

CIVIL AND CRIMINAL LIABILITY OF DENTISTS ARISING FROM ENDODONTIC FILE FRACTURES*

*RESPONSABILIDADE CIVIL E PENAL DO CIRURGIÃO-DENTISTA DECORRENTE DE
FRATURAS DE LIMAS ENDODÔNTICAS*

Evelin Carine Alves Silva¹

Gabriel de Oliveira Silva²

Maria Luiza Gioster-Ramos³

Clemente Maia da Silva Fernandes⁴

Mônica da Costa Serra⁵

Abstract: dental malpractice occurs when a professional fails to follow required standards of dental practice, causing harm and damage to the patient. The present research aims to discuss the ethical and legal aspects of the dentist's liability in face of fracture of endodontic files, through an exploratory study based on existing literature and jurisprudence. Factors attributed to the professional can be considered as the most frequent cause of fracture of endodontic files. In order to characterize the dentist's civil liability resulting from the fracture of endodontic files, it is necessary to characterize the intent or fault, considering the subjective responsibility of liberal professionals. Criminal liability will occur in cases of criminal types expressly provided for in the legislation, such as the crime of bodily harm, as well as in the existence of unlawfulness (or illegality) of the conduct. We conclude that the professional must perform endodontic treatment with scientific and practical rigor, presenting the knowledge of techniques, instruments and jointly the responsibility to which he responds in the practice of his profession.

* Artigo submetido em 25/04/2022 e aprovado para publicação em 12/08/2022.

¹ Cirurgiã-dentista. Doutoranda em Odontologia, área de Endodontia, pela Faculdade de Odontologia de Araraquara, Universidade Estadual Paulista-Unesp. ORCID: <https://orcid.org/0000-0002-6424-5504>. E-mail: evelin.silva@unesp.br.

² Advogado. Doutorando em Ciências Forenses pela Faculdade de Odontologia de Araraquara, Universidade Estadual Paulista - Unesp. ORCID: <https://orcid.org/0000-0002-6843-4134>. E-mail: gabrieloliveirasilv@gmail.com.

³ Cirurgiã-dentista. Doutoranda em Odontologia, área de Biociências, Biomaterias e Materiais Odontológicos pela Faculdade de Odontologia de Araraquara, Universidade Estadual Paulista - Unesp. ORCID: <http://orcid.org/0000-0002-7002-592X>. E-mail: luiza.gioster@unesp.br.

⁴ Bacharel em Direito e Cirurgião-dentista. Pós-Doutor em Direito Internacional da Saúde pela Universidade de São Paulo - USP e Pós-Doutor em Antropologia Forense pela Universidade de Coimbra - UC. Líder do Grupo de Pesquisa "Núcleo de Ciências Forenses, Bioética, Biodireito e Ética em Ciência e Tecnologia de Araraquara", cadastrado junto ao CNPq. Professor da Pós-graduação *stricto sensu*, área de Ciências Forenses, Unesp. ORCID: <http://orcid.org/0000-0002-5401-6265>. E-mail: c.face@terra.com.br.

⁵ Advogada. Cirurgiã-dentista. Licenciada em Letras. Pós-Doutora em Bioética pela Universidade Complutense de Madri, em Direito Internacional da Saúde (Universidade de São Paulo -USP) e em Antropologia Forense (Universidade de Coimbra). Livre-docente em Odontologia Legal (Universidade Estadual Paulista -Unesp). Líder do Grupo de Pesquisa "Núcleo de Ciências Forenses, Bioética, Biodireito e Ética em Ciência e Tecnologia de Araraquara", cadastrado junto ao CNPq. Professor Associado da Faculdade de Odontologia de Araraquara-Unesp. Coordenadora da Pós-graduação *stricto sensu*, área de Ciências Forenses, Unesp. ORCID: <https://orcid.org/0000-0001-8820-2982>. E-mail: monica.serra@unesp.br.

Keywords: Endodontic files; Civil Liability; Ethical conduct of the dentist; Informed consent form; Criminal Liability.

Resumo: A negligência odontológica ocorre quando um profissional deixa de seguir os padrões exigidos de prática odontológica, causando prejuízo e dano ao paciente. A presente pesquisa tem como objetivo discutir os aspectos éticos e jurídicos da responsabilidade do cirurgião-dentista diante da fratura de limas endodônticas, através de um estudo exploratório com base na literatura e jurisprudência existentes. Fatores atribuídos ao profissional podem ser considerados como a causa mais frequente da fratura de limas endodônticas. Para caracterização da responsabilidade civil do cirurgião-dentista decorrente da fratura de limas endodônticas, é necessária a caracterização do dolo ou culpa, considerando a responsabilidade subjetiva dos profissionais liberais. A responsabilidade penal, se dará nos casos de tipos penais previstos expressamente na legislação, tais como o crime de lesão corporal, bem como na existência de antijuridicidade (ou ilicitude) da conduta. Concluimos que o profissional deve executar o tratamento endodôntico com rigor científico e prático, apresentando o conhecimento de técnicas, instrumentos e conjuntamente da responsabilidade ao qual responde na prática de sua profissão.

Palavras-chave: Limas endodônticas; Responsabilidade civil; Conduta ética do cirurgião-dentista; Termo de consentimento livre e esclarecido; Responsabilidade penal.

Introduction

Endodontic treatment is performed through mechanical preparation with cutting instruments associated with chemical substances, aiming at the elimination of microorganisms, pulp and necrotic remains present in the root canal system (SCR). Cleaning and shaping the SCR is essential for successful endodontic treatment. But the complex anatomy of the root canal, including curvatures, isthmuses, accessory canals and ramifications.

Endodontic files are subject to fracture, this failure is related to the phenomenon of fatigue (LOPES *et al.*, 2015), which happens from a microscopic defect that propagates through the instrument as the material is subjected to repeated cyclic stresses, until the fracture of the components occurs under a load below the maximum load supported. Studies show that the incidence of fracture varies from about 2 to 6%.

Fatigue can be caused by bending and/or twisting (SATTAPAN *et al.*, 2000). Flexural fatigue occurs as the instrument rotates in a channel with curvature and stress is generated in this area of greatest curvature, producing alternating cycles of tension and compression until fracture (PRUETT *et al.*, 1997). While torsional failure occurs when the instrument tip locks inside the channel while the rest of the instrument continues to rotate, or when the torque

resulting from contact between the instrument and the channel wall exceeds the instrument's torsional resistance (JAMLEH *et al.*, 2014).

Endodontic instruments made of nickel-titanium alloy (NiTi) reduce iatrogenesis and instrument failure during endodontic treatment (GUTMANN; GAO, 2012), due to their greater safety and ability to prepare curved canals while maintaining the original canal anatomy (PEREIRA *et al.*, 2015). To improve the fatigue resistance of endodontic instruments, different alloys and manufacturing processes have been introduced to the market, such as technologies M Wire (Dentsply Tulsa Dental Specialties, Tulsa, OK, EUA), R phase (Kerr, Orange, CA, EUA), CM Wire (Clinician's Choice Dental Products, New Milford, CT, USA) and Blue Technology (Dentsply Tulsa Dental Specialties). NiTi instruments that are heat treated have greater flexibility and fracture resistance (DRUKTEINIS *et al.*, 2019).

Knowing the mechanical properties of each instrument being used, having previous training and knowledge of preparation techniques reduce iatrogenic events during endodontic treatment.

Dental negligence is present when a dental professional fails to follow the required standards of dental practice, causing some harm to the patient (MANCA *et al.*, 2018). Procedures performed by endodontists are highly technique sensitive and require training, knowledge as well as skill. If the dentist risks the patient's life or causes him any harm, he may face legal consequences for his actions.

Failure to comply with the protocols for a correct endodontic treatment established in the literature compromise the prognosis of the case, as well as the result in which negligence claims occur (GIVOL *et al.*, 2010). The types of technical "errors" during endodontics that are considered negligence include mostly perforations and fractured instruments. While complications such as infection or persistent pain in the absence of pathology are not considered negligence. However, hiding an accident that occurred during the patient's treatment is considered negligence that exposes the dentist to litigation (KAKAR *et al.*, 2014).

In view of the technical errors that can occur during endodontic treatment, the present research aims to discuss the ethical and legal aspects of the dentist's liability in face of endodontic files fracture through an exploratory study based on the literature about endodontic files and their fracture, associated with the research of Brazilian jurisprudence in the civil and criminal spheres.

1. Ethical aspects in professional conduct

Fracture of endodontic files presents two aspects of causality, the first arising from the characteristics and defects of the instrument and the second is characterized by factors attributed to professionals.

The dentist on several occasions is not responsible for failure or incidents that occur during or after endodontic treatment. De Deus (2003) explains that failures and incidents can occur due to several factors inherent to the patient, the tooth, the root canal, the instruments, and materials used and the techniques and professionals who perform them.

Leonardo and Leonardo (2002) report that factors attributed to the professional can be considered as the most frequent cause that results in the fracture of endodontic files. The authors explain that some care is essential before performing the procedure, such as: Mastery of the chosen technique, knowledge of the anatomy and appropriate choice of instrument disposal.

Lopes *et al.* (2015), describe that the fracture of endodontic instruments during the preparation of the canal, usually occurs due to the lack of knowledge about the mechanical properties of the chosen material and non-observance of the defects and deformations originated during the instrumentation. In view of this, some recommendations are necessary. The authors advise the immediate disposal of instruments that present plastic deformation in their helices, regardless of the time of use. Leonardo and Leonardo (2002) also suggest that small diameter instruments should be discarded normally, after a use of five to six times and in cases should be discarded after a single use.

Selbst (1990) addressed aspects related to informed consent and the relationship between the incidence of adverse events in conventional endodontic therapy. The records of complications present in 3308 endodontic treatments of 43 specialists in Endodontics were analyzed. Study participants listed 28 possible adversities that could occur during treatment, including fracture of endodontic instruments. The results showed that at the beginning of treatment, at retreatment and at referral (in the middle of treatment), instrument fracture occurred in approximately 1%, 2% and 8% of adverse cases, respectively.

Yared and Kulkarni (2002), when evaluating the incidence of failures of NiTi ProFile® rotary instruments when used by an inexperienced operator, found a high incidence of deformation and separation in air micromotors and in high and low torque electric motors during the beginning of the operation. preparation of the canals, concluding that it is safer to

use a motor with very low torque (170 rpm) for inexperienced operators in terms of preventing fractures and deformation of the NiTi rotary instruments.

In view of this, the professional must remain attentive to the instruments and techniques and ethically choose the cases in which he has technical mastery for correct execution, providing the best and most effective care for his patient. Ramos and Bramante (2001) also add that the knowledge of various instrumentation techniques allows the operator to choose the most appropriate for the type of canal to be prepared. For each anatomical situation, there is an indicated technique, but only common sense allows it to be associated with others in the most convenient way to obtain the perfect root preparation.

However, it is important to emphasize that despite all care, an instrument can still be fractured during root canal preparation, which results in the need for the patient to be warned of the presence of this instrument, the course of treatment and what the final prognosis will be tooth.

When accidents happen, the operator must be consciously prepared to face them with dignity and proficiency, to seek the solution to maintain the integrity of the patient's health and well-being. In this regard, Imura and Zuolo (1988) consider that prevention is the most prudent way to reduce accidents during endodontic treatment. The authors recommended that, in cases of fracture of endodontic instruments, the patient should be informed of the accident, the sequence of treatment and the probable prognosis of the case.

The Dental Ethics Code (CFO, 2003) establishes several fundamental ethical recommendations for the Surgeon-Dentist-patient relationship, in addition to protecting the professional from possible legal disputes. Among the ethical duties, art. 5th: IV - keep professional, technical-scientific, and cultural knowledge updated, necessary for the full performance of the professional exercise; VIII - prepare and keep up-to-date patient records, keeping them in the proper file; XVI – guarantee to the patient or his legal guardian, access to his chart, whenever it is expressly requested, being able to grant a copy of the document, upon delivery receipt.

Among the various ethical infractions, we highlight the IV art. 7th: failure to adequately clarify the purposes, risks, costs, and alternatives of treatment.

We therefore consider that, as a rule, the professional must report to the patient all the foreseeable risks of the treatment, making him aware of the occurrences that may eventually arise patient does not understand what the professional says to him.

1.1 Informed Consent Form

The dental record is a file where all patient information, clinical procedures and administrative information regarding the treatments performed are organized. It must include: the anamnesis, the procedures performed, the medical prescriptions and certificates, the imaging tests and informed consent form (ICF) (ALMEIDA; ZIMMERMAN; CERVEIRA; JULIVALDO, 2004).

The ICF refers to the document responsible for clarifying the particularities regarding the clinical diagnosis, the available treatment options, the prognosis and the possible risks related to a certain treatment to be performed, in addition to the consequences if the patient chooses not to perform it (RODRIGUES *et al.*, 2017). This document must be present at each new stage of dental treatment, so that the patient can make decisions about the procedure to be submitted from it, being of fundamental importance to be prepared in a simple and clear language (RODRIGUES *et al.*, 2017). According to the Brazilian Dental Code of Ethics, it is considered an ethical failure to not provide the patient with the ICF containing treatment alternatives (if applicable) and adequate explanations about the treatment, its risks, and costs (CFO, 2003).

The ICF fulfills an essential function of ethical and legal protection of the dentist in relation to the patient, but when proven its inexistence, it can be characterized as negligent conduct by the professional from an informative point of view. The ICF should be present in all clinical specialties, especially in cases of greater complexity, where the aim is to keep the tooth in the oral cavity despite the poor prognosis, and in cases in which, despite following the entire treatment protocol established in the literature, some complications are present, as in endodontic treatment.

In endodontics, the most common accidents during treatment are perforation (13%) and instrument fracture (6%) (PINCHI *et al.*, 2013). Failure to comply with the appropriate treatment protocols for each case can, in addition to compromising the quality of treatments and the result, also result in allegations of dental malpractice (GIVOL *et al.*, 2010). However, complications commonly associated with endodontic treatment, such as infection or persistent pain, fracture of instruments, non-access of canals due to anatomical variation are not considered cases of negligence, provided that these complications are previously clarified in the ICF (BJØRNDA; REIT, 2008).

Therefore, due to the high level of sensitivity of the technique used to perform the canal, endodontics is one of the specialties most involved in cases of negligence (ZANIN; HERRERA & MELANI, 2016). Thus, in order to guarantee the safety of the dentist, the organization of the updated dental record containing the correct information and signatures of the patient or his legal guardian, in addition to the documentation of the treatment steps, with protocol notes, archiving of complementary exams and The well-formulated ICF are essential if the patient comes to file a lawsuit against the dentist, in cases where interurrences such as file fractures occurred during endodontic treatment.

2. Civil and Criminal Liability of the Dentist

The issue of legal liability of health professionals generates intense debate both in the academic field and in forensic practice. The specialized doctrine divides civil liability into contractual and non-contractual. Despite the existence of criticism of this division, for the purposes of the discussion brought about in the present work, we must stick to extra-contractual liability and, especially, that based on tort. An illicit act is one that is performed in a manner contrary to the current legal order. This act violates rights and causes damage, generating civil liability (TARTUCE, 2016).

The Civil Liability Institute is one of the oldest in the legal system and has its origins in Roman Law, however it has undergone enormous transformations over the centuries, but always maintaining its essence of recovering the damage experienced by victims (ROCHA; MARQUES, 2016).

The Civil Code provides that “anyone who, through voluntary action or omission, negligence or recklessness, violates a right and causes harm to others, even if exclusively moral, commits an illicit act” (BRASIL, 2002). That is, the action or omission that violates a third party's right and causes damage, even if not voluntary and if negligence or recklessness is verified, generates civil liability and, consequently, the duty to indemnify.

It turns out that the relationship between patients and health professionals, as a rule, can and should be viewed from another perspective. This is because the Consumer Defense Code (CDC) regulates relationships between consumers and suppliers of products and services, classifying it as a consumer relationship. This law defines a consumer as that person, natural or legal, who acquires or uses a product or, in this case, a service as the final recipient. Likewise, the CDC provides that a supplier is one who, among others, performs service provision

activities, considering as such any activity provided in the market for remuneration (BRASIL, 1990). It is clear, therefore, that the relationship between patient and dentist is, as a rule, a relationship of consumption. This observation remains important given that there are specific rules on civil liability in the Consumer Defense Code.

The CDC establishes, in consumer relations, the strict liability of the supplier. That is, in order for liability to be set, unlike what is provided for in the Civil Code, it does not matter whether there is intent, fault or even negligence and malpractice. The existence of a causal link is sufficient for liability to exist. In practice, the supplier is liable for the damage caused even if there is no fault and has adopted all possible procedures to avoid the damage, hence the name objective liability. This option by the legislator considered the fact that the exercise of economic activity results in the assumption of risks inherent to the activity itself, with the supplier having to bear the damage caused by it (NUNES, 2012).

The law even expressly provides for what the legislator preferred to call the service fact, bringing the idea of events or even accidents caused by the provision of the service to the consumer (BRASIL, 1990).

Therefore, it is concluded that the actions or omissions of the service provider that imply in the fact of consumption that generate damage imply strict liability, without the need to prove guilt for there to be a duty to indemnify. However, in the same way that the CDC provides for strict liability as a rule, the consumerist diploma opens an important exception applicable to the present study: the liability of liberal professionals. In your article 14, § 4º, the Consumer Defense Code expressly conditions the liability of self-employed professionals to the existence of fault, unlike other service and product providers. These professionals then begin to respond in a subjective manner, requiring proof of intent or fault, despite all other provisions of the CDC applicable to the patient-dentist surgeon relationship.

Nunes (2012) highlights those liberal professionals are those endowed with professional autonomy, with decisions made on their own and without subordination. The reasons behind the legislator's intention to exempt the liberal professional from the strict liability rule in the CDC are diverse. The same author, among other reasons, clarifies that the relationship established with liberal professionals, although it is a consumer relationship, is a relationship of trust. Also, the activities performed by these professionals, including dentists in this group, are, as a rule, middle activities and not end activities. That is, in most cases, the liberal professional does not guarantee the result of his actions. There is no way for the health professional to guarantee, with absolute certainty, the cure of a certain disease to which the

patient is affected, despite it being necessary for the patient to use all possible means to achieve the best result. However, it is certain that there are exceptions, including in the dental field. However, it is up to the professional to exercise his/her profession with prudence and expertise, and one that is related to the service provided and that does not depend on any other circumstance for it to be effectively performed can be considered as core activity.

So, for example, if a dentist examines the radiograph he has just taken of his client's dental arch and diagnoses that the tooth has to be extracted, due to an insoluble problem that exists there, and decides to extract it, and then it is verified from a correct examination carried out by another dentist that the tooth should not have been extracted, this is a defect in the provision of the service, which is typically of the end and not of the means. The end-service was the radiography examination and the decision to extract the tooth. It is very different from the dentist who correctly diagnoses by examining the X-ray that he must extract the tooth — end-activity — and, later, the client ends up having complications in the gum at the site of the extracted tooth (middle activity, whose result could not be guaranteed) (Nunes, 2012, p. 407)

However, it cannot be concluded that, since the activity carried out by the liberal professional is an end and not a means, he is objectively liable for the damages caused. On the contrary, the Consumer Defense Code makes no distinction, clearly establishing that these professionals are only liable in the event of intent or fault. Thus, the type of liability applicable to the liberal professional is subjective liability, regardless of whether he performs an end or means activity (NUNES, 2012).

Another aspect that deserves attention regarding the liability of the liberal professional is the fact that, although, as we have seen, there will be a duty to indemnify only if malice or guilt is proven, the burden of proof will not necessarily fall on the consumer. Strictly speaking, the burden of proof rests with the claimant. Thus, in the case of damage caused by the liberal professional, it would be up to the consumer to prove both the damage and its causal link between it and the service provided, as well as the fault (negligence or malpractice) of the service provider. It so happens that the Consumer Defense Code itself provides for the possibility of reversing the burden of proof in favor of the consumer. In your article 6º, incised VIII, the law allows that, at the judge's discretion, the duty to prove becomes the responsibility of the professional and not of the consumer, in case there is verisimilitude of the allegations and hyposufficiency, understood as technical or informative lack of knowledge on the part of the consumer (NUNES, 2012).

Specifically, regarding the doctor-patient relationship, but also applicable to the dentist, Santos & Pacheco (2020) conclude that, based on the interpretation of the current

legislation, it is possible to invert the evidence in the case of damages caused to patients, taking into account into account, especially the clear difficulties on the part of the consumer in producing medical evidence that demonstrates the professional's guilt.

However, the reversal of the burden of proof, by itself, does not remove the need to demonstrate, in a concrete way, the professional's guilt in the procedure. Regarding the fracture of endodontic files, the Court of Justice of the State of São Paulo has already decided that it is essential to demonstrate the professional's culpable conduct, in addition to the causal link between the fracture of the file and the damage experienced by the patient, denying the right to compensation (SÃO PAULO, 2018). On another occasion, the same court understood that the expert report prepared for the case was clear in the sense that the fracture of endodontic files is inherent to the risk of execution, being common in the professional environment of the dentist, classifying the fact as a fortuitous case (SÃO PAULO, 2016). In the same sense, in a more recent judgment, the Court of Justice of Rio de Janeiro held that there was no duty to indemnify in the event of fracture of an endodontic file, having considered the expert opinion in the sense that any pain or discomfort reported by the patient is a consequence of the surgical procedure itself and not necessarily of the fractured file (RIO DE JANEIRO, 2021). On the contrary, the Court of Justice of Minas Gerais, except for most of the jurisprudence, decided that a fragment of file left in the root of the patient's tooth can be considered malpractice, and the dentist should be liable for the damages suffered (MINAS GERAIS, 2017).

It is important to emphasize that, ultimately, the discussion about the responsibility of the health professional in their relationship with the patient necessarily involves one of the dearest human rights for our legal system, namely, the right to health. According to Sturza & Lucion:

Concern about health has always been a topic present in social debate since the dawn of civilization; what changes over time is the concept and positivization of health, always linked to factors that prevail at each time, whether political, social, economic, or sociological. This concern is largely since health is a topic of common interest: all human beings depend on the preservation of their health for the survival and dignity of life.

Although the concern with health is a subject that has always been in vogue in the scale of social concerns, its affirmation as a right and its universal recognition is a modern fact. Thus, despite health being added to the list of human rights, it is essential to become aware of the idea of human rights to understand the right to health (STURZA; LUCION, 2021, p. 9-10).

As for the criminal liability of the dentist, although this can be observed independently of the determination of civil liability, it is certain that the requirements for it to be configured

are more restricted. Most of the specialized doctrine understands crime as being the typical, unlawful (or illicit) and culpable fact. Part of the doctrine understands that it is enough for the fact to be typical and unlawful to be considered a crime. Thus, adopting the second current, the agent's conduct must be provided for in some (typical) criminal type and not be a conduct that excludes illegality, that is, expressly foreseen as being lawful (legitimate defense, state of necessity, strict compliance with the law). of legal duty, among others). Still, it is certain that, as a rule, it is necessary for the agent to act with intent, that is, with the will to carry out the actions provided for in the criminal type. Exceptionally, the law may provide for crimes in which the existence of guilt is sufficient for them to be characterized, which is understood as negligence, imprudence, or malpractice (ESTEFAM, 2018).

Applying these concepts to the present work, in the case of fractures of endodontic files, the criminal responsibility of the dentist would only be possible, first, if the conduct is perfectly shaped to some criminal type provided for in the legislation. In an exercise of interpretation of the possible consequences, it can be concluded that the most likely crime would be that of bodily harm, provided for in article 129 of the Penal Code, which also provides for culpable conduct in its paragraph 6° (BRASIL, 1940).

Thus, to characterize the dentist's civil liability resulting from the fracture of endodontic files, it is necessary to characterize the intent (will) or guilt (negligence or recklessness), considering the subjective responsibility of professionals in the context of relationships of consumption. However, it is possible that this same professional bears the burden of proof, in cases of verisimilitude of the consumer's claims added to his technical insufficiency.

On the other hand, criminal liability, more restricted, will occur in the cases of criminal types expressly provided for in the legislation (typicality), such as the crime of bodily harm, as well as in the existence of unlawfulness (or illegality) of the professional's conduct. In the specific case of bodily injury, it is certain that there is the possibility of conviction for fault, that is, without the need for willful misconduct on the part of the professional, with the finding of negligence, recklessness and malpractice that caused the injury to the patient sufficing.

Conclusion

Fracture of endodontic files is a recurrent risk of endodontic treatment, which can be caused by technical failure or defects in the material of choice. Based on the ethical precepts that govern the dental activity, the professional must present the knowledge to perform the procedures, as well as continuous improvement in order to provide greater efficiency and quality in the exercise of their activities. In cases where there was a fracture of the instrument, the communication of the patient is essential, as well as the explanation of risk and solutions.

As for civil liability, it can be said that it is categorized as subjective, so that the characterization of intent or fault is necessary. Despite this, it is possible to apply the Consumer Defense Code in favor of the patient who felt injured, so that it may be possible, in the analysis of the concrete case, to reverse the burden of proof. In this case, the dentist will have the duty to prove the inexistence of guilt or willful misconduct in his professional performance.

In the criminal sphere, although any conviction of the professional is shown to be independent of civil liability, it is certain that the criteria for the crime to be configured are more restricted. In addition to the verbs that characterize the crime, it is necessary for the dentist to act with intent or guilt, if the criminal type so provides, the latter being configured in the existence of negligence, imprudence, or malpractice on the part of the professional.

Based on the above, we conclude that the professional must perform endodontic treatment with scientific and practical rigor, presenting knowledge not only of their techniques and instruments, but of the responsibility to which they respond in the practice of their profession.

Referências

ALMEIDA, Casimiro Abreu Possante de; ZIMMERMAN, Rogério Dubosselard; CERVEIRA, Joaquim Guilherme Vilanova; JULIVALDO, Francisco Soriano Nunes. Prontuário odontológico – uma orientação para o cumprimento da exigência contida no inciso VIII do Art. 5º do Código de Ética Odontológica. *Relatório Final*, Conselho Federal de Medicina – CFO, 2004, 39 p. Disponível em: https://www.crors.org.br/wp-content/uploads/2018/07/www.crors.org.brmodelo_prontuario_odontologico_cfo.pdf.

BJØRNDAL, Lars; REIT, Claes. Endodontic malpractice claims in Denmark 1995-2004. *International endodontic journal*, v. 41, n. 12, p. 1059-1065, 2008. Disponível em: <https://onlinelibrary.wiley.com/doi/full/10.1111/j.1365-2591.2008.01455.x>. Acesso em: 26 de set. de 2021.

BRASIL. *Decreto-Lei nº 2.848, de 7 de dezembro de 1940*. Código Penal. Brasília, Diário Oficial da União, 31 de dez. de 1940.

BRASIL. *Lei nº 8.078, de 11 de setembro de 1990*. Dispõe sobre a proteção do consumidor e dá outras providências. Brasília, Diário Oficial da União, 12 de set. de 1990.

CONSELHO FEDERAL DE ODONTOLOGIA. *Resolução CFO nº 42, de 20 de maio de 2003*. Revoga o Código de Ética Odontológica aprovado pela Resolução CFO-179/91 e aprova outro em substituição, 2003.

DEUS, Gustavo André De *et al.* Analysis of the film thickness of a root canal sealer following three obturation techniques. *Pesquisa Odontológica Brasileira*, v. 17, n. 2, p. 119-125, 2003. DOI: <https://doi.org/10.1590/S1517-74912003000200004>. Disponível em: <https://www.scielo.br/j/pob/a/zdJPtK8mgps5b6NK3LkCf8L/abstract/?lang=en>. Acesso em: 26 de set. de 2021.

DRUKTEINIS, S. *et al.* Shaping ability of BioRace, ProTaper NEXT and Genius nickel-titanium instruments in curved canals of mandibular molars: a MicroCT study. *International Endodontic Journal*, v. 52, n. 1, p. 86-93, 2019. Disponível em: <https://onlinelibrary.wiley.com/doi/full/10.1111/iej.12961>. Acesso em: 26 de set. de 2021.

ESTEFAM, André. *Direito penal: parte geral* (arts. 1º a 120). São Paulo: Saraiva, 7ª ed., 2018, p. 760.

GIVOL, Navot *et al.* Risk management in endodontics. *Journal of endodontics*, v. 36, n. 6, p. 982-984, 2010. Disponível em: <https://www.sciencedirect.com/science/article/pii/S0099239910002797>. Acesso em: 26 de set. de 2021.

GUTMANN, J. L.; GAO, Y. Alteration in the inherent metallic and surface properties of nickel–titanium root canal instruments to enhance performance, durability and safety: a focused review. *International endodontic journal*, v. 45, n. 2, p. 113-128, 2012. Disponível em: <https://onlinelibrary.wiley.com/doi/full/10.1111/j.1365-2591.2011.01957.x>. Acesso em 22 de set. de 2021.

IMURA, Noboru; ZUOLO, Mário Luiz. Procedimentos clínicos em endodontia. In: IMURA, Noboru; ZUOLO, Mário Luiz. *Procedimentos clínicos em endodontia*. São Paulo: Artes Médicas, 1988, p. 288.

JAMLEH, Ahmed *et al.* Endodontic instruments after torsional failure: nanoindentation test. *Scanning: The Journal of Scanning Microscopies*, v. 36, n. 4, p. 437-443, 2014. Disponível em: <https://onlinelibrary.wiley.com/doi/full/10.1002/sca.21139>. Acesso em: 22 de set. de 2021.

KAKAR, Heena *et al.* Informed consent: Corner stone in ethical medical and dental practice. *Journal of family medicine and primary care*, v. 3, n. 1, p. 68, 2014. Disponível em: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4005206/>. Acesso em: 22 de set. de 2021.

LEONARDO, Mário Roberto; LEONARDO, Renato. *Sistemas rotatórios em endodontia: instrumentos de Níquel-Titânio*. São Paulo: Artes Médicas, 2002.

LOPES, Hélio P. *et al.* Comparison of the mechanical properties of rotary instruments made of conventional nickel-titanium wire, M-wire, or nickel-titanium alloy in R-phase. *Journal of endodontics*, v. 39, n. 4, p. 516-520, 2013. Disponível em: <https://www.sciencedirect.com/science/article/pii/S0099239912012095>. Acesso em: 22 de set. de 2021.

MANCA, Raimondo *et al.* A 15 years survey for dental malpractice claims in Rome, Italy. *Journal of forensic and legal medicine*, v. 58, p. 74-77, 2018. DOI: <https://doi.org/10.1016/j.jflm.2018.05.005>. Disponível em: <https://www.sciencedirect.com/science/article/pii/S1752928X18302749>. Acesso em: 22 de set. de 2021.

MINAS GERAIS. Tribunal de Justiça de Minas Gerais. *Acórdão proferido nos autos da Apelação Cível nº 1278459-52.2013.8.13.0024*. Relatora Aparecida Grossi. 17ª Câmara Cível. Data de Julgamento 28 de setembro de 2017. Brasília, Diário Oficial da União, 05 de out. de 2017.

NUNES, Luis Antonio Rizzatto. *Curso de direito do consumidor*. São Paulo: Saraiva, 7 ed., 2012, p. 926.

PEREIRA, Érika Sales Joviano *et al.* Behavior of nickel-titanium instruments manufactured with different thermal treatments. *Journal of endodontics*, v. 41, n. 1, p. 67-71, 2015. Disponível em: <https://www.sciencedirect.com/science/article/pii/S0099239914005627>. Acesso em: 22 de set. de 2021.

PINCHI, Vilma *et al.* Trends in endodontic claims in Italy. *International dental journal*, v. 63, n. 1, p. 43-48, 2013. Disponível em: <https://www.sciencedirect.com/science/article/pii/S002065392033416X>. Acesso em: 29 de set. de 2021.

PRUETT, John P.; CLEMENT, David J.; CARNES JR, David L. Cyclic fatigue testing of nickel-titanium endodontic instruments. *Journal of endodontics*, v. 23, n. 2, p. 77-85, 1997. Disponível em: <https://www.sciencedirect.com/science/article/pii/S0099239997802506>. Acesso em: 22 de set. de 2021.

RAMOS, Carlos Alberto Spironelli; BRAMANTE, Clovis Monteiro. *Endodontia: fundamentos biológicos e clínicos*. São Paulo: Santos, 2001, 259 p.

RIO DE JANEIRO. Tribunal de Justiça do Rio de Janeiro. *Acórdão proferido nos autos da Apelação Cível nº 2183722-52.2011.8.19.0021*. Relatora Elisabete Filizzola Assunção. 2ª Câmara Cível. Data de Julgamento 27 de agosto de 2021. Brasília, Diário Oficial da União. 27 de ago. de 2021.

ROCHA, Leonel Severo; MARQUES, Carlos Alexandre Michaello. A Responsabilidade civil do empregador por acidente de trabalho: reflexões sobre a dignidade humana e o dano

existencial na constitucionalização do direito privado. *Revista Culturas Jurídicas*, v. 3, n. 6, 2016. Disponível em: <https://periodicos.uff.br/culturasjuridicas/article/view/44723>. Acesso em: 26 de set. de 2021.

RODRIGUES, Livia Grazielle *et al.* Screening the use of informed consent forms prior to procedures involving operative dentistry: ethical aspects. *Journal of Dental Research, Dental Clinics, Dental Prospects*, v. 11, n. 1, p. 66, 2017. Disponível em: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5390130/>. Acesso em: 22 de set. de 2021.

SANTOS, Pâmela Azevedo Ferreira dos; PACHECO, Rafaella Ferreira. O instituto do ônus da prova na responsabilidade civil médico/hospitalar. In.: SILVA, Michael César; THIBAU, Vinícius Lott (Org.). *Responsabilidade Civil: Diálogos entre o direito processual e o direito privado*. Belo Horizonte: Escola Superior Dom Helder, 2020, p. 131-143. Disponível em: <https://domhelder.edu.br/wp-content/uploads/2020/12/Responsabilidade-Civil-di%C3%A1logos-entre-o-direito-processual-e-o-direito-privado.pdf>. Acesso em: 22 de set. de 2021.

SÃO PAULO. Tribunal de Justiça do Estado de São Paulo. *Acórdão proferido nos autos da Apelação Cível nº 1007515-64.2016.8.26.0566*. Relator Rodolfo Pellizari. 6ª Câmara de Direito Privado. Julgada em 30 de maio de 2018. Brasília, Diário Oficial da União, 30 de maio de 2018.

SÃO PAULO. Tribunal de Justiça do Estado de São Paulo. *Acórdão proferido nos autos da Apelação Cível nº 0035520-53.2012.8.26.0405*. Relator José Joaquim dos Santos. 2ª Câmara de Direito Privado. Julgada em 17 de maio de 2016. Brasília, Diário Oficial da União, 17 de maio de 2016.

SATTAPAN, Boonrat *et al.* Defects in rotary nickel-titanium files after clinical use. *Journal of endodontics*, v. 26, n. 3, p. 161-165, 2000. Disponível em: <https://www.sciencedirect.com/science/article/pii/S0099239912012095>. Acesso em: 22 de set. de 2021.

SELBST, Alan G. Understanding informed consent and its relationship to the incidence of adverse treatment events in conventional endodontic therapy. *Journal of endodontics*, v. 16, n.

8, p. 387-390, 1990. Disponível em: <https://www.sciencedirect.com/science/article/pii/S0099239906819114>. Acesso em: 22 de set. de 2021.

STURZA, Janaína Machado; LUCION, Maria Cristina Schneider. Retornando ao passado para compreender o presente: A trajetória de reconhecimento da saúde como direito e importante elemento de cidadania e inclusão social. *Revista Culturas Jurídicas*, v. 08, 2021, p. 1-27. Disponível em: <https://periodicos.uff.br/culturasjuridicas/article/view/45395/29999>. Acesso em: 25 de abr. de 2022.

TARTUCE, Flávio. *Manual de direito civil*. São Paulo: Método, 2012.

YARED, G. M.; KULKARNI, G. K. Failure of Profile Ni-Ti instruments used by an inexperienced operator under access limitations. *International Endodontic Journal*, v. 35, n. 6, p. 536-541, 2002. Disponível em: <https://europepmc.org/article/med/12190911>. Acesso em: 22 de set. de 2021.