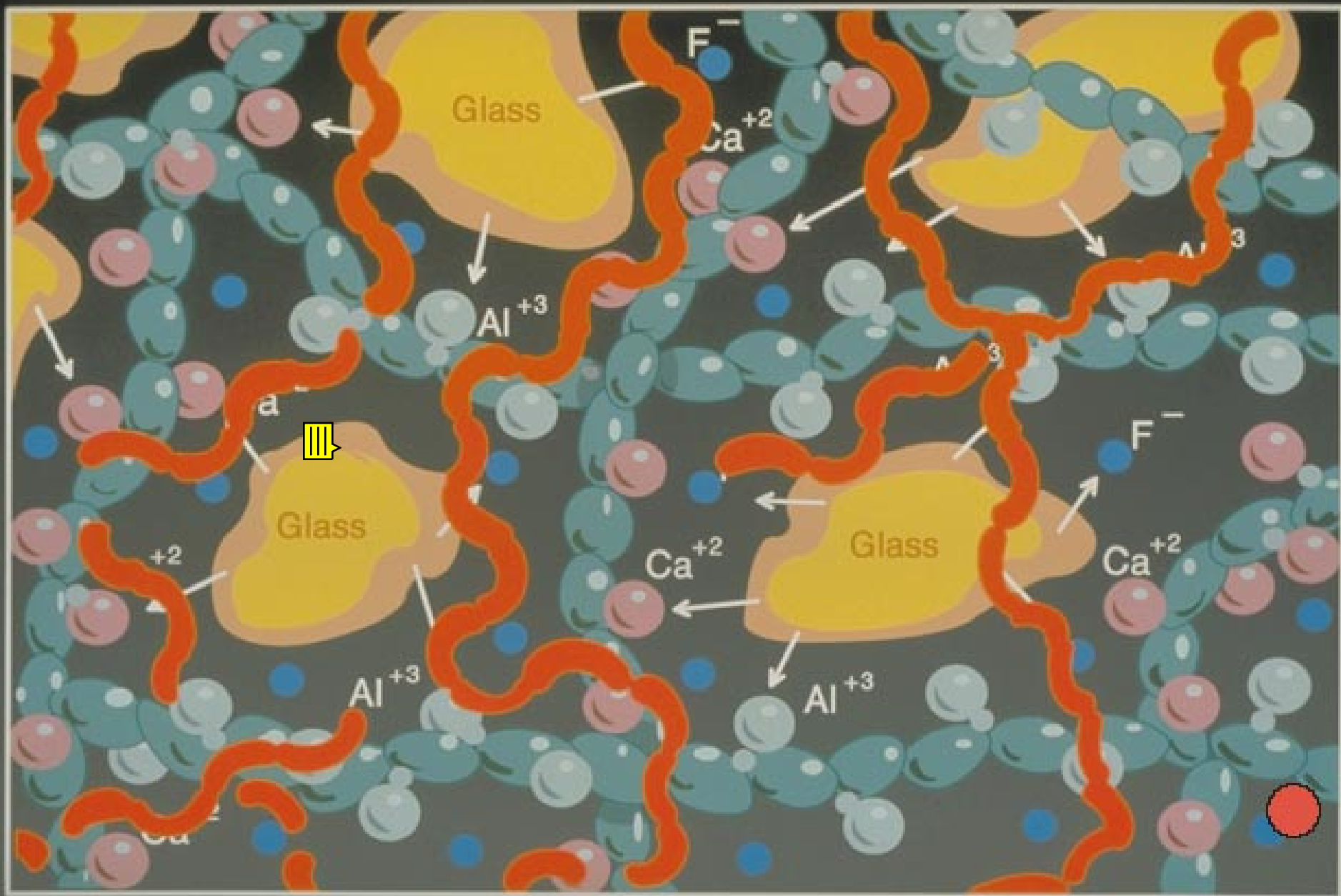


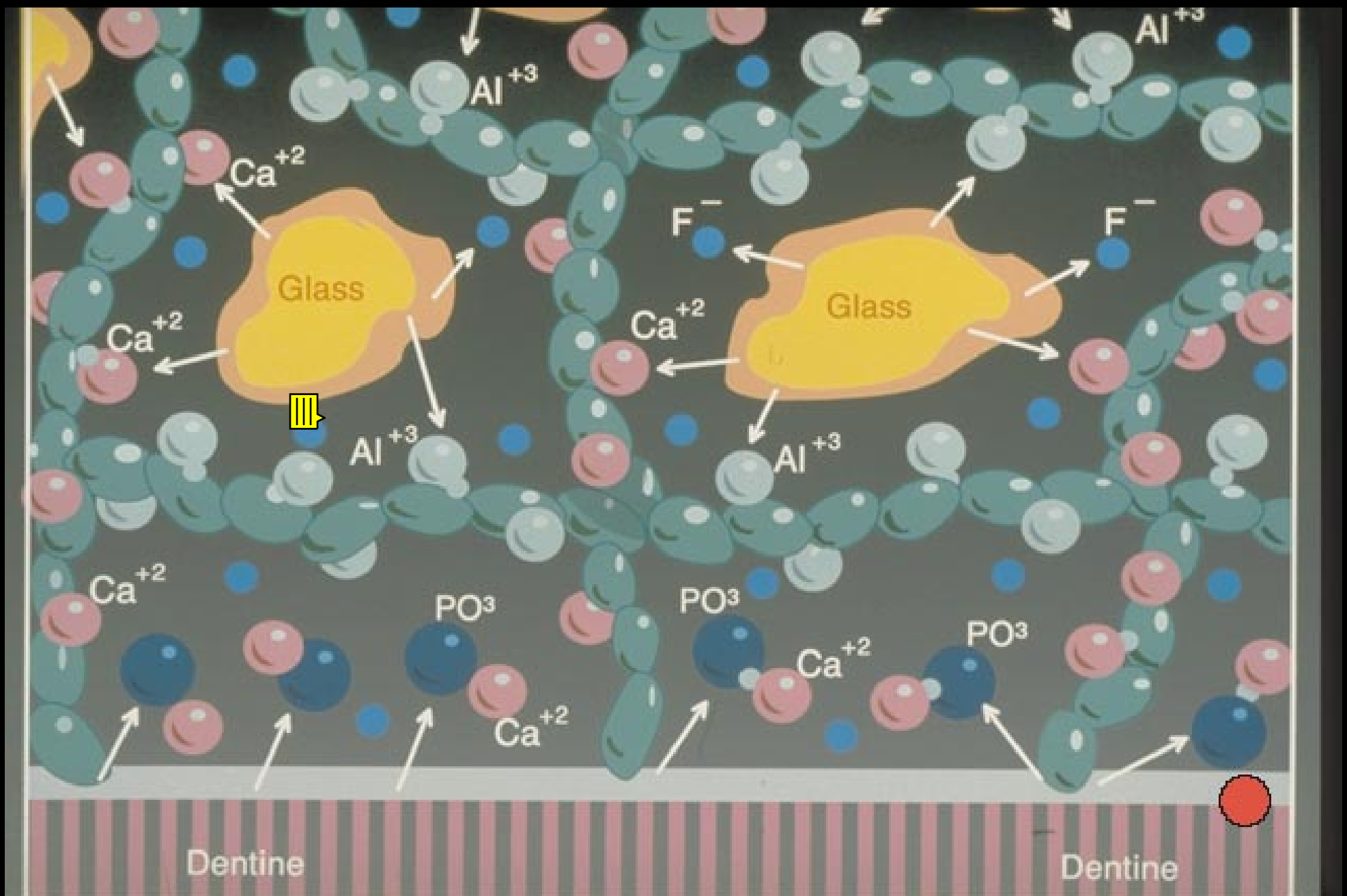




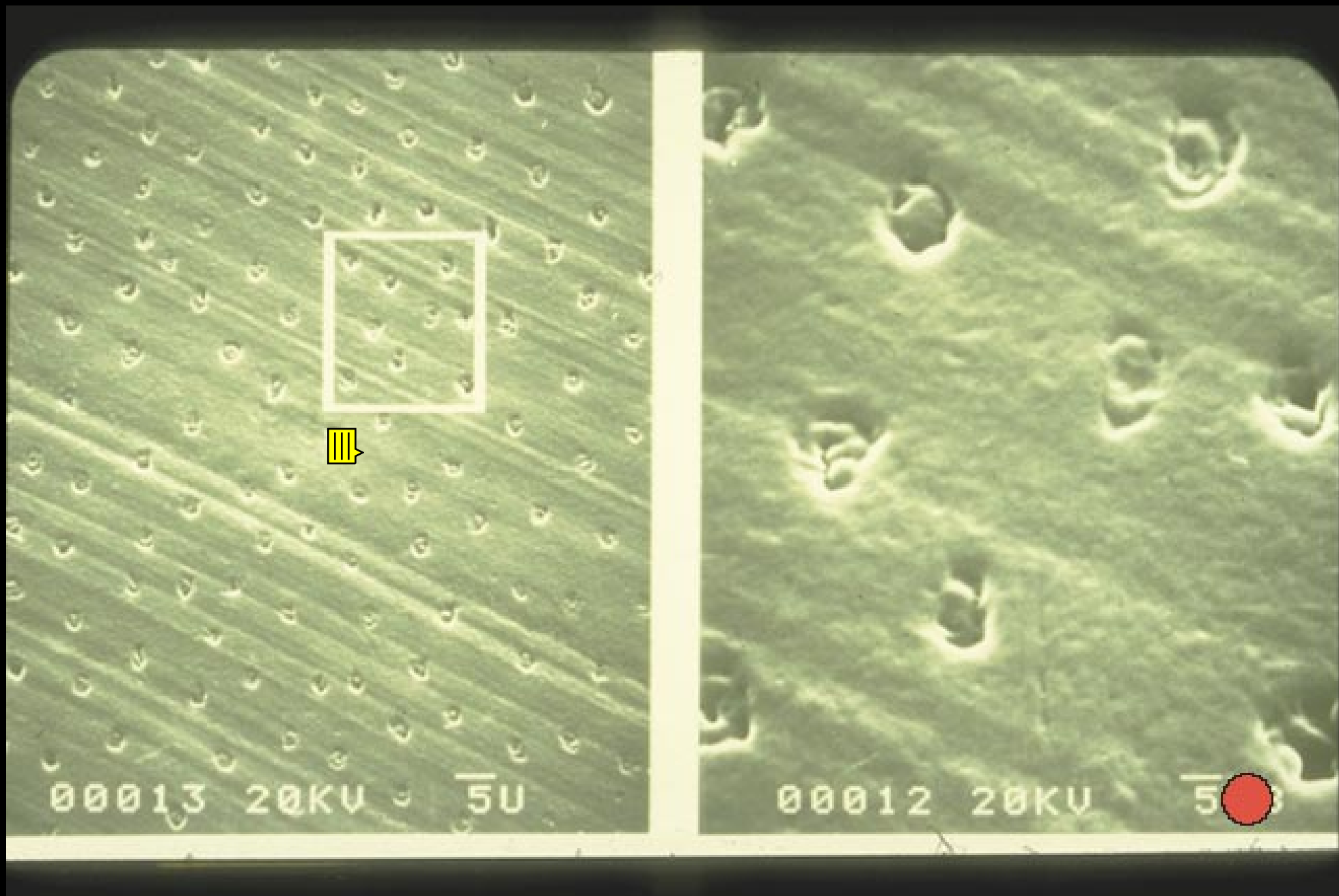










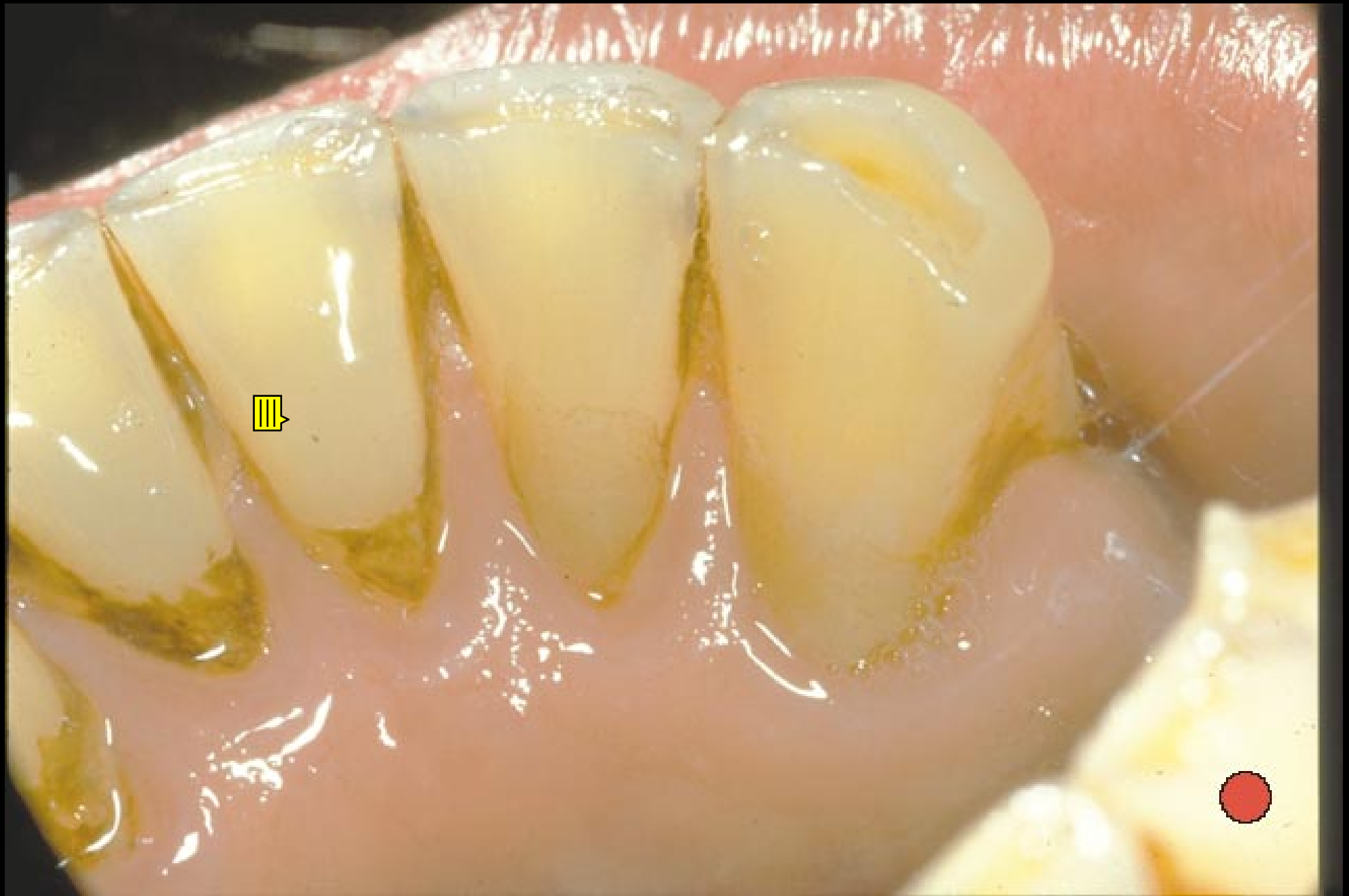


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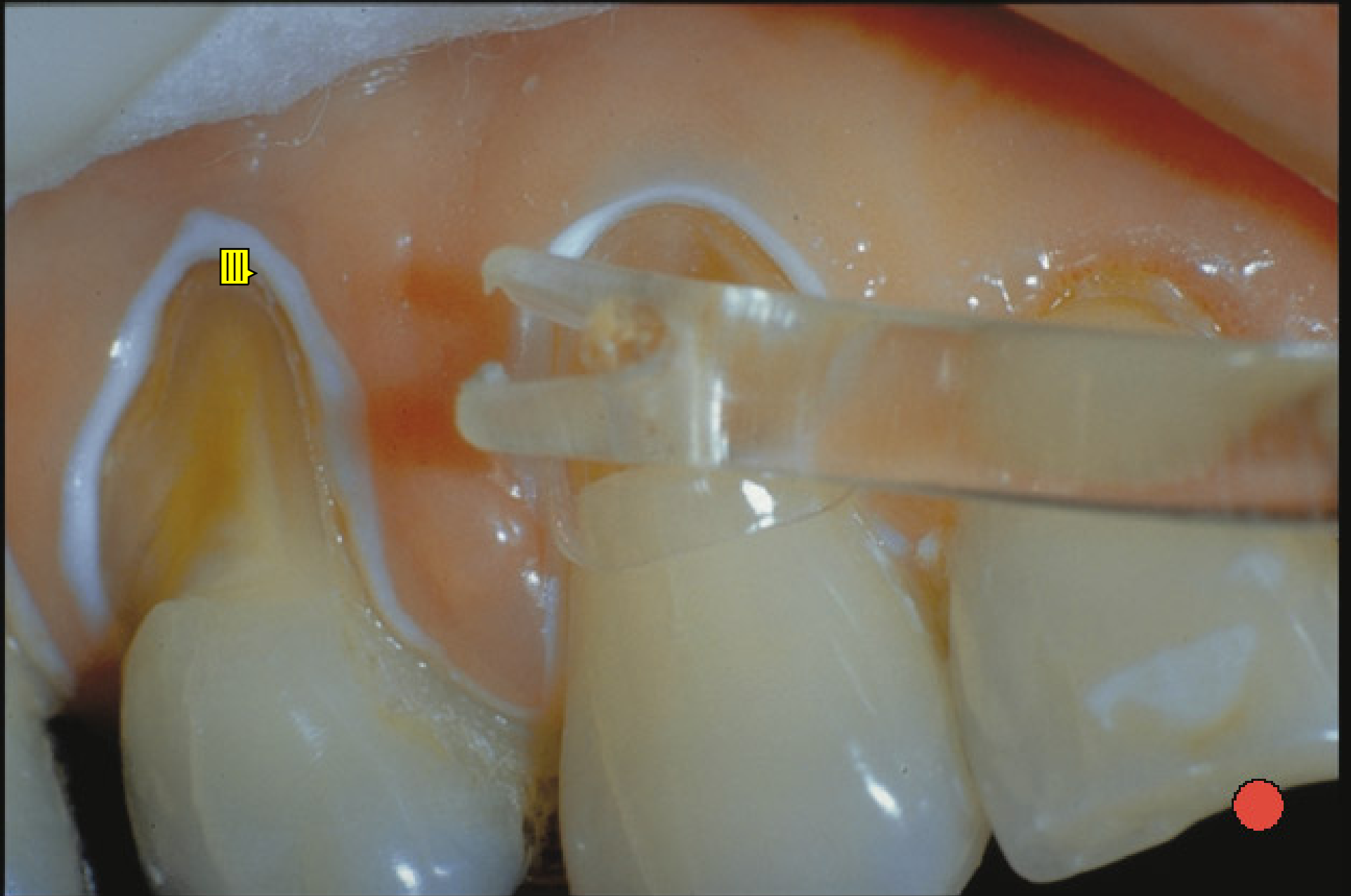


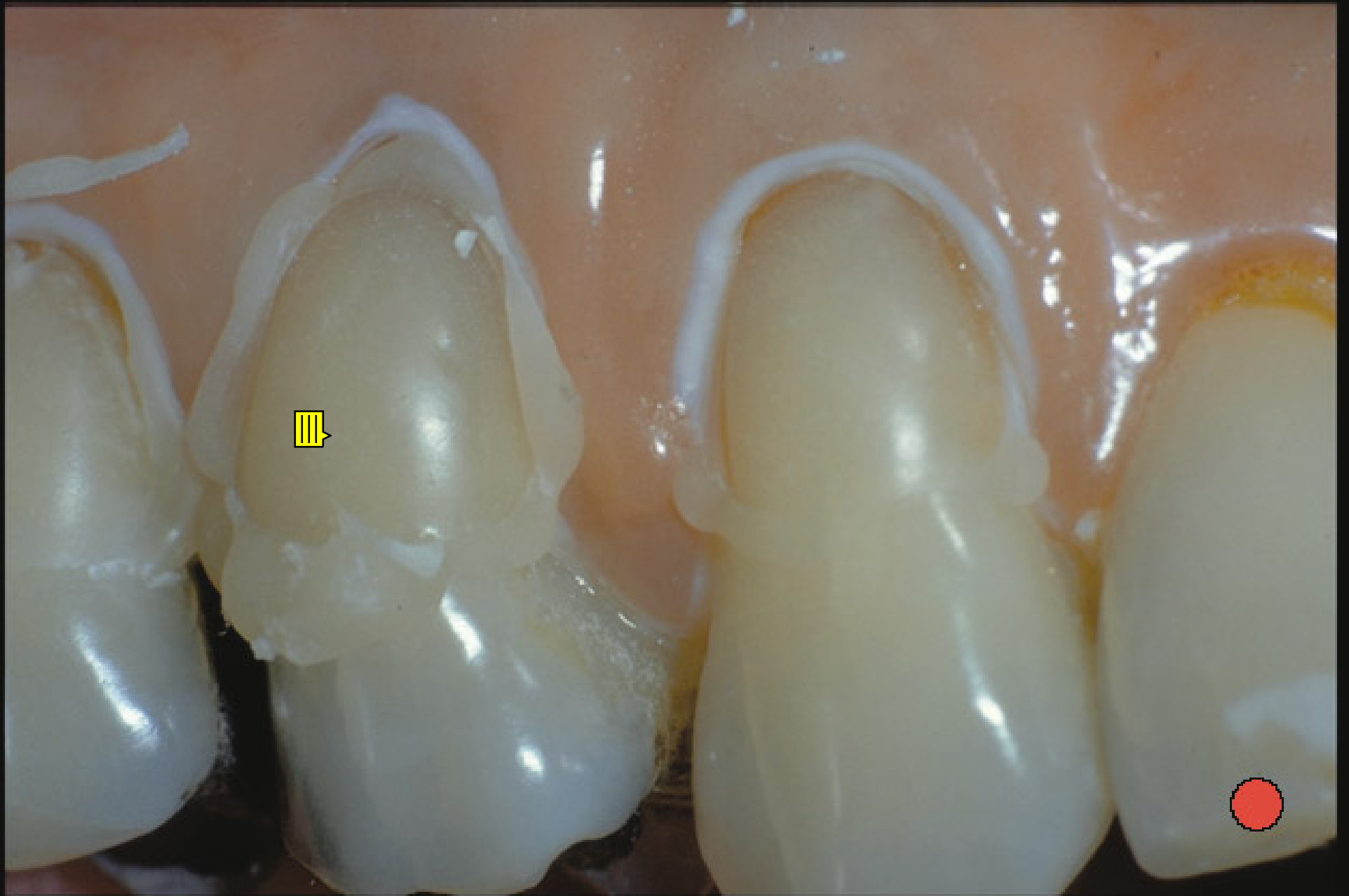




















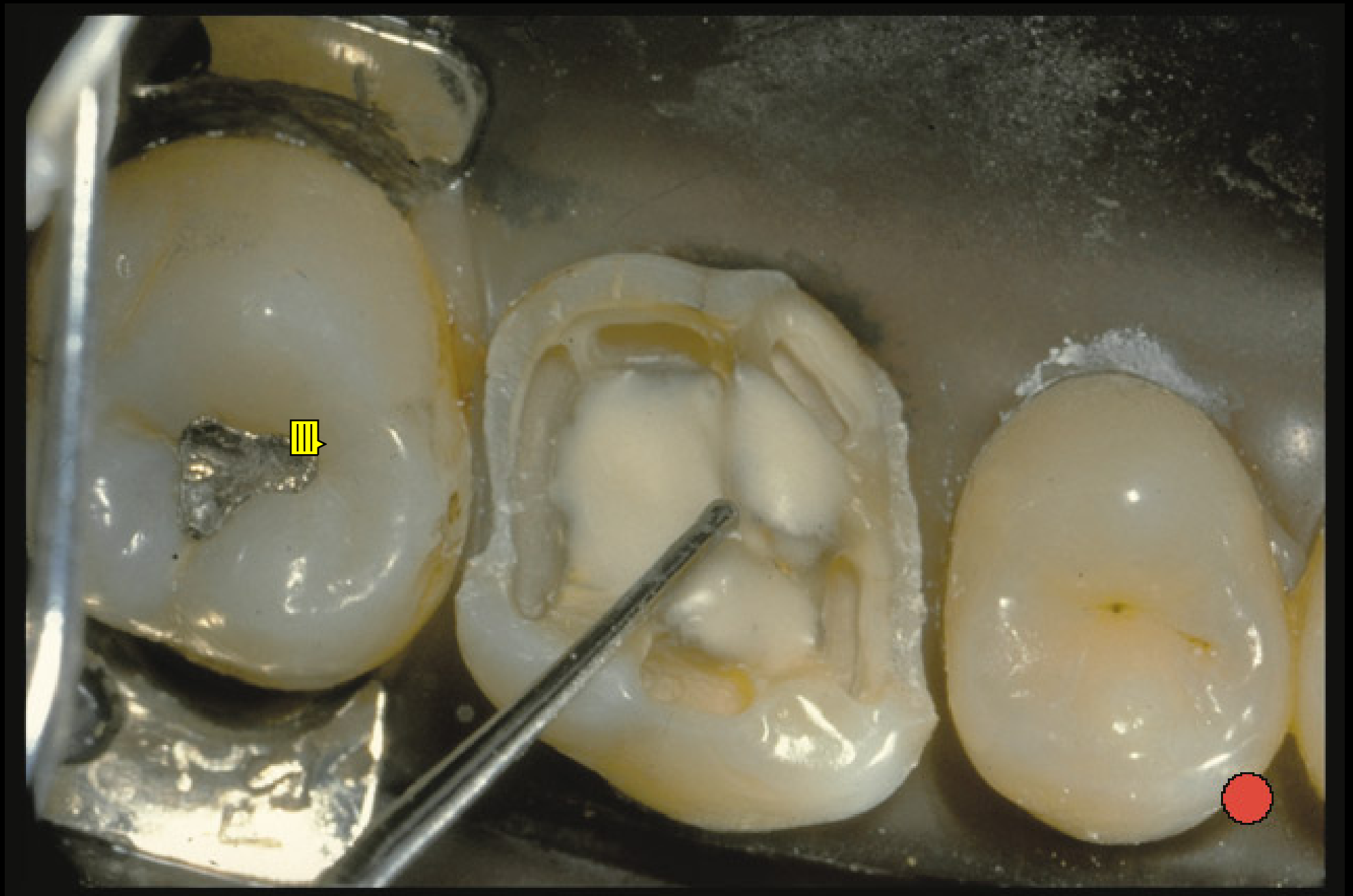


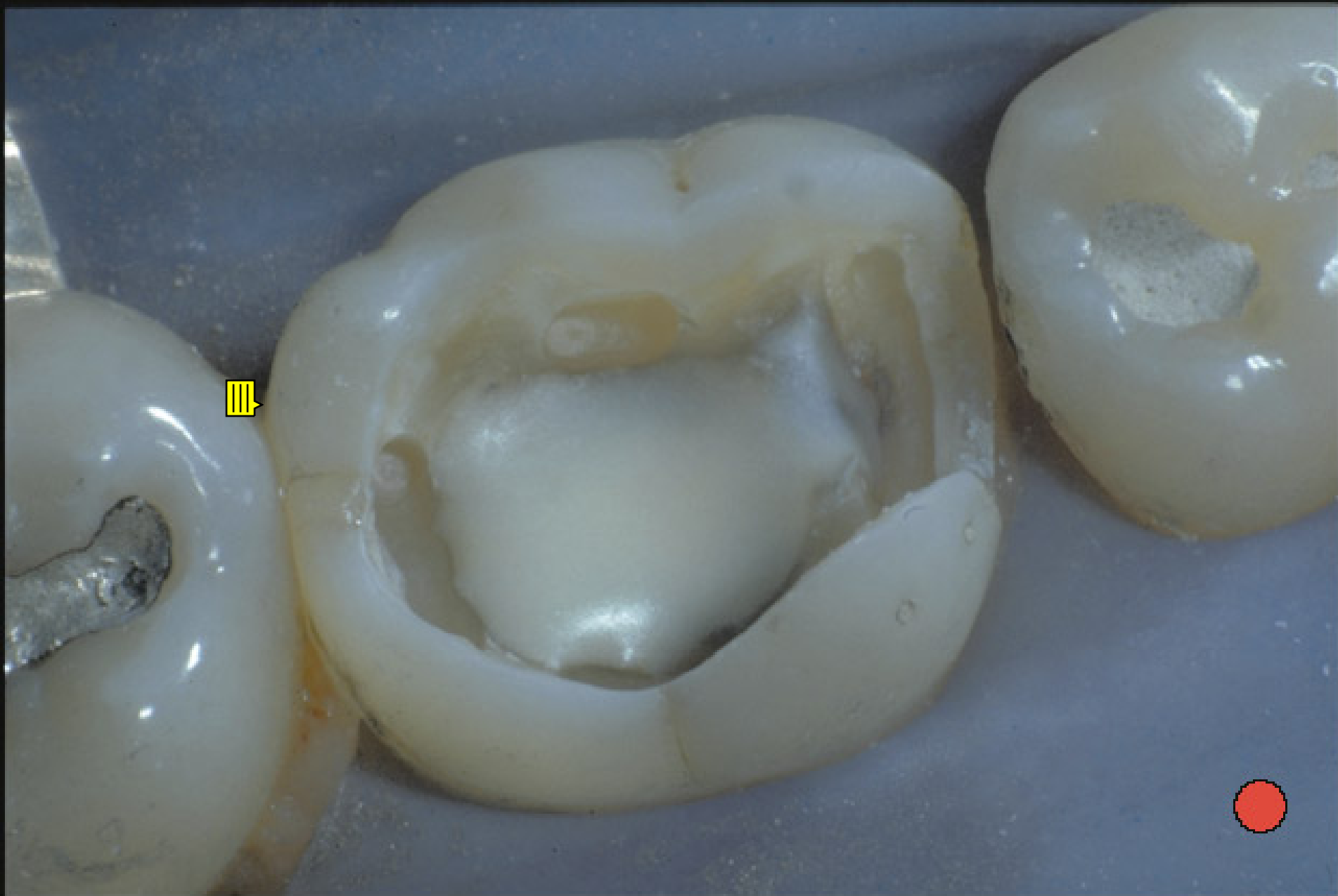
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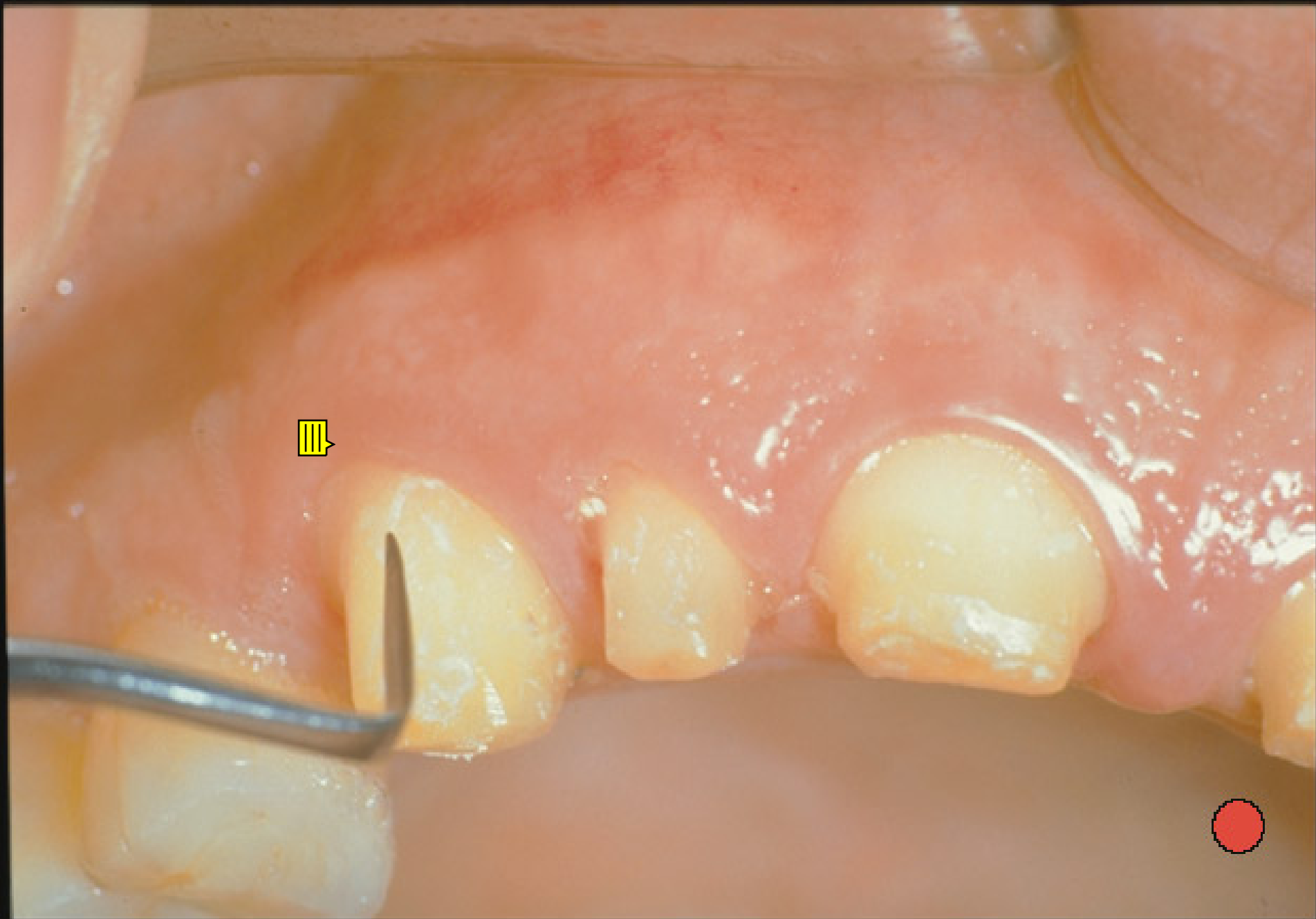


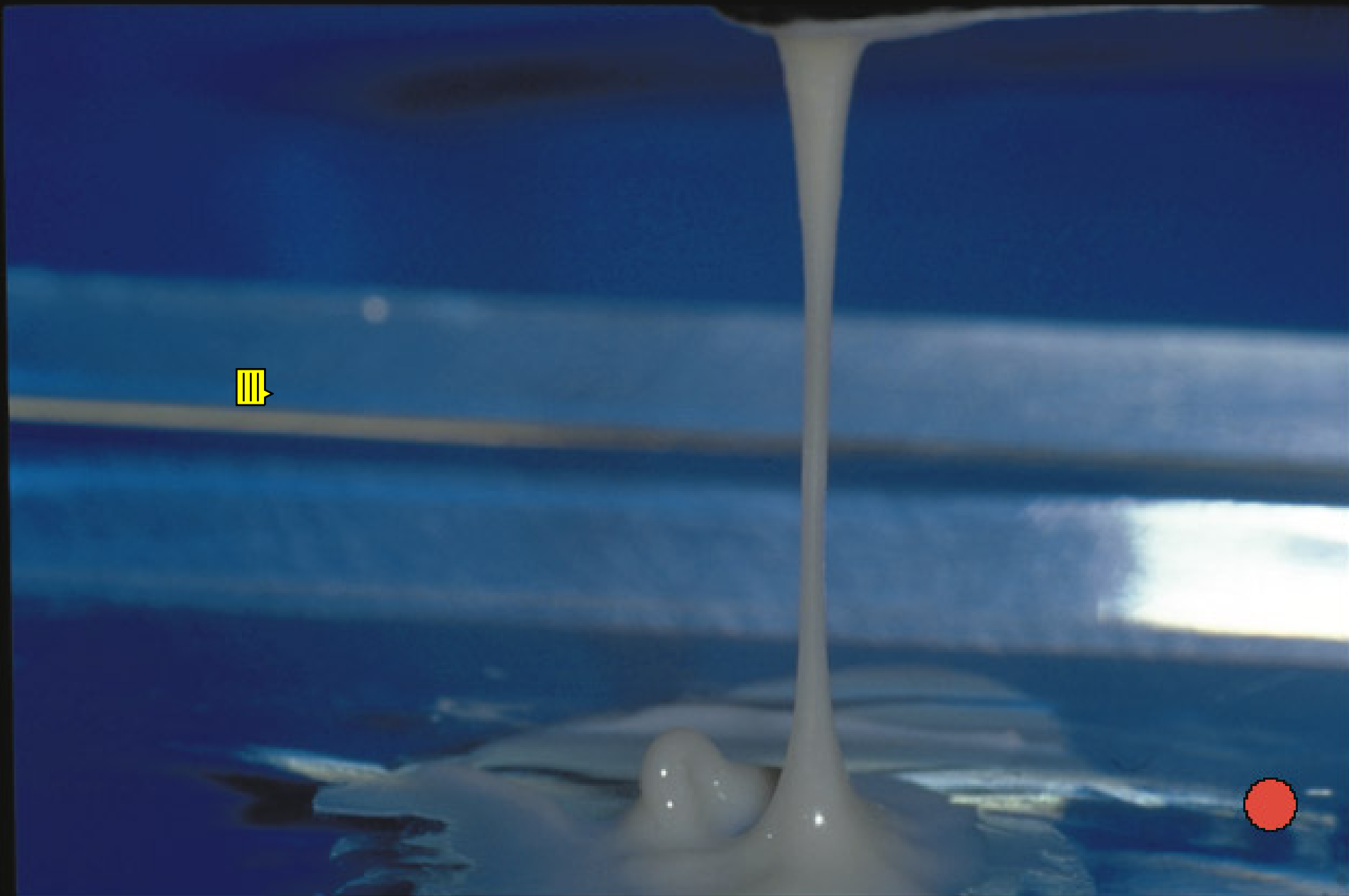










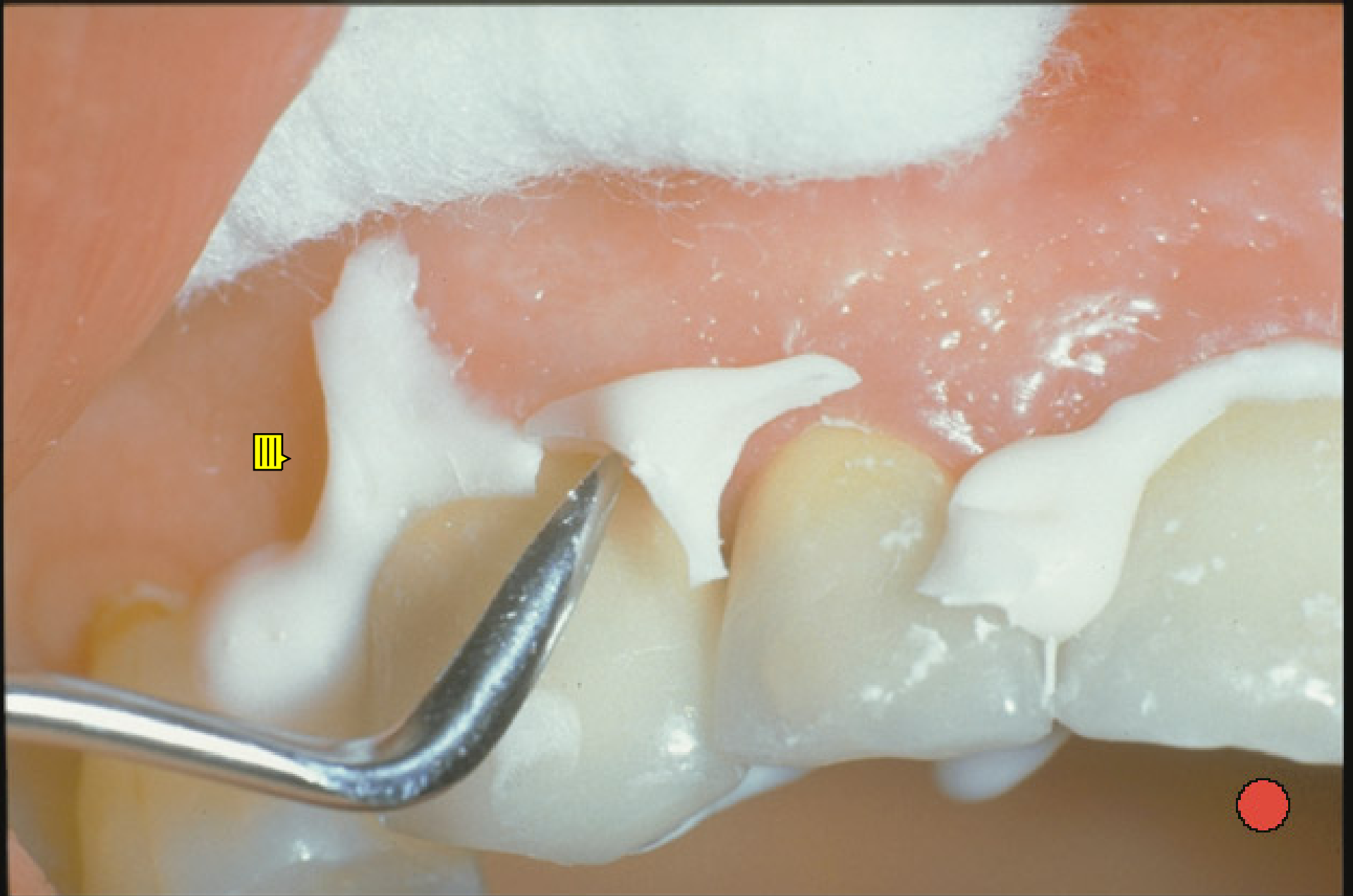










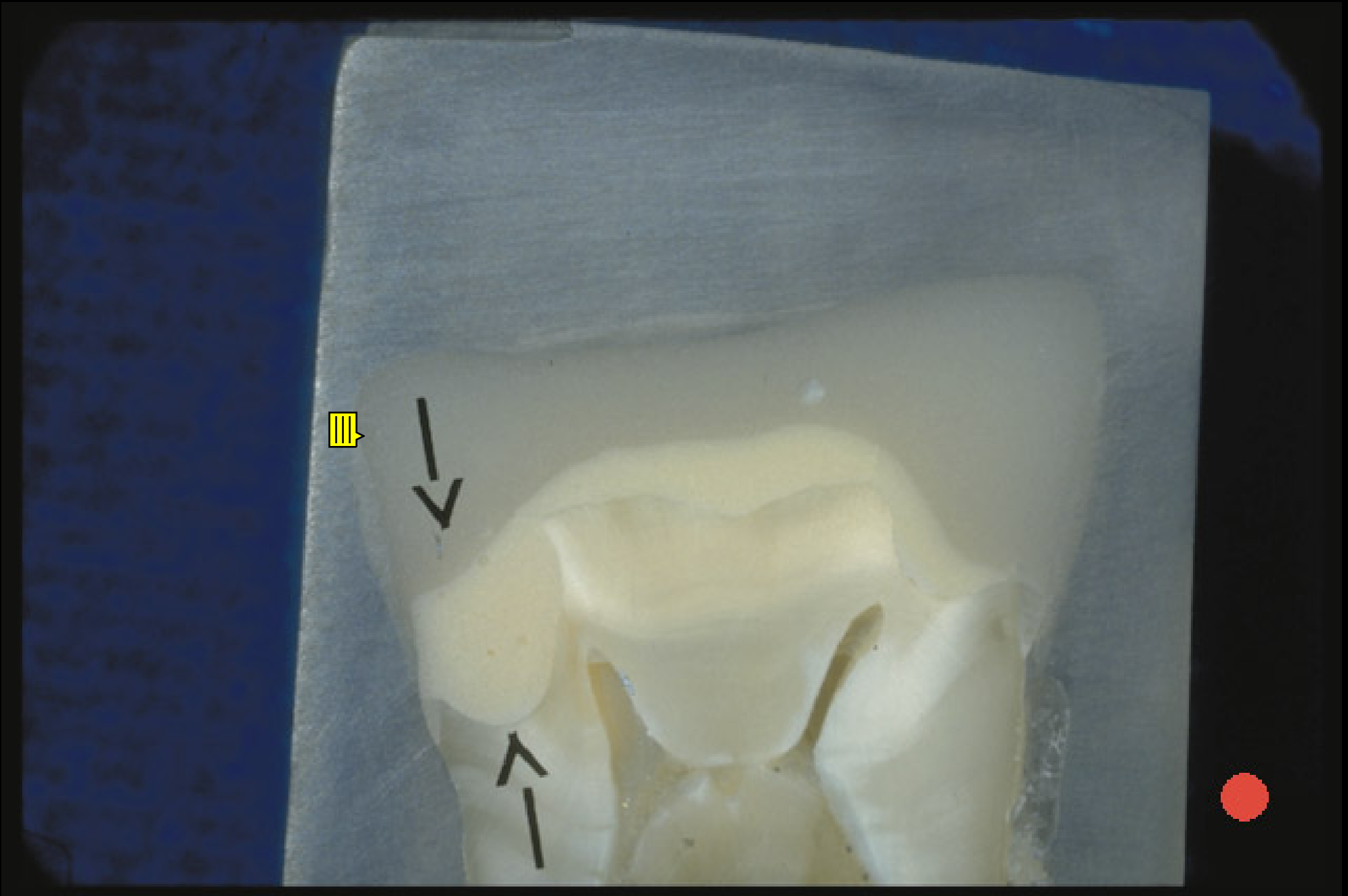


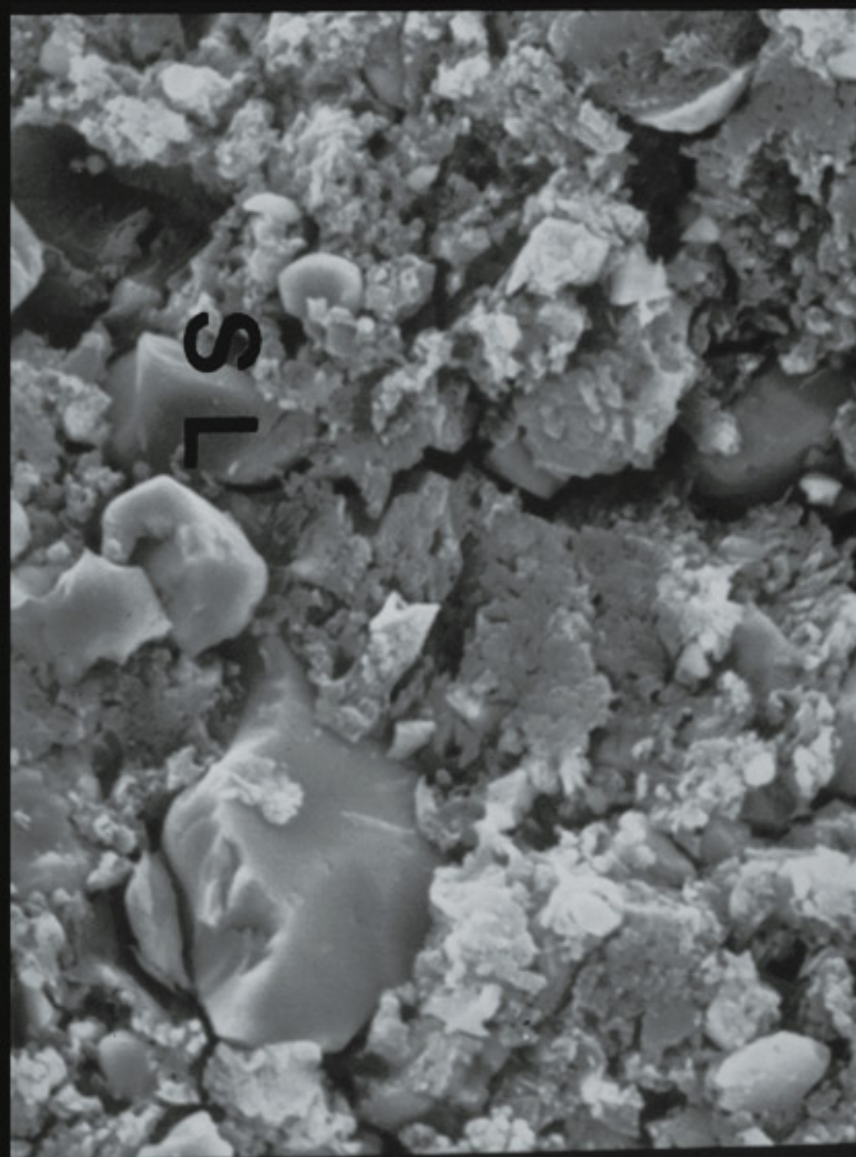




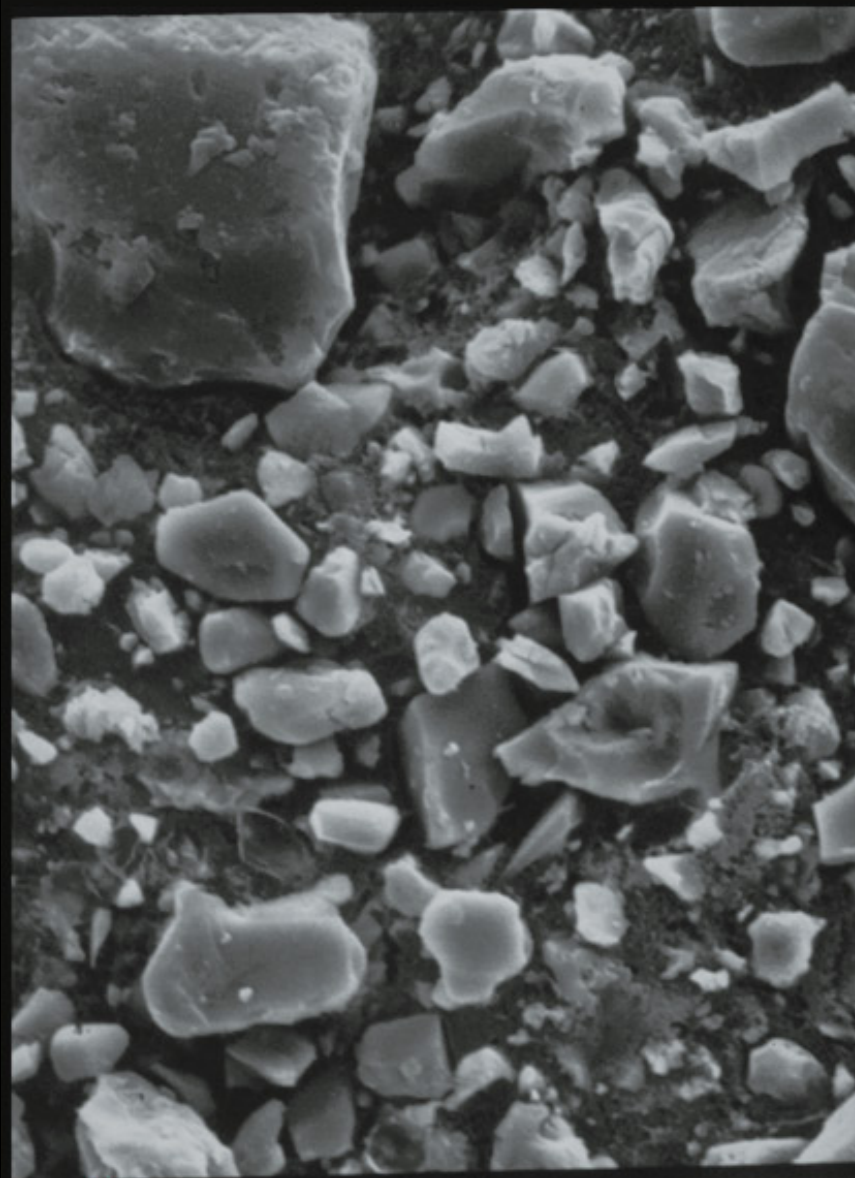








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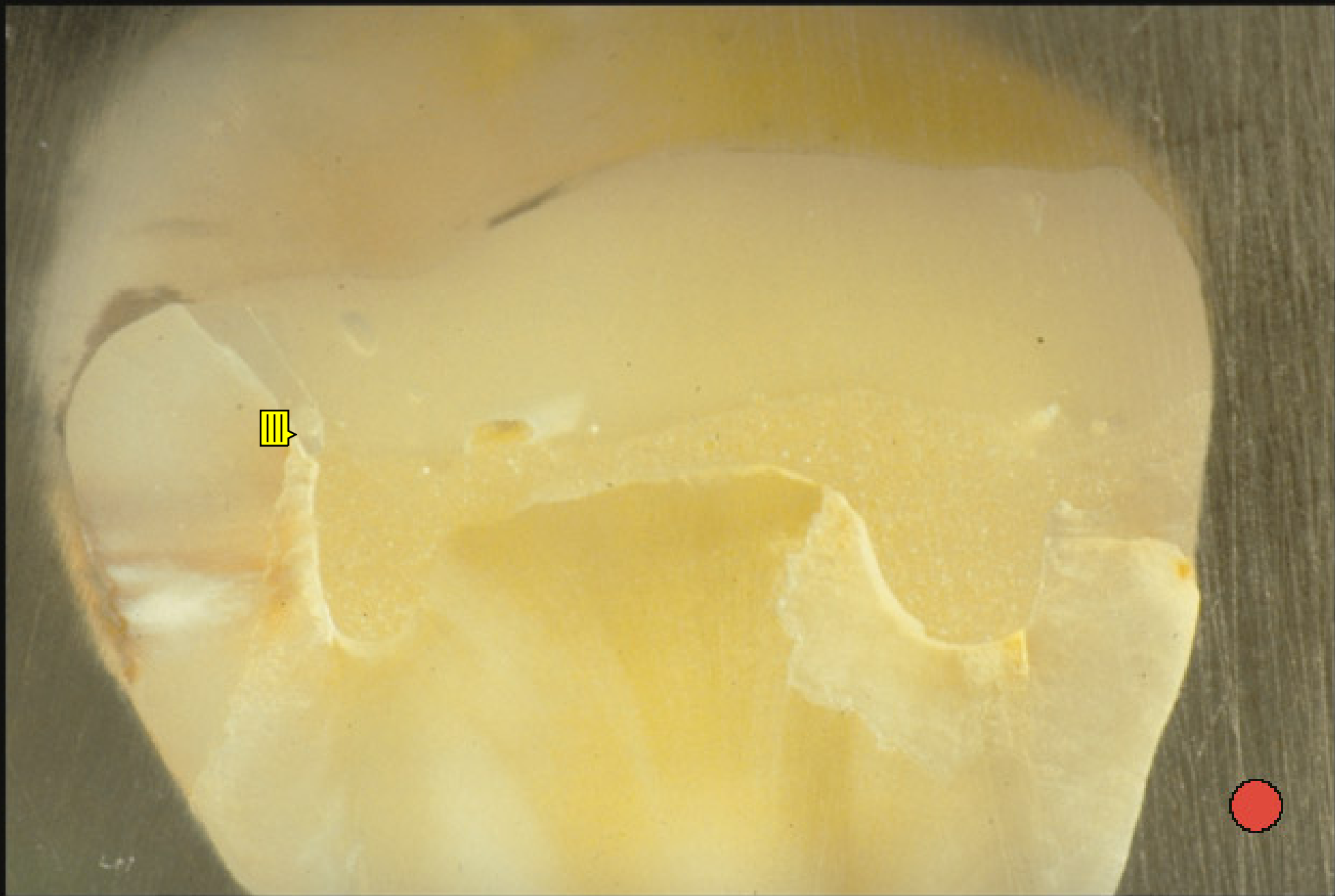








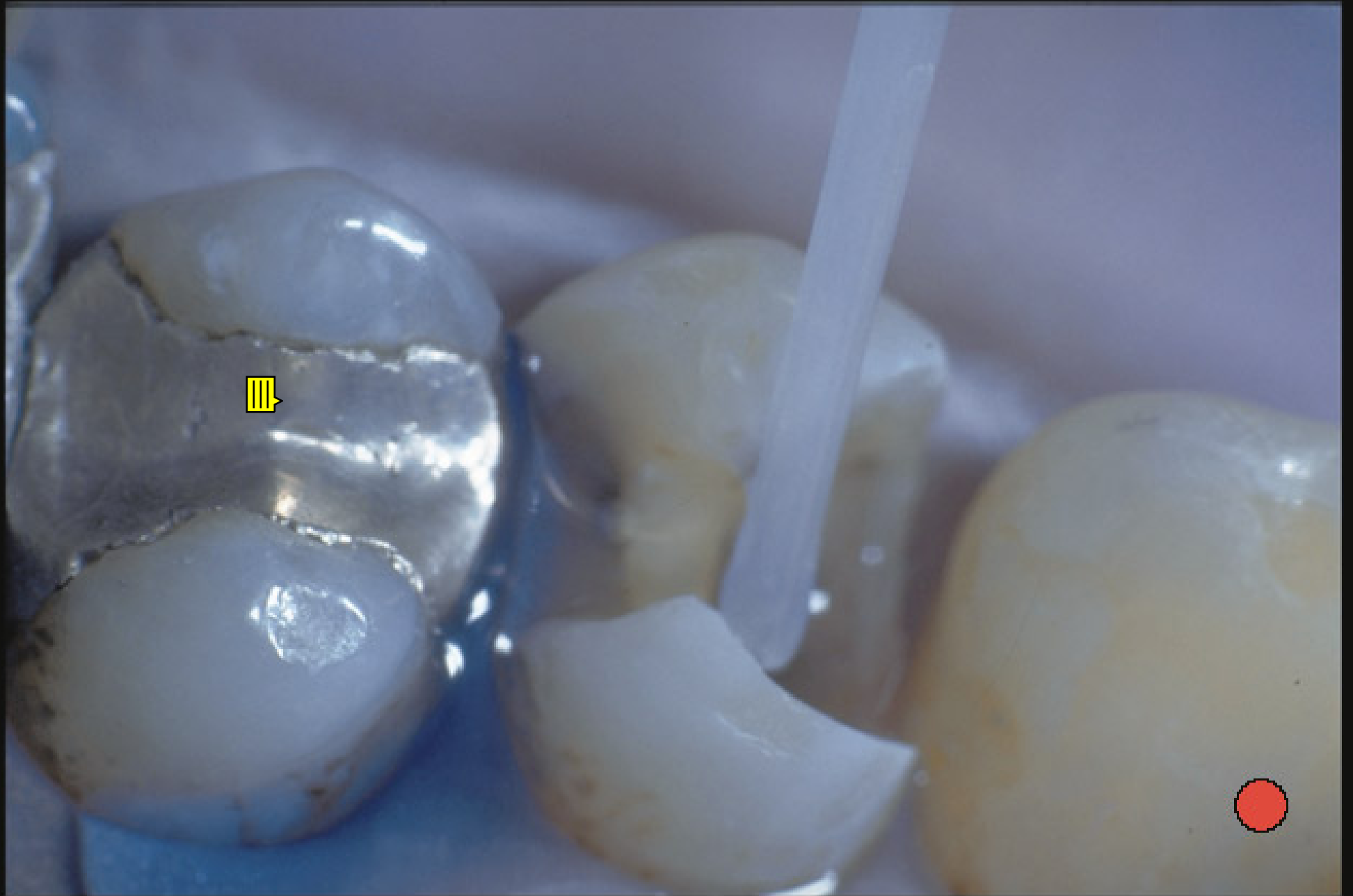


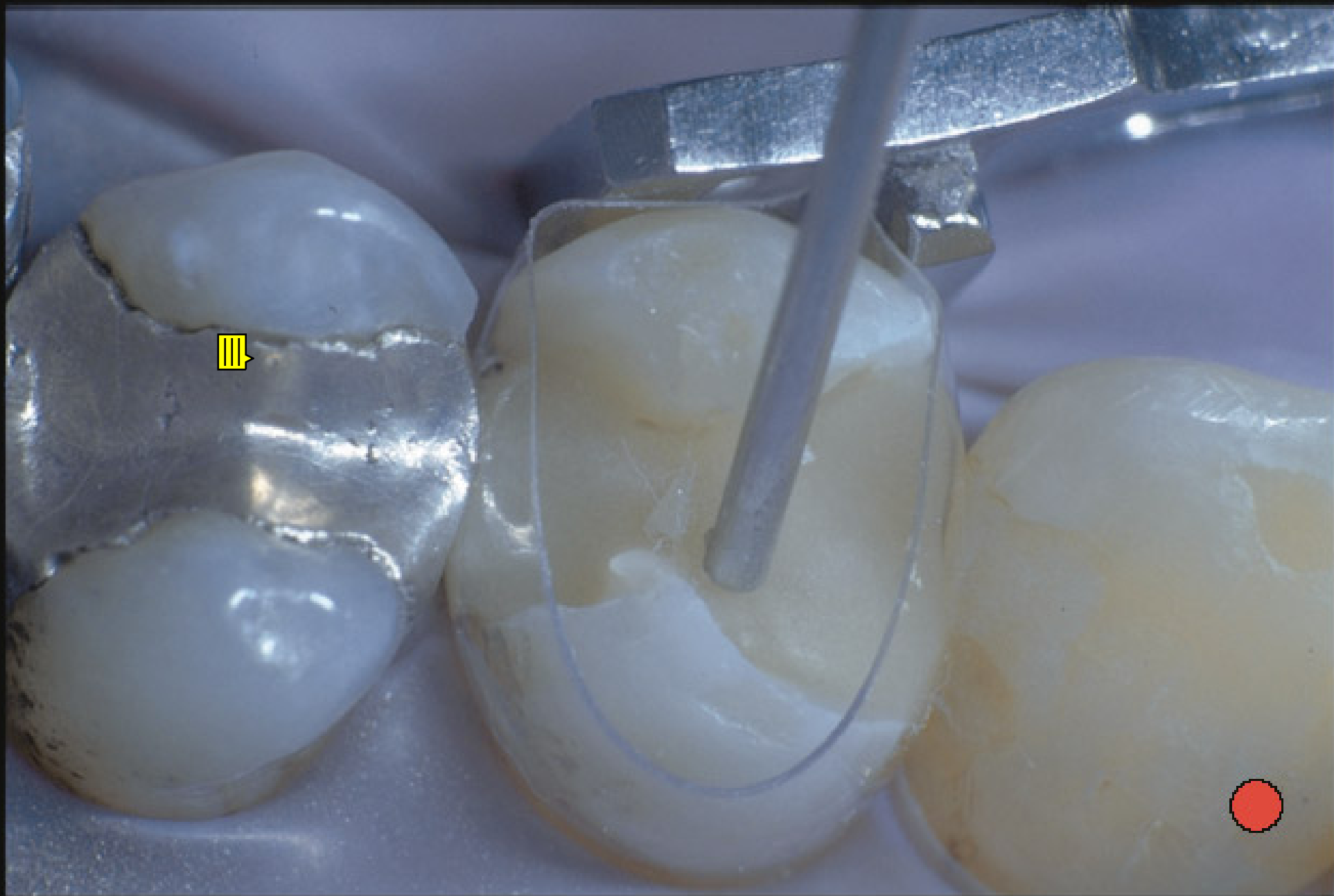






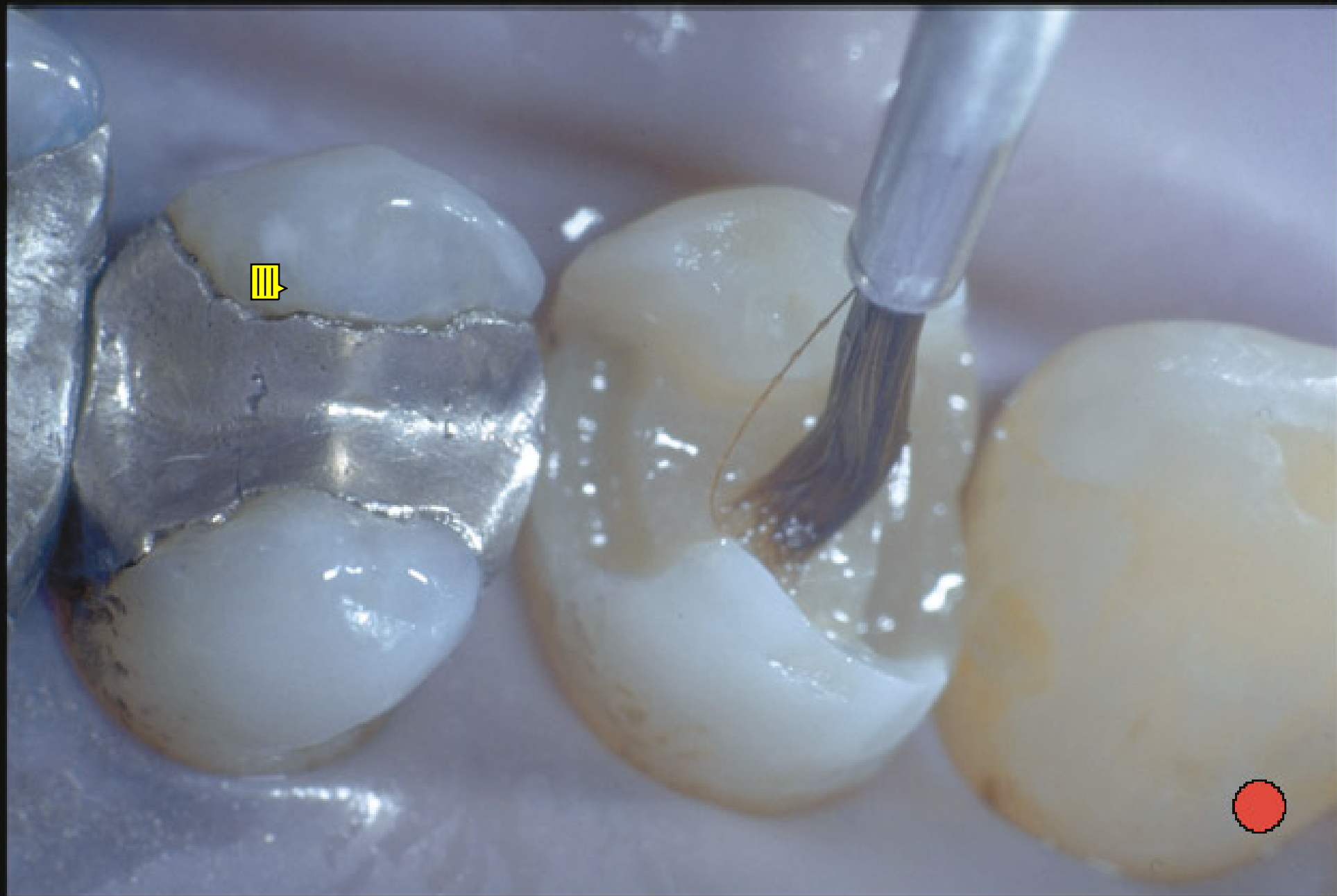


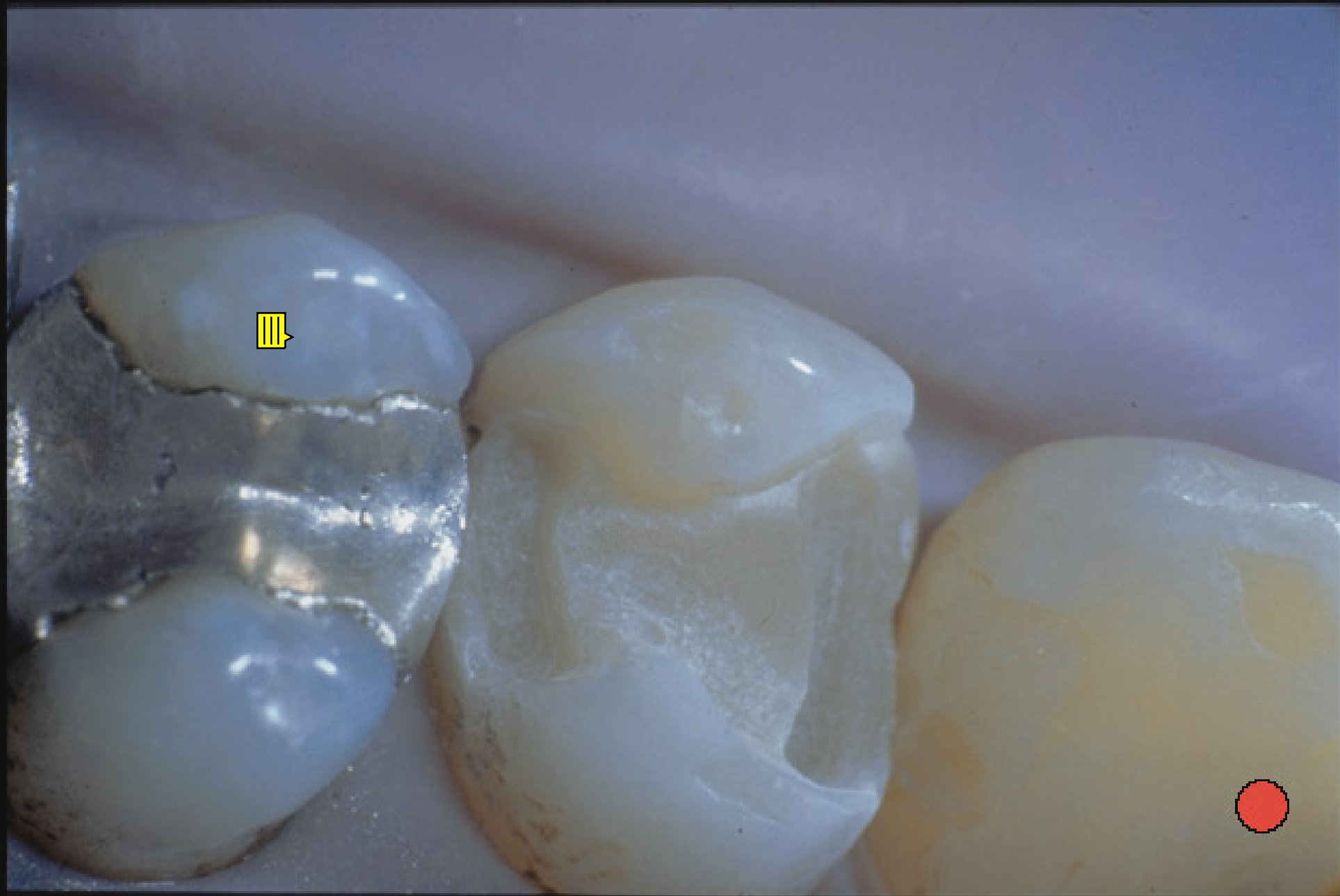


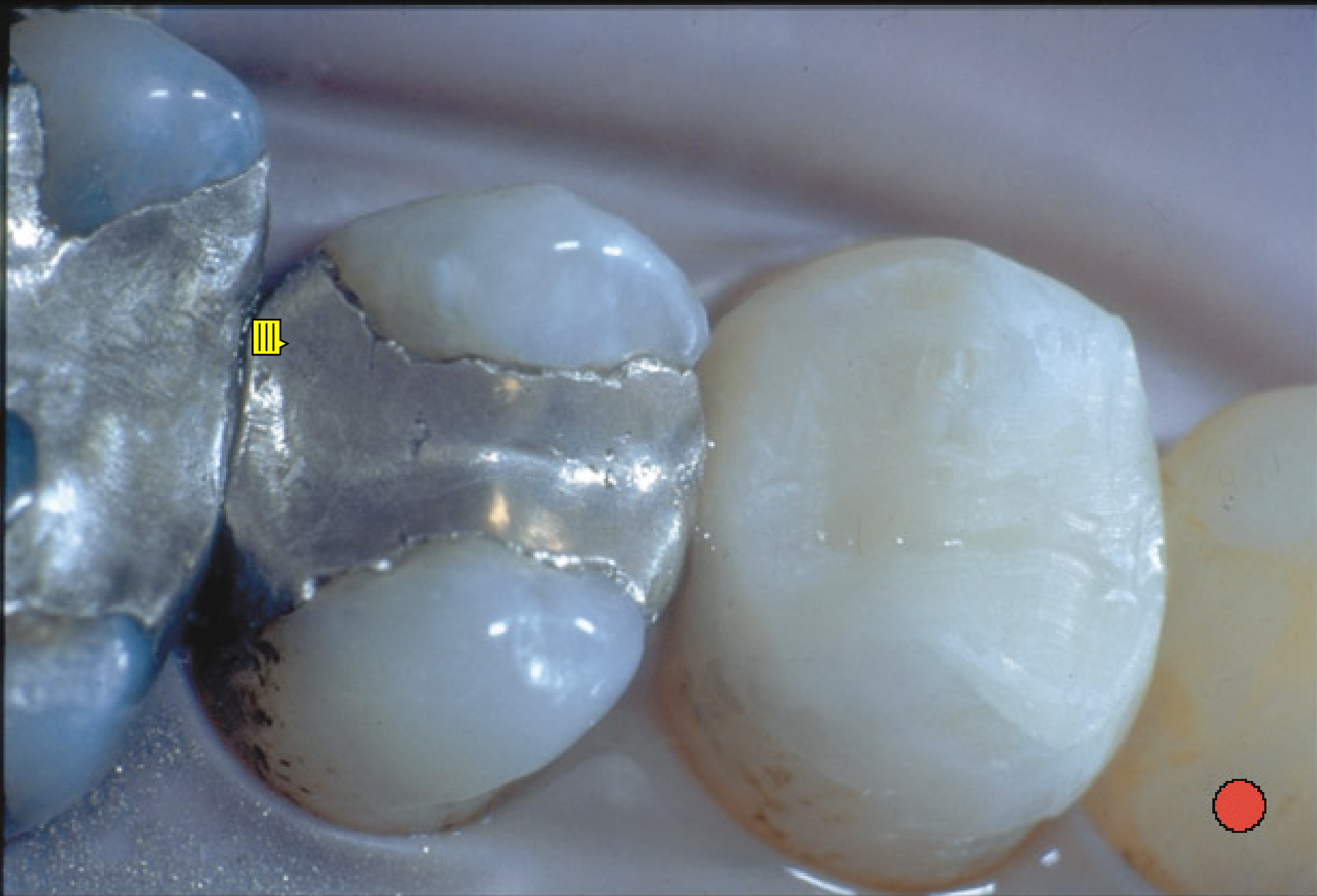








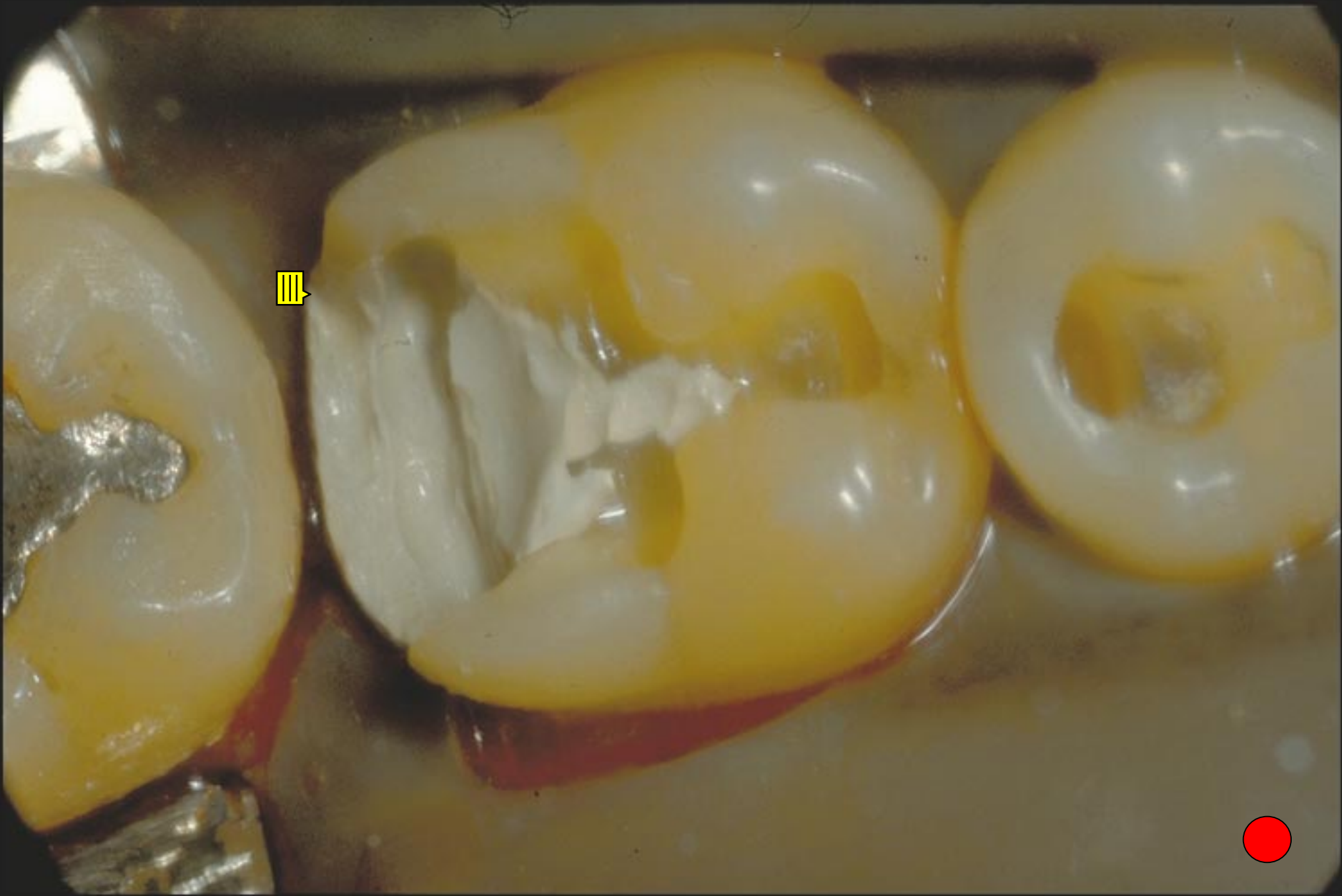


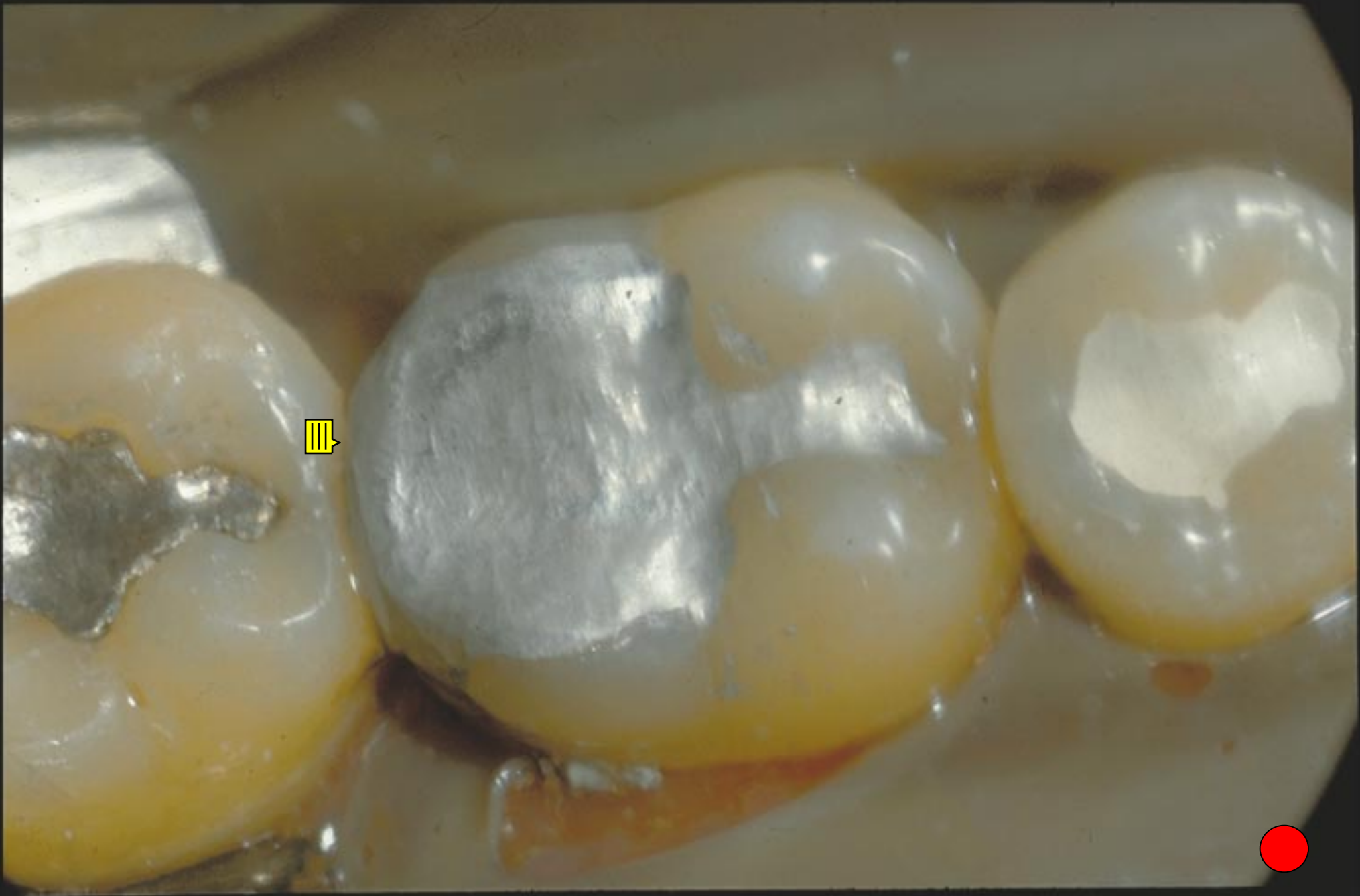


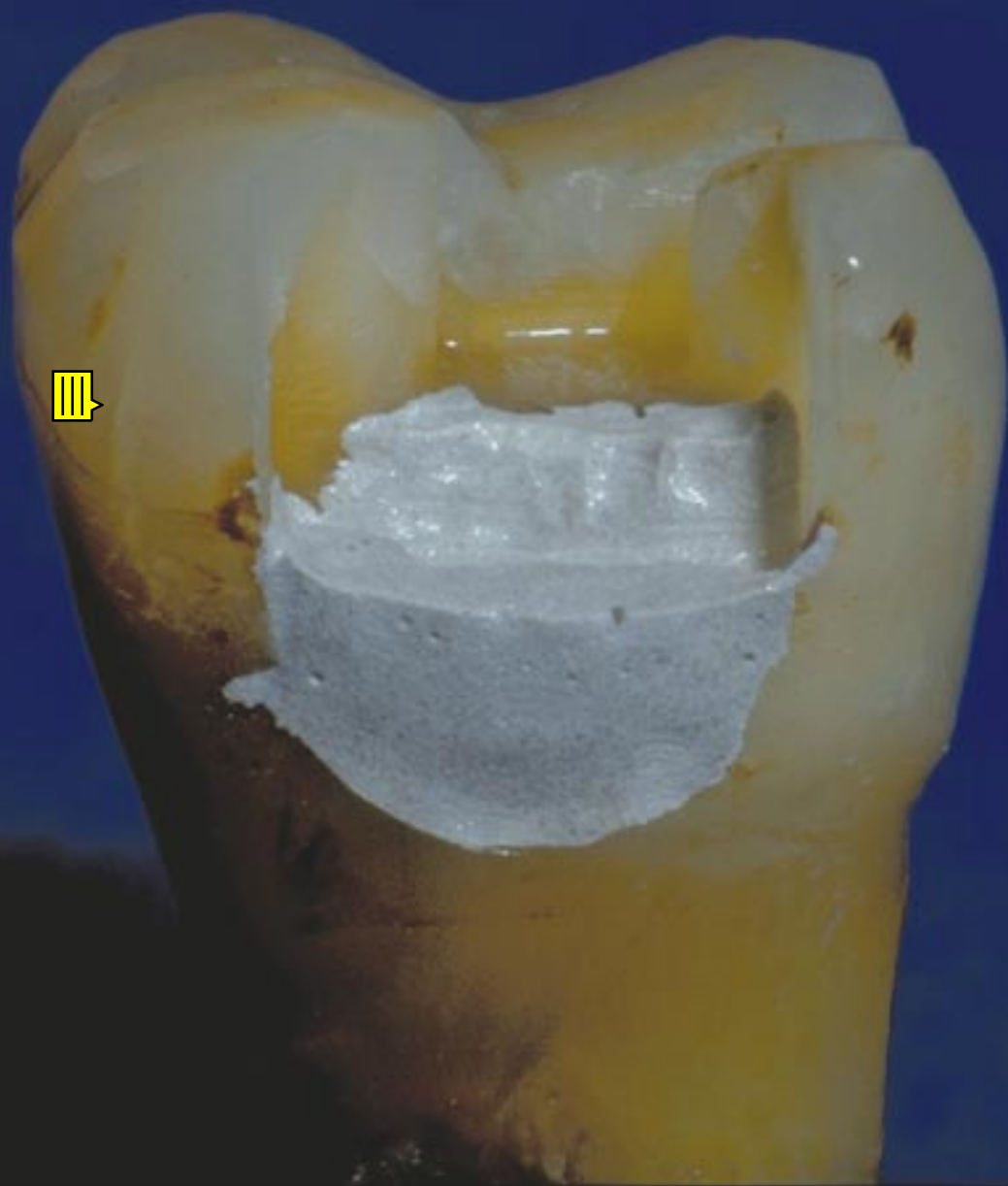






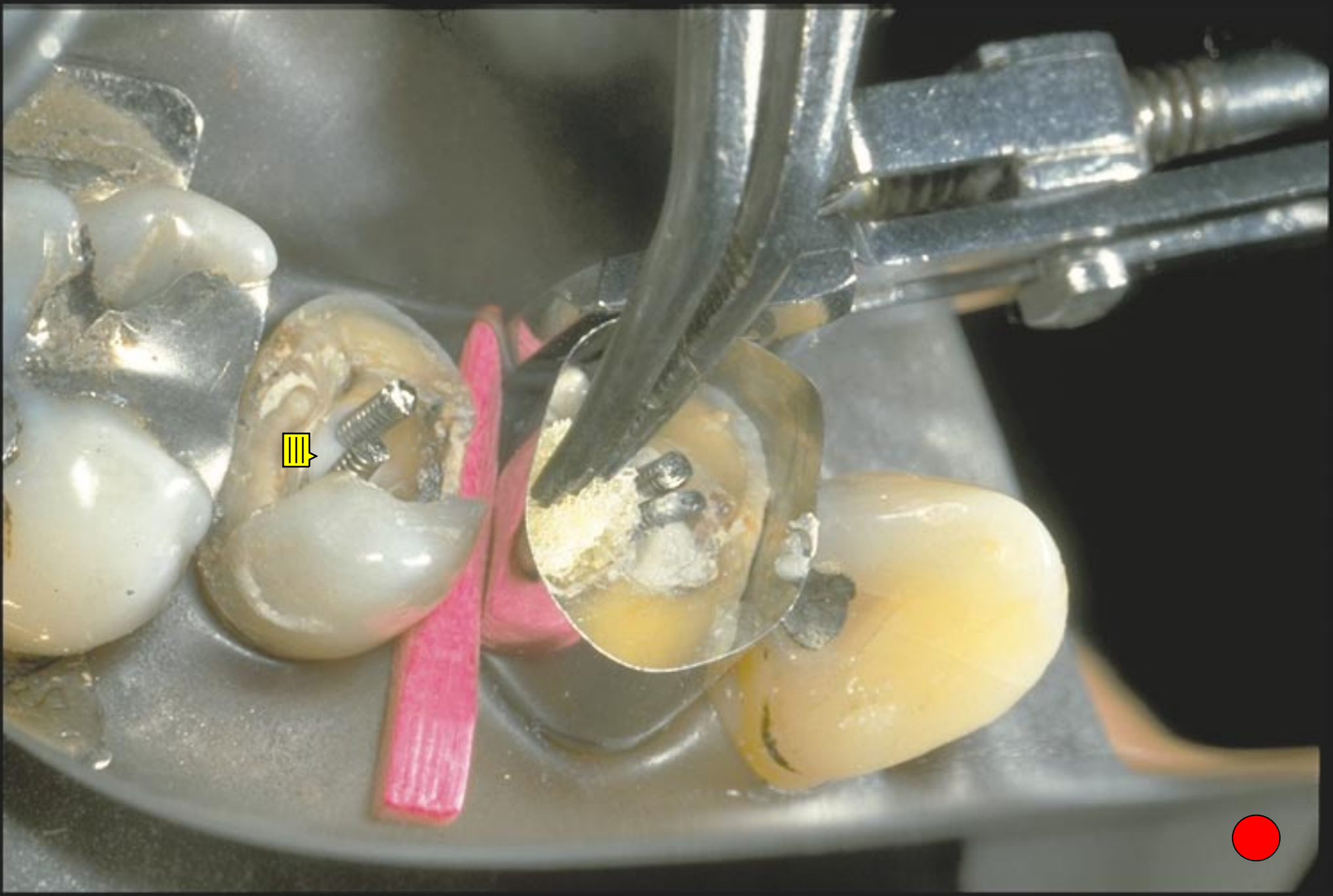


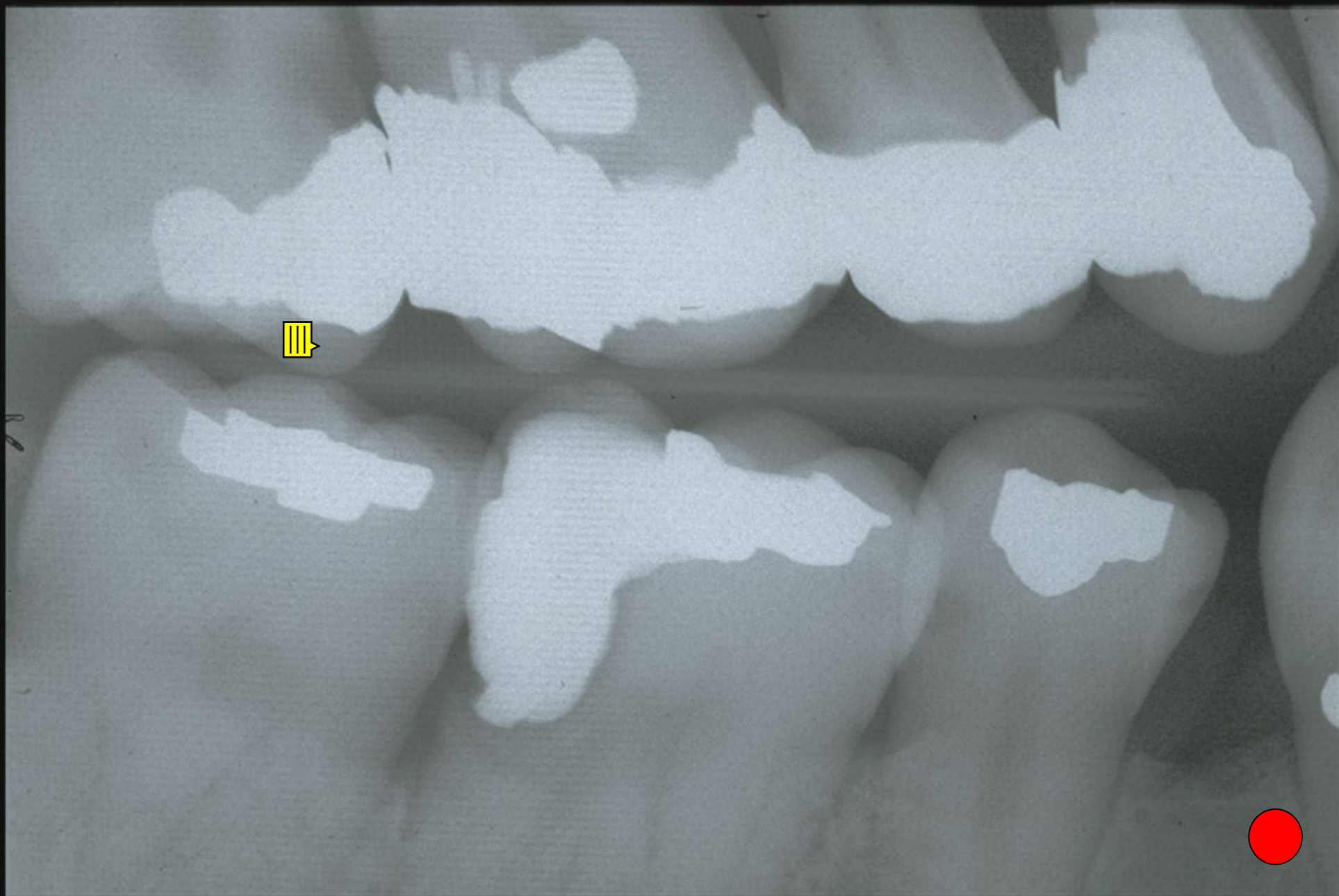




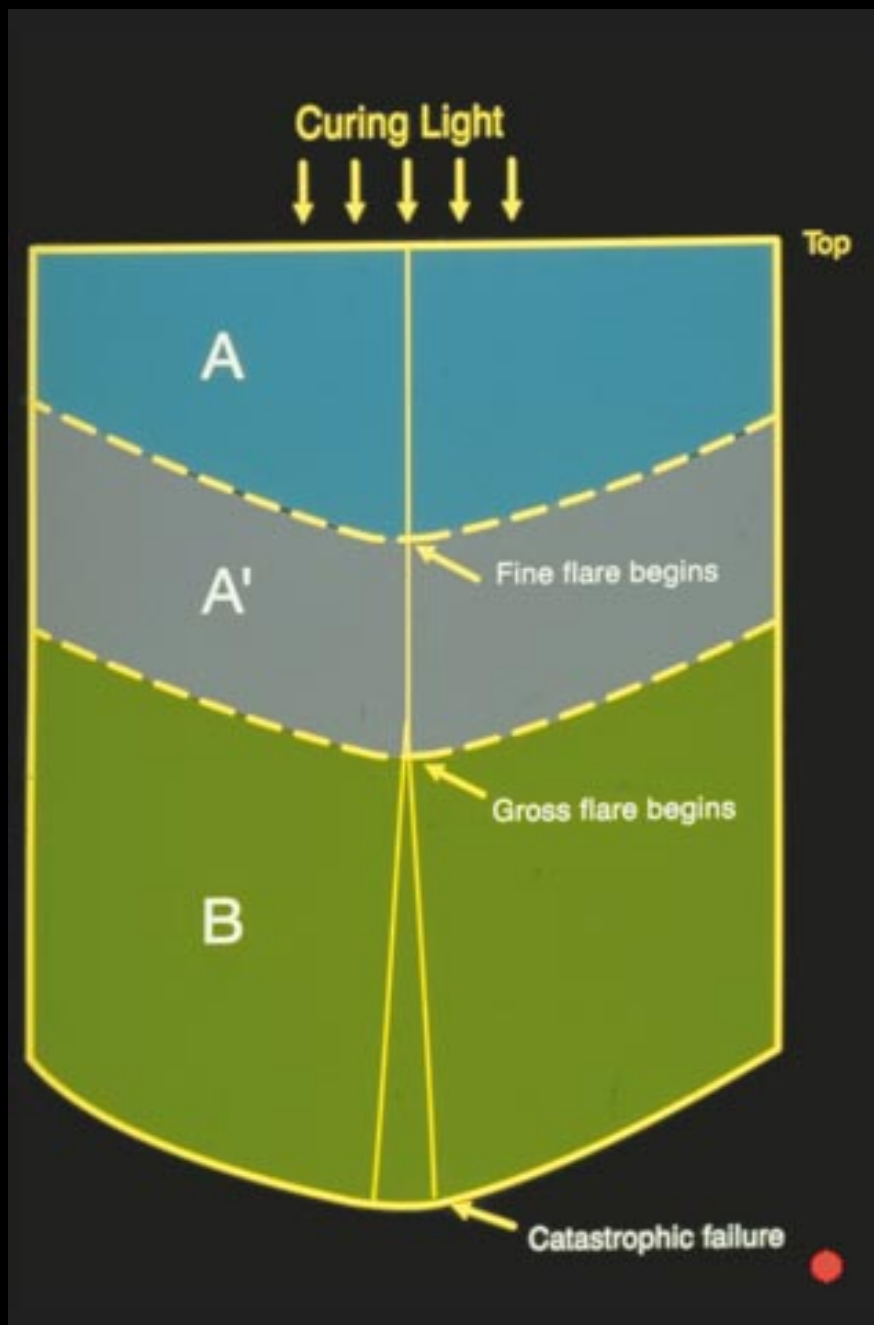




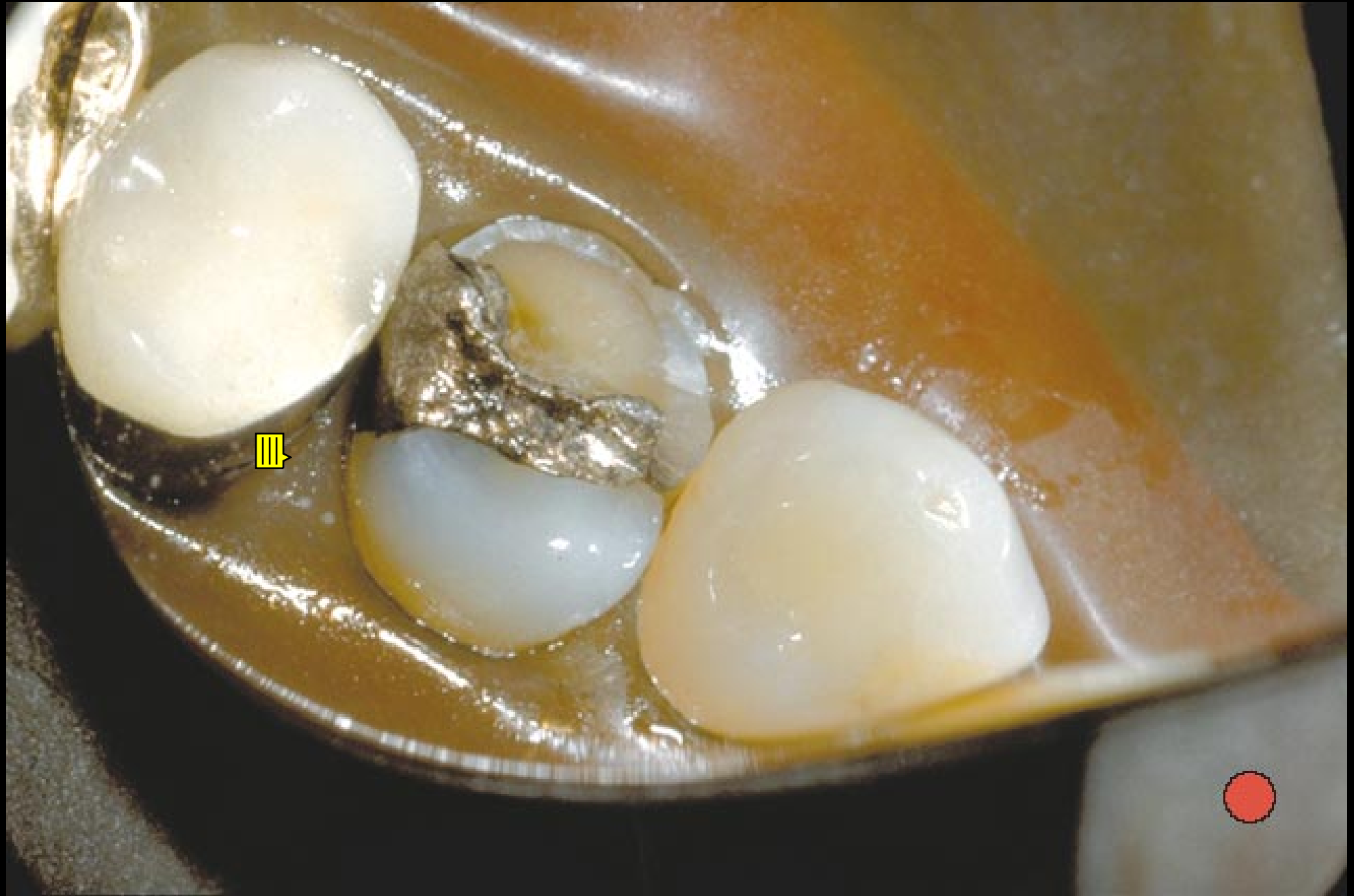


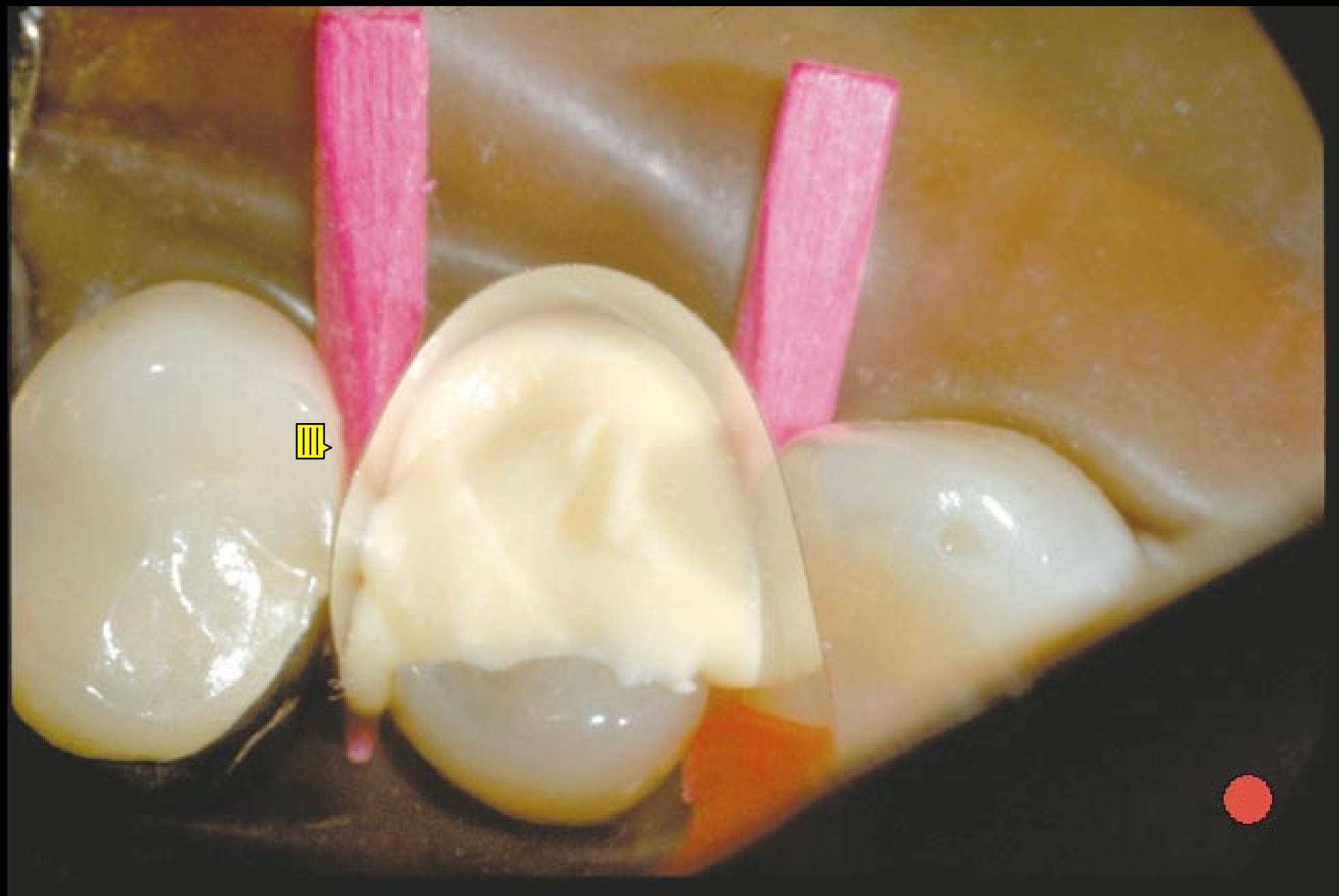


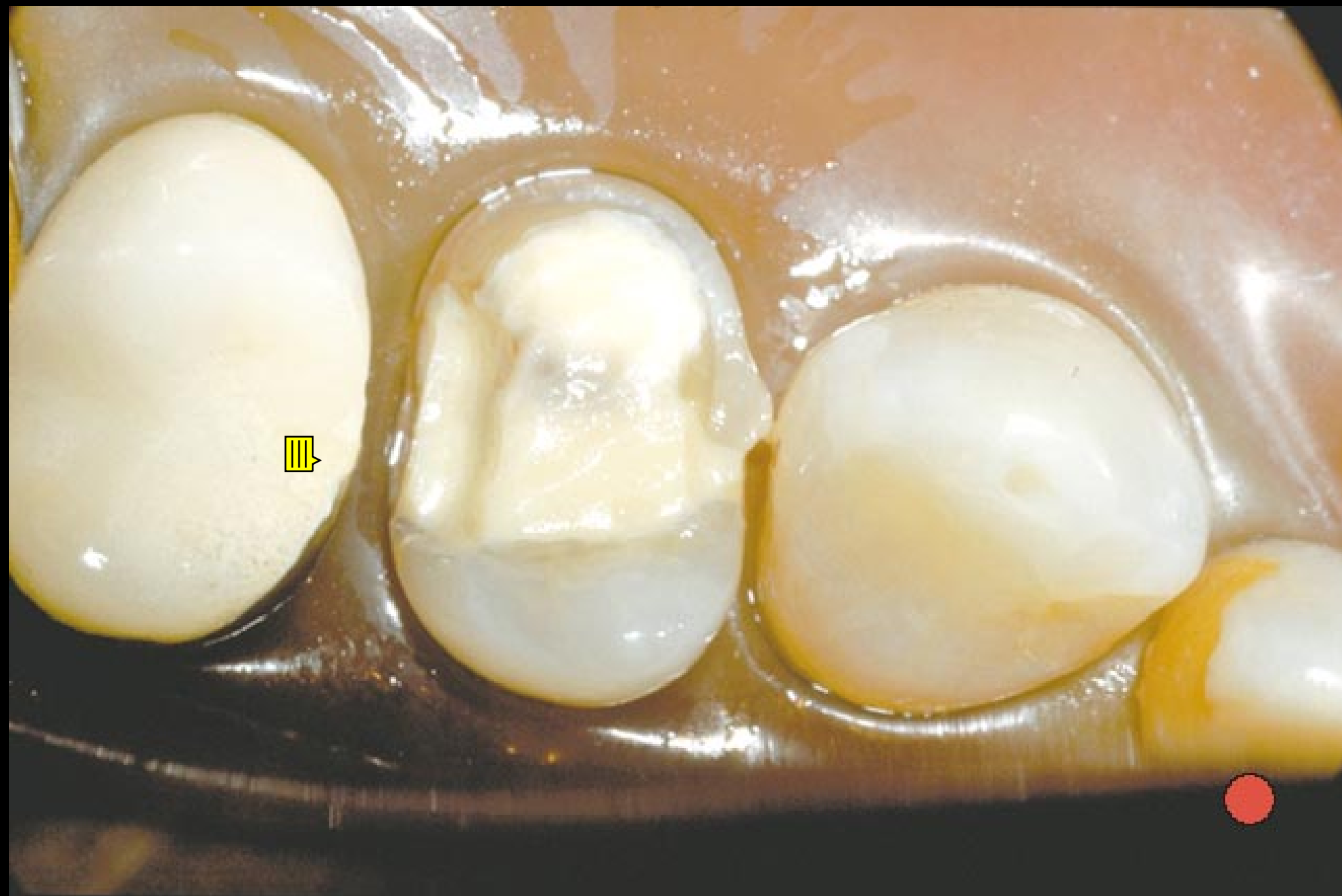


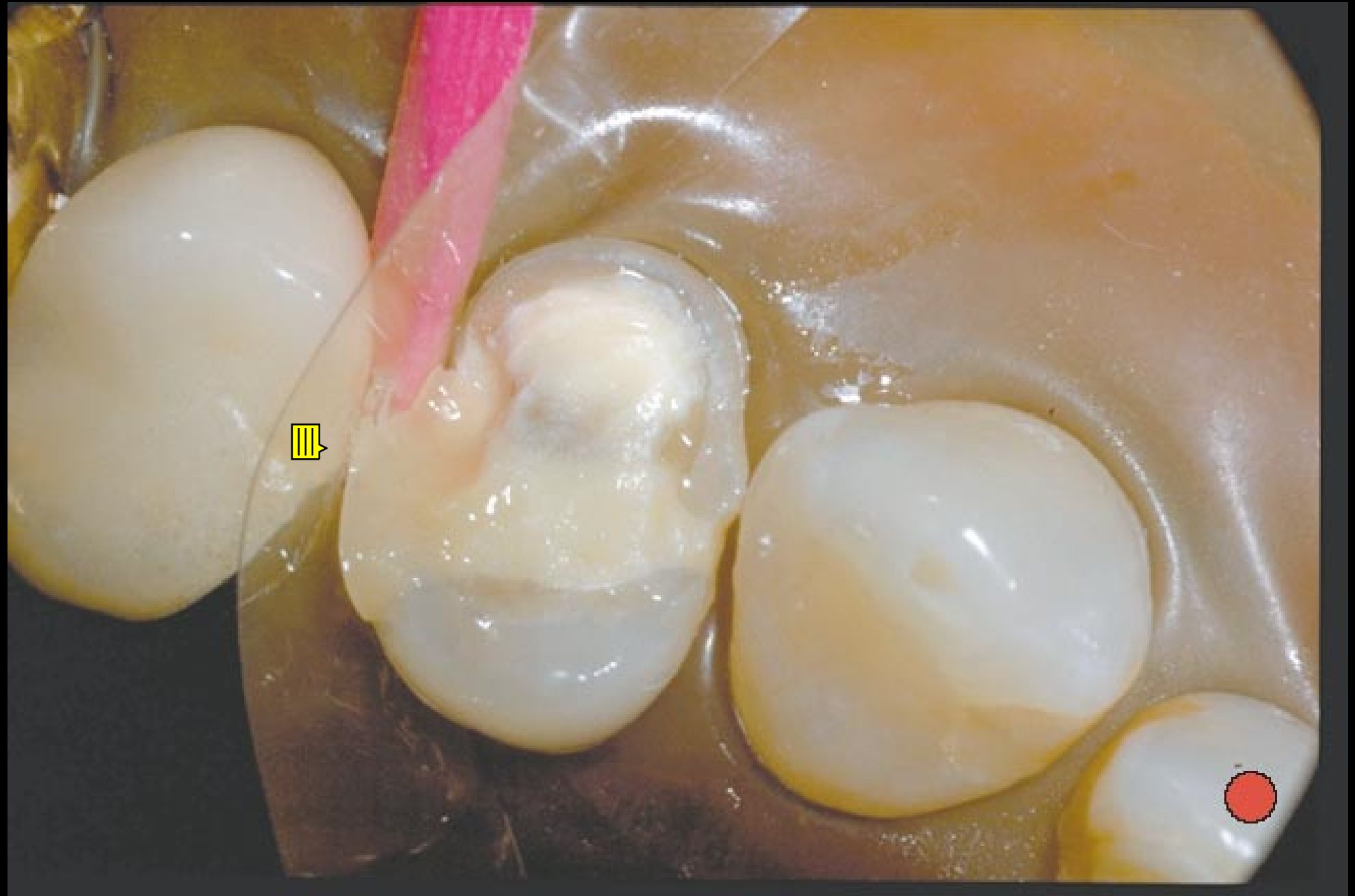


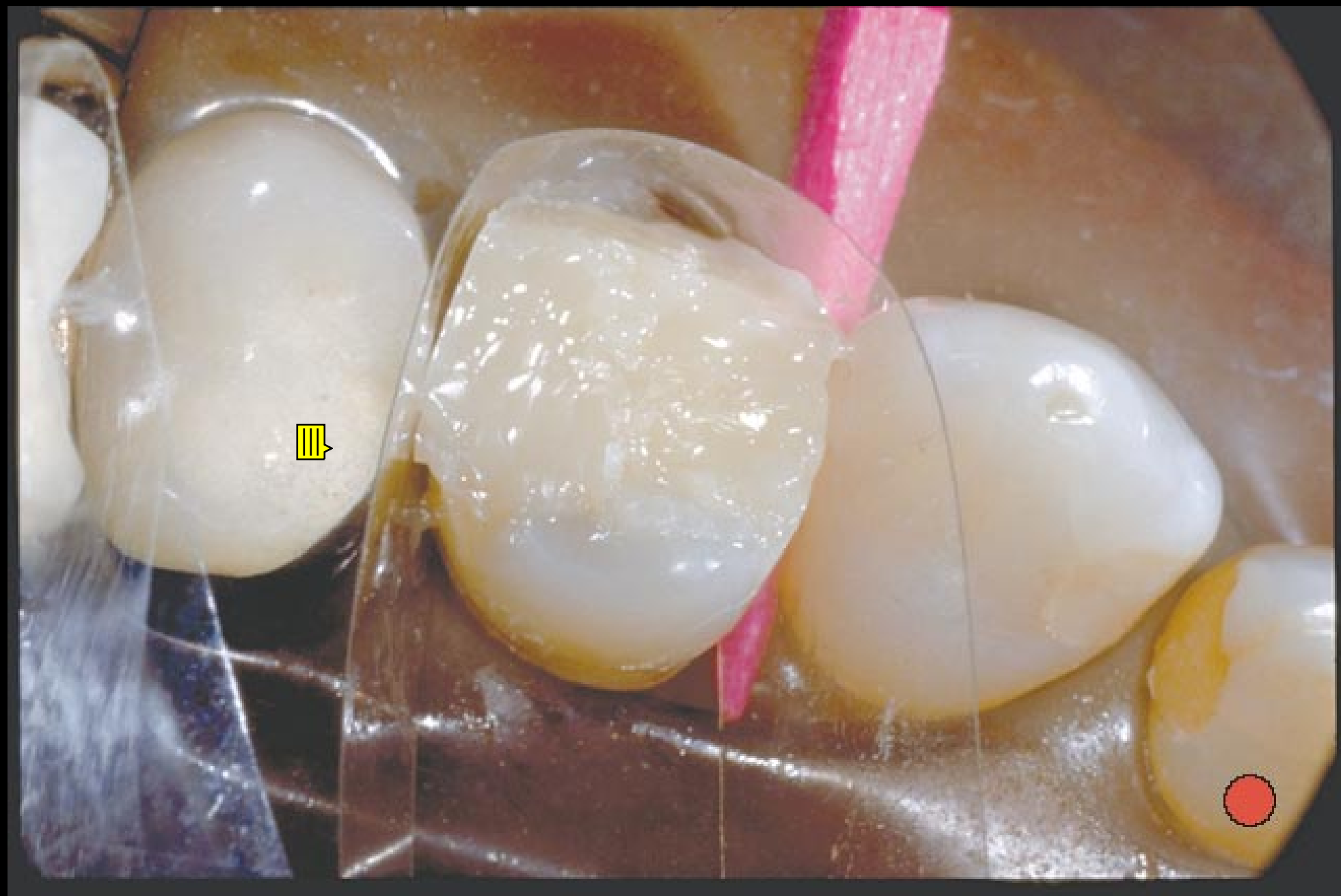




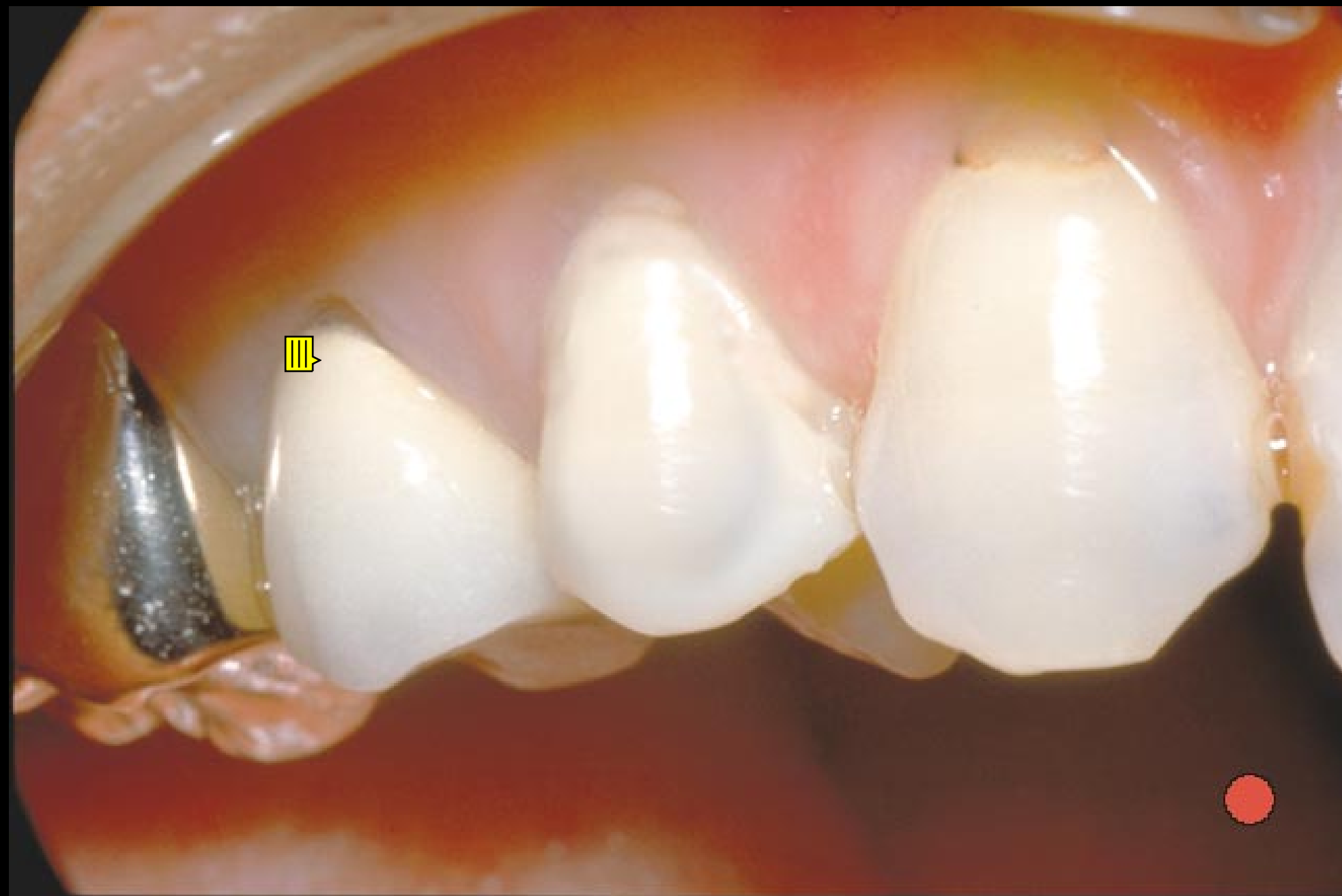




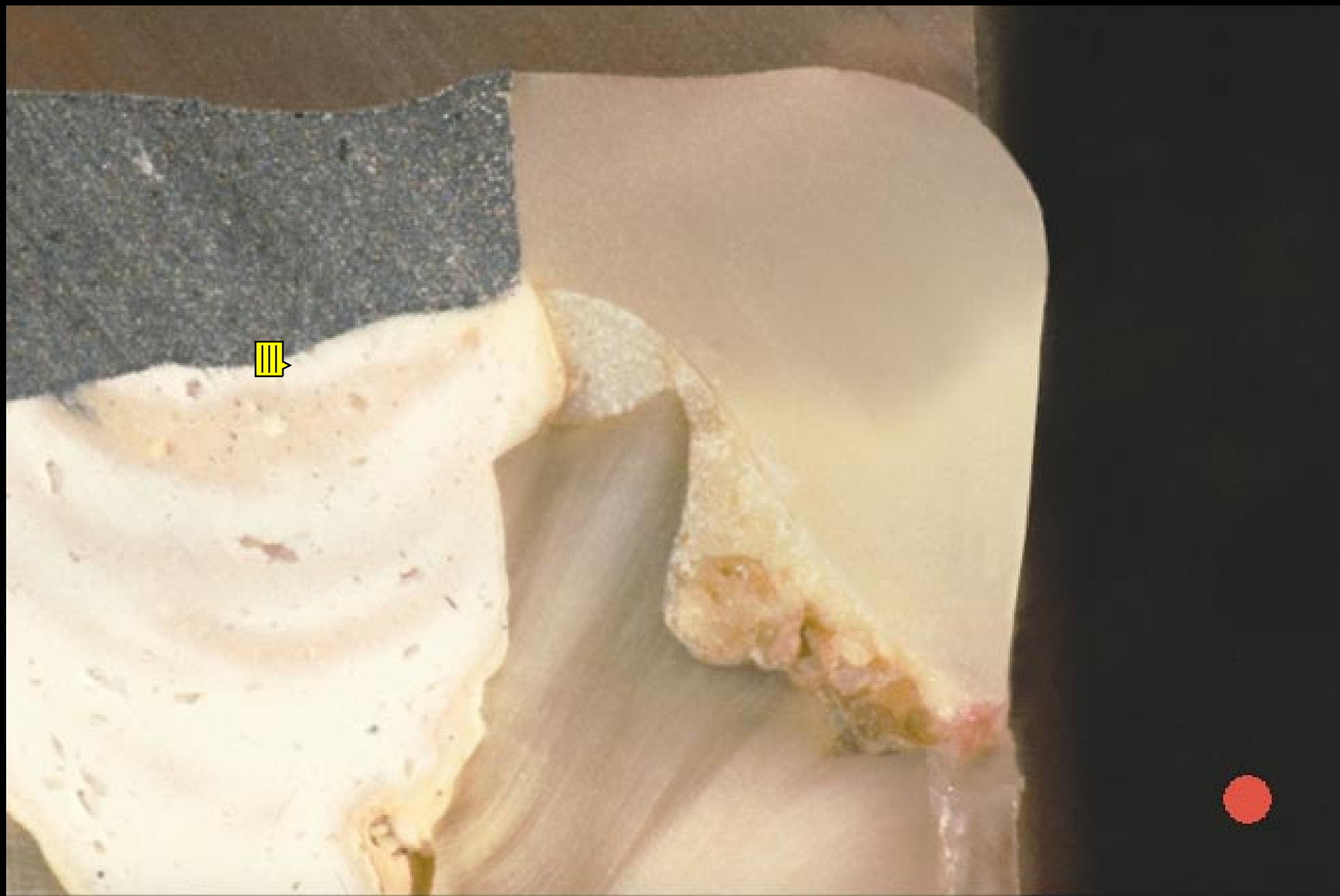










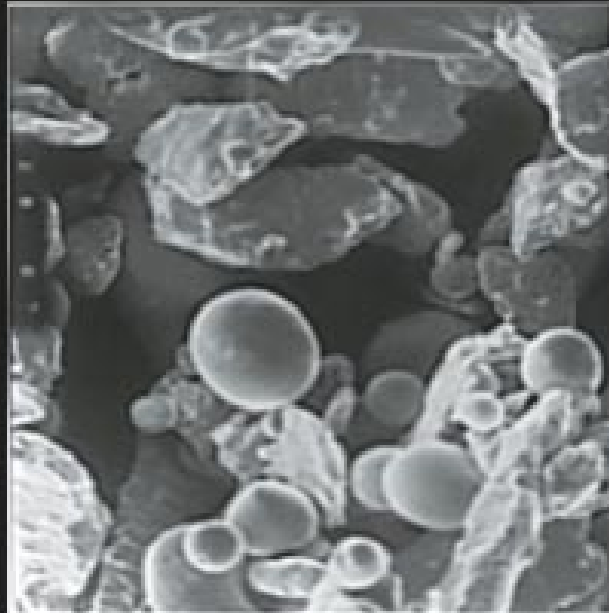


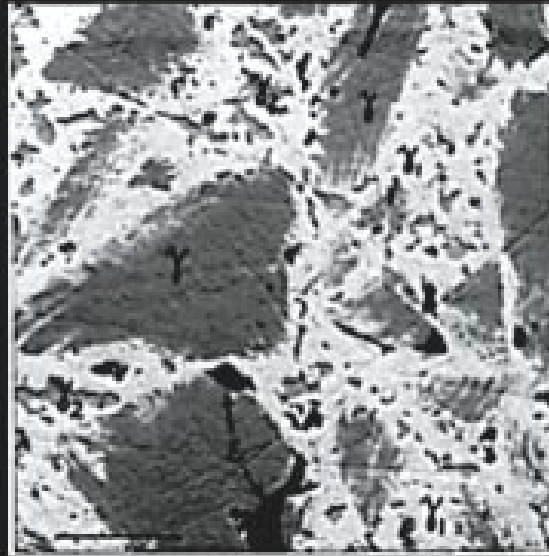


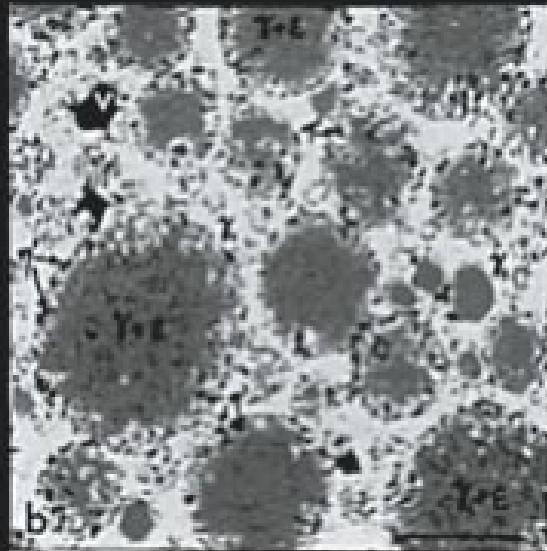


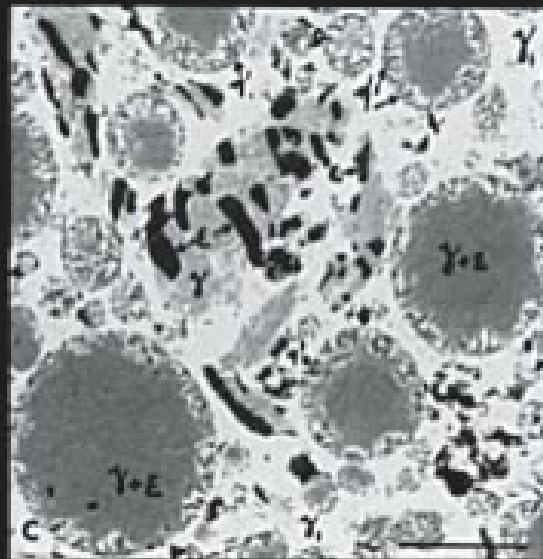


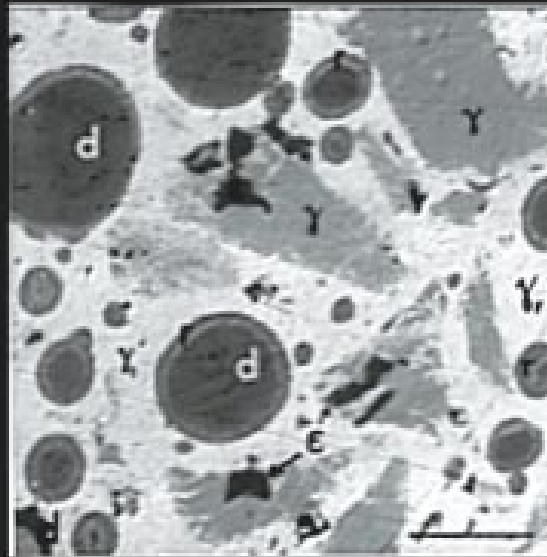


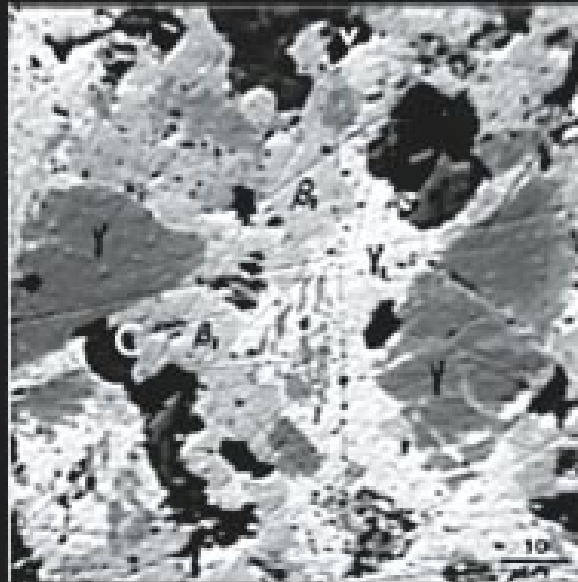


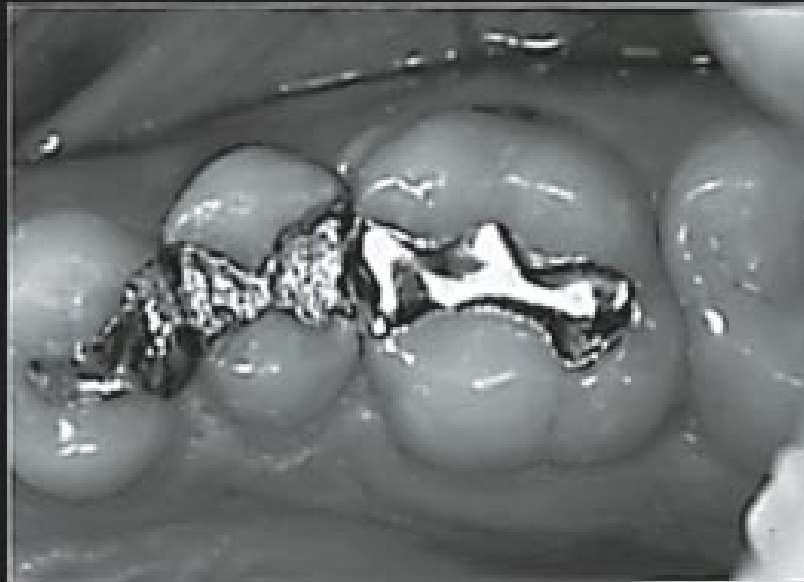


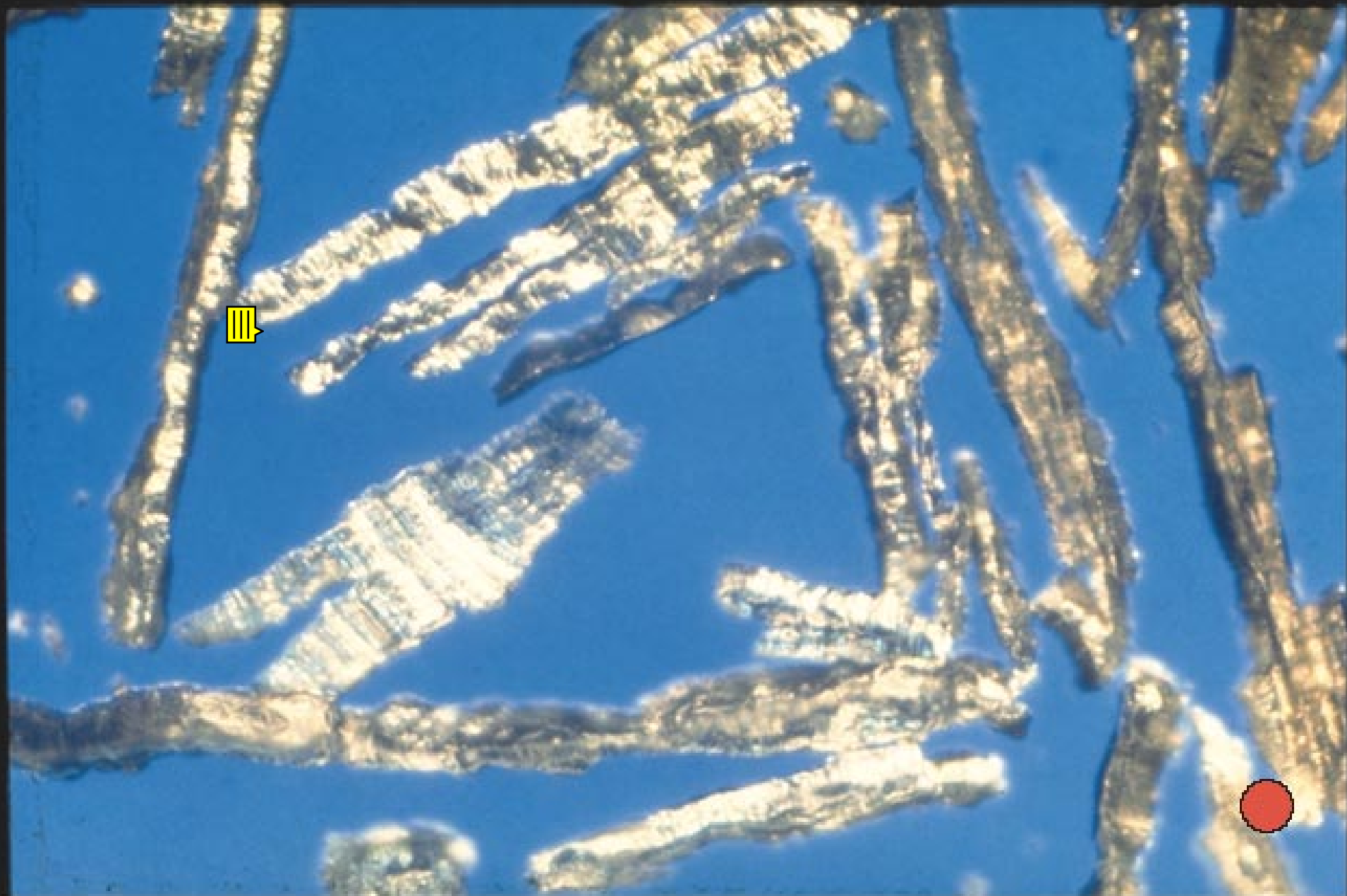


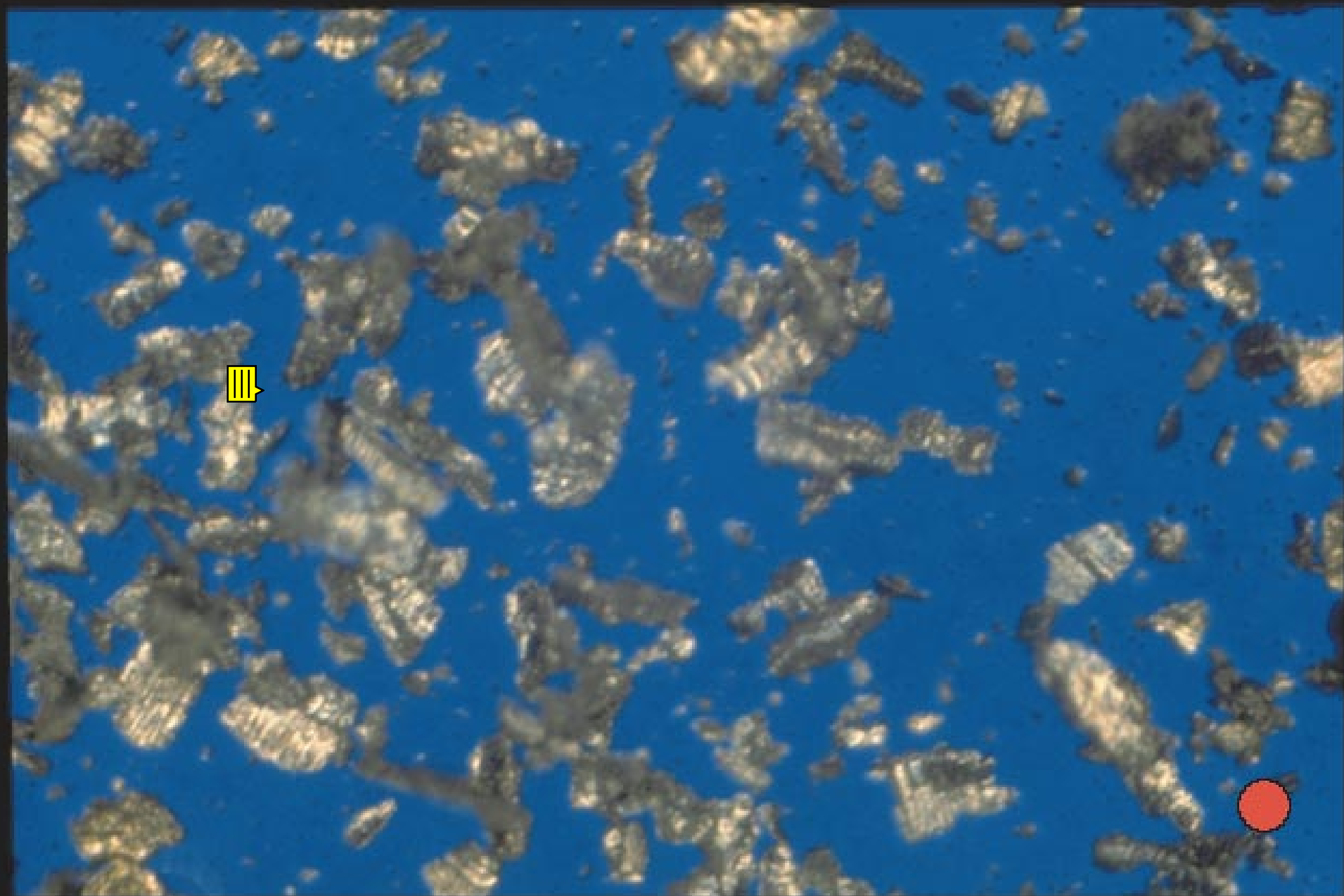


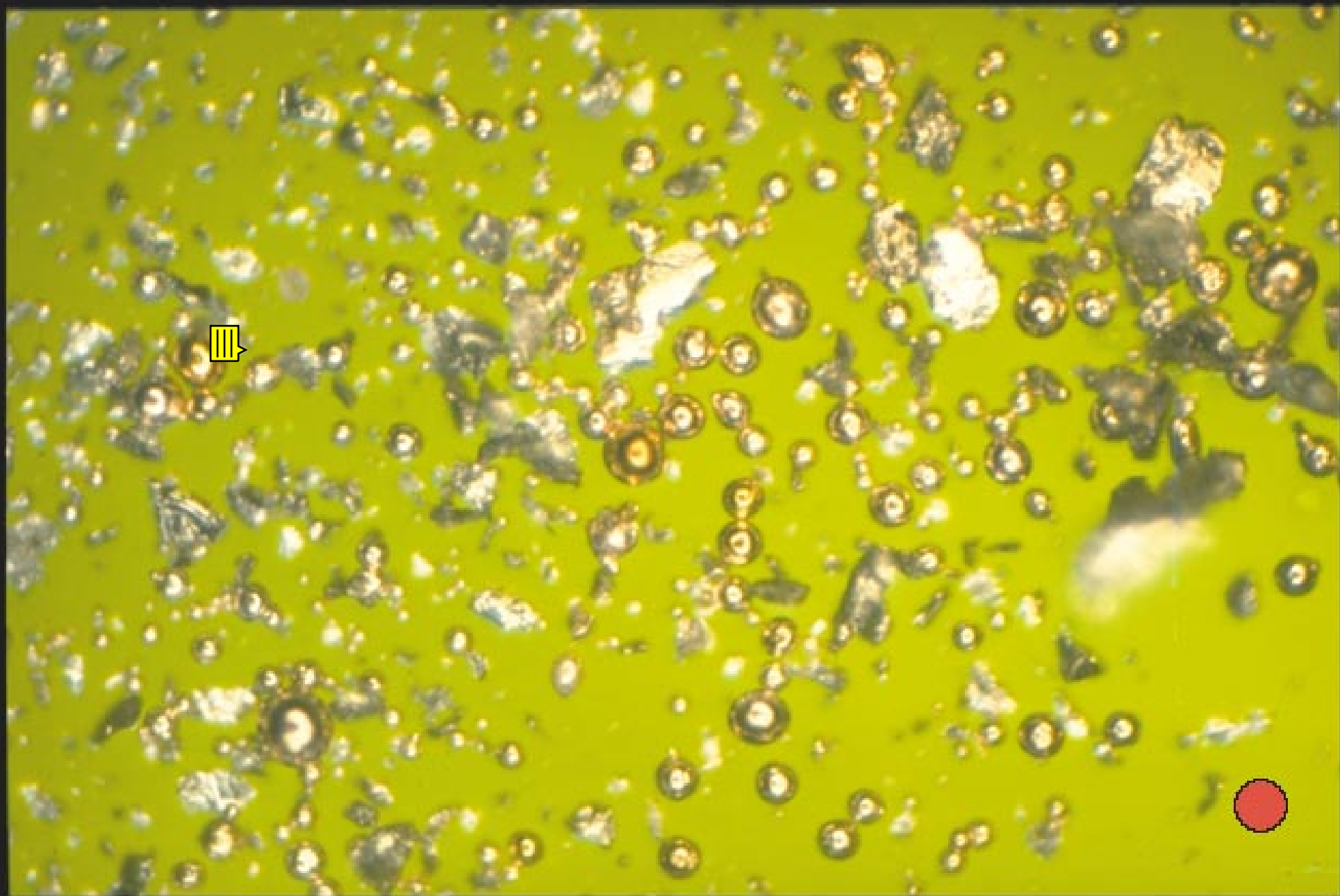






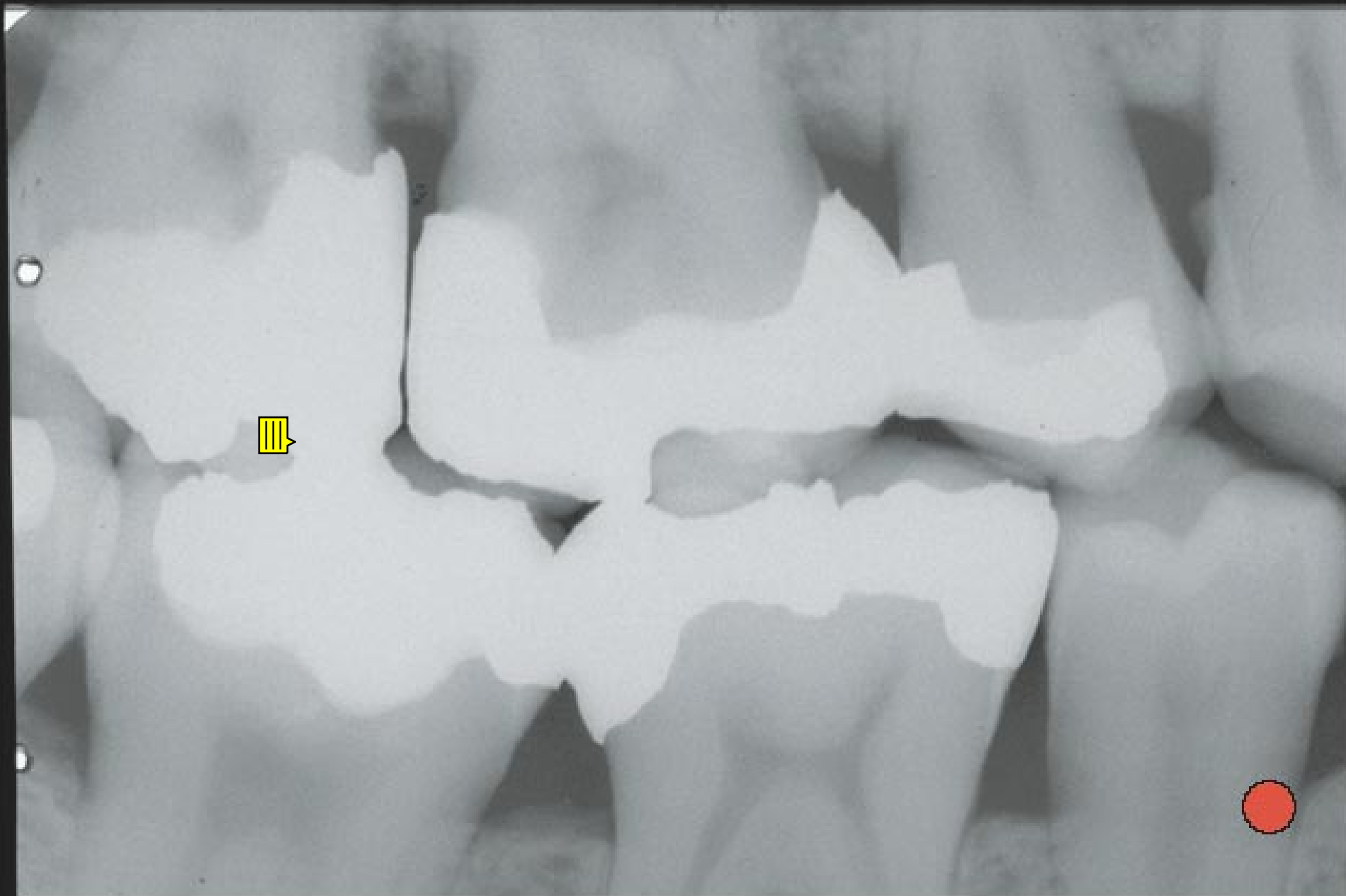




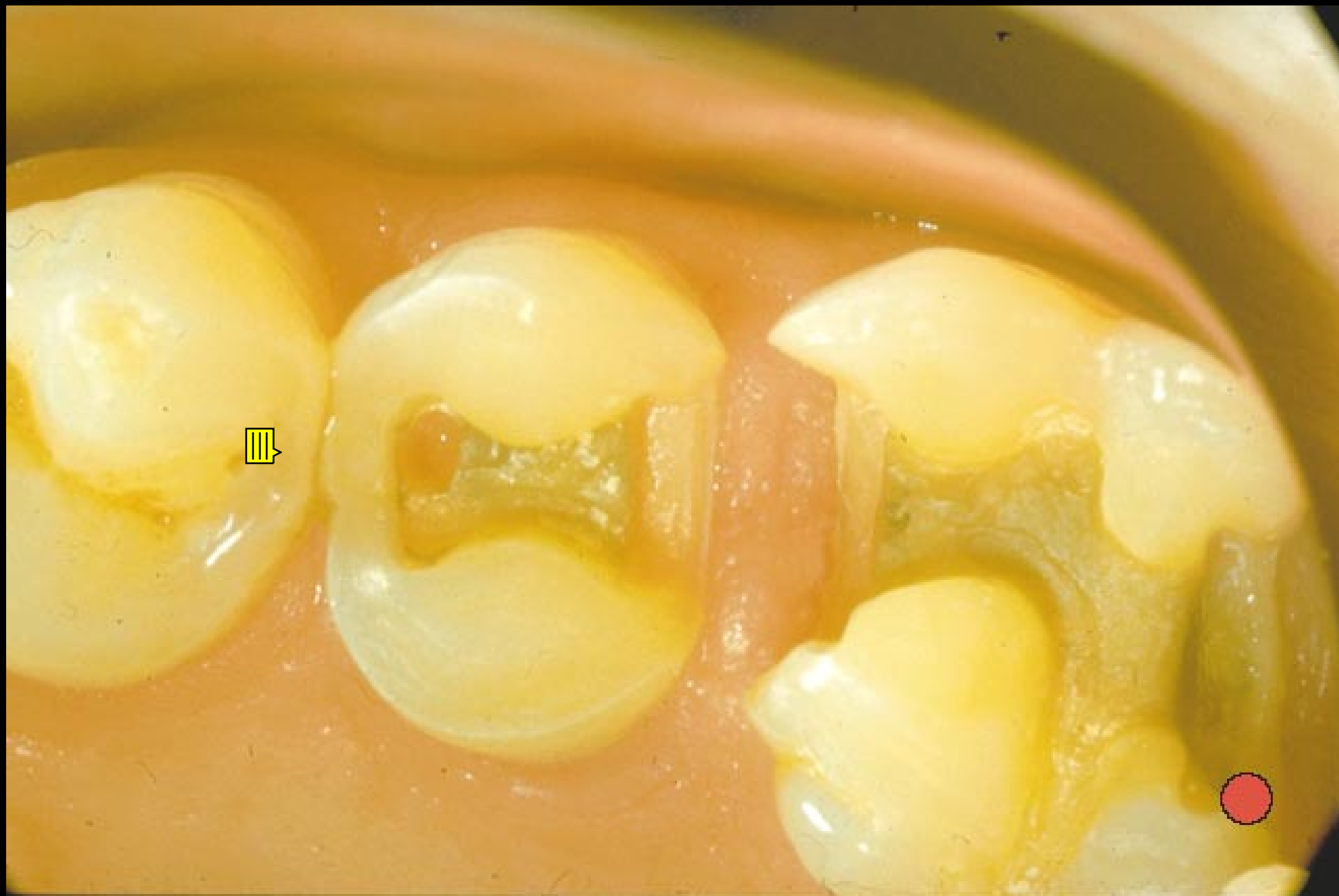


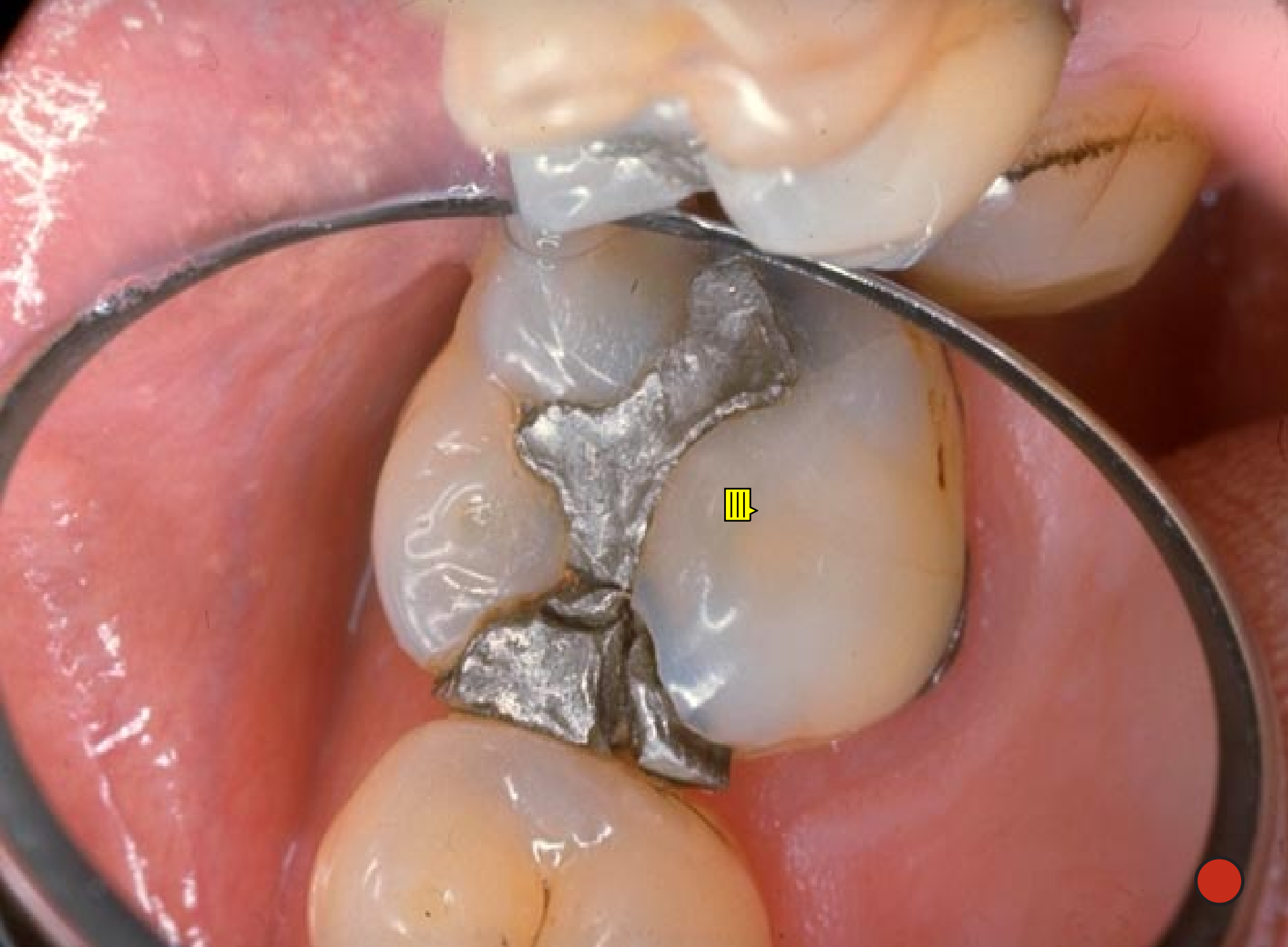
















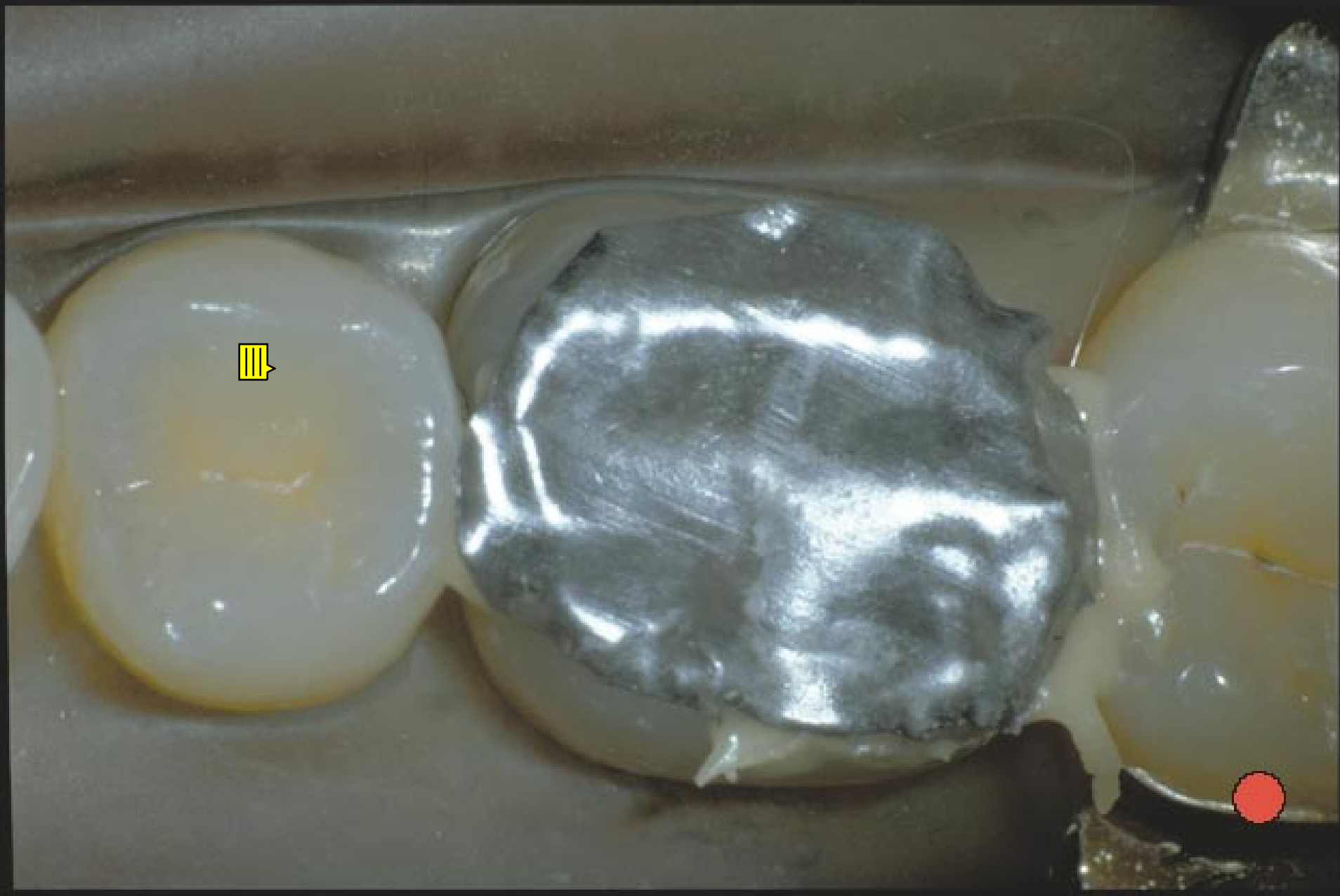


































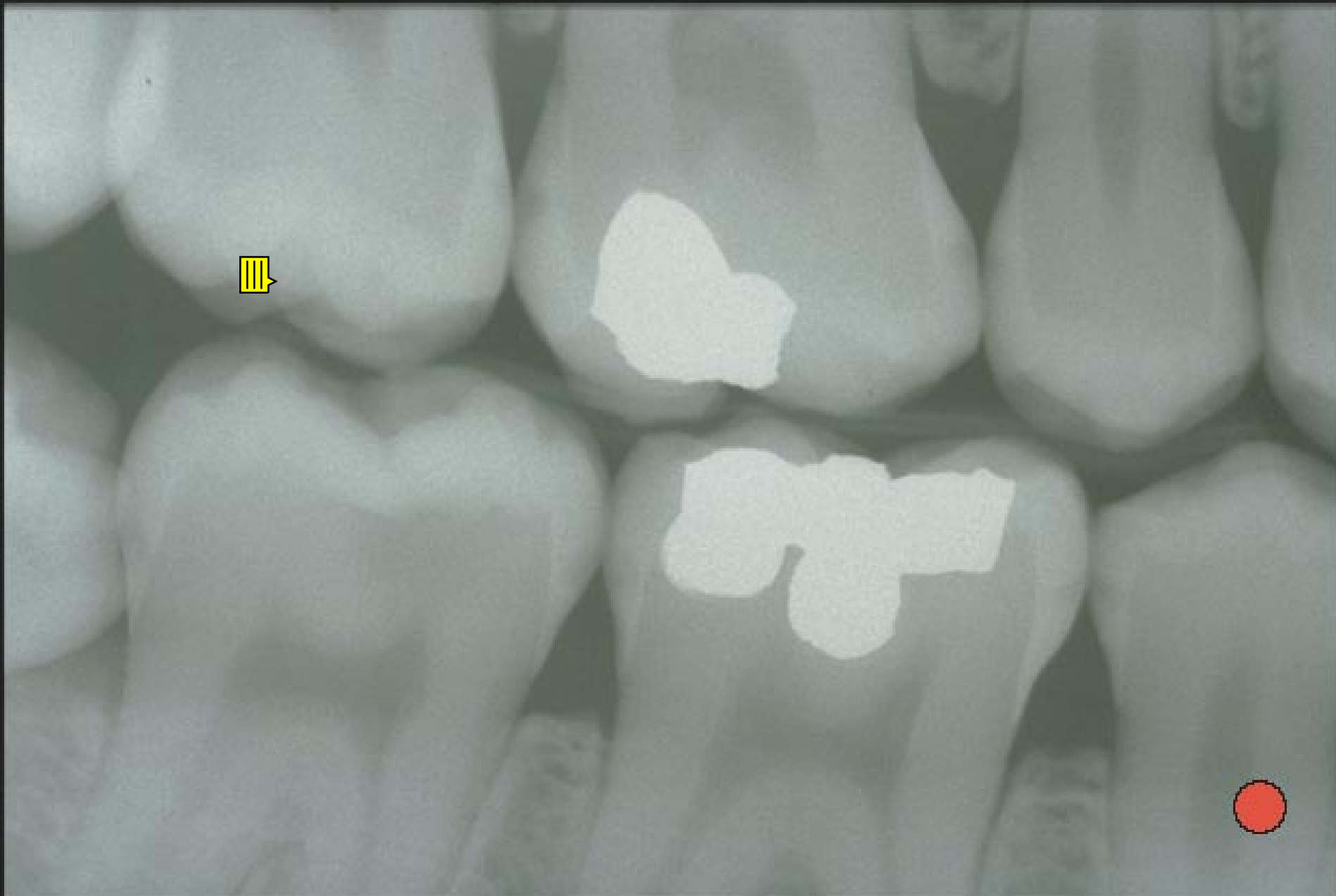








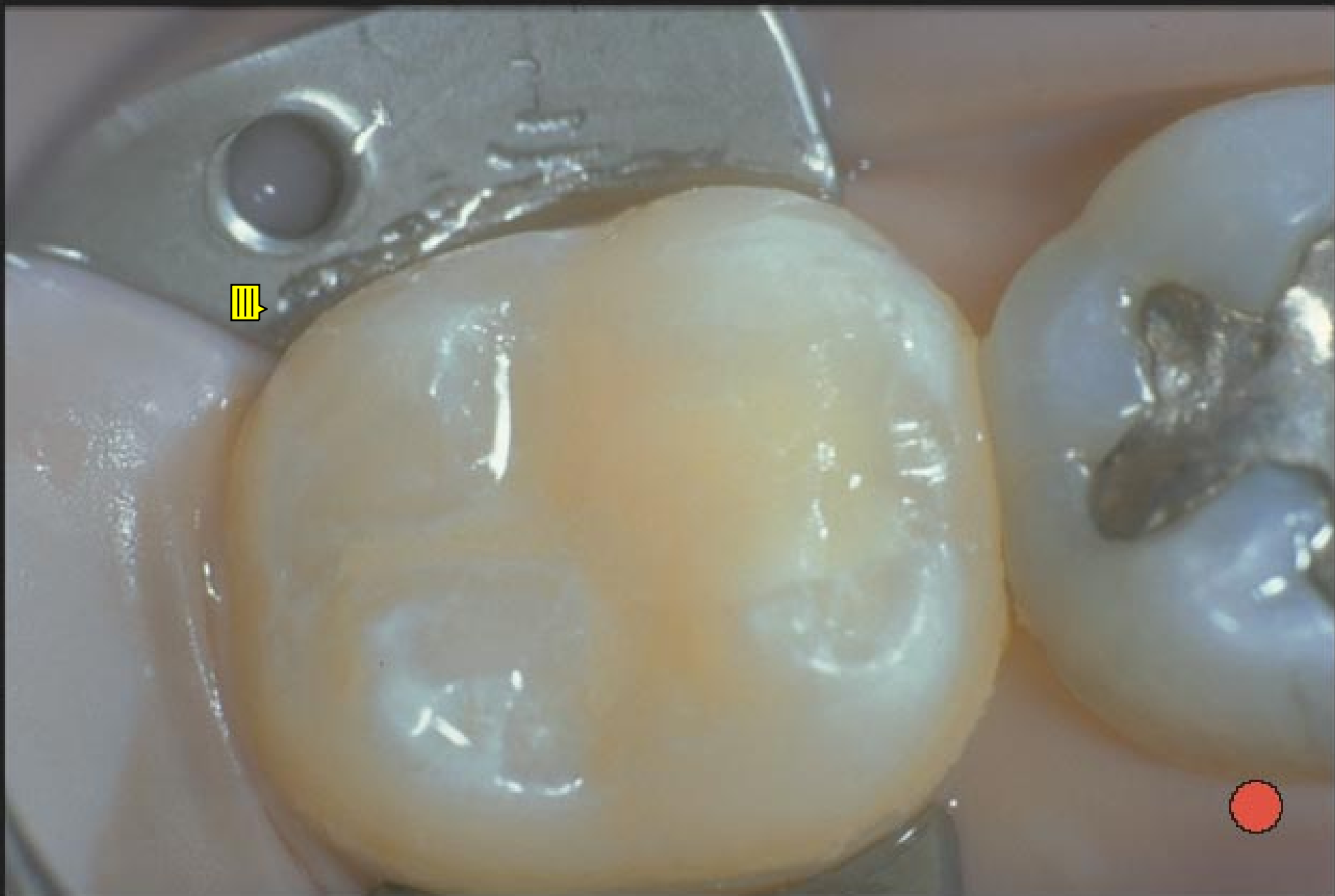








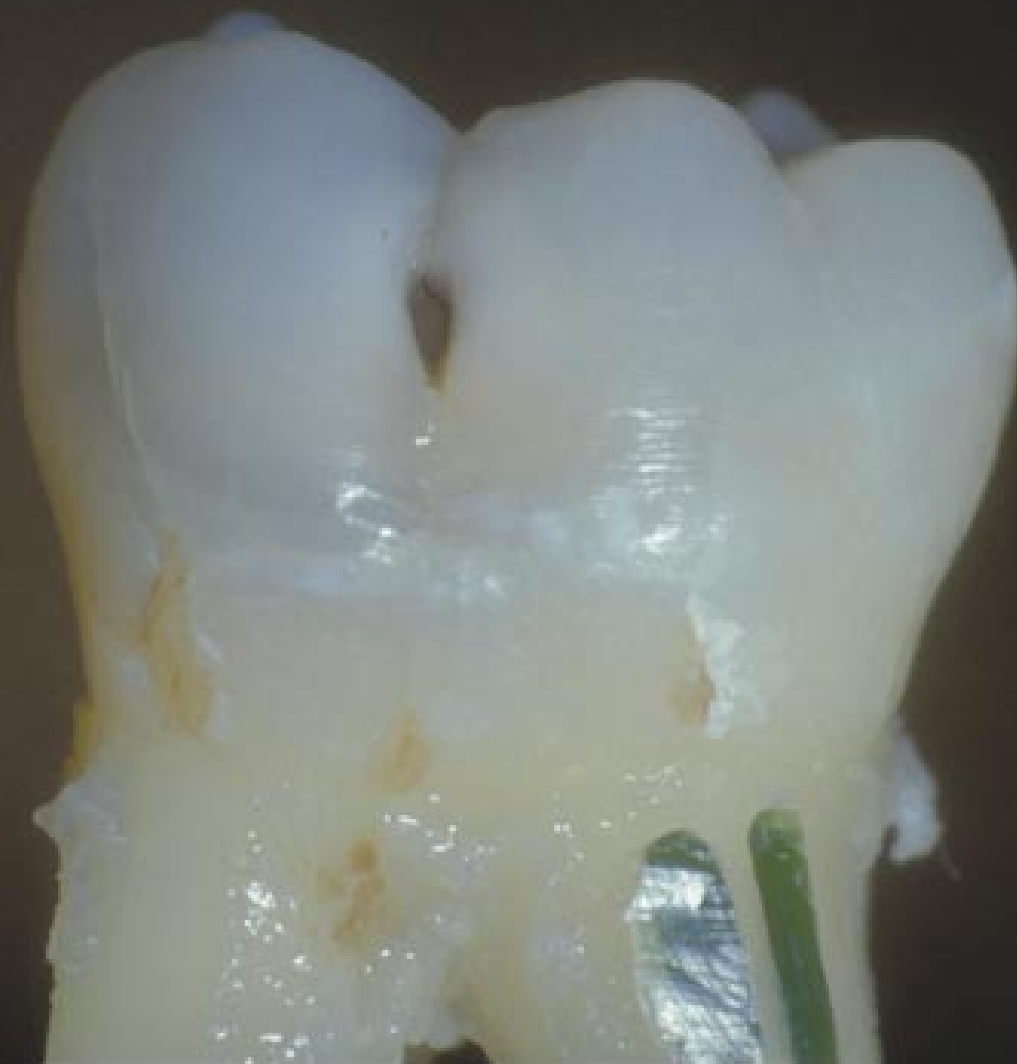




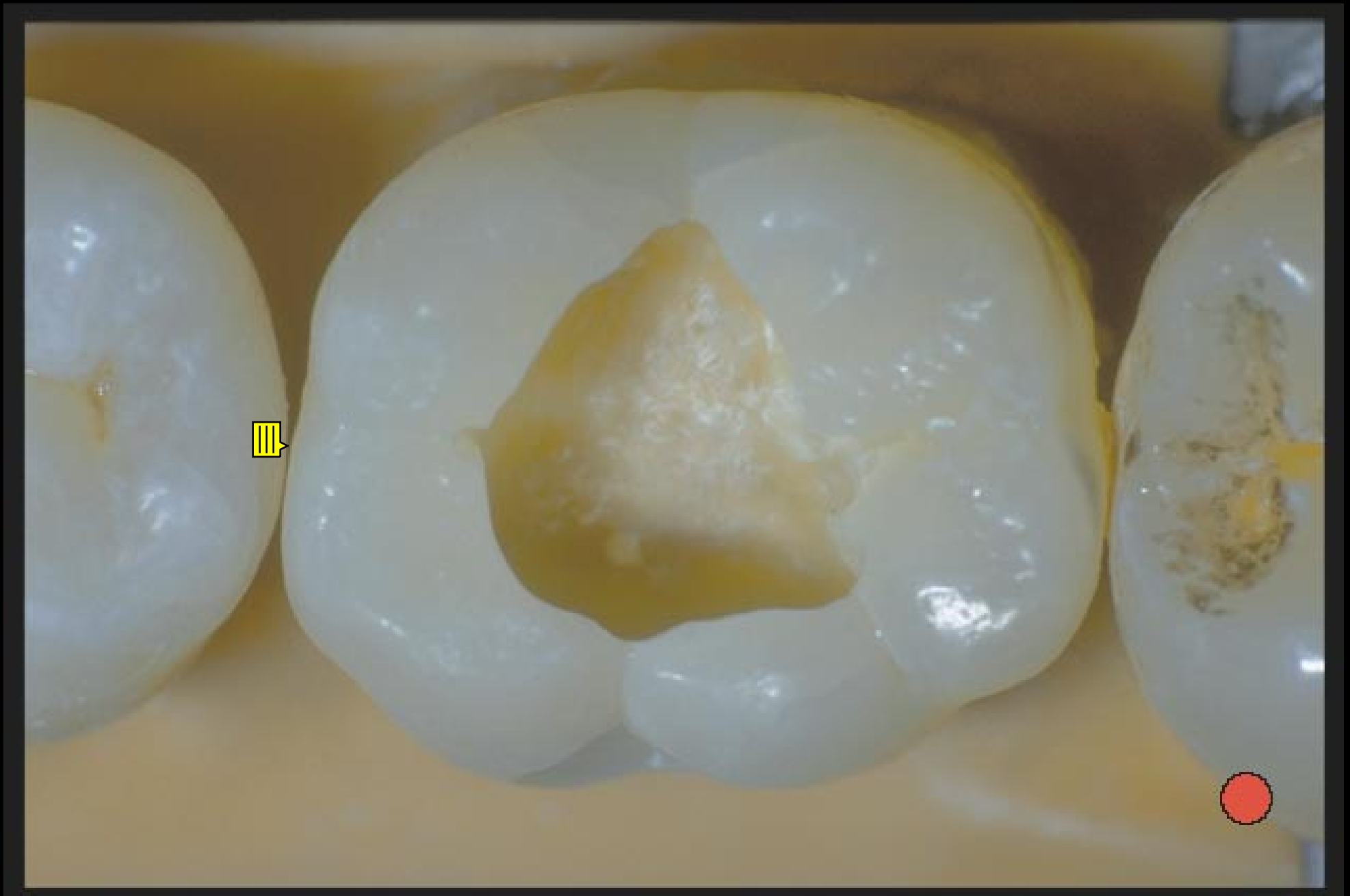




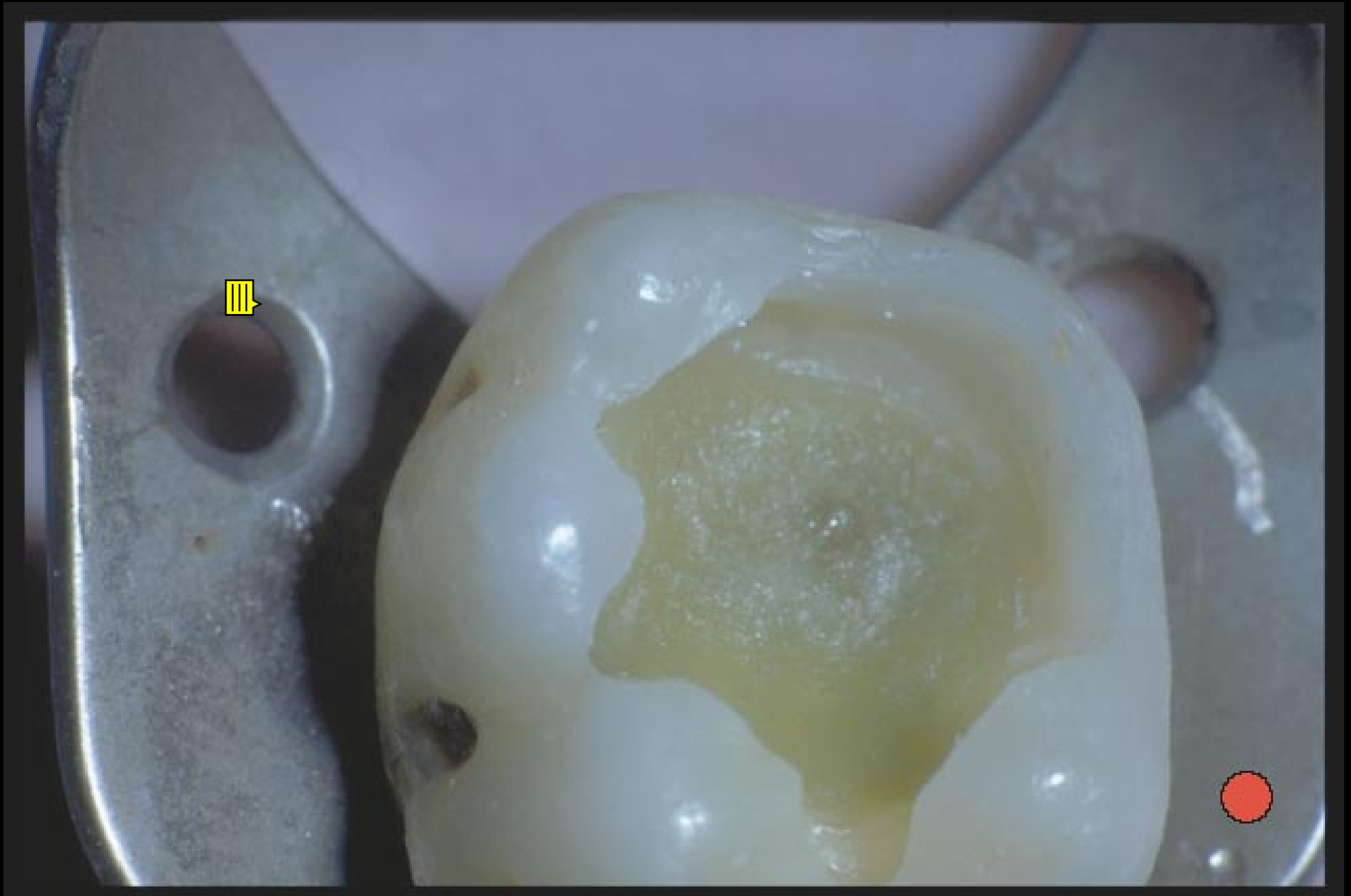








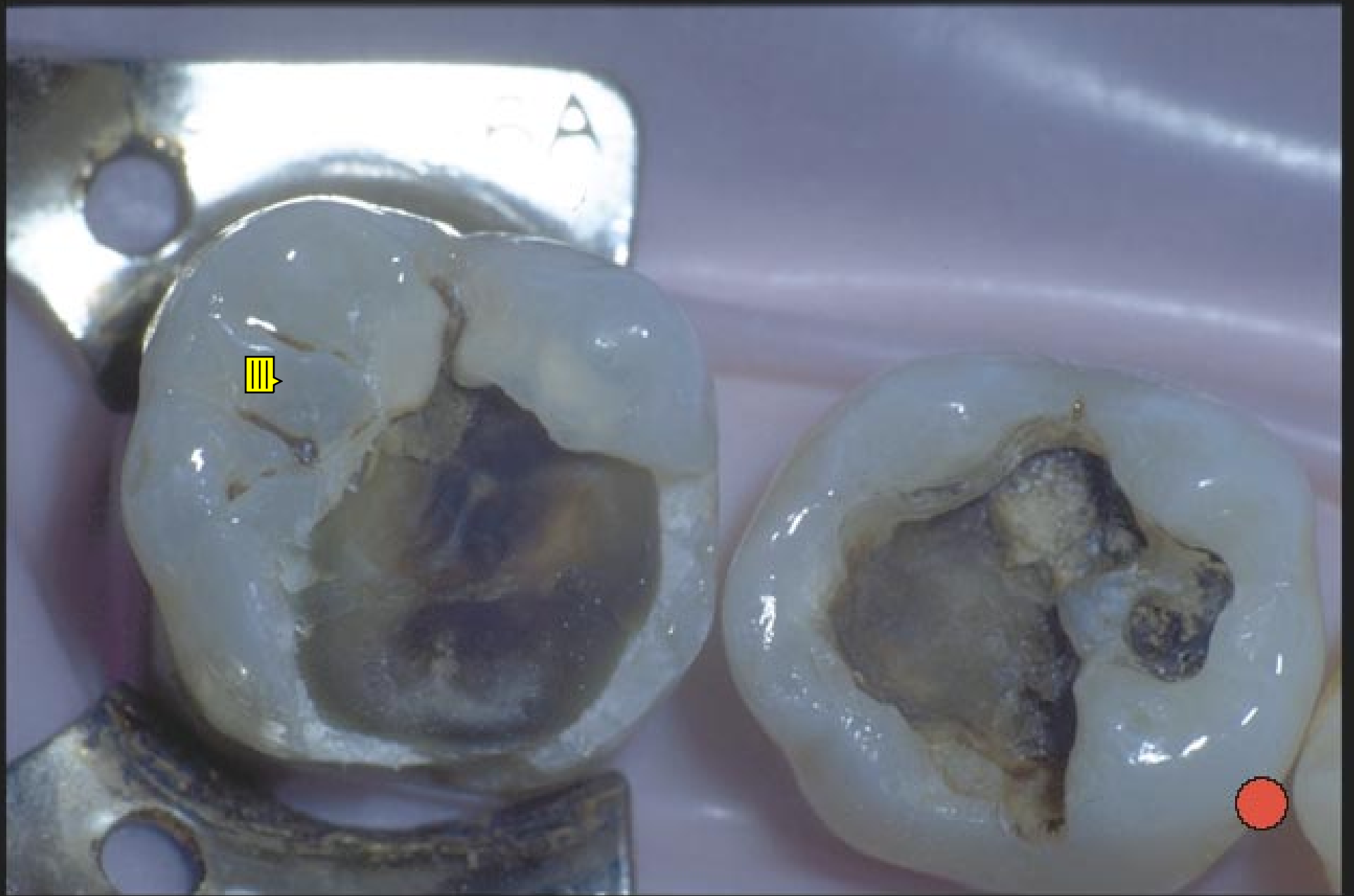




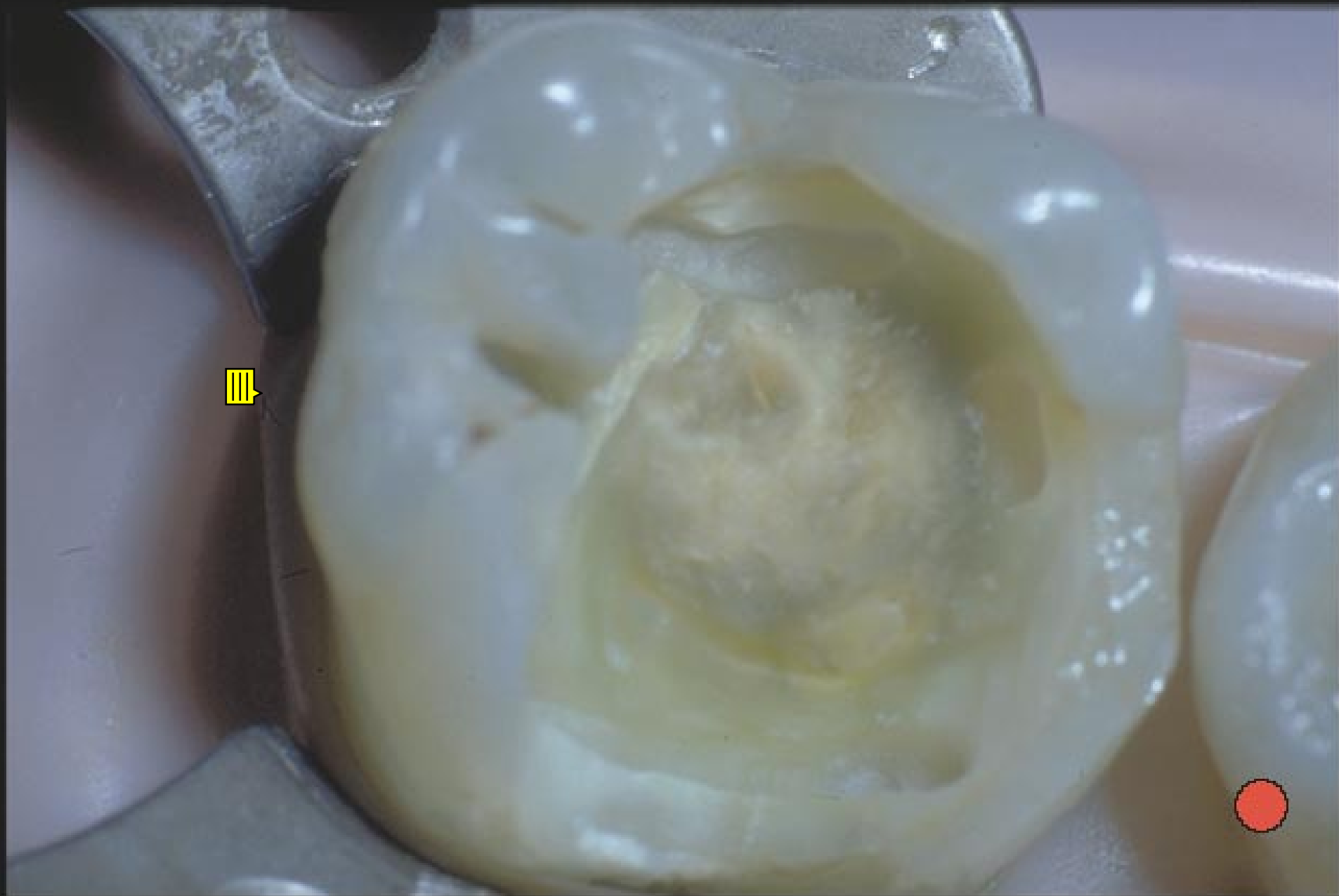






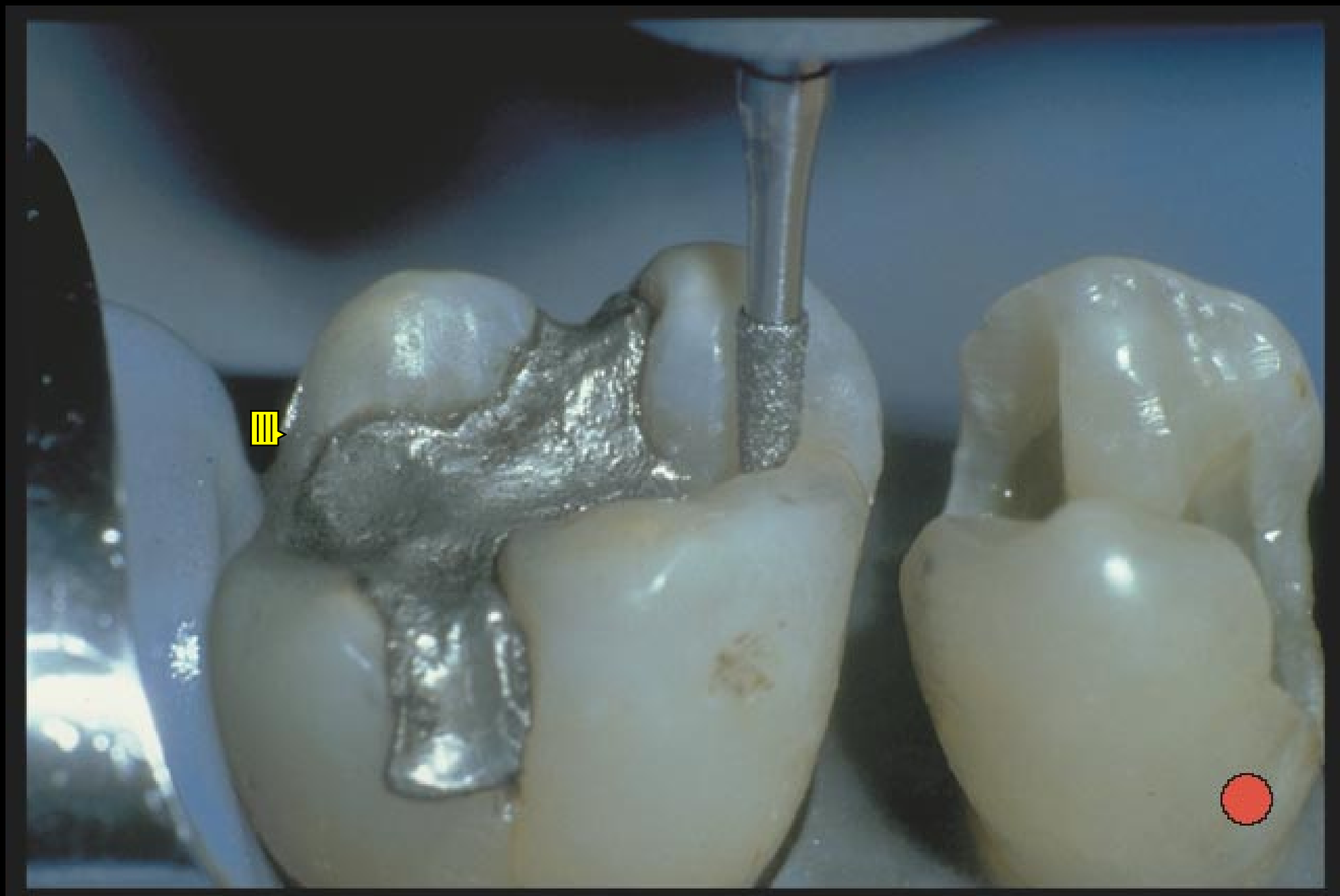














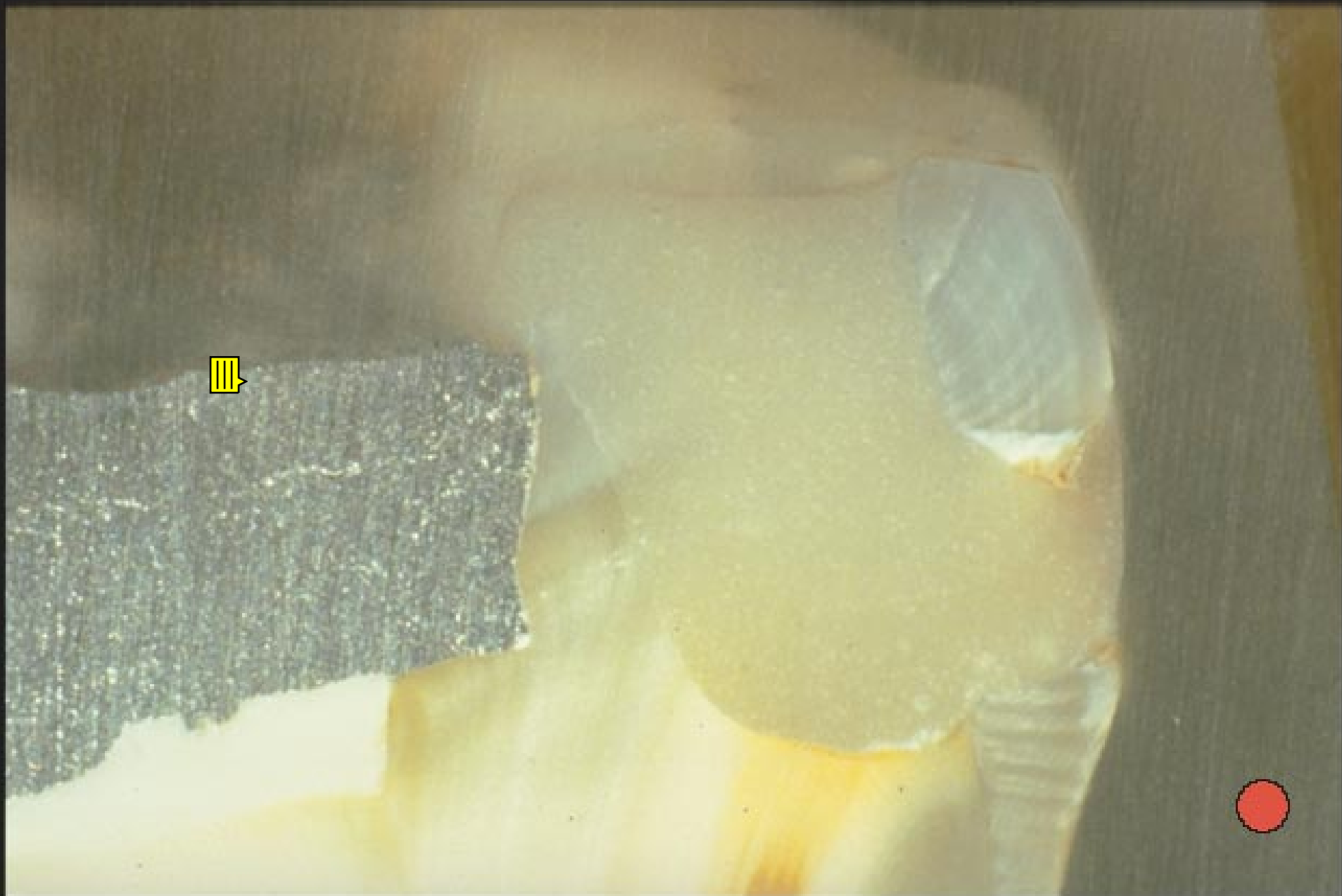


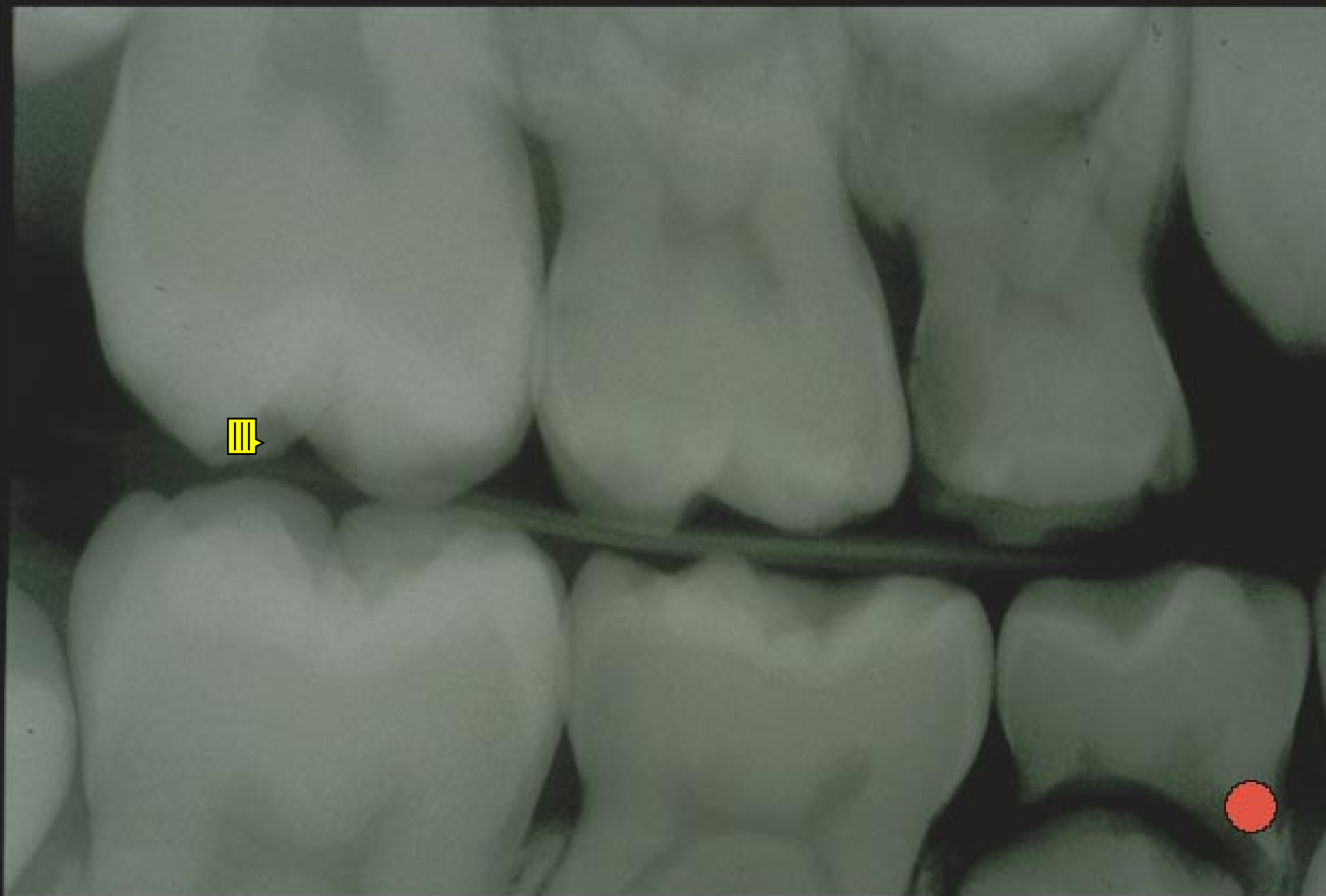














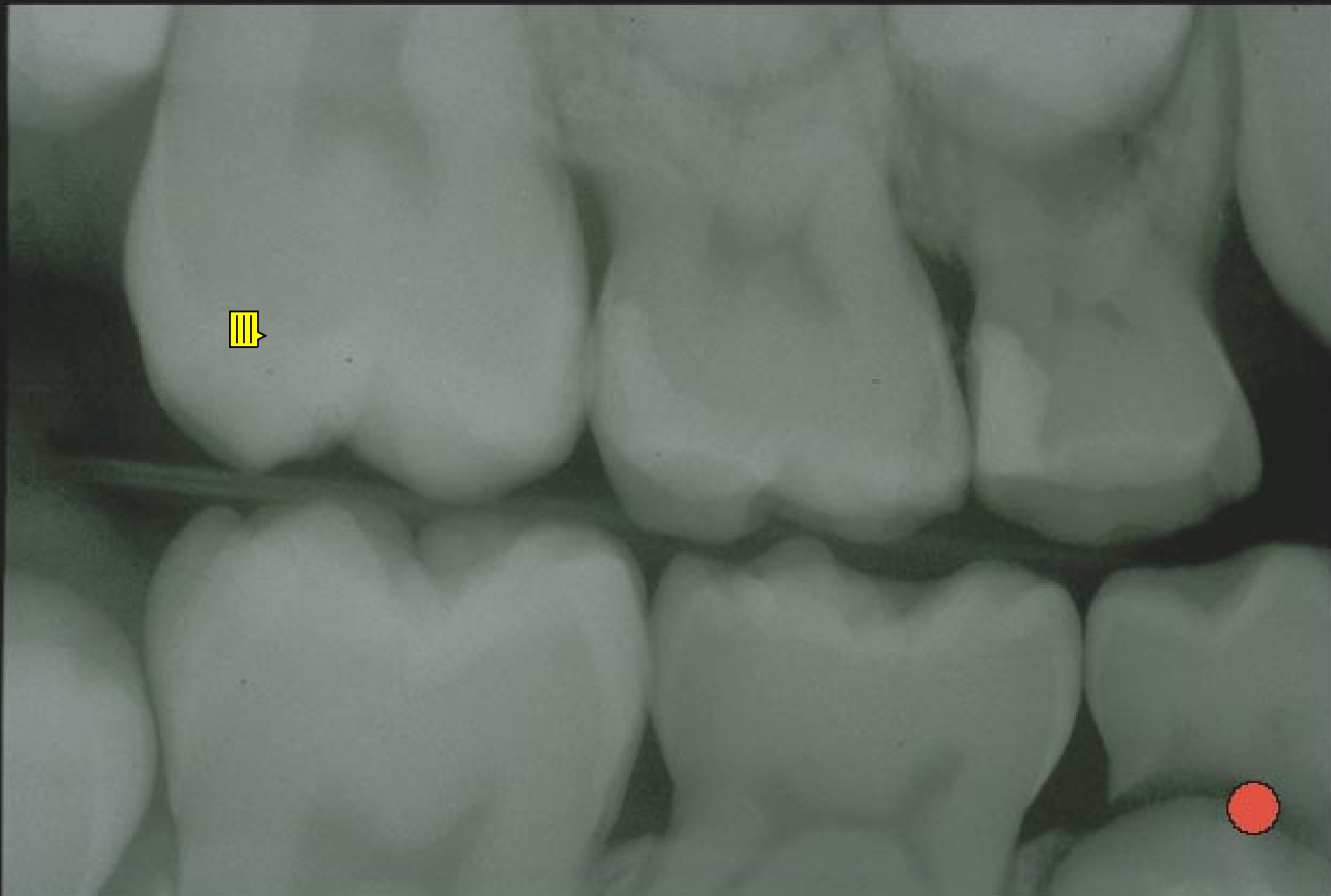






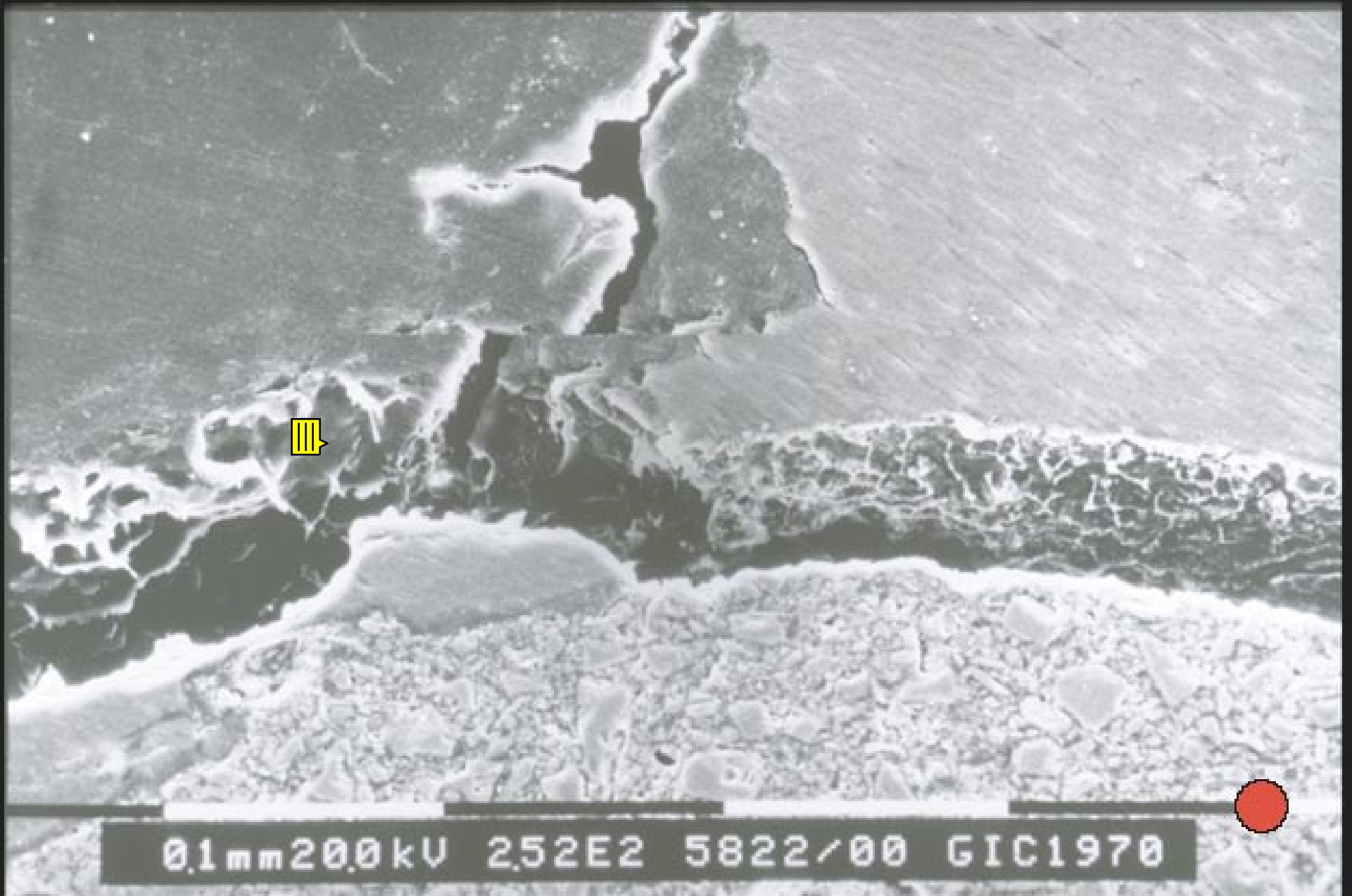
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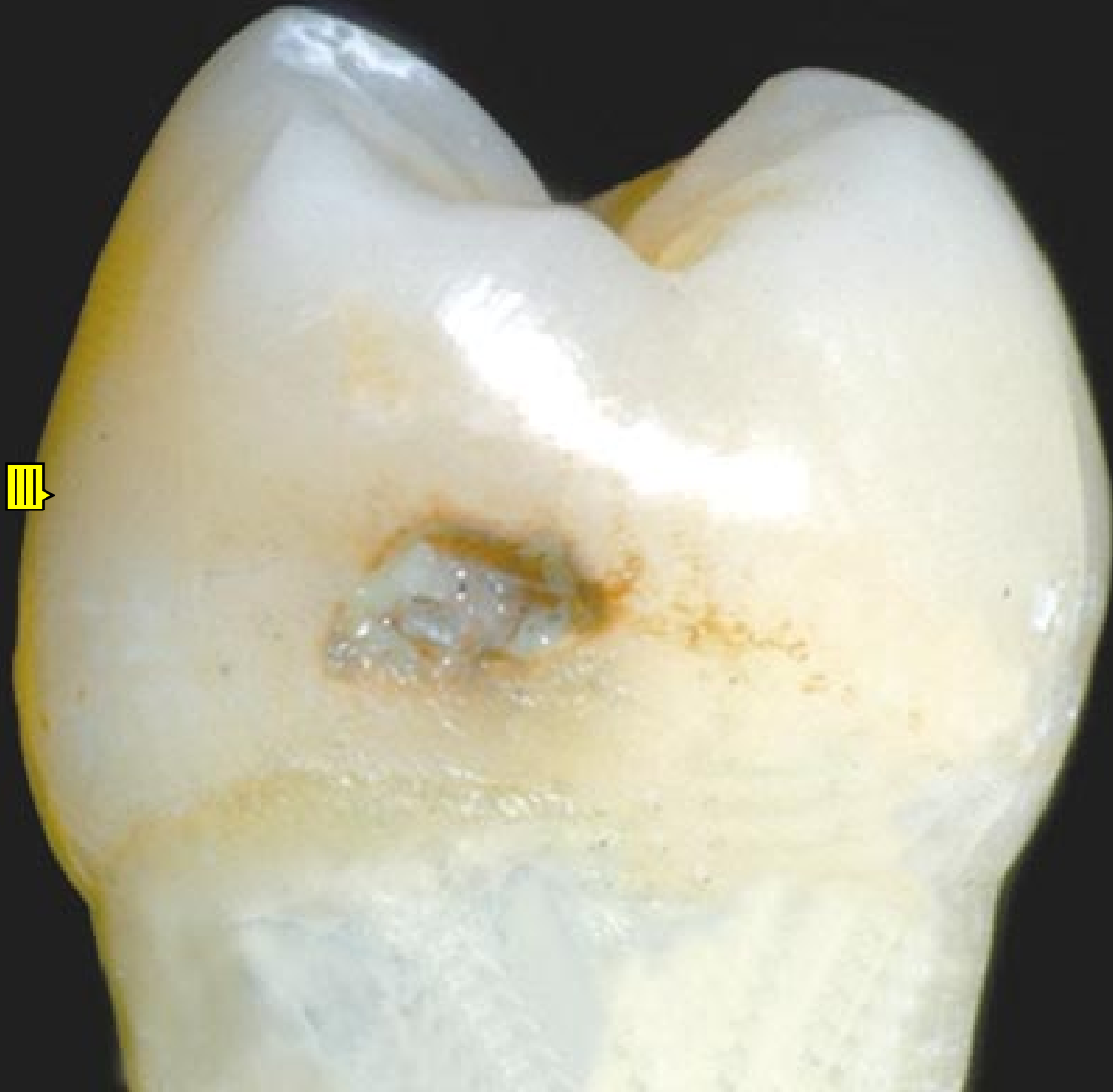










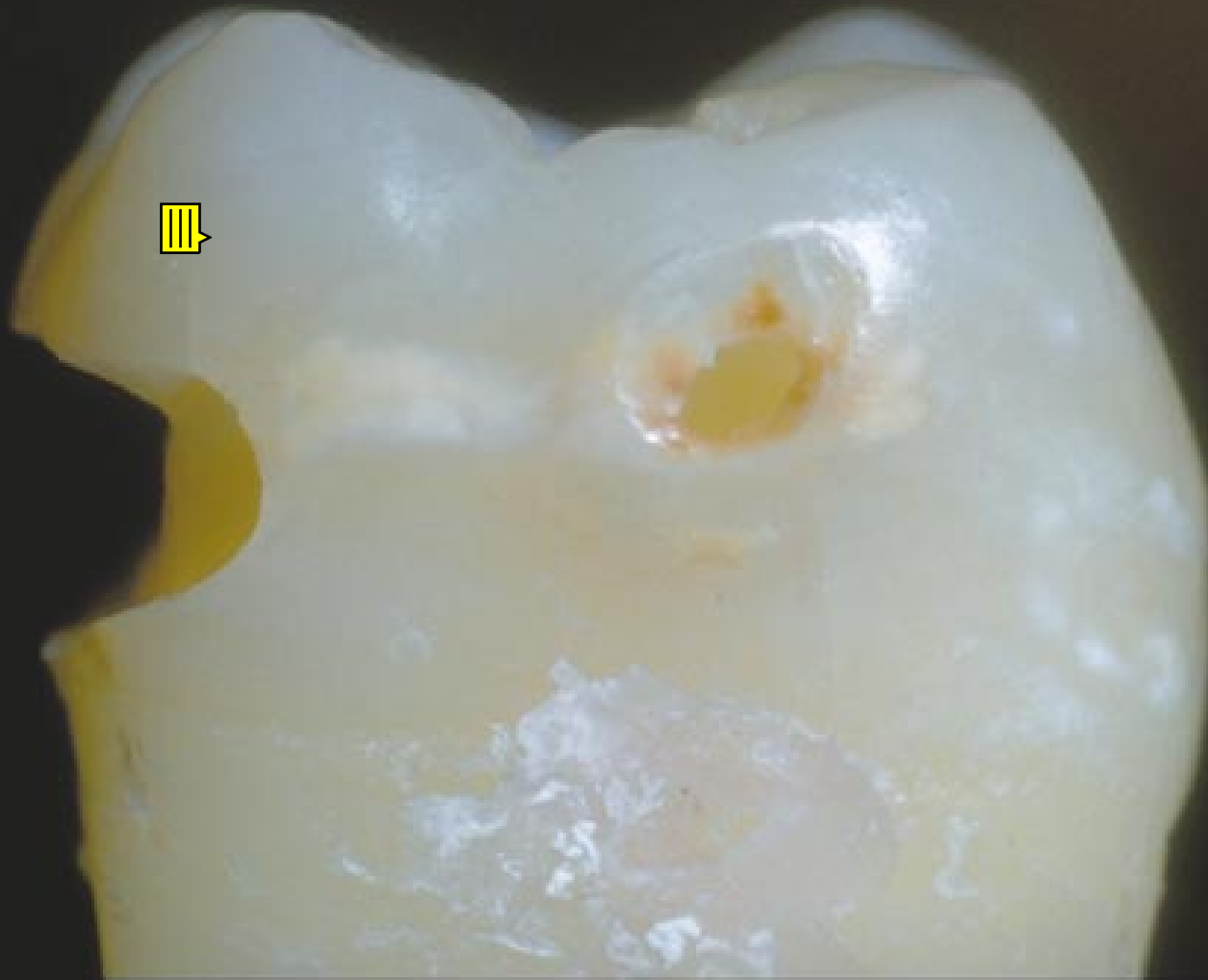




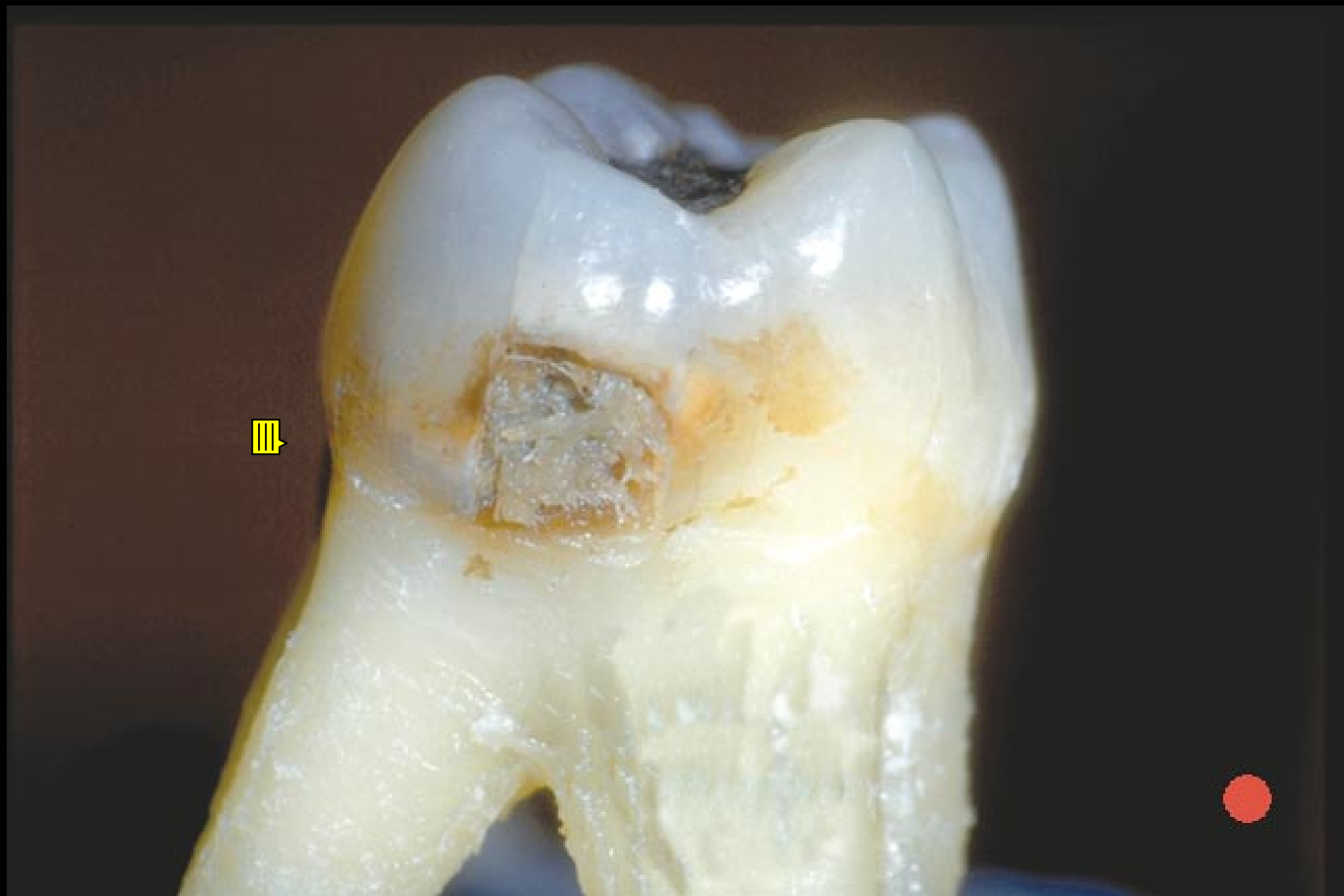












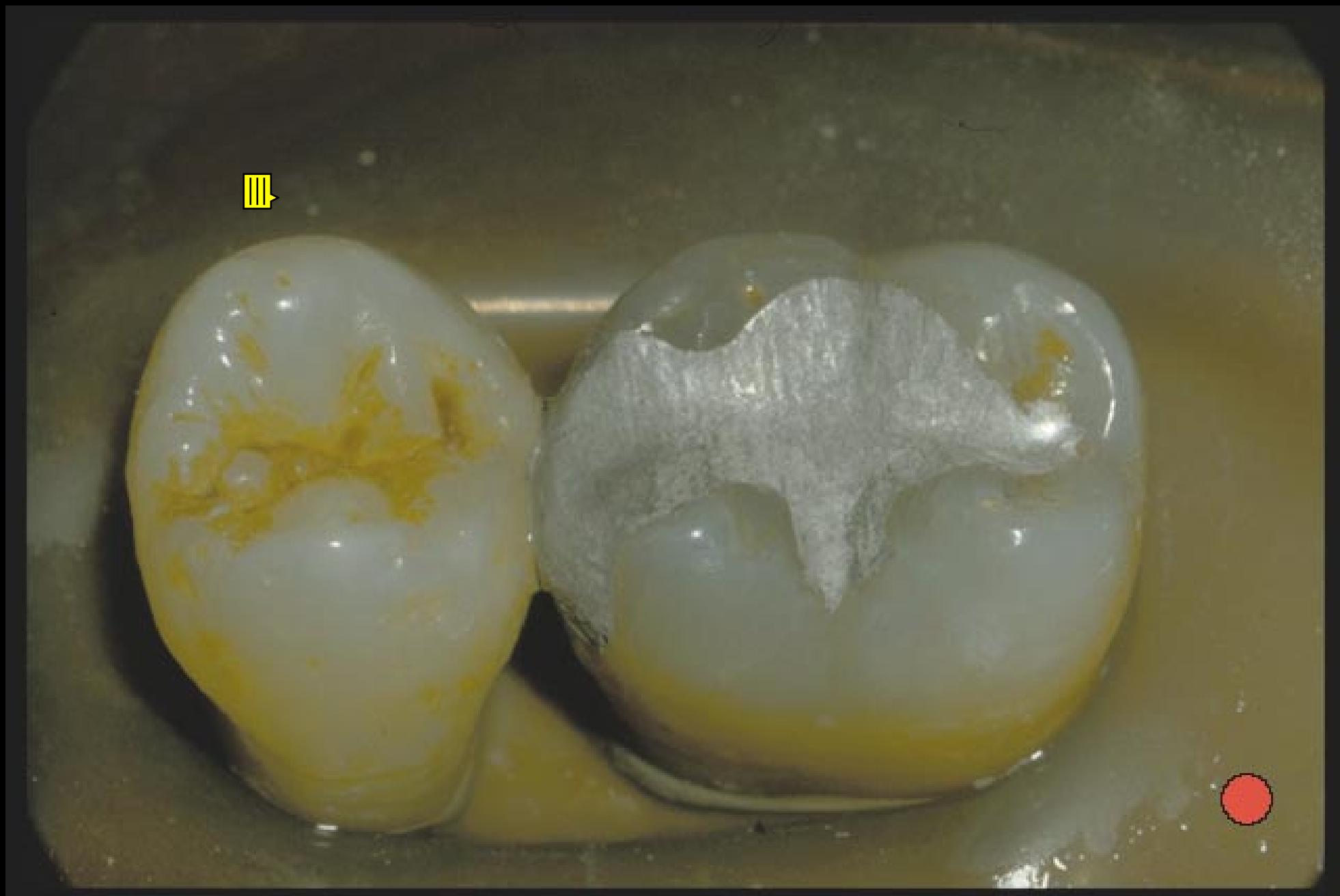
























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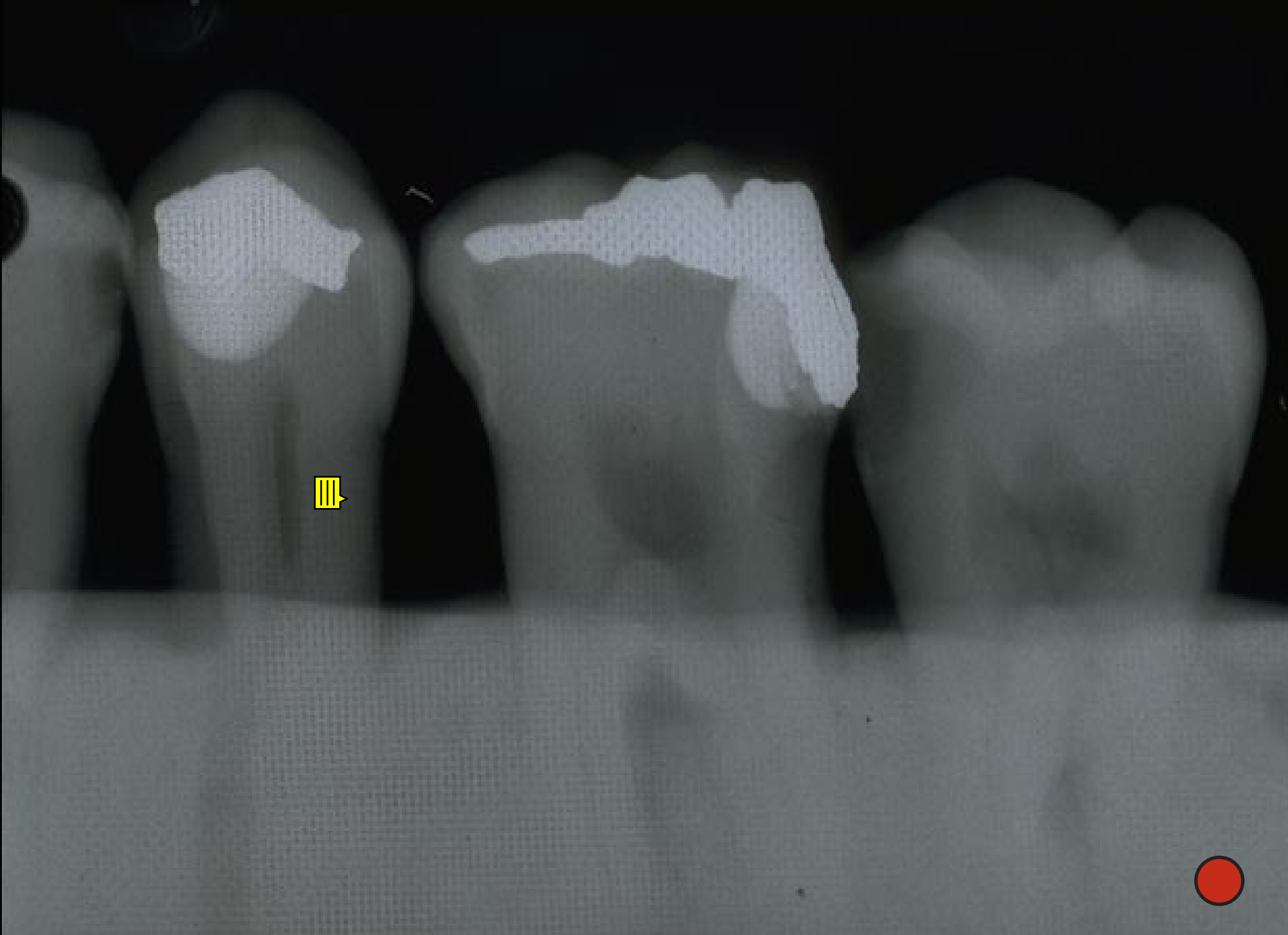






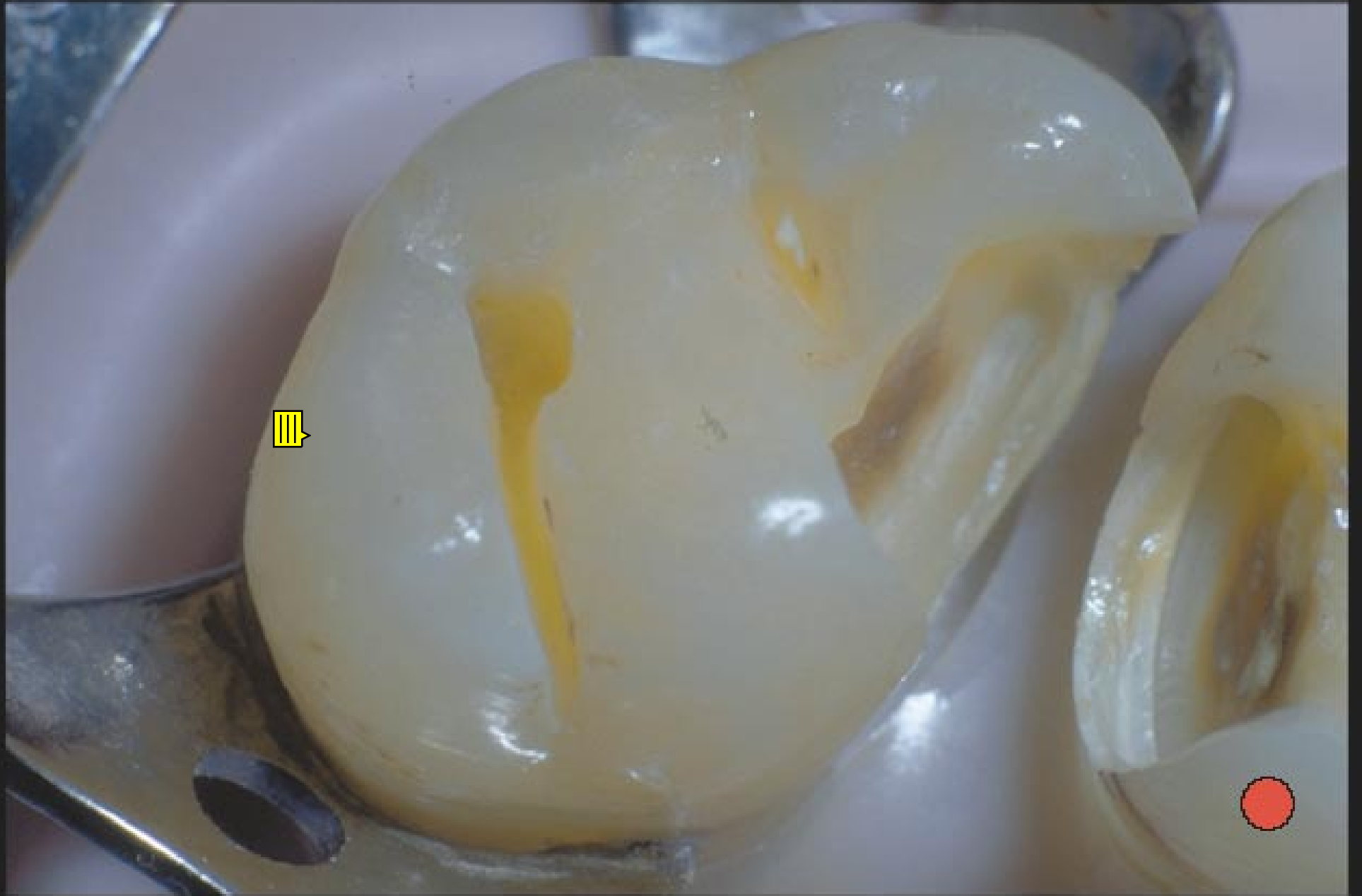




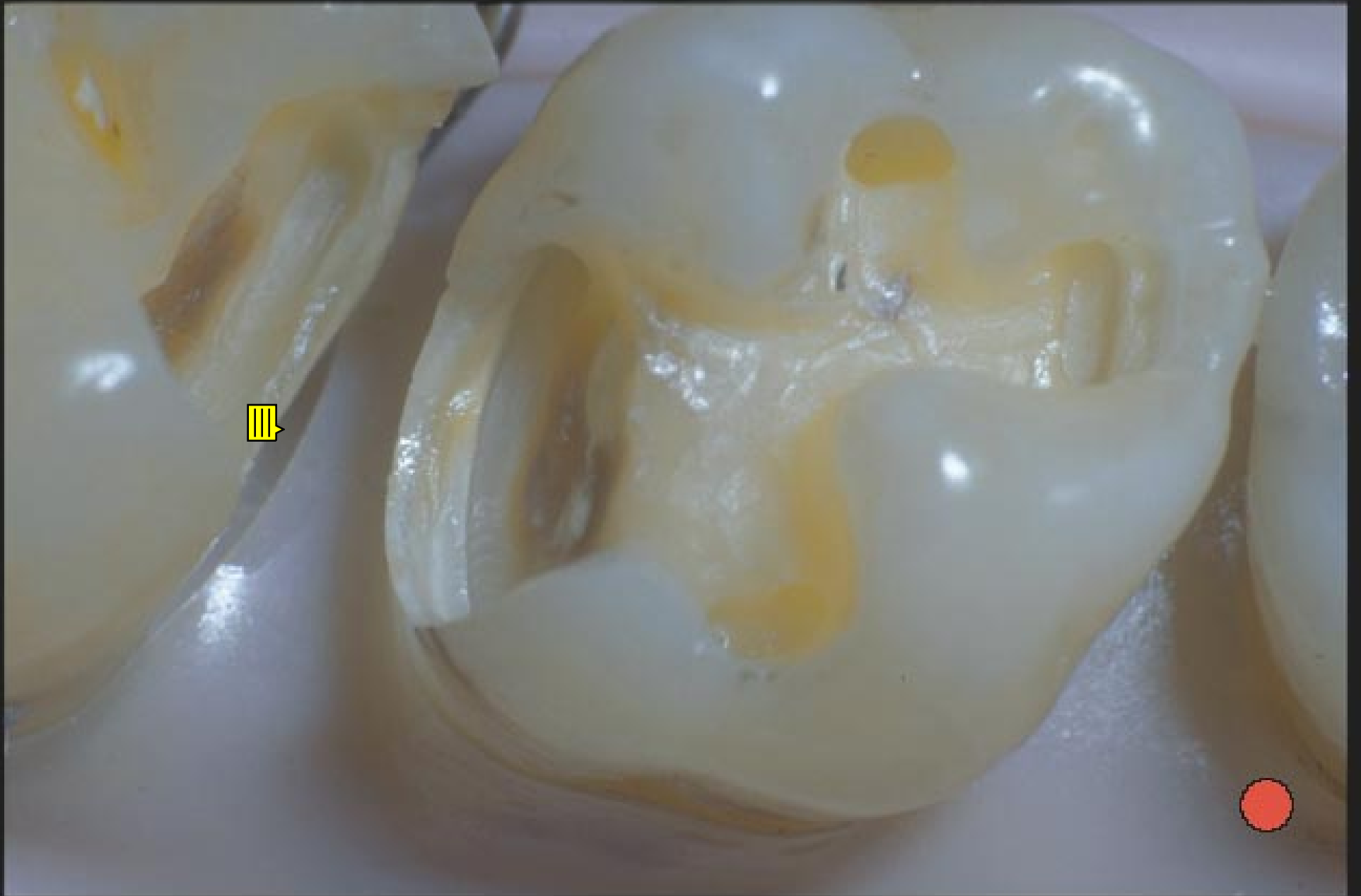














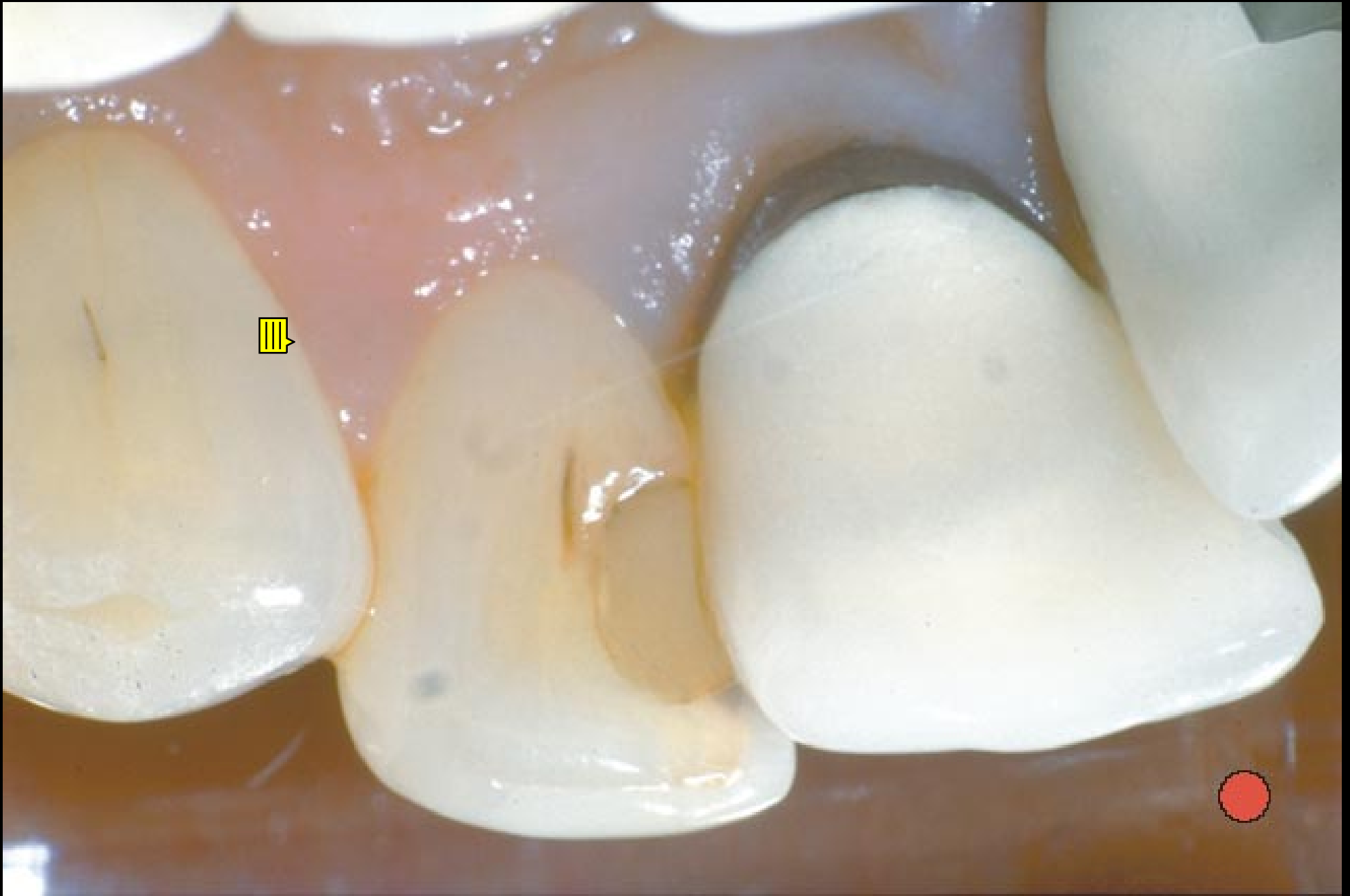






































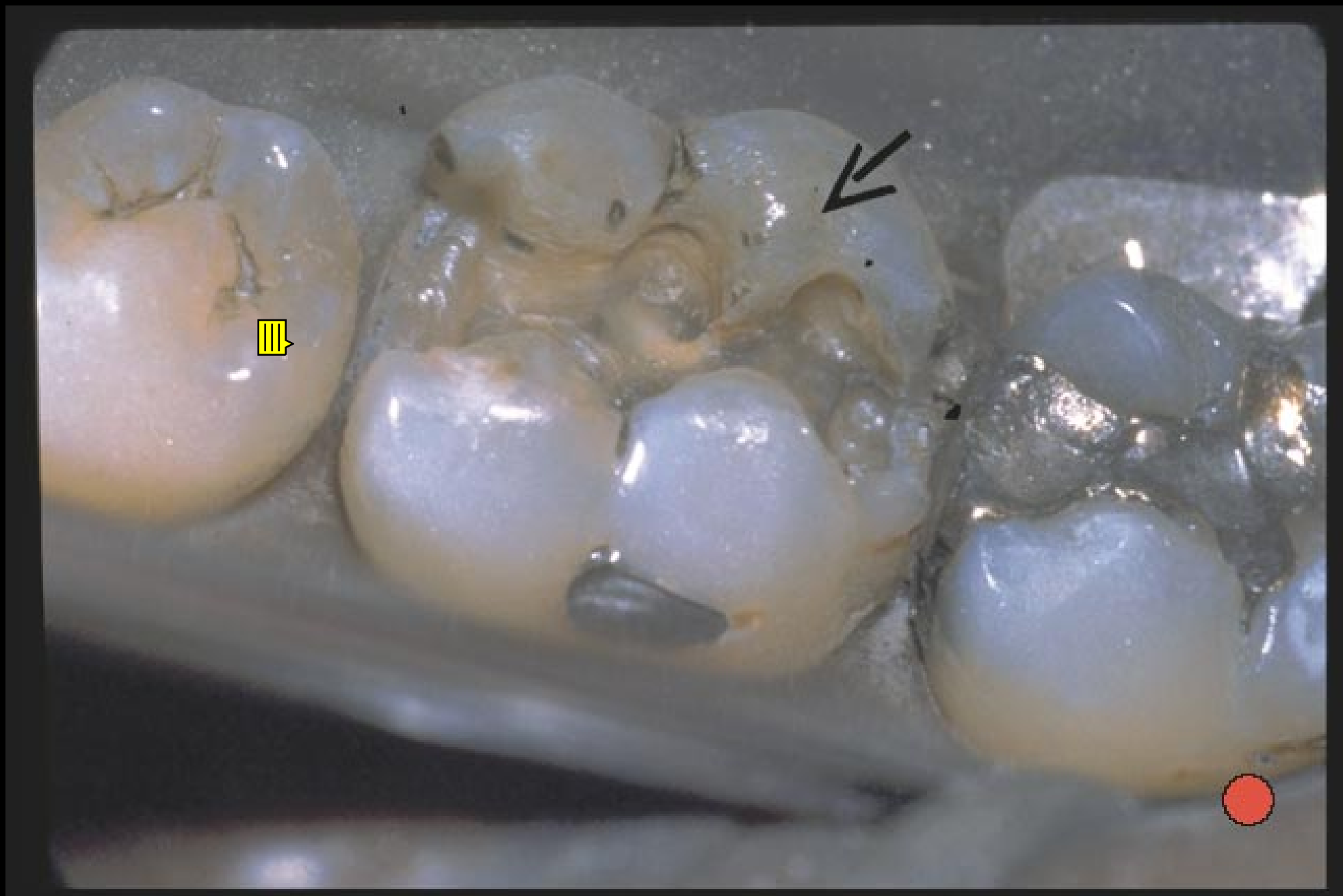




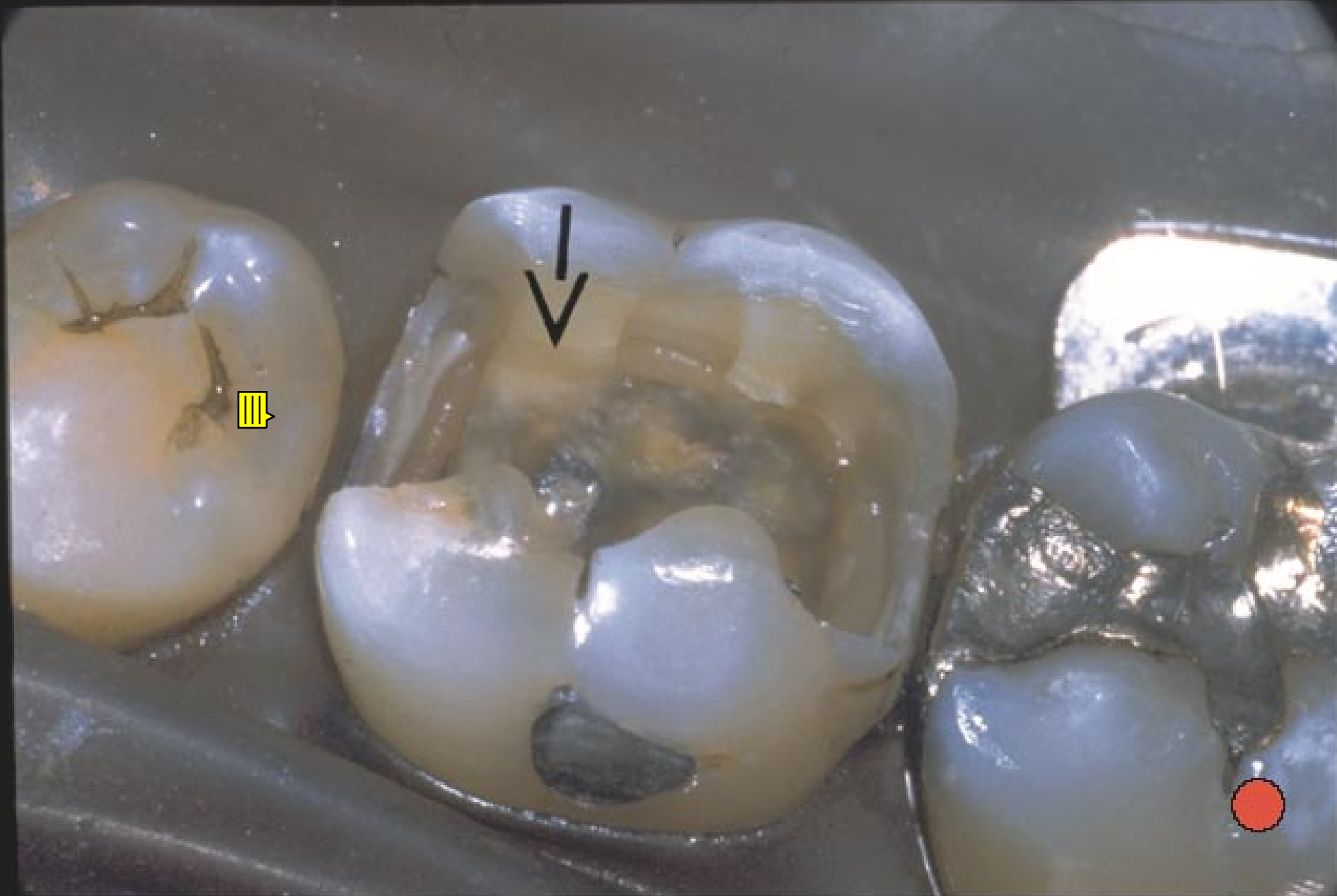




























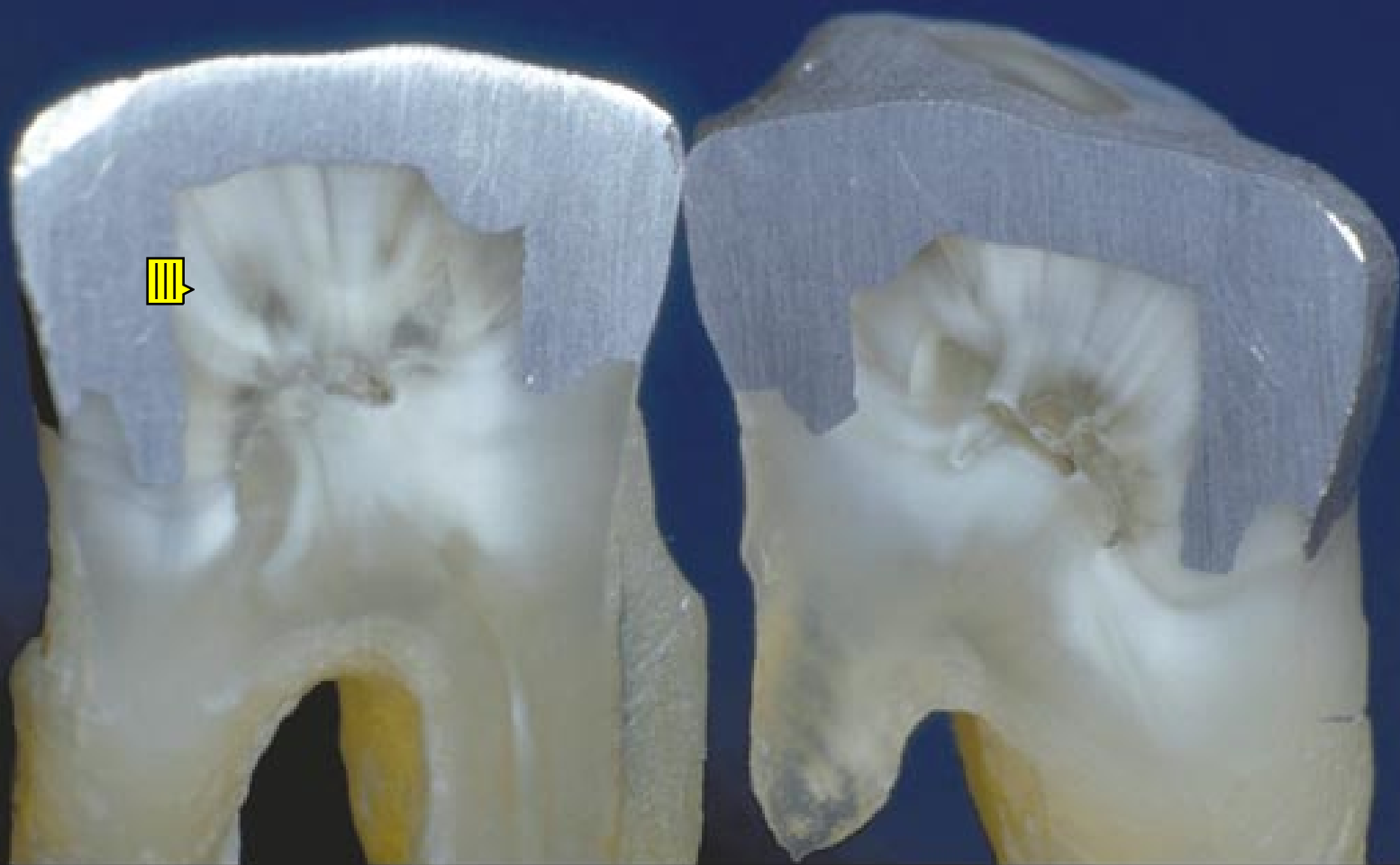


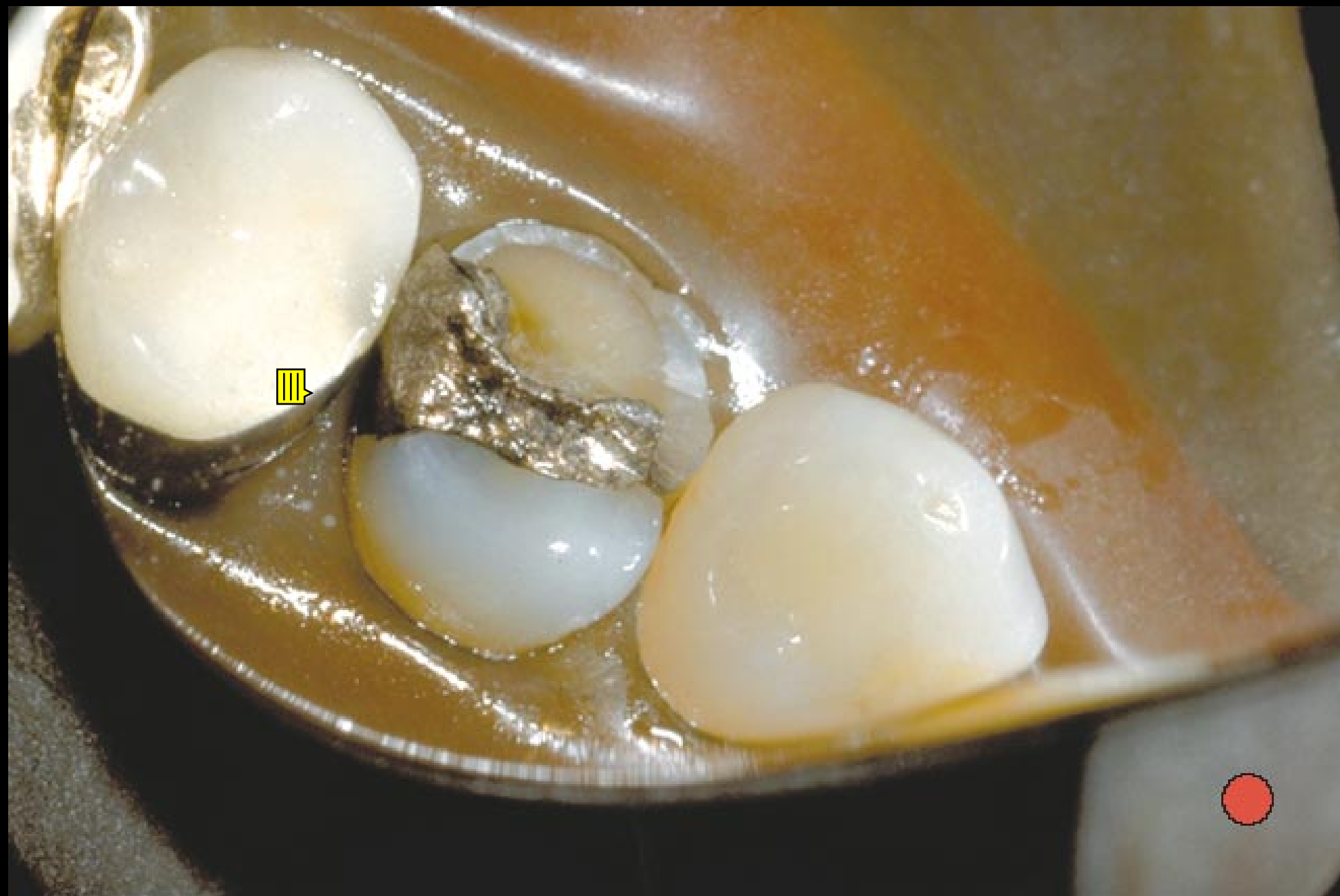










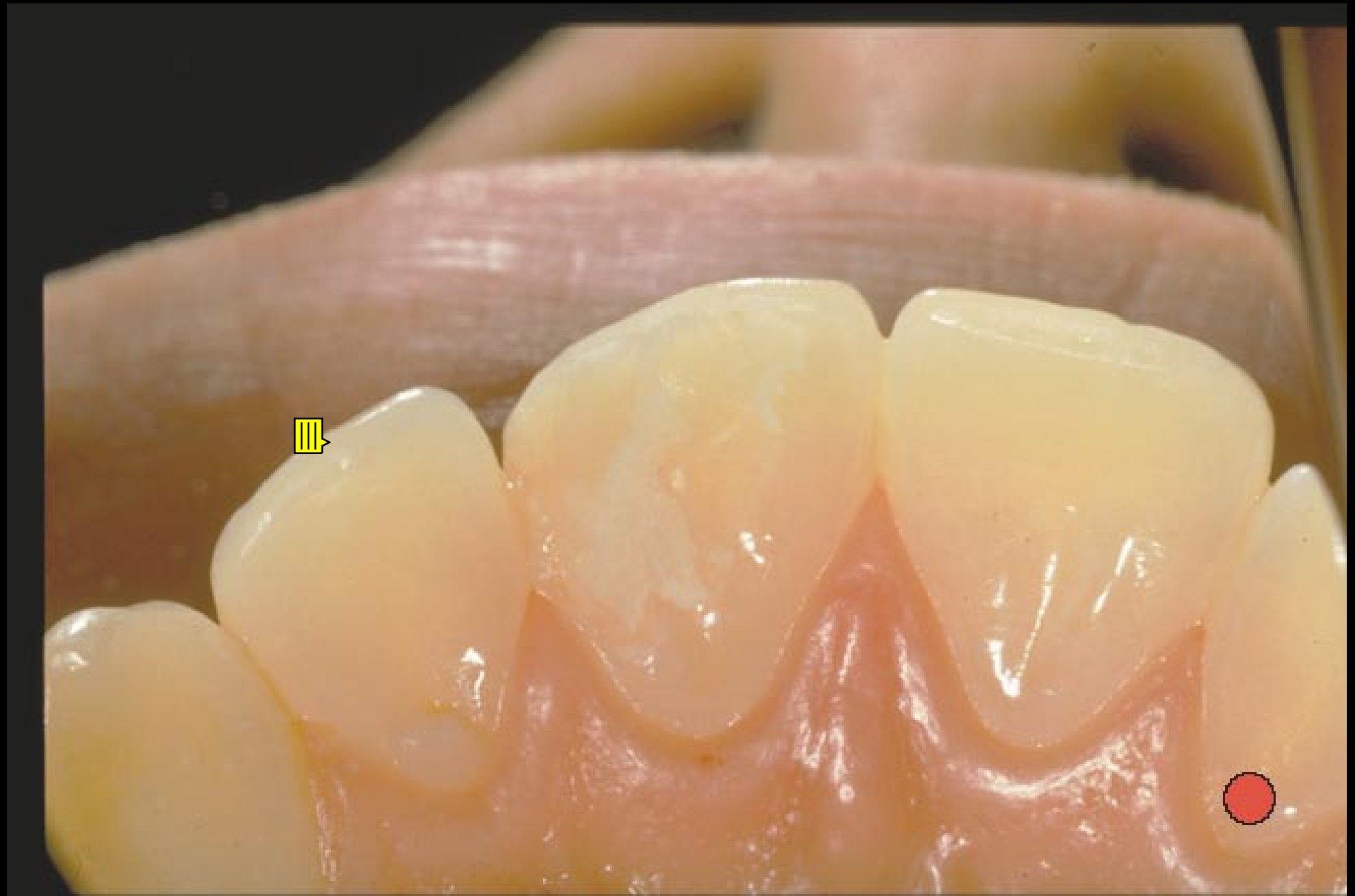


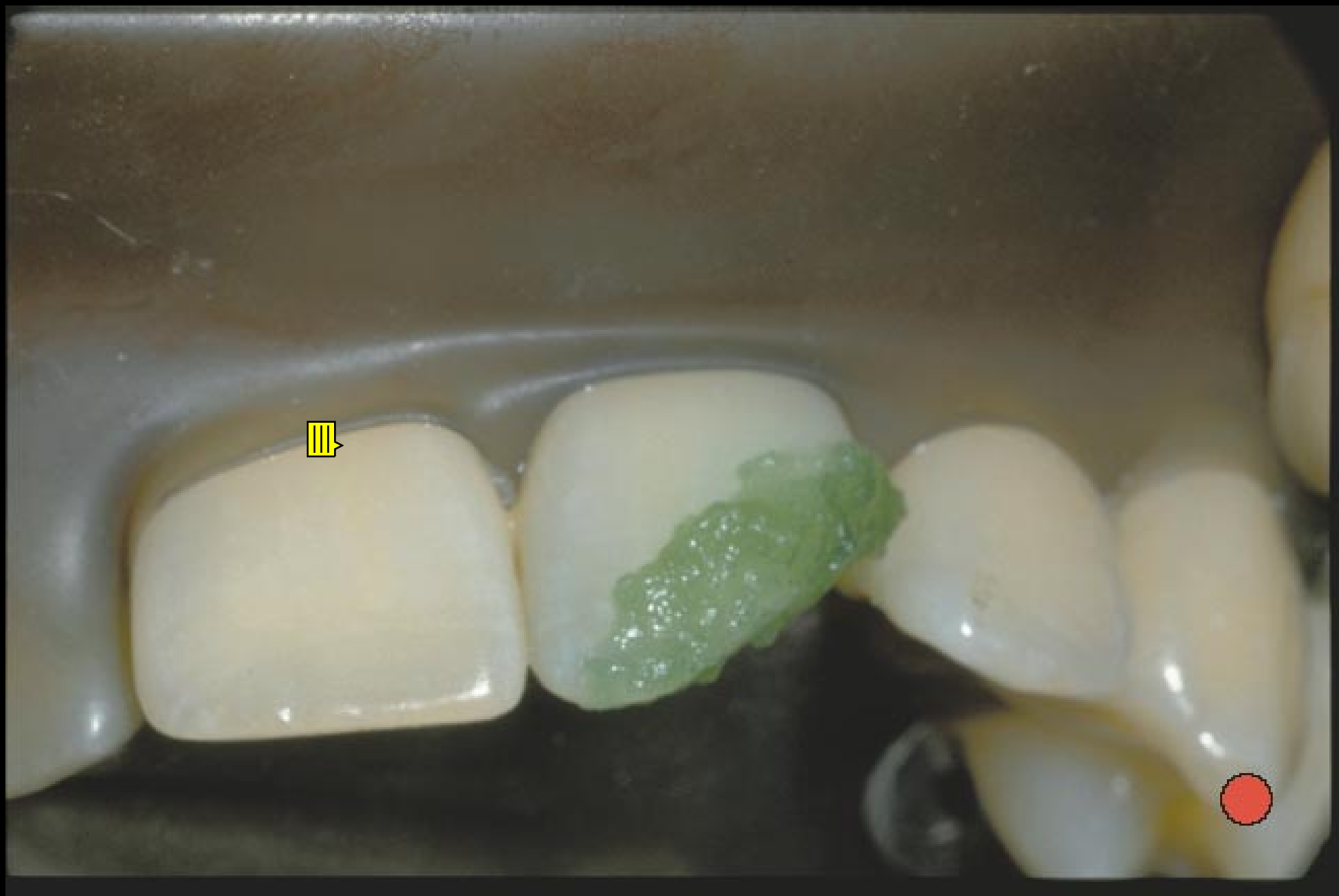












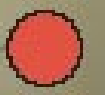






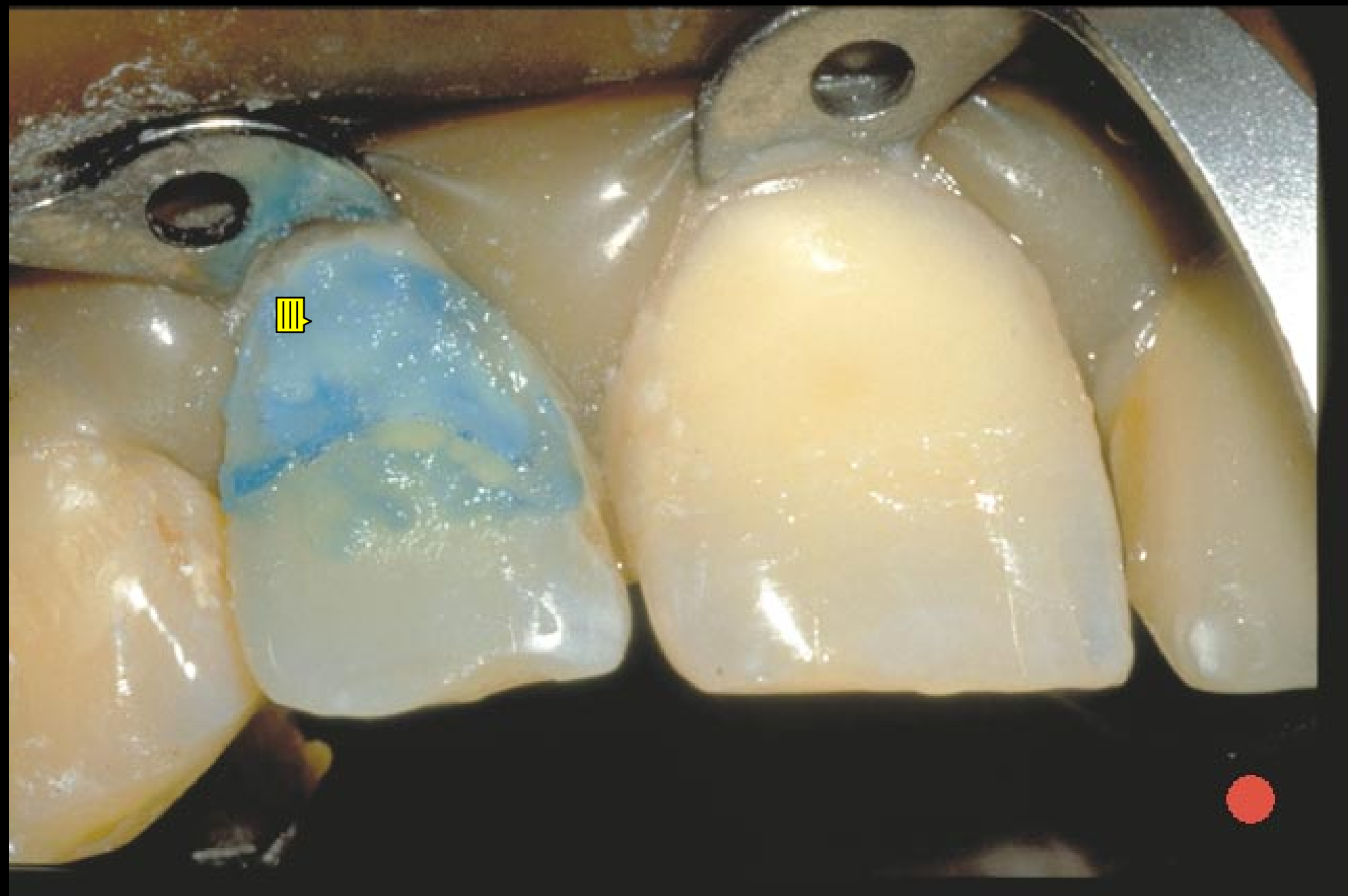












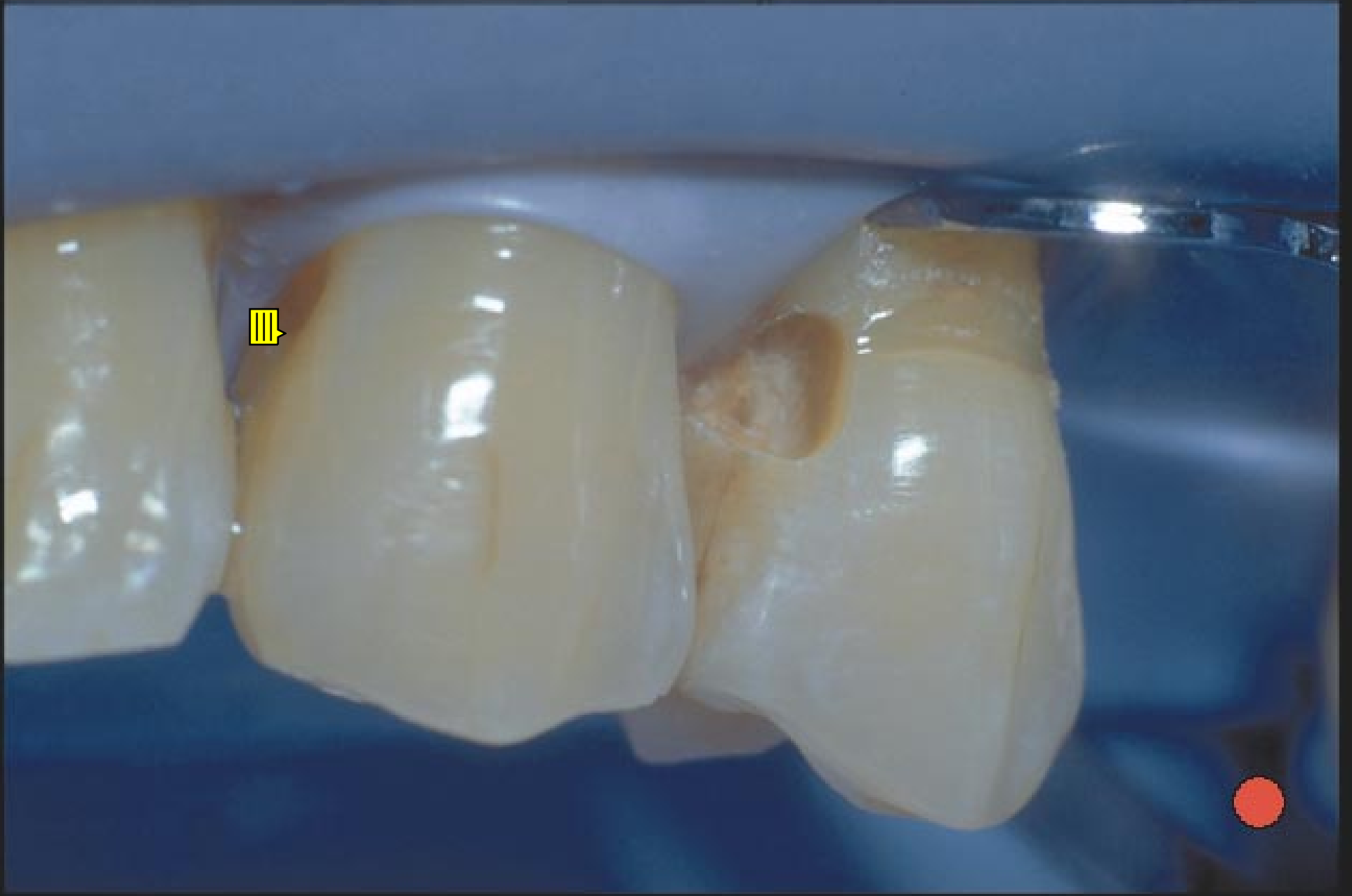








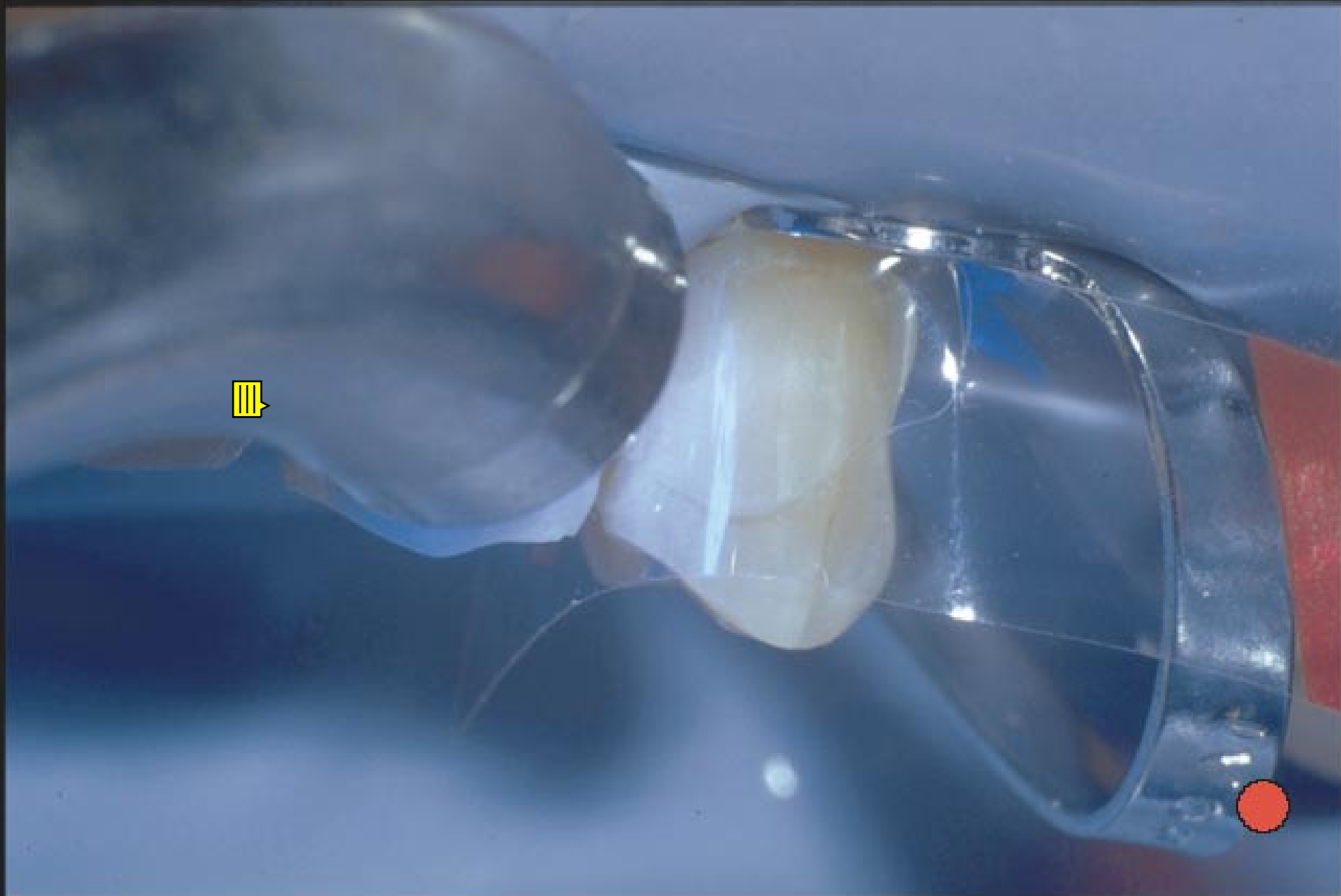








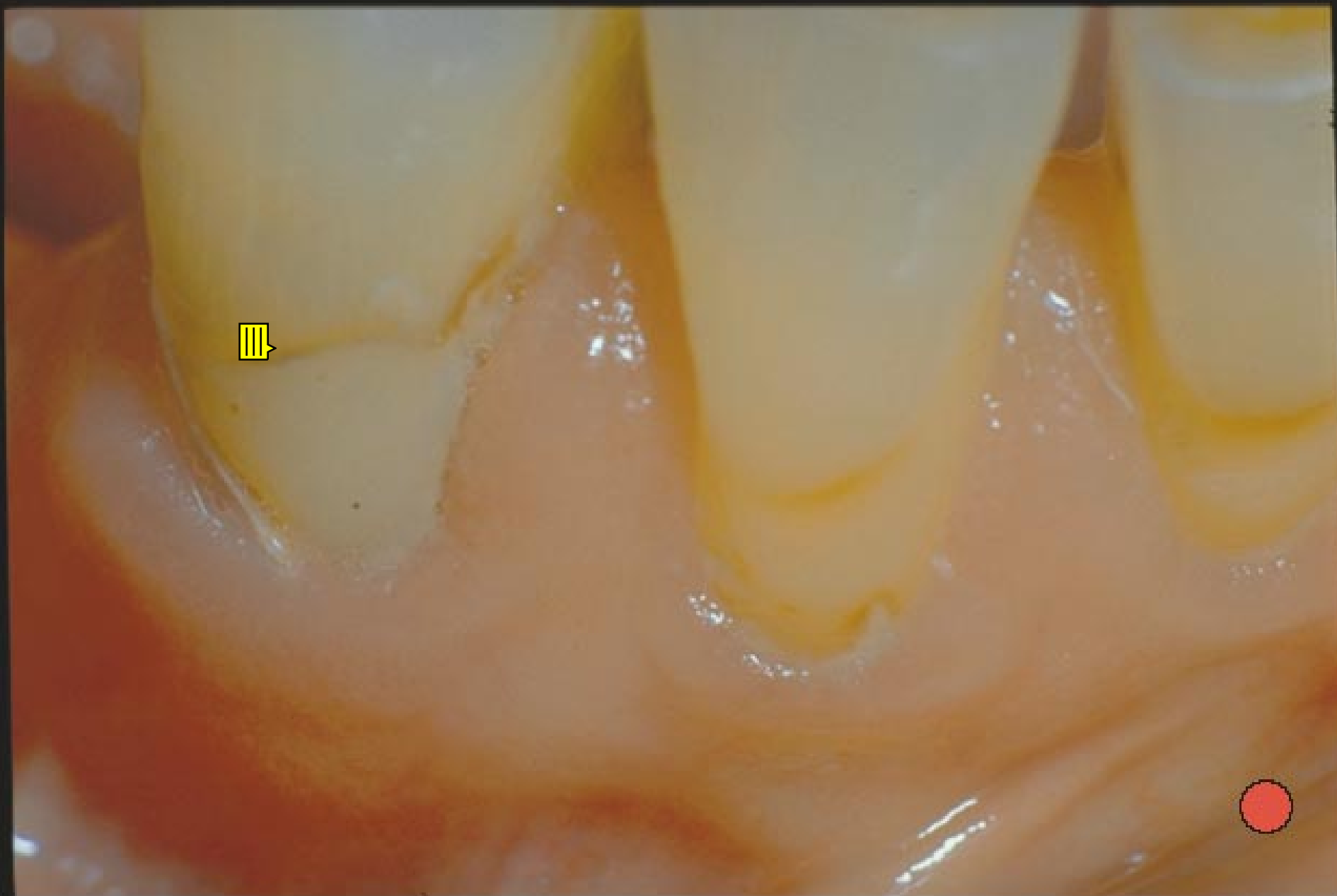






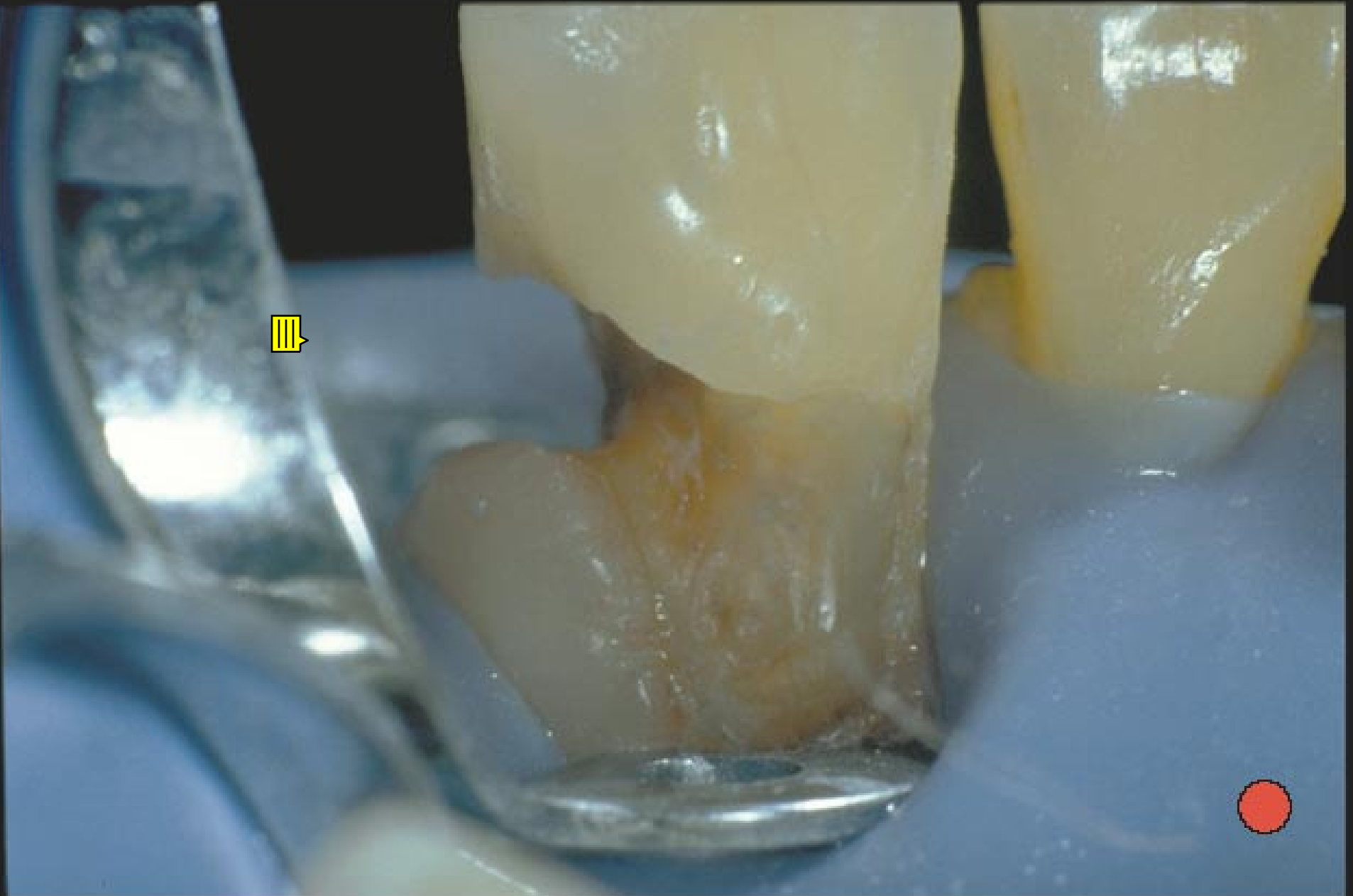
















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Chapter 12 : Rigid materials used in tooth restoration

Author : D Southan

This chapter deals with the rigid materials which can be used in the restoration of the teeth following caries or fracture.

Because the materials themselves are as rigid and inflexible as the tooth, the techniques used for their construction are almost invariably indirect, meaning that a model replica of the tooth or teeth must be constructed first and the restoration then constructed on the model on the laboratory bench. Whilst this is a time consuming procedure and requires a number of steps each of which is subject to human error, the end result when properly carried out, is the closest possible reproduction of original correct dental anatomy which can be achieved.

Structures can be rigid or flexible. A rigid material has a high modulus of elasticity and can resist high stress without permanent deformation. Rigid substances are almost perfectly elastic and many behave in a brittle fashion at room temperature.

The rigidity of any structure is controlled by the inherent elastic modulus of the material, the thickness of the structure and its shape. Otherwise, rigid materials can be made flexible when the relative dimensions of the body are changed. A long, thin glass rod can be flexible while a thick slab of the same material behaves in a rigid fashion. Ductility is the antithesis to rigidity. Ductile substances can be permanently deformed easily at room temperature. Ceramic materials are rigid - pure gold is ductile.

Each chapter has a series of photographs that supplement the text and illustrations in this book. By double clicking on the folder symbol (see the icon at right) you will be able to read a caption or commentary for that picture.



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Chapter 13 : Tooth preparation for restoration with rigid materials

Author : GJ Mount

The general principles for removal of tooth structure during preparation for restoration were described in Chapters 7 and 11. The essential difference between a cavity designed for placement of a plastic material and for the acceptance of a rigid restorative material is that the restoration itself will be fabricated outside of the mouth rather than in the tooth. This has several implications for preparation design. Probably the most important is that it must be possible to take an impression without distortion and then it must be possible to insert the restoration into the cavity without it binding or imposing stress on remaining tooth structure.

Preservation of remaining tooth structure is still of paramount importance because all restorations rely upon the strength and integrity of remaining tooth structure for their retention. To a limited extent the restorative material can be used to protect and 'reinforce' the remaining tooth, but in the long run the less dentine and enamel there is the weaker the remaining tooth structure and the greater the risk of failure

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Chapter 15 : Restoration of aesthetics in anterior teeth

Author : D Southan

Restoration of the single anterior tooth is a difficult aesthetic challenge and the single maxillary central incisor is the most difficult of all. Dentine is the prime source of colour in a tooth and enamel envelopes the dentine with a translucent prismatic mantle. The highest light transmission occurs at the incisal one-third and in the proximal regions. A section of enamel 1.0mm thick can transmit up to 70 per cent light. A section of dentine the same thickness transmits only about 30 per cent light. Un-opacified porcelain is the best material available to simulate these optical properties of teeth.

Both the colour and shape of natural teeth are constantly changing throughout life but porcelain restorations show little change in service. Therefore, at present, it is not possible to guarantee to provide a single anterior restoration that remains permanently aesthetically undetectable. There are a number of problems which occur to alter the aesthetics of teeth and a number of methods that can be employed to modify or improve the situation. Not all are perfect or permanent in their effect but the alternatives should be offered and discussed with the patient.

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Chapter 18 : Vital pulp therapy

Authors : WR Hume, GJ Mount

In addition to procedures designed to keep the pulp alive by avoiding pulpal damage there are several routine measures available which are designed to help heal a damaged pulp. Whether the damaged pulp will heal with the aid of a particular therapy or not will depend to a large extent upon the balance between the damaging factors and the host response.

It is impossible to accurately predict the outcome of a particular therapy when the principal pulpal irritant is microbial because both the microbial mix and the host response vary greatly. These two factors can vary between individual patients, between teeth and with time in the same patient. Despite this, several therapies have been applied with sufficient likelihood of success to have made them accepted and reasonable parts of the practice of dentistry.

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Chapter 19 : Restoration of pulpless teeth

Author : GJ Mount

Loss of vitality reduces the physical properties and translucency of remaining tooth structure. Depending to some degree upon the cause of pulp death and the history of the endodontic treatment there will generally be a colour shift towards grey or brown. There will inevitably be a reduction in the fracture resistance of remaining tooth structure and the strength of the remaining crown of the tooth will be reduced by the need to open into the crown to carry out a root canal therapy.

Restoration of non-vital teeth will need to take all these factors into account.

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Chapter 20 : Periodontal considerations in tooth restoration

Author : GJ Mount

The significant factors which require consideration are those situations which can compromise the health of the gingival tissues as the result of operative procedures undertaken for the restoration of a diseased or broken tooth. It is necessary to be able to recognize variations from normal prior to commencement of treatment as well as changes which may occur following restorative procedures. Consideration must also be given to actions which may cause irreversible damage during treatment.

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Chapter 21 : Occlusion as it relates to restoration of individual teeth

Author : GJ Mount

When the anatomy of the occlusal surface of a posterior tooth, or the incisal or lingual surface of an anterior tooth is to be modified in any way as a result of restoration of that tooth, or an opponent such modification must be carried out with an understanding of the potential for change in the occlusal relationship between the arches.

Any change must maintain the overall pattern of occlusal harmony.

Each chapter has a series of photographs that supplement the text and illustrations in this book. By double clicking on the folder symbol (see the icon at right) you will be able to read a caption or commentary for that picture.



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Chapter 22 : Failures of individual restorations and their management

Author : GJ Mount

There are many reasons for failure of a restoration and there is always a temptation to replace it entirely rather than repair it. However, each time a restoration is replaced there is inevitably further loss of tooth structure and that which remains will be weakened. It is desirable therefore, that all factors be taken into account before a decision is taken to remove all remaining restorative material on the grounds that, in many cases, repair of the existing restoration may be acceptable.

Firstly, it is essential that the cause of failure be assessed and if possible, fully determined. This may pose problems because the physical properties of the remaining restorative material cannot be assessed without removing it. Also it is often not possible in many cases, to be certain that there is no recurrent caries under the restoration, or to make a valid assessment of the condition of the pulp. Some restorative materials can be repaired more readily than others and adequate access to the area of breakdown may be difficult.

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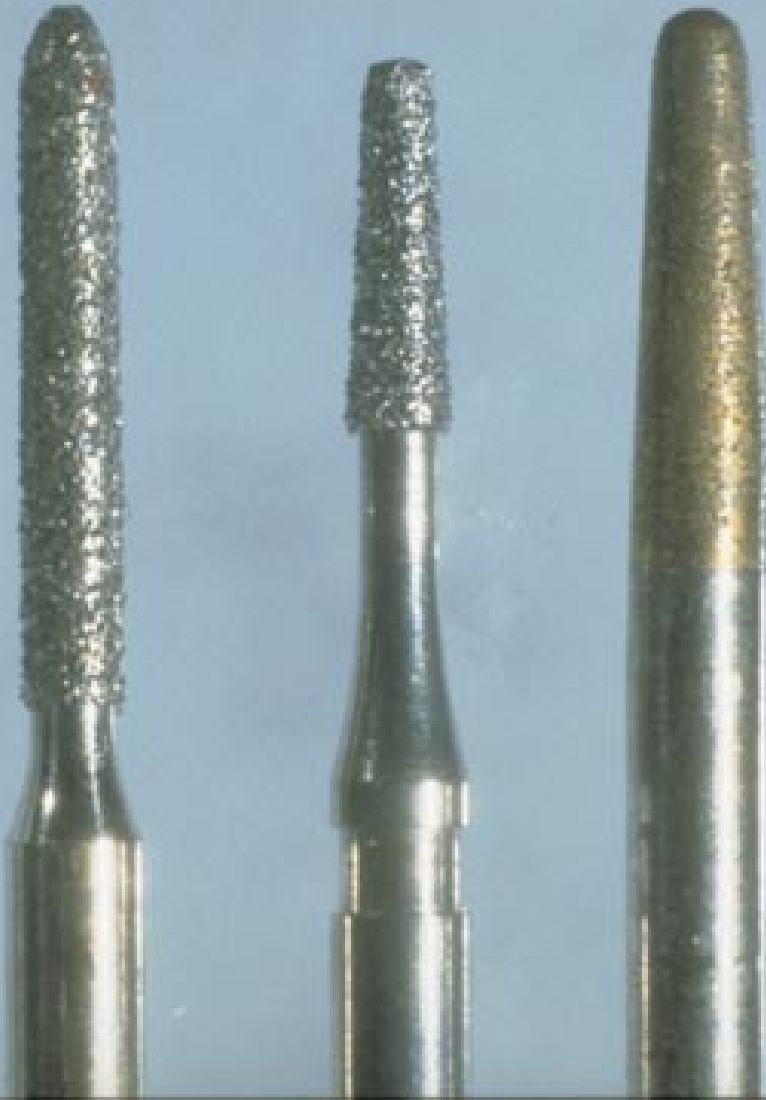


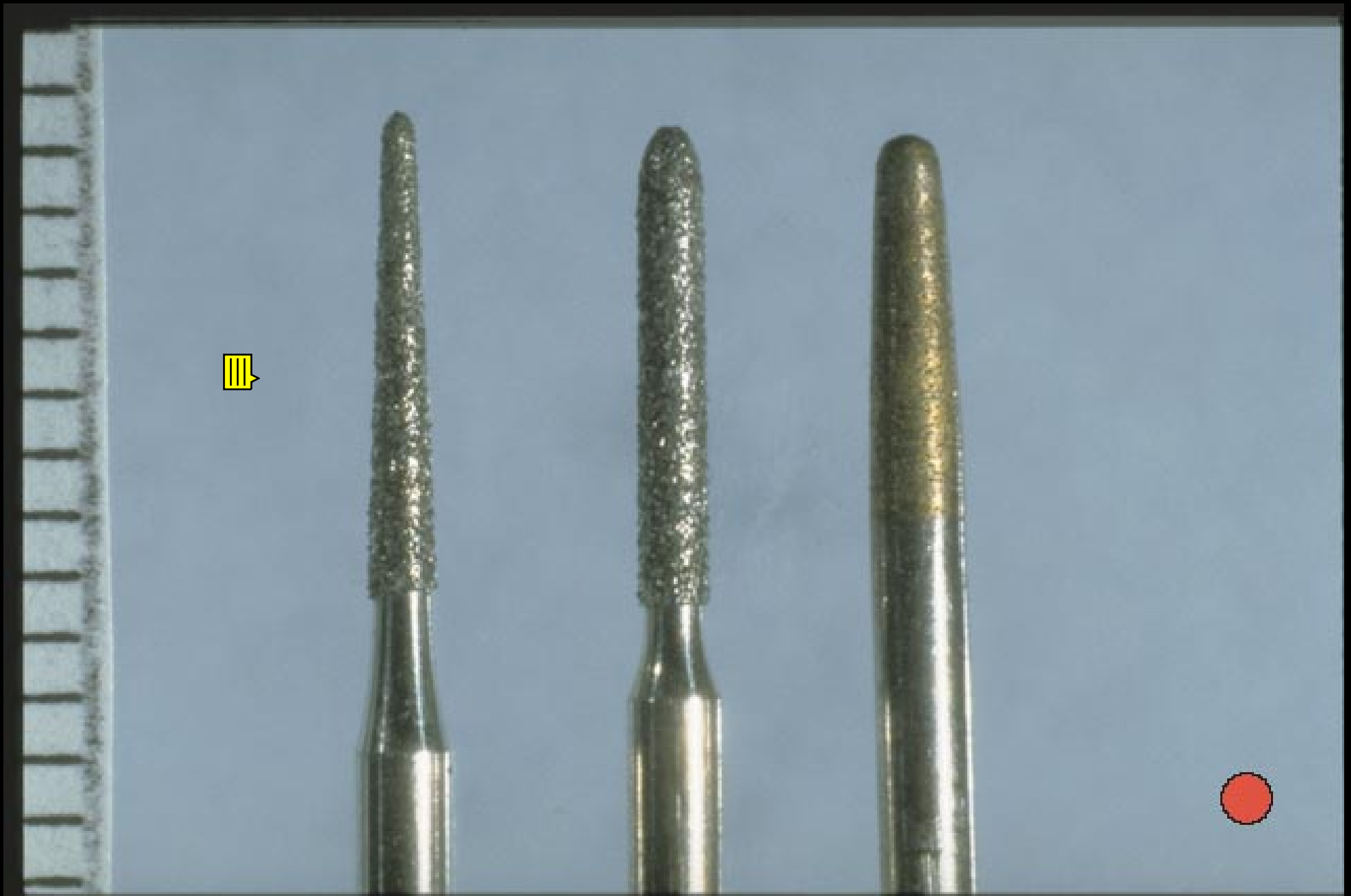
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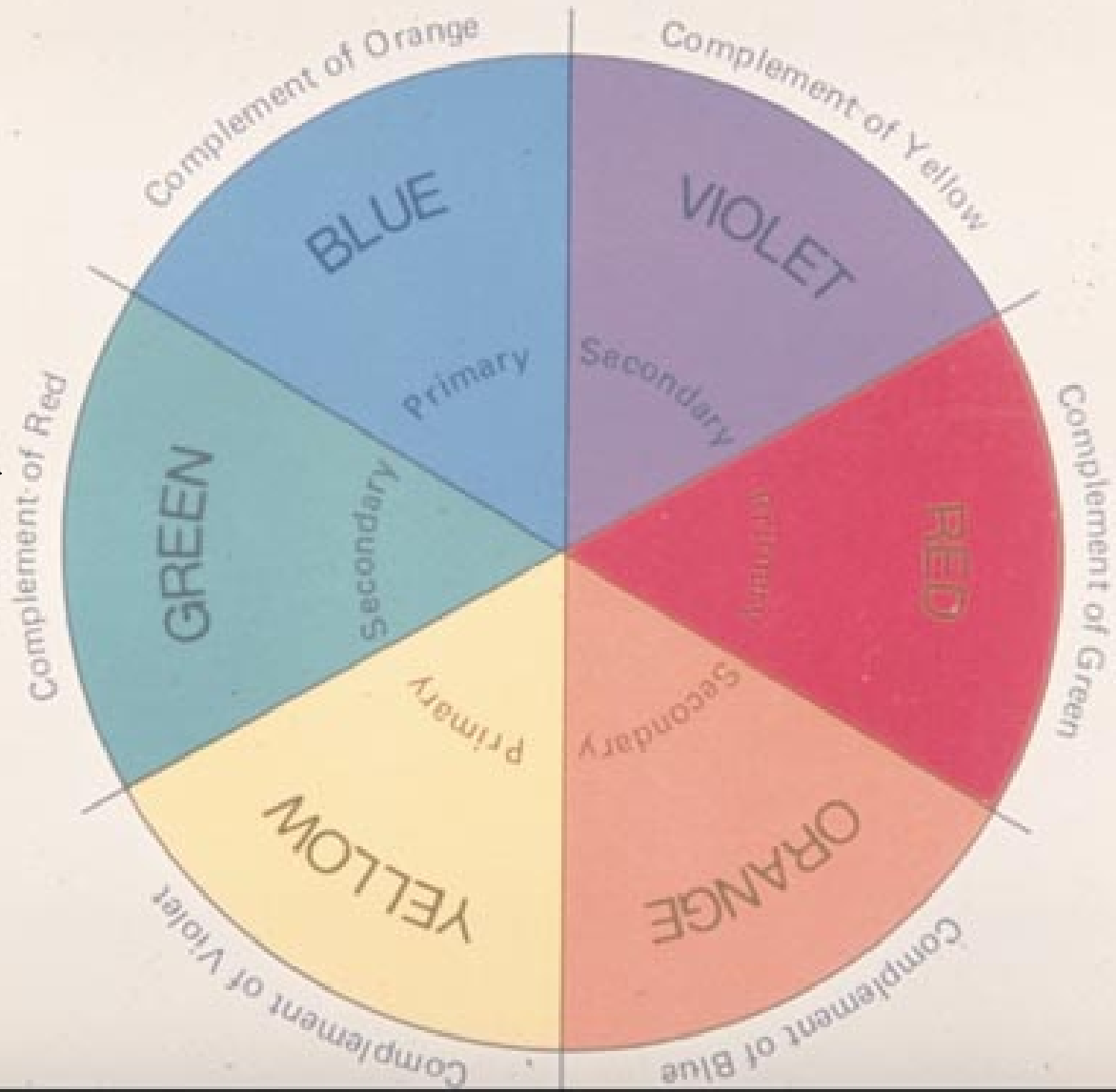




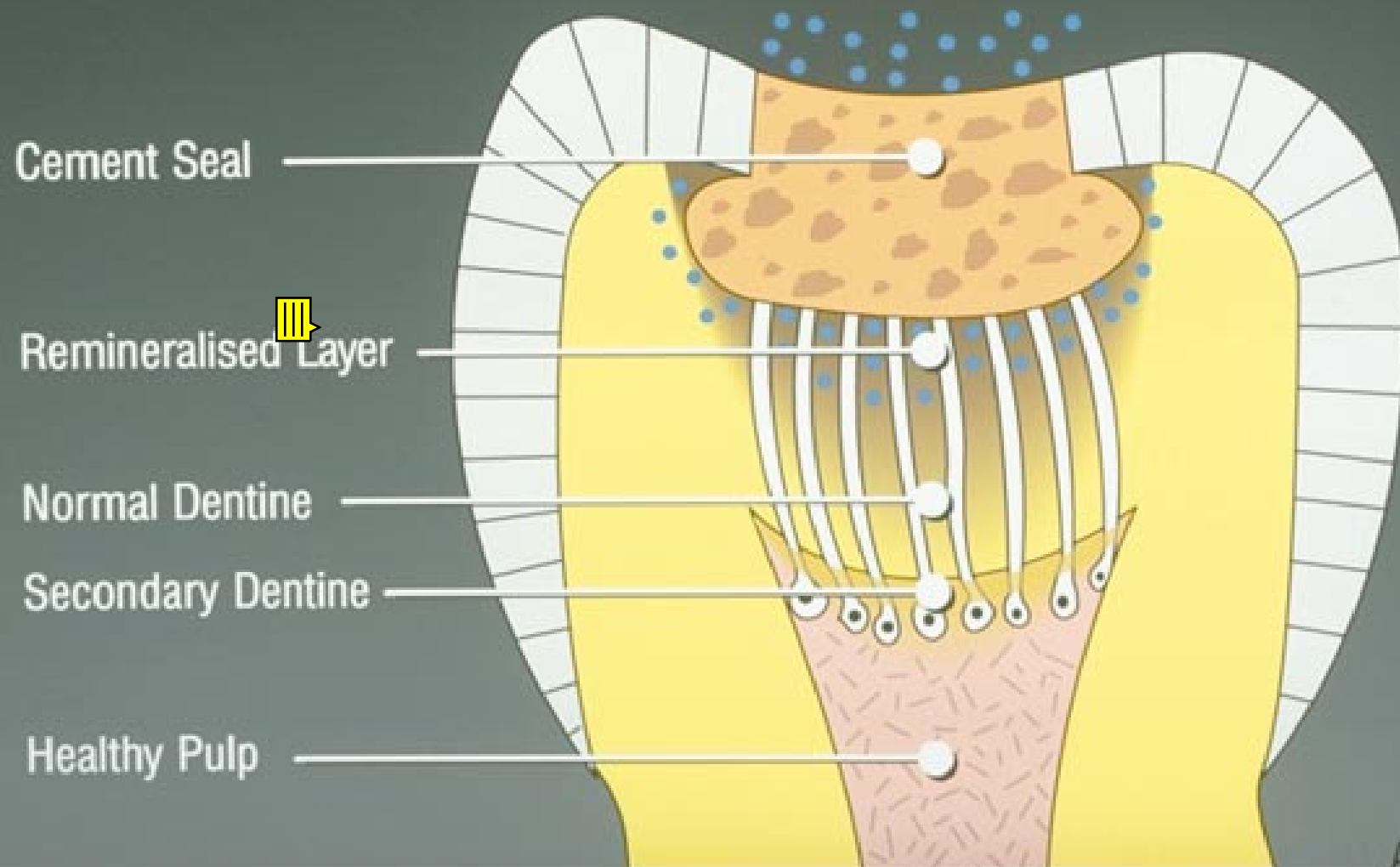




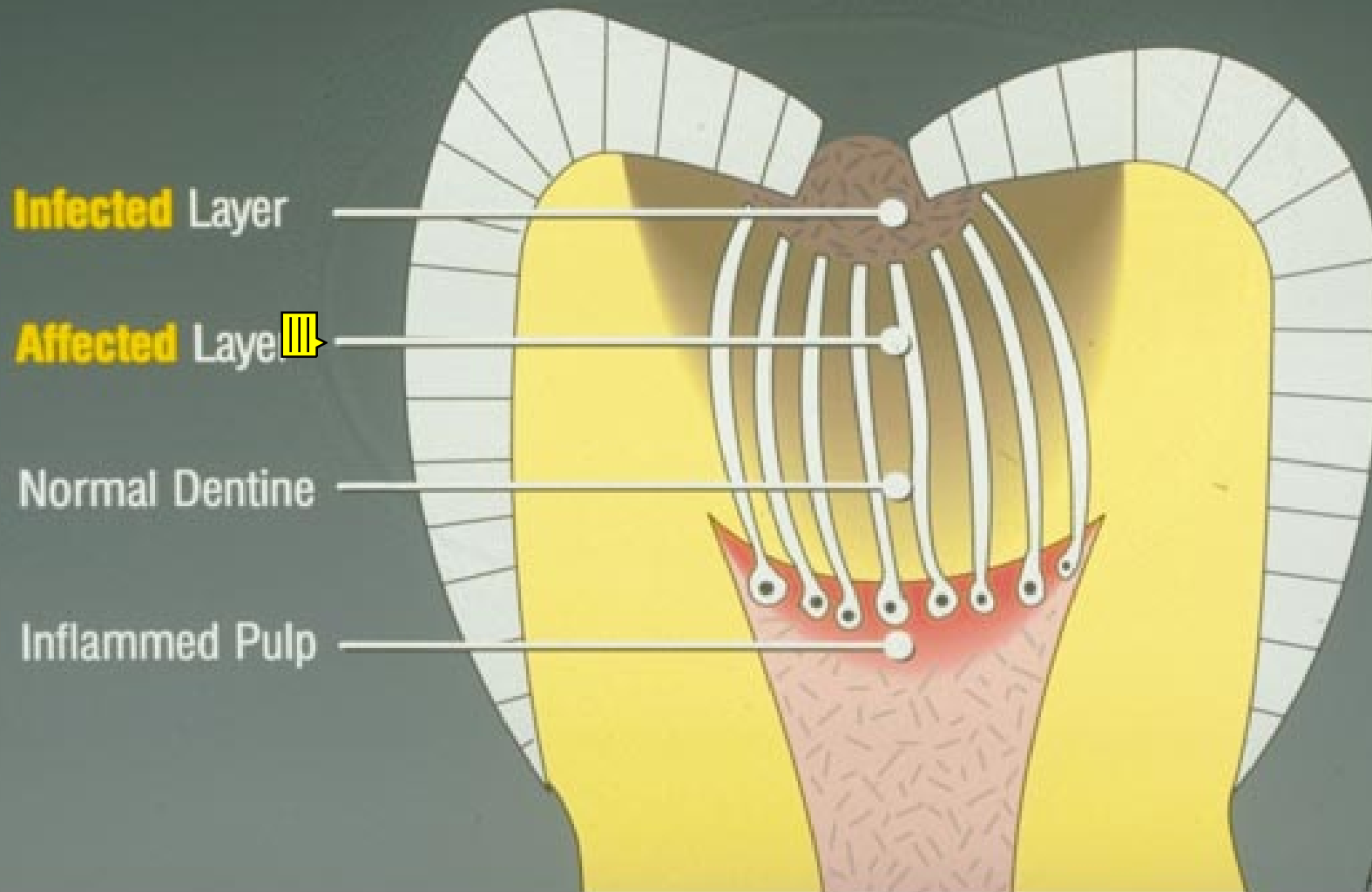
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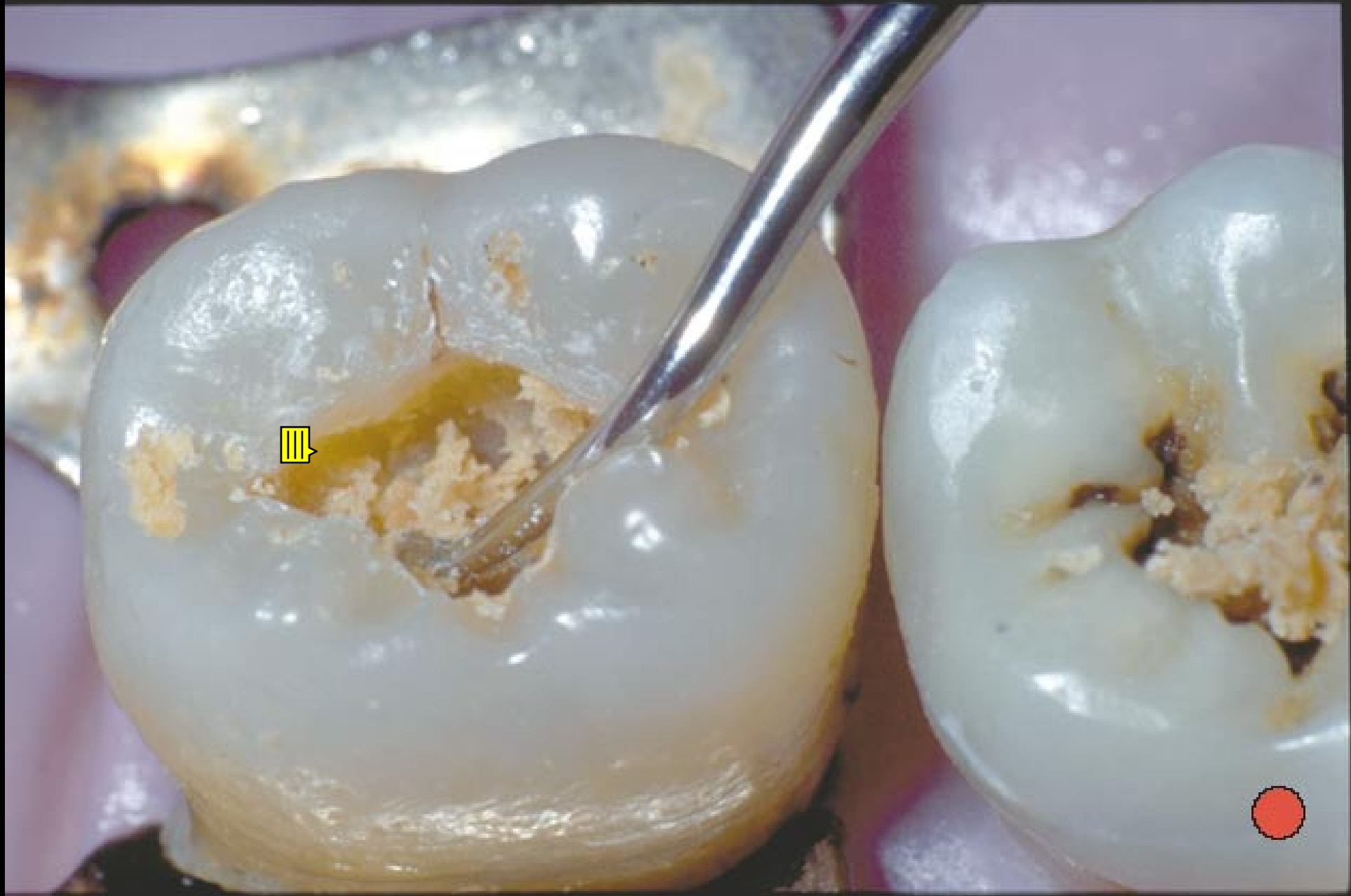
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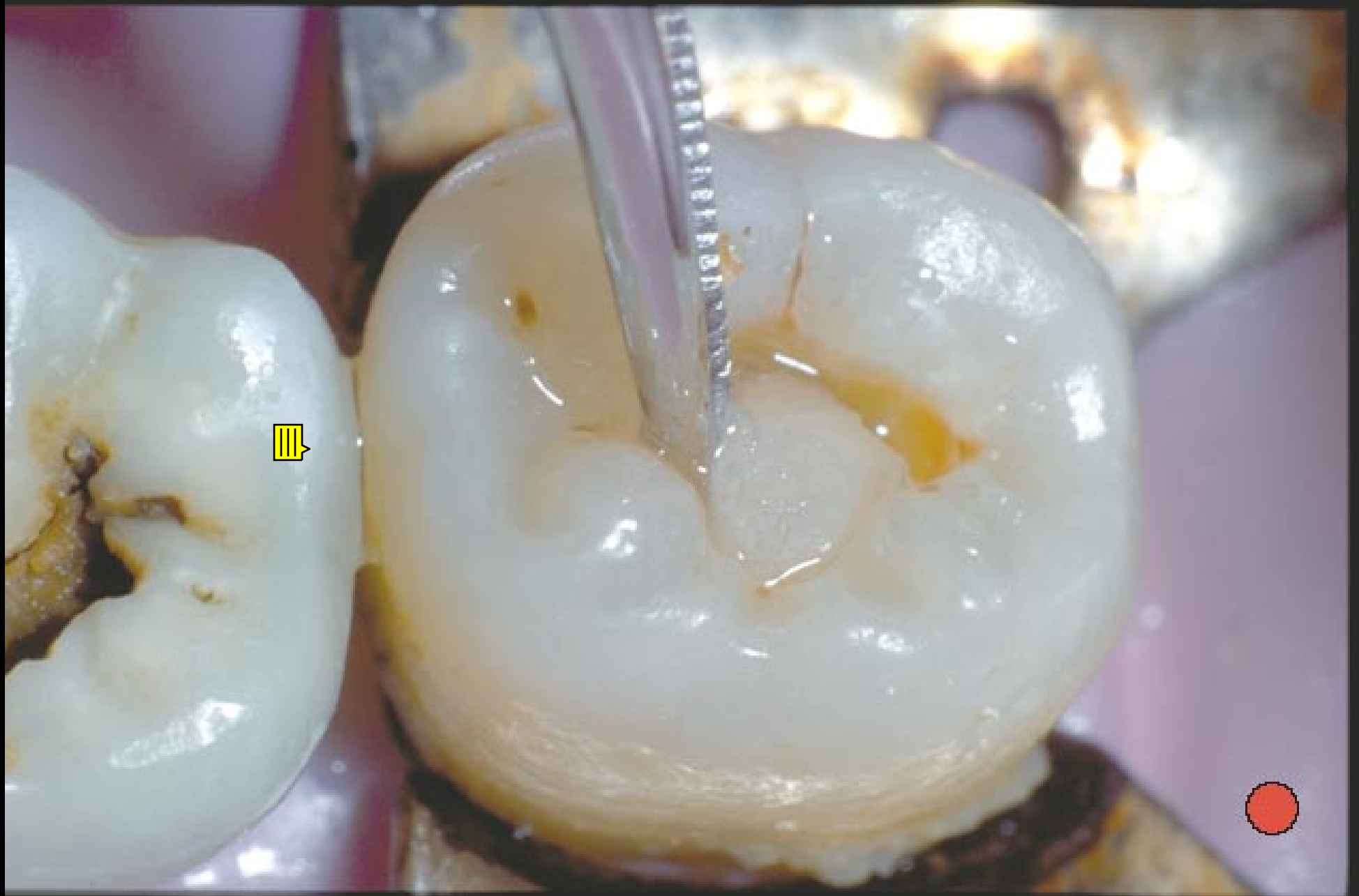
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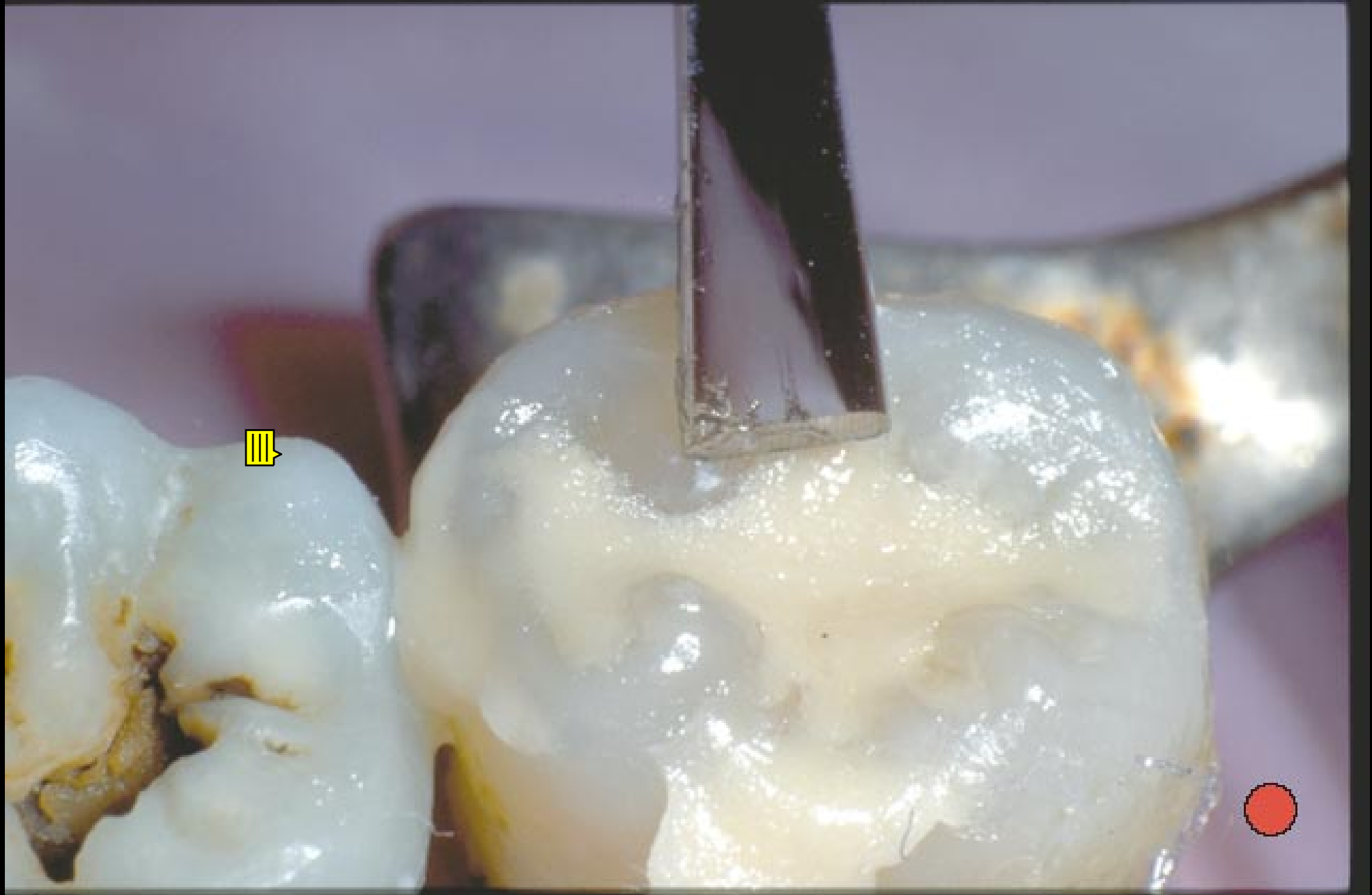






























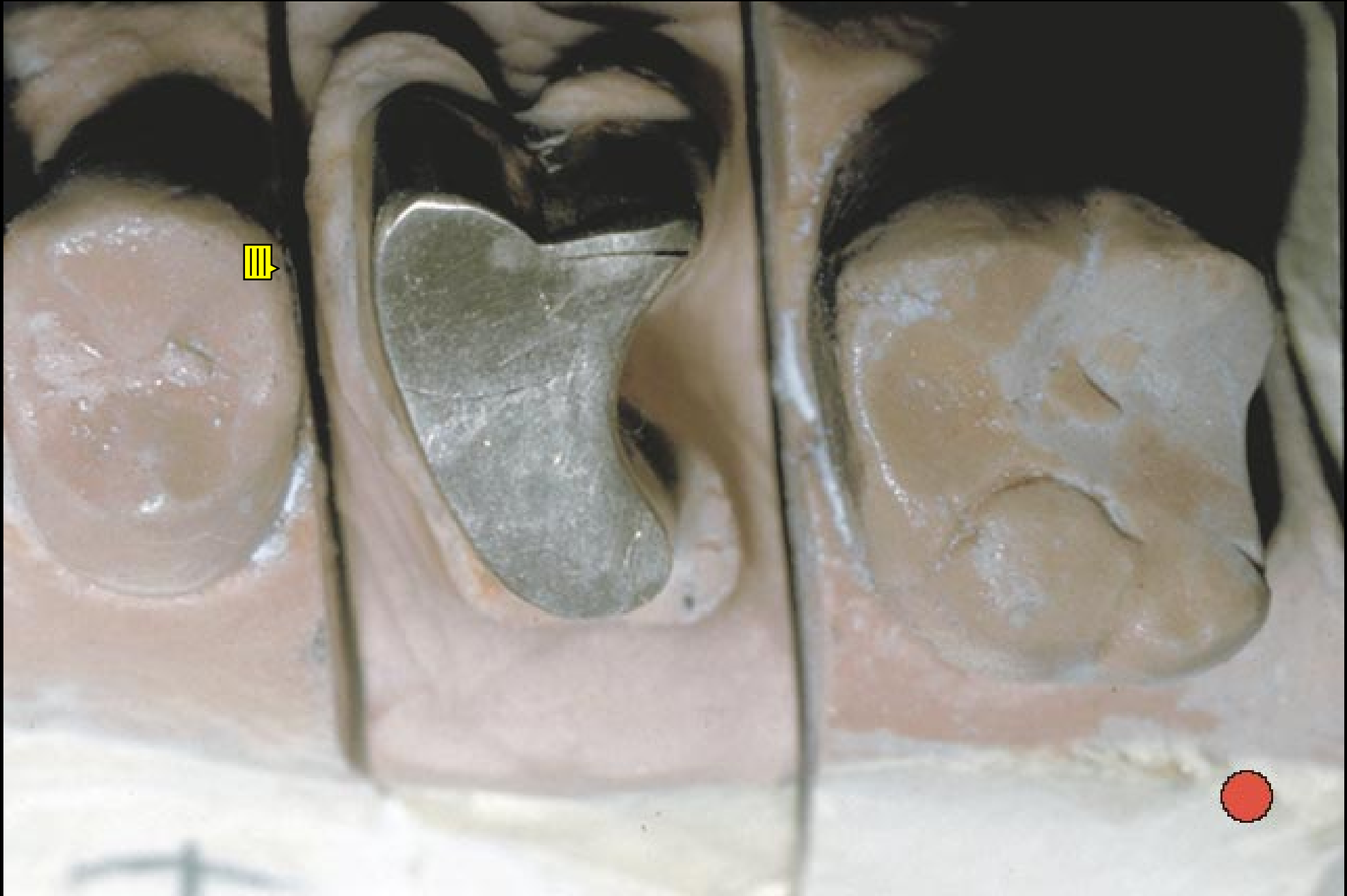




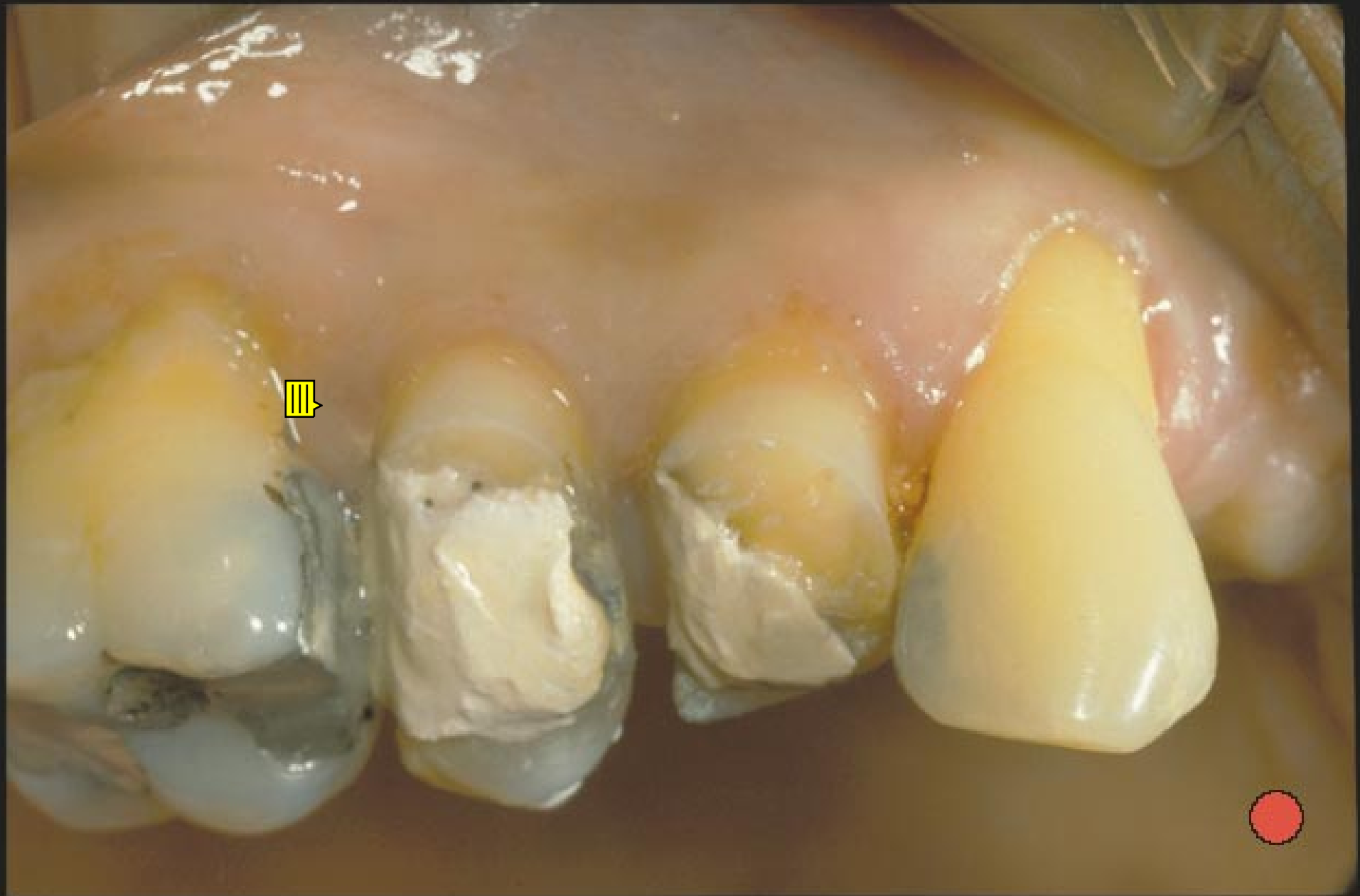




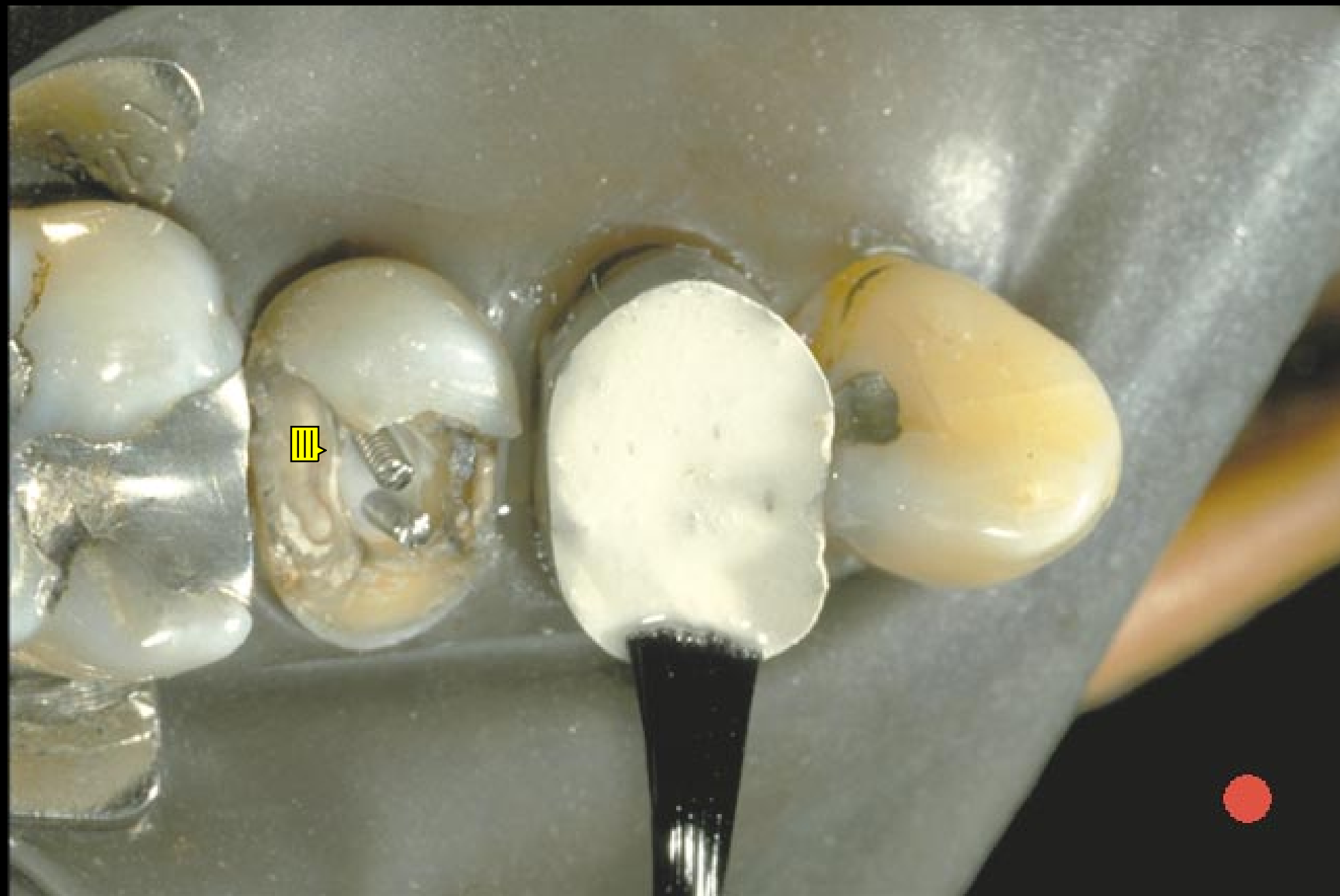


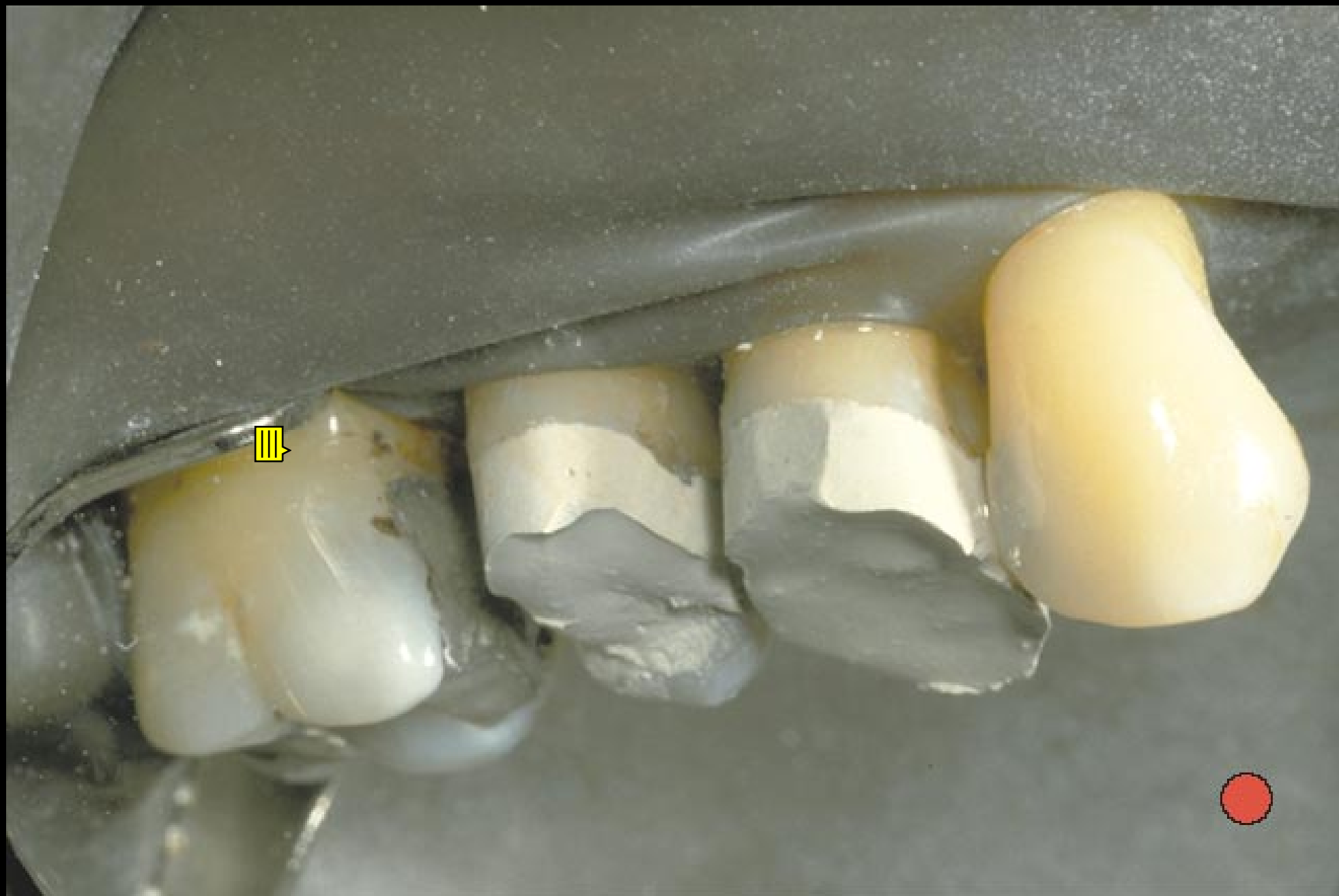


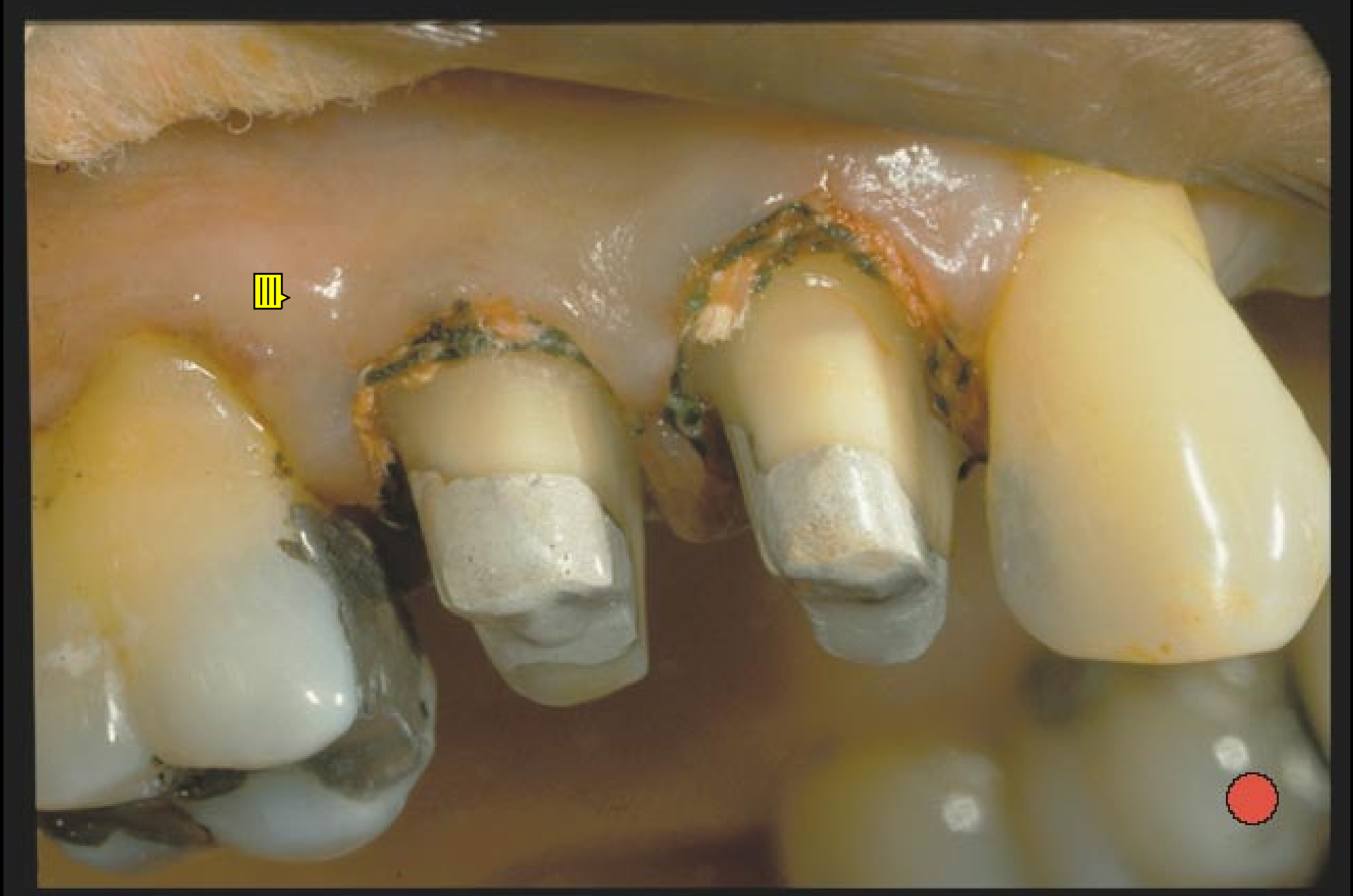












Normal height
of gum margin
Normal height
of bone



Height of gum
margin at
stage four of
the disease

Height of bone at
stage four of the
disease







