The Role of X-ray in Diagnoses of Probably Risks Before and After Tooth Removed

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ABSTRACT
X-rays play an important role in diagnosing the various pathological conditions that the patient suffers from with a defect that has occurred in the teeth for any reason. In our current research the radiographic images referred to different types of cases represented by (the pain generated because of the severe punch in the place of the tooth when it is removed, complication pain in mandibular due to inflammation arising before the removal of the tooth, increased tooth pain due to its breaking into small pieces, and not completely removing it from its place, pain arising from a wound in the place of the removed tooth, and in the gums, pain that occurs because the patient does not follow the necessary preventive instructions, the emerging pain when the tooth next to the tooth to be removed (wrongly) was removed), as the numerous (25, 75, 28, 12, 82, 32) respectively, documented through the periodic time between (march\2020 and march\2021). There were no significant differences between these cases represented by dental and gum problems whose diagnosed, and there risks were detected by using X-rays before and after tooth extraction, and thus it is clear to determine the appropriate treatment to get rid of the seriousness of the condition that was photographed by X-rays.

1. Introduction

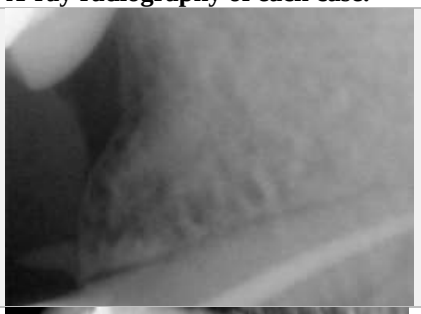
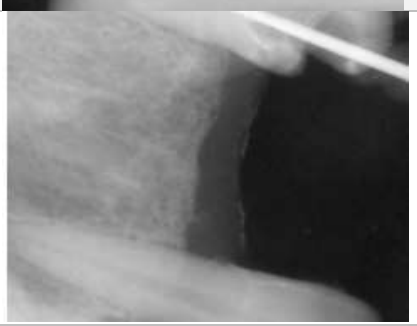
X-rays were discovered by the German scientist (Röntgen in 1895) , and since then, these rays began to take an important and prominent role in various medical and biological fields, as they were used in the diagnosis and treatment of many diseases such as cancers and others. Dental imaging using X-rays gives X-ray images of the entire teeth and jaw bones as well as provides clarity of the surrounding tissues and structures in order to help diagnose problems related to the teeth, mouth and jaw (1). X-rays are considered one of the most important means by which a patient can diagnose the type of dental defect that a patient suffers from. Teeth are like any organ or any part of the human body, which needs the necessary examinations when needed, including x-rays in order to identify any potential problem affecting the health and safety of teeth. Dental x-rays are defined as the images used by the dentist to clarify the exact anatomical parts of the tooth in detail to assess the health status of both the mouth and teeth, as well as the gums. these x-rays are used with a small amount of radiation so that images can be taken from the inside of each of the teeth and gums. Dental caries, also known as (teeth decay), is among the most prevalent chronic infectious dental diseases among humans (society members) throughout their lives (2). It is possible through X-ray images to show all the cavities in the teeth, tumors, and hidden dental structures such as wisdom teeth, or in the event of bone loss that cannot be noticed during a visual examination by the dentist. According to the statistics of the National Health and Nutrition Examination Survey, tooth decay occurs at an estimated rate of (90%) in adults in the United States (3, 4). X-rays can help the dentist determine the type of problems that the teeth and gums suffer from, such as tooth decay and gingivitis, and the rest of the problems that the patient may suffer from in his teeth. About medical tools that are commonly used and very important and necessary for dental health and safety, and their importance is no less important than cleaning teeth. plaque is the simple example of a biofilm that formation on the teeth surfaces, it isn't means a set of bacteria disorganized, but it's a group of metabolically active microorganisms adhered to a surface (5). After the occurrence of a certain dental problem, the formation of caries, which has become a common phenomenon in abundance, or other problems that occur to the teeth, especially those that are accompanied by severe pain suffered by the patient, it is necessary to conduct an X-ray, which is represented by the radiograph that appears by firing a beam of X-rays It penetrates the oral structure at various specific levels before settling on film or radial sensors as it is known. In the x-ray images, all the teeth to be examined appear in a lighter color than the surrounding tissues due to their resistance to the penetration of the rays beam, and in the event that there are any cavities or decay in a specific area

of the teeth, it will appear in the images in a different dark color, and the reason for this is due to the low density of that substance and therefore, it is very necessary to conduct x-rays of the tooth before removing it from its place in the jaw to find out the real problem that led to the pain that the patient suffers from and to treat it, but if the pain remains even after a period of removed of the tooth and its complete removal, here it is necessary to return to the use of x-rays to find out what happened in the jaw or in the tissue surrounding the tooth, or perhaps there are remnants of the removed tooth that left severe infections that the patient suffers from before and after tooth removed.

2. Methodology

The data was collected and documented according to radiological images taken using X-rays for each type of case that shows the problem in the tooth before and after its removal for the time period between (March\ 2020 and March\ 2021).

Table (1): to show the type of pain before and after tooth removed, and X-ray radiography of each case., for the periodic time from (March 2020 to March 2021):

No.	Type of pain before and after tooth removed.	X-ray radiography of each case.
1-	The pain generated because of the severe punch in the place of the tooth when it is removed. (25 cases).	
2-	Complication pain in mandibular due to inflammation arising before the removal of the tooth. (75 cases).	
3-	Increased tooth pain due to its breaking into small pieces, and not completely removing it from its place. (28 cases).	
4-	Pain arising from a wound in the place of the removed tooth, and in the gums. (12 cases).	

5-	Pain that occurs because the patient does not follow the necessary preventive instructions. (82 cases).	
6-	The emerging pain when the tooth next to the tooth to be removed (wrongly) was removed. (32 cases).	

3. Results and discussion

Table (2): to show the statistical measurements, means, and standard error of all a set of cases.

Descriptives				
			Statistic	Std. Error
T	Mean		42.3333	11.79454
	95% Confidence Interval for Mean	Lower Bound	12.0145	
		Upper Bound	72.6522	
	5% Trimmed Mean		41.8148	
	Median		30.0000	
	Variance		834.667	
	Std. Deviation		28.89060	
	Minimum		12.00	
	Maximum		82.00	
	Range		70.00	
	Interquartile Range		55.00	
	Skewness		.748	.845
	Kurtosis		-1.623-	1.741

Table (3): to show the tests of normality to ensure that there is no significant differences of all a set of cases.

Tests of Normality						
	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
T	.306	6	.082	.845	6	.144
a. Lilliefors Significance Correction						

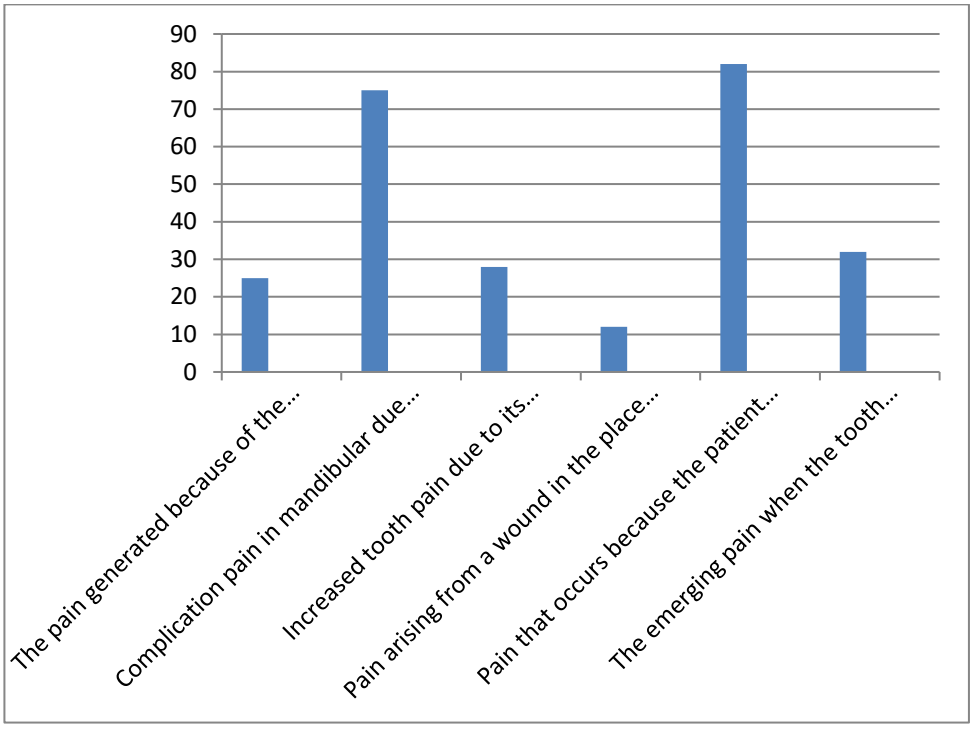


Figure (1): to show the number of cases according to the type of defect that occurred in the teeth and the surrounding tissue, which were photographed by x-rays, for the periodic time from (March 2020 to March 2021).

Discussion

X-rays are one of the most important diagnostic methods that are used in dentistry, as they help to detect many diseases and the extent of the potential level of risk and to establish an accurate diagnosis of various cases, which helps him to develop a treatment plan for the patient to recover. It helps to detect whether there is (necrosis in the tooth, if the bone level of the tooth is abnormal, the lesion reaches the root of the tooth, the shape and direction of the tooth, the relationship of the upper jaw to the lower jaw and the relationship of the upper teeth to the lower one, the presence of impacted teeth, and other cases that must be disclosed). Digital radiography often uses a sensor placed inside the mouth instead of the traditional radiographic film, in addition to using other additional advantages that include the lowest possible radiation dose, which gives a high quality image, and a short processing time when enlarging and storing the digital image (6). The resolution of the image is mainly affected by its magnification, errors from radiographic analysis, defect location such as apical foramen, root curvature, and the two-dimensional image often obscured by surrounding anatomical structures (7). These cases, which were included in our study and were photographed according to what is shown in **table no. 1**, are related to the removal of the tooth, since its presence constitutes a risk that causes a big problem that affects the health of the patient who suffers from it and who cannot remain without treatment. Each type of these cases is represented by a different problem from the other, but they are all related to the tooth before or after its removal. The details of the statistical study show that the standard error is estimated at (11.79454) out of the total number of cases that were studied, and it is estimated at less than (5%) , this indicates that the study includes good and acceptable statistics for comparison, and what confirms this is that there are no significant differences between any of the cases described, note **table no. 2, 3.** Dentists often prefer to use radiographs in order to find the type of problem in the hidden tooth structure or in the event of bone loss, as well as in detecting malignant or benign masses and cavities that cannot be examined through visual examination. There are many problems with the mouth and teeth before and after tooth removal, but in our study only the cases shown in figure no.1 were highlighted. The electrical characterizations in the structure of teeth measured and its position must be determined (8). One of the most common reasons for tooth decay is the damage to the tooth as a result of its fracture or decay. The most important reasons that require

tooth extraction are:

- Tooth decay or severe inflammation: Despite the recent decline in the number of tooth decay cases worldwide, caries remains the main reason for the extraction of all teeth (9).
- When extra teeth arise that impede the normal growth of other teeth.
- Severe periodontal disease which may have an effect on dental tissues.
- In some cases : related to the installation of orthodontic appliances in the mouth.
- Temporary or permanent supernumerary teeth that cause cosmetic or functional defects, or when they impede the eruption of the permanent tooth.
- Temporary teeth in children fall behind their schedule, as they are a reason for the permanent teeth not to erupt (10-12).
- Teeth within the fracture line.
- Teeth affected for various reasons.
- Deliberate extraction of teeth without the necessary medical need, as in the case of horrific forms resulting from physical torture.
- In the past, it was common for the front teeth to be extracted for psychiatric patients who were in mental health hospitals and who were known to bite a lot (13-18).

The buried third molar, although most dentists perform the extraction of the buried third molar even if it does not show any symptoms, but the (American and British international) medical bodies recently recommend doctors not to perform this operation unless there is evidence of a disease Certain in the buried tooth or next to it (19-21). The American Public Health Association has said against preventive third molar extractions because of the high number of injuries that result from unnecessary extractions of third molars (wisdom teeth) (22-25). So, through our study, it became clear to us that the extraction of the tooth may be for an inevitable reason that must be eliminated because it is accompanied by pain and any of the causes that result in damage, or there may not be a necessary reason to remove the tooth, but the use of detection of fine details by X-ray is considered necessary from In order to be sure of knowing the type of defect in the tooth or gums

4. Conclusion and future scope

We conclude from our study that the use of x-rays before or after tooth removal is to clarify the type of the main problem that is associated with the tooth and gums, whether the problem was caused by the role of microorganisms, food, biological, chemical, physical, or even a medical error that led to a certain defect. Thus, the real problem can be known, which leads to giving the appropriate treatment to the patient, as well as knowing the extent to which each case is related to the other.

Reference

[1] Dr. Bernard Friedland. Harvard School of Dental Medicine, 1dec07. A copy preserved March 04, 2016 on the Wayback Machine website.

[2] R. H. Selwitz, A. I. Ismail, and N. B. Pitts, “Dental caries,” The Lancet, vol. 369, no. 9555, pp. 51–59, 2007.

[3] P. Amrollahi, B. Shah, A. Seifi, and L. Tayebi, “Recent advancements in regenerative dentistry: A review,” Materials Science and Engineering: C, vol. 69, pp. 1383–1390, 2016.

[4] E. D. Beltr´an-Aguilar, L. K. Barker, M. T. Canto, B. A. Dye, B. F. Gooch, S. O. Griffin, J. Hyman, F. Jaramillo, A. Kingman, R. Nowjack-Raymer et al., “Surveillance for dental caries, dental sealants, tooth retention, edentulism, and enamel fluorosis; united states, 1988-1994 and 1999-2002,” 2005.

[5] Marsh, P. D. “Dental plaque as a microbial biofi lm.” *Caries research* 38.3 (2004): 204-211.

[6] Iqbal Z, Memnon RA. Comparison between radiographic and electronic working length determination in root canal treatment in vivo study. Isra Med J 2013; 5:41

[7] Cianconi L, Angotti V. Accuracy of three electronic apex locator compared with digital radiography: An ex vivo study. J Endod 2010;36:2003-07. *https://doi.org/10.1016/j.joen.2010.08.036*

[8] Nekoofar , The Fundamental Operating Principles of Electronic Root Canal Length Measuring Devices. Int Endod J. 2006; 39: 595-609.

[9] Zadik Y, Sandler V, Bechor R, Salehrabi R (August 2008). "Analysis of factors related to extraction of endodontically treated teeth". Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 106 (5): e31. doi:10.1016/j.tripleo.2008.06.017. PMID 18718782.

[10] Muhannad M, 2016. “Mernar Magazine.” Archived from the original on September 14, 2016.

[11] Zadik Y, Levin L (April 2006). "[Decision making of Hebrew University and Tel Aviv University Dental Schools graduates in every day dentistry--is there a difference?]". Refuat Hapeh Vehashinayim (in Hebrew). 23 (2): 19–23, 65. PMID 16886872.

[12] Zadik Y, Levin L (April 2007). “Decision making of Israeli, East European, and South American dental school graduates in third molar surgery: is there a difference?” J. Oral Maxillofacial. Surg. 65 (4): 658–62. doi:10.1016/j.joms.2006.09.002. PMID 17368360. Archived from the original on 2020-02-26.

[13] Morant H (April 200). "NICE issues guidelines on wisdom teeth". British Medical Journal. 320 (7239): 890A. doi:10.1136/bmj.320.7239.890. PMC 1117823. PMID 10741982. Archived from the original on February 8, 2009. Viewed on 08-08-2008.

[14] Opposition to Prophylactic Removal of Third Molars (Wisdom Teeth)". Policy Statement Database. American Public Health Association. October 28, 2008. Archived from the original on July 26, 2014. Retrieved February 24, 2010.

[15] C. Thomas Gualtieri. Brain injury and mental retardation: psychopharmacology and neuropsychiatry. Archived from the original on 2014-06-29.

[16] MARGIANA, Ria, et al. Functions and therapeutic interventions of non-coding RNAs associated with TLR signaling pathway in atherosclerosis. *Cellular Signalling*, 2022, 100: 110471.

[17] ARIF, Anam, et al. The functions and molecular mechanisms of Tribbles homolog 3 (TRIB3) implicated in the pathophysiology of cancer. *International Immunopharmacology*, 2023, 114: 109581.

[18] LEI, Zimeng, et al. Detection of abemaciclib, an anti-breast cancer agent, using a new electrochemical DNA biosensor. *Frontiers in Chemistry*, 2022, 10: 980162.

[19] LAFTA, Holya A., et al. Tumor-Associated Macrophages (TAMs) in Cancer Resistance; Modula-tion by Natural Products. *Current topics in medicinal chemistry*, 2023.

[20] HJAZI, Ahmed, et al. The pathological role of CXC chemokine receptor type 4 (CXCR4) in colorectal cancer (CRC) progression; special focus on molecular mechanisms and possible therapeutics. *Pathology-Research and Practice*, 2023, 154616.

[21] HJAZI, Ahmed, et al. Unraveling the Impact of 27-Hydroxycholesterol in Autoimmune Diseases: Exploring Promising Therapeutic Approaches. *Pathology-Research and Practice*, 2023, 154737.

[22] GUPTA, Jitendra, et al. Double-edged sword role of miRNA-633 and miRNA-181 in human cancers. *Pathology-Research and Practice*, 2023, 154701.

[23] SANE, Shahryar, et al. Investigating the effect of pregabalin on postoperative pain in non-emergency craniotomy. *Clinical Neurology and Neurosurgery*, 2023, 226: 107599.

[24] AL-HAWARY, S. I. S., et al. Tunneling induced swapping of orbital angular momentum in a quantum dot molecule. *Laser Physics*, 2023, 33.9: 096001.

[25] Muzammil Khursheed, Kzar Mazin Hadi, Mohammed Faraj, et al., Methanol extract of Iraqi Kurdistan Region Daphne mucronata as a potent source of antioxidant, antimicrobial, and anticancer agents for the synthesis of novel and bioactive polyvinylpyrrolidone nanofibers. JOURNAL=Frontiers in Chemistry. 2023,Vol. 11, ISSN=2296-2646. DOI=10.3389/fchem.2023.1287870