

## Forensic Dentistry - Dental Expertise in Civil Lawsuits

**Irineu Gregnanin Pedron<sup>1\*</sup> and Marcelo do Lago Pimentel Maia<sup>2</sup>**

<sup>1</sup>Dental Surgeon, Specialist in Periodontics and Implant Dentistry, Master in Dental Sciences, School of Dentistry, University of São Paulo, Undergraduate Law Student, Universidade São Judas Tadeu, Technical assistant in expertise, Brazil

<sup>2</sup>Dental Surgeon, Specialist in Implant Dentistry and Dentomaxillofacial Imaginology and Radiology, Master in Bioengineering, Universidade Brasil, São Paulo, Brazil, Technical assistant in expertise, Brazil

**\*Corresponding Author:** Irineu Gregnanin Pedron, Dental Surgeon, Specialist in Periodontics and Implant Dentistry, Master in Dental Sciences, School of Dentistry, University of São Paulo, Undergraduate Law Student, Universidade São Judas Tadeu, Technical assistant in expertise, Brazil.

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We read, with great enthusiasm, the article entitled “Forensic Dentistry - Need to Expand the Horizon”, authored by Sukhpal Kaur, and published in volume 3, issue 3 (December 2023) of Medicon Dental Science [1]. We congratulate the author on the article and its broad and visionary approach. The article is well-written and describes the importance of the dental surgeon’s forensic work, particularly in the criminal field. However, the role of the dental surgeon in the legal sphere goes beyond the elucidation of criminal situations.

Forensic Dentistry is part of Forensic Medicine, whose specialized services can help the Judiciary with dental issues in the civil, criminal, administrative and labour spheres [2-6].

As also reported by the author, the role of the dental expert in the criminal sphere is famous for solving post-mortem criminal cases, thanks to widespread publicity in the media and cinema [2-3, 6]. The dental arch, like DNA and fingerprints, is unique to each human being. In these cases, dental surgeons depend on the legislation in force in each country, determining the definitions of each crime [2-4, 6].

However, dental surgeons can also work in the field of Forensic Dentistry, providing expertise and reports on the oral conditions of patients who request indemnity actions against the dental surgeon. The identification of iatrogenic, provoked or accidental injuries (complications) in patients may be necessary and fundamental in the elucidation of public and private, civil, criminal, labour or ethical-legal actions [2-4, 6].

Several methods can be used to draw up expert reports. The clinical examination is the first, in which the expert dental surgeon can, in addition to describing the current state of the oral cavity, provide the Court with information to conclude the case [2, 6]. Figure 1 illustrates the case of a 32-year-old male patient who underwent aesthetic restorative treatment with composite resin veneers. Clinically, the cervical excess of the dental veneers is observed. The expert opinion establishes the causal link between the poor and inadequate execution of the treatment (unsatisfactory treatment) and the failure of the case (damage caused). In this case, the cervical excess of the dental veneers contributed to the difficulty of oral hygiene and the early onset of bone loss (periodontal disease). Figure 2 shows, by means of the blue arrows, the presence of a tumour mass on the anteroinferior teeth, probably of inflammatory origin (caused by the difficulty of oral hygiene), or underestimated by the installation of the dental veneers (pre-existing to the veneer procedure), or caused by the cervical excesses of the dental veneers. In addition, other clinical diagnostic methods can be used [2, 6]. Figure 3 shows gingival bleeding from flossing, shown again by the red arrows in Figure 4.



**Figure 1:** Aesthetic restorative treatment with composite resin veneers presenting cervical excesses.



**Figure 2:** Gingival mass on the anteroinferior teeth (blue arrows).



**Figure 3:** Gingival bleeding from flossing.



**Figure 4:** Blue arrows showing gingival bleeding from flossing.

With regard to imaging tests relevant to Dentistry, periapical radiographs, panoramic radiographs and computed tomography can be requested [2, 6]. Figure 5 illustrates the panoramic radiograph of a 44-year-old female patient who underwent restorative treatment with composite resin veneers on her upper anterior teeth. Figure 6 shows the anterosuperior region of the panoramic radiograph, in which the excess dental veneers are subsequently highlighted by the blue arrows in Figure 7, the presence of dental calculus by the orange arrow and bone loss by the yellow arrows.

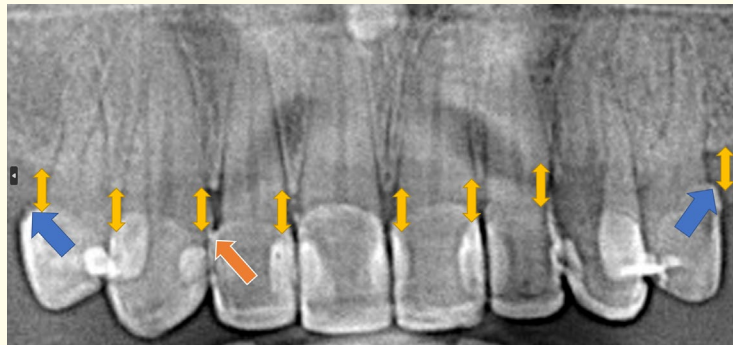


**Figure 5:** Panoramic radiograph presenting restorative treatment with composite resin veneers on her upper anterior teeth.

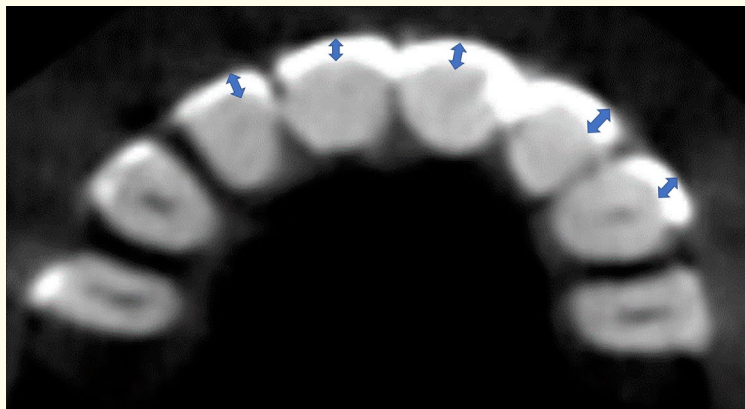
Figure 8 shows an axial cross-section demonstrating the excess material (blue arrows) embedded on the tooth (increased tooth thickness). Figure 9 illustrates the excess material in the cervical region (blue arrow). In addition, the red arrows also indicate the linear buccal face, which does not have the expected buccal anatomical curvature of the maxillary central incisor. The absence of this curvature implies that the tooth in function is susceptible to mastication and may cause mechanical damage to the gums during chewing of harder and more resistant foods. Figure 10 shows the 3D reconstruction from the volumetric Cone Beam CT scan. It is possible to see the cervical excesses of the veneers on the anterior teeth. In detail, Figure 11 shows the cervical excesses of the veneers on the anterior upper teeth (blue arrows) and the interproximal bone loss between the same teeth (red arrows). Figure 12 shows the same configuration in right lateral view.



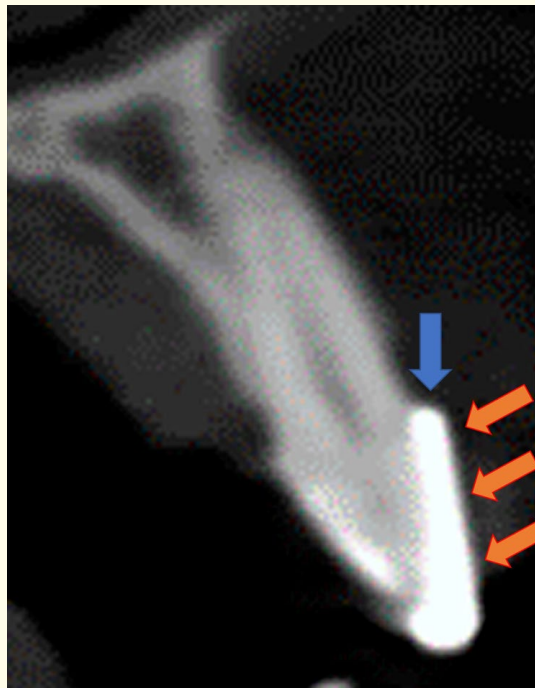
**Figure 6:** Anterosuperior region of the panoramic radiograph.



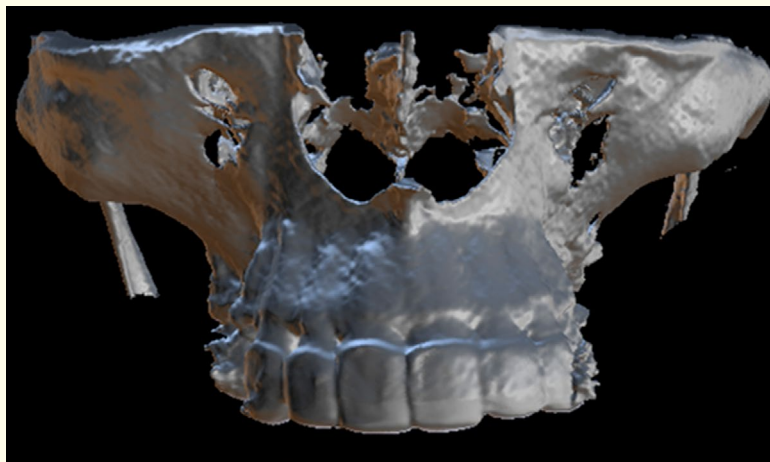
**Figure 7:** Anterosuperior region of the panoramic radiograph, in details: cervical excesses dental veneers (blue arrows); presence of dental calculus (orange arrow); and periodontal bone loss (yellow arrows).



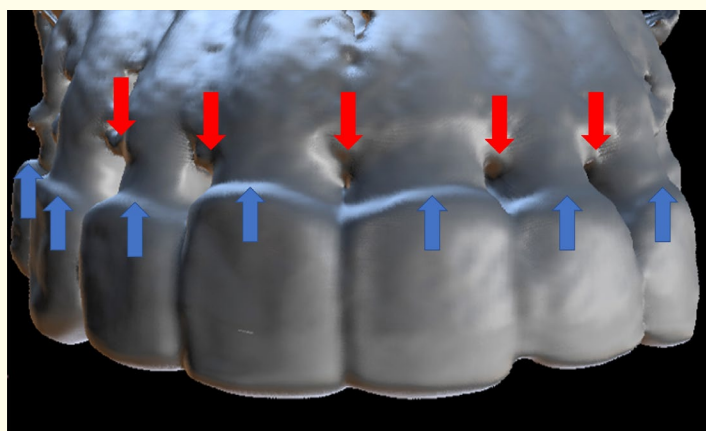
**Figure 8:** Excess material (blue arrows) embedded on the tooth (increased tooth thickness).



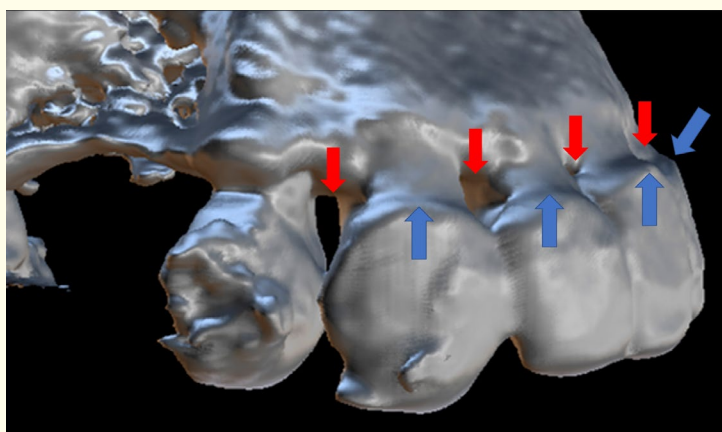
**Figure 9:** Excess material in the cervical region (blue arrow), and linear buccal face (red arrows).



**Figure 10:** 3D reconstruction from the volumetric Cone Beam CT scan.



**Figure 11:** Cervical excesses of the veneers on the anterior upper teeth (blue arrows) and interproximal bone loss between the same teeth (red arrows).



**Figure 12:** Right lateral view: cervical excesses of the veneers on the upper teeth (blue arrows) and interproximal bone loss between the same teeth (red arrows).

The two cases presented indicate that the presence of cervical excess hinders satisfactory oral hygiene, favouring the onset and progression of periodontal diseases (gingivitis and periodontitis) and culminating in bone loss, which can progress to tooth loss. The relationship between the causal link and the damage suffered (material, moral, aesthetic) is then determined. Through the presentation of dental records, it can also be seen that many dental surgeons do not provide guidance and instruction on oral hygiene, which is negligence (omission) for not doing so [2, 6, 7].

Dental contact lenses or dental veneers, when they have excess restorative material (composite resin or porcelain) in the cervical regions, can cause other late complications [2, 6, 7].

Dental contact lenses or dental veneers that are excessively thick (as can be seen in Figure 8 - blue arrows) can cause overbite and overjet. These alterations can cause an imbalance in the relationship between the maxilla and mandible, not only in occlusion but also in soft tissue adaptation. The increased thickness of lenses or veneers can lead to a lack of passive lip sealing, causing mouth breathing and subsequently an increase in the incidence of periodontal disease and caries. The absence of a passive lip seal can also trigger a neuromuscular imbalance that can affect stomatognathic functions and the harmonious growth of the face [2, 6, 7]. In addition, changes in the temporomandibular joint as a result of malocclusion can be generated [2, 6-9]. Generally, dental lenses and veneers alter the shape and especially the length of the teeth. In addition to the aforementioned alterations, phonetic interference, discomfort, incisal fractures or wear on antagonist teeth can occur [2, 6, 7, 10].

As can be seen in both cases, the treatment was inadequate and iatrogenic. The dental surgeon can be sued in various legal actions. In the civil area, they can be sued for civil liability, for material, moral and aesthetic damages. In this area of the law, the expert report is of unique importance, because once the unlawful act has been proven, linking the damage (periodontal disease with bone loss or tooth loss) and the causal link (excess veneers or contact lenses) determines the triggering of the civil and consumer action. The unlawful act is also determined by recklessness, negligence or malpractice. In the criminal field, considering criminal liability, the professional may be indicted for bodily injury (bone loss and future loss of teeth) [2, 3, 6]. The dental surgeon may also be subject to ethical and administrative proceedings before his or her Professional Council [2, 6].

Professionally, dental surgeon should advise patient of the possible risks and complications. However, due to the high demand and search for these procedures by patients, professionals give in mainly to the financial appeal. Furthermore, even when the procedures are carried out, there is a lack of guidance on proper oral hygiene and the necessary post-treatment care. From this perspective, there is a lack of professionalism and care when carrying out the procedure. One of the ethical pillars of healthcare professionals is *Obligatio ad diligentiam*, from the Latin "obligation to be diligent" [2, 6]. Thus, the dental surgeon should resolutely decline to carry out the treatment, even at the patient's request. This honest and preventative conduct could also provide a defence in the event of a possible legal problem with the patient [2, 6].

Another observation in this area of dental practice is the lack of knowledge of human anthropometry. Dental surgeons seem to be totally ignorant of human anthropometry concepts, including bone, dental, facial and soft tissue measurements. This ignorance favours bad practices, from planning to execution [2, 3, 6, 11].

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