

The Localization of Dental Calcifications in Radicular Pulp

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Abstract: Introduction: Localization of the pulp stones can be coronar and/or radicular pulp. The intention of the study is to present morphology of dental calcifications according to the localization in radicular pulp. Materials and Methods: The present study was analyzed 60 extirpated pulps of teeth with endodontic diagnosis pulpitis chronic, and 40 pulps of extracted teeth, with the method of light microscopy, and by using standard differential histochemical stain. Results: The spherical calcifications show tendency of grouping according to their number, with average value of 3 calcifications per volume of one pulp. Irregular calcifications do not show tendency of grouping. Conclusion: With this study are confirm that, radicular pulp stones can be localized in dependence on theirs the size and the shape.

Keywords: pulp stones, radicular calcifications, the morphology, the localization, light microscopy, longitudinal direction, transverse section.

1. Introduction

Localization of the pulp stones can be coronar and/or radicular pulp. They are reported to occur more often in the coronal region but are also found in the radicular pulp [1].

Histological method of evaluation is reported to yield higher values than radiographic method [2]. The latter method, however, is incapable of resolving stones less than 200µm [3].

Regarding the size, calcifications show a wide range of variations [4]. The findings show values smaller than 1 micron, up to 1cm measured per sample, with continuous areas of calcifications which fill in almost the whole pulp, in a longitudinal direction. The transverse section is within the limits of 20 to 200 microns, whereas the longitudinal section is up to 500 microns [5].

Regarding the shape, 2 groups are identified. The first group consists of calcifications of oval shape, which have a degree of bending similar to circle or spherical objects; these calcifications are nodular. The second group of calcifications consists of calcifications which are of irregular shape, corner-like, except the bigger ones, which are relatively elongated [6].

2. Materials and Methods

Material for histological examination was provided with endodontic extirpation and vertical section during indicated teeth extraction.

The material consisted of extirpated vital pulp of teeth with chronic diseases and pulp of extracted teeth with chronic diseases with the method of light microscopy, and by using standard differential histochemical stain.

Histological analysis was made on the pulp of 60 extirpated pulps of teeth with pulpitis chronica, and 40 extracted teeth with pulpitis chronica.

For the purpose of histological processing there was used various different methods and procedures such as: fixation, decalcination, tissue processing, provision of paraffin sections, standard colouring, differential colouring, microscoping and morphological analysis with photographing.

3. Results and Discussion

Perceived in longitudinal direction, with ordinary segmentation of the pulp in 3 thirds, calcifications are localized in each third as well as in the transition areas among them.

Spherical calcifications occur more often in the middle third, whereas irregular calcifications do not show any predilection.

Regarding the transverse measuring of the pulp, parts of spherical calcifications are closer to the lateral sides of the pulp i.e. to the surface of the pulp.

Another part of spherical calcification calcification and irregular in shape, is placed over the center, and the entire width of the pulp.



Figure 1: Pulp stone in the upper second left premolar, radicular localized in the middle third

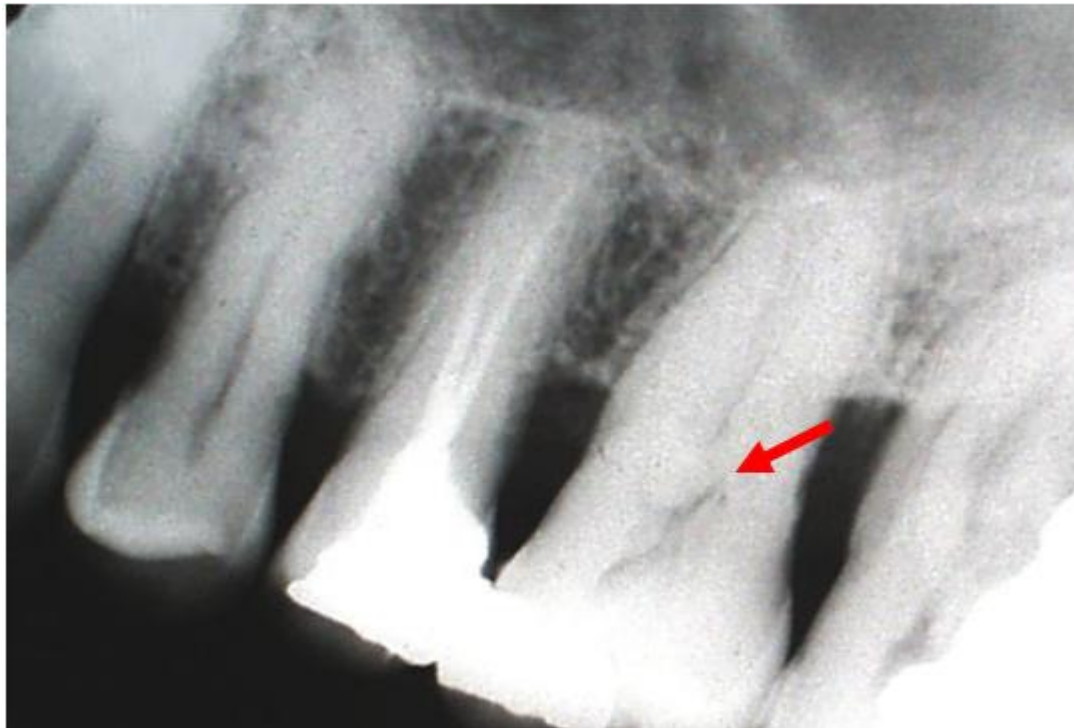


Figure 2: Pulp stone in the upper first left molar, radicular localized in the first third

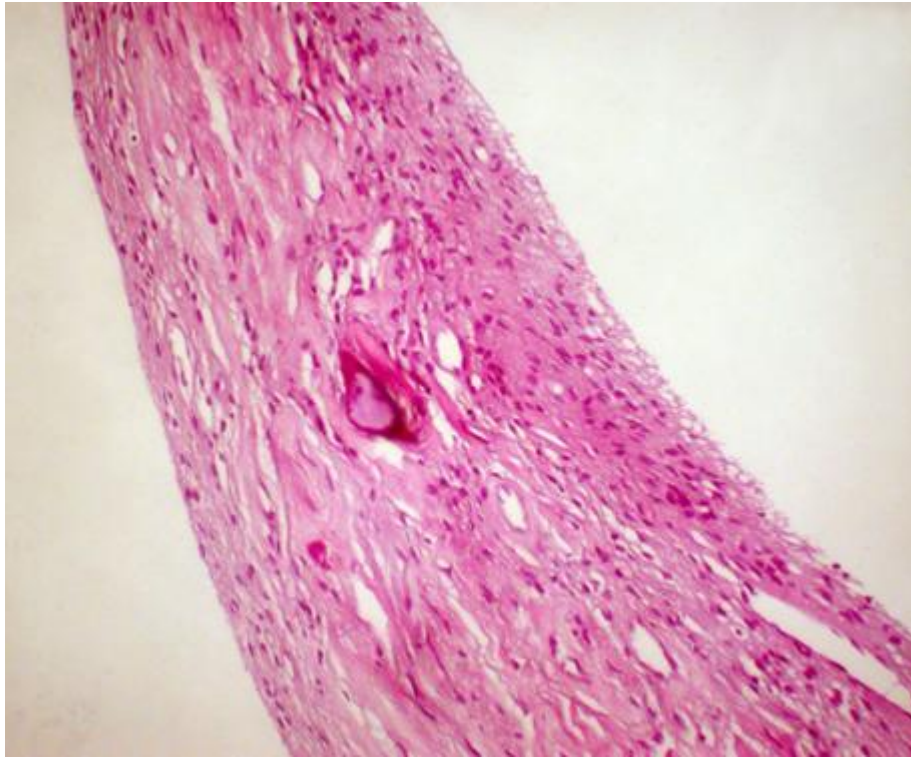


Figure 3: HE colouring (magnify.10x4), pulp stone in the middle third of radicular pulp

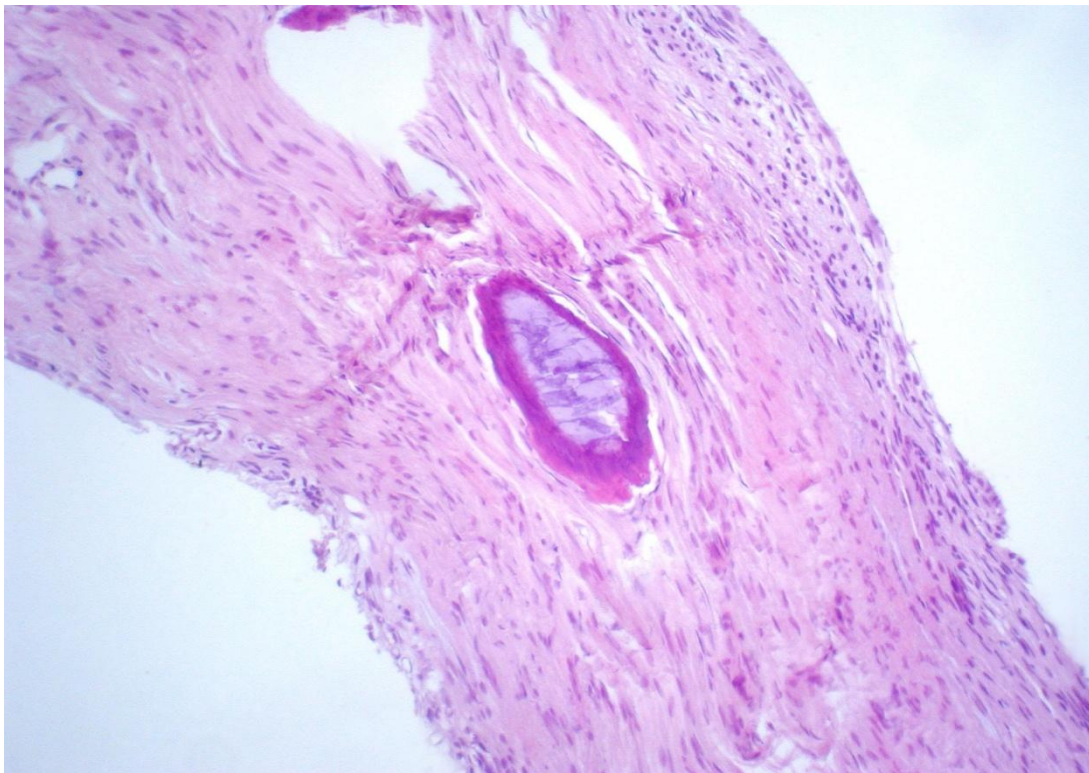


Figure 4: HE colouring (magnify.10x10), pulp stone in the middle third of radicular pulp

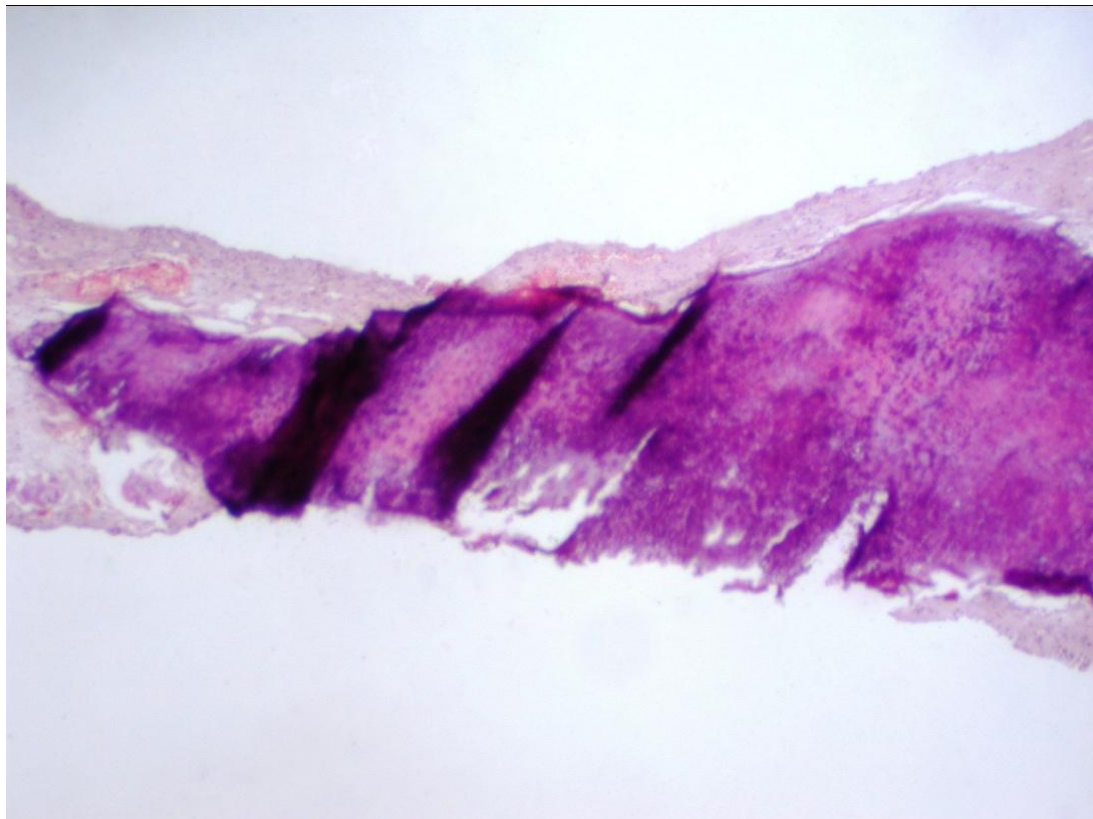


Figure 5: Colouring according to HE, zoom of 10 x 4, formation of radicular the bigger pulp stones, the size of which being such to occupy the pulp almost across all its width and along its length. Visible congested blood vessels

Radicular pulp stones can be localized in dependence on theirs the size and the shape (Figure 1,2,3,4,5).

As a basis for discussion is the finding that the dental calcifications represent a separate model of pathological calcification, fitting into overall pathological calcification, although with different morphological feature.

Pulp stones are discrete calcifications and are amongst changes that include more diffuse pulp calcifications such as dystrophic calcification [7].

Literature is rich with descriptions of dental calcifications. The studies on the size, the shape, number prevalence and localization of radicular pulp stones not very numerous, which leaves available the possibility to make tries to define it in a more accessible manner, as an opportunity to clarify this dental entity which is present in the everyday casuistics, but does not appear to always be detected.

Pulp stones vary in size, ranging from microscopic particles to larger masses that almost obliterate the pulp chamber with only the large masses being radiographically apparen (Figure 5), [8].

In the present study, regarding the shape, identified 2 groups of radicular dental calcifications: oval shape, which have a degree of bending similar to circle or spherical objects; these calcifications are nodular. A second report from the same study using the same material histologically demonstrated that the radicular calcification can be irregular shape, corner-like, except the bigger ones, which are relatively elongated, corresponding with Mjo'r & Pindborg [9,10].

Textbooks discuss the clinical relevance of pulp stones in terms of their effect upon root canal treatment. Their large size in the pulp chamber may block access to canal orifices and alter the internal anatomy. Attached stones may deflect or engage the tip of exploring instruments, preventing their easy passage down the canal (Pashley et al.) [10,11].

4. Conclusions

With this study are confirm that, radicular pulp stones can be localized in dependence on theirs the size and the shape.

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