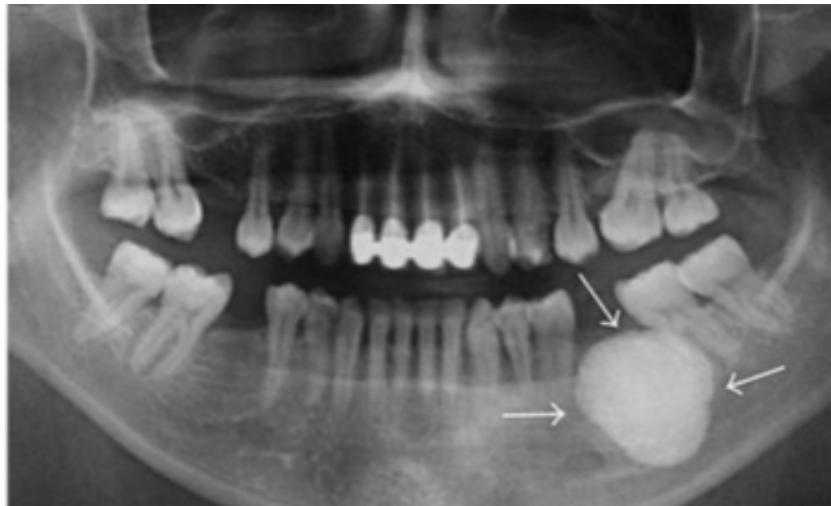


Franchesca Sanchez

December 18, 2017

Relationships Between Dental X-rays and Treatment



*If I can stop one heart from breaking,
“ I shall not live in vain;
If I can ease one life the aching,
or cool one pain,
Or help one fainting robin
Unto his nest again,
I shall not live in vain.”*

Emily Dickinson

I want to help people improve their lifestyle. My desire as a dental professional is to make a positive impact in peoples' lives. I strive to give my aid to those who are suffering to ease their pain. Health professionals have to be very cautious in the work environment because we could put patients' health at risk. Patients have different perspectives regarding dental x-rays based on their health literacy, cultural, and socioeconomic backgrounds. As a health professional, I seek to ease patients' concerns about x-rays exposure as well as informing patients about the importance of taking the prescribed radiographs.

Dental x-rays subject has raised many concerns over the years. William Rollins claims on his article "X-Light Kills" published in 1901, he mentions that x-ray light could be produced by electricity when no X-light was present. He shows that when electricity is excluded, death can be produced by X-light without burning. Rollins believed that the x-ray light was harmful. To demonstrate his theory, he used a male guinea pig and placed in a ground faraday chamber and exposed to the source of light two hours daily. The male guinea pig died on the eleventh day. The experiment was repeated on another male guinea pig and again died on the eighth day. There were no burns presented in either case. Rollins felt it was important to have this article printed in a medical journal instead of physical journal. Initially, "because the experiments separated the effects of electricity from those of X-light". Then, "to call attention to need of

using this power in new growths in the interior of the body”. Lastly, “to give an opportunity to repeat three precautions advised.” Rollins also emphasized that physicians using fluoroscope should wear glasses since the X-light is not visible. The X-light tube should remain in a box from which no x-ray light can escape. The patient should be covered with a non-radiable material, exposing the necessary area.

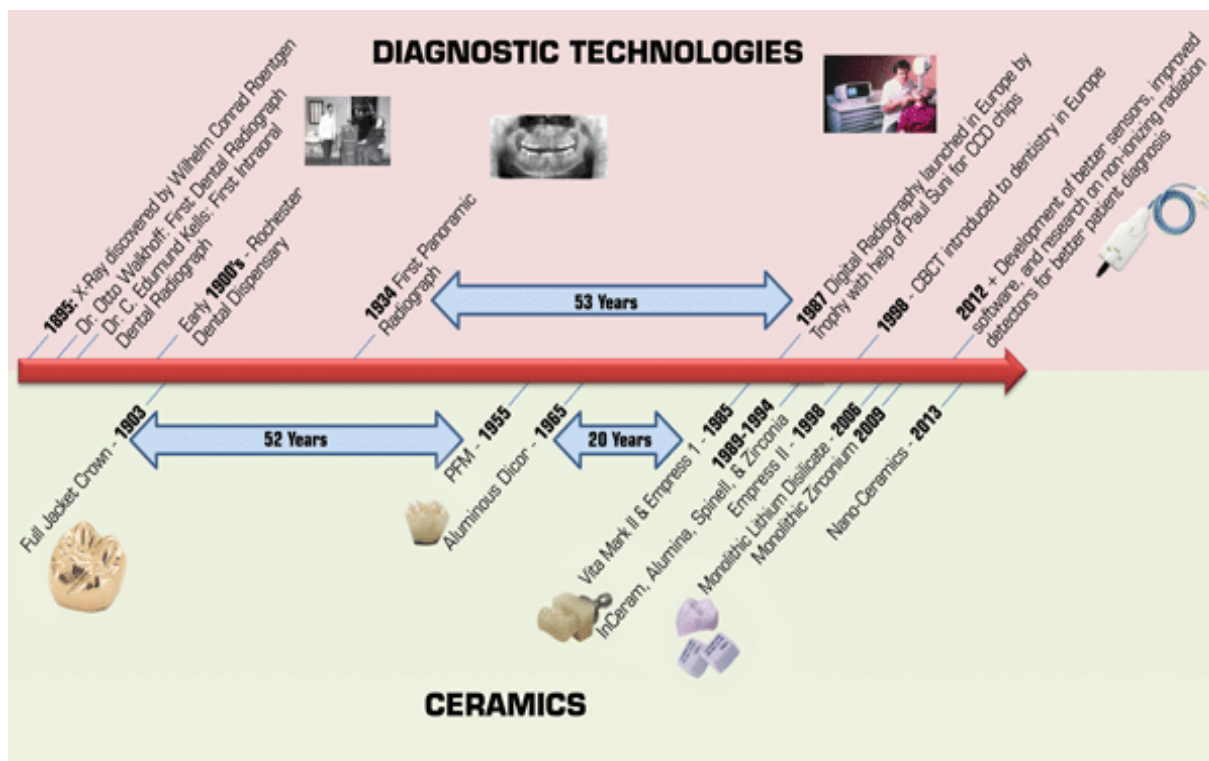
John Dennis published, “The Roentgen Energy To-Day,” on The Dental Cosmos, volume 41, in 1899. He claims that, no injury results from its Roentgen Ray during proper use. He emphasized that a healthcare provider should not be allowed to conduct an x-ray examination without obtaining a license. The act of conducting an examination without obtaining a license should be subjected to punishment for a misdemeanor. Dennis strongly believed that when users were educated about the x-ray device, they will truly understand the value of managing an x-ray machine. Every state follows different regulations regarding dental x-ray management. According to Dental Assistant National Board, there is no x-ray license requirements for dental assistants in the state of New York. Dental assistants may legally operate routine oral radiography and panoramic radiographic dental equipment under the supervision of a licensed dentist in the state of NY. They can operate cone beam computed tomography (CBCT) equipment under the direct supervision of a dentist after demonstrating satisfactory completion of a training program approved by the Department of Health or provided by the manufacturer. A dental assistant in the state of New Jersey must be licensed as a Dental Radiologic Technologist (DRT) by the New Jersey Radiologic Technology Board of Examiners.

Dental assistant A, is a 30-year-old female from Dominican Republic. She has been a resident of Yonkers, NY for 13 years. She is currently married and has three boys. She has been a dental assistant for 12 years in Yonkers, NY. She is grateful that her dentist gave her the

opportunity and trained her on how to take dental x-rays. She only learned the technical aspect of taking dental x-rays due to working on a fast-paced environment. Unfortunately, she did not learn the concept behind dental x-rays. She expressed that one day she forgot to place the lead apron on the patient. She assumed that it was not hazardous because she was only taking one x-ray. A health professional must follow all regulations in order to deliver adequate patient care. Dental professionals' objective is to deliver to the patient the least possible amount of radiation to obtain the highest diagnostic value. We must aim to achieve occupational radiation exposure as close to zero as possible. To achieve these objectives, we must fully understand the subjects of radiation biology and protection. The dental professionals and patients will feel at ease in an environment which diagnostic radiation is used for proper diagnostic purpose (Frommer 69). The scattered radiation that results from the interaction of the useful beam and the patient's face is a form of secondary radiation. Secondary radiation, besides being harmful to both patient and operator, degrades the diagnostic image of the film because the scattered rays produce film fog on the radiograph. Operators should not be in the room while the x-ray is being exposed and must remain six feet away from the tube behind a barrier (Frommer 89).

December of 2015, I took my daughter to the dentist for a routine check-up visit. She was 5 years old at the time of her appointment. She did not express any fear at the dentist. Then, the dental assistant started taking radiographs and did not place a lead apron on my daughter. I questioned her about taking radiographs without a lead apron. She replied, "she doesn't need it" because new technology improvements deliver a low dose of dental radiation. I was not happy with her response and I decided to switch providers. All patients should be covered with a lead apron and wear a thyroid collar for every intraoral exposure. Children are more vulnerable than adults to radiation. This rule holds true regardless of the patient's age or the number of films

exposed. The use of lead aprons and thyroid collars can reduce radiation to the thyroid and gonads by up to 94% (Frommer 94).



*“It’s such a little thing to weep,
So short a thing to sigh;
And yet by trades the size of these
We men and women die.”*

Emily Dickinson

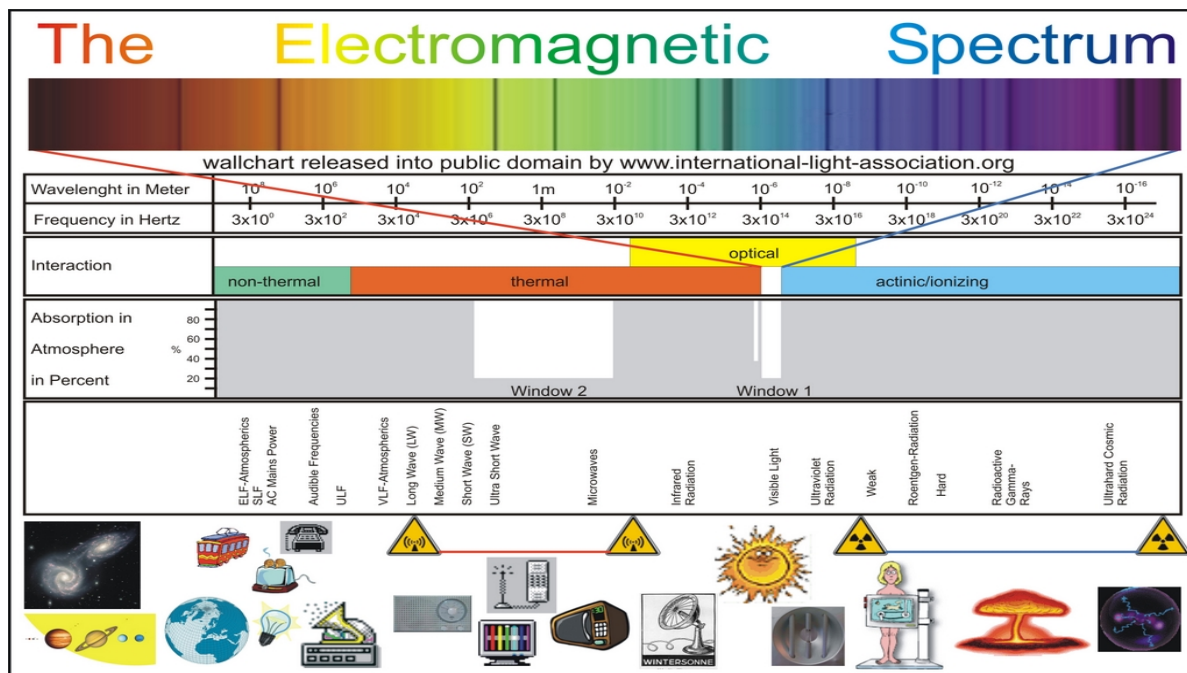
The discovery of x-rays has been a great tool in medicine. Many health professionals devoted their lives in the process of the innovational discovery of dental x-rays. Dental radiographs had advanced and improved its quality since it was invented in 1895. Although, there has been advancements of digital x-ray on reducing the amount of radiation delivery. There are many misconceptions about dental x-rays. Some patients fear that radiation from dental x-rays and believe it is harmful.

Dr. Oz Claimed that people who have more than five x-rays a year have a greater risk of developing thyroid cancer. There has been a lot of controversy about the safety of dental radiation. Wilhelm Roentgen discovered x-rays in 1895, and 14 days after his discovery Friedrich Otto Walkhoff took the first dental radiograph. Exposure of x-rays was reduced to milliseconds, and changed from analogue to digital. There has been a lot of improvements since the discovery of dental x-rays. Presently, digital dental radiographs reduced exposure amount of radiation delivered to the patients and films are available to view immediately.

In 1896, Otto Walkhoff and Fritz Giesel opened the first dental roentgenological laboratory, providing practitioners with images of the head. Walkhoff succeeded on taking extra oral radiographs with an exposure time of 30 min. Subsequently, he started noticing that patients he irradiated started developing some cancer signs, for instance, losing hair on the side of the head. In 1927, Fritz Giesel died of metastatic carcinoma triggered by large amounts of radiation exposure on his hands.

In 1896, electrical review reported that Dr. HD Hawks, a graduate of Columbia College, exhibited a powerful x-ray unit in New York. Later, He noticed a drying of the skin, his hand appeared to be burn and began to swell. Then, two weeks later his skin was coming off. Dr. H.D. Hawks was able to partially recover after the course of six weeks. Furthermore, GA Frei of Frei and Co., a Boston manufacturer of x-ray tubes, was found that one of employee of the company had an abnormal itching and burning on his left hand. The employee attended during testing of tubes. Frei also experienced itching and burning on his hand. It was concluded that further developments would be carefully monitored. On the beginning of x-ray development many health professionals and patients were affected by the large amount of radiation delivered. Currently, a routine exam which includes 4 bitewings is about 0.005 mSv, which is equivalent to

less than one day of natural background radiation.



The hand of the Lord was upon me, and carried me out in the spirit of the Lord, and set me down in the midst of the valley which was full of bones, And caused me to pass by them round about: and, behold, there were very many in the open valley; and, lo, they were very dry. And he said unto me, Son of man, can these bones live?"

Ezekiel 37:1-3, King James translation

Dr. Oz and third parties' advice about the harms of dental x-rays, are one of factors that contributes to many patients phobic of dental radiation exposure. For health practitioners persuading patients to take dental x-rays is a difficult task when they are afraid. Protecting the patient is our main goal as healthcare professionals. Taking oral radiographs can assist identifying a problem that is not visible by the professionals' naked eye and it will contribute on preventing small issues from arising. Dr. Wartofsky claims that "We've said for years that the amount of radiation from dental x-rays is not enough to cause cancer." It is also considered that

radiation can accumulate over a lifetime on the body tissues, but there is no side effect linked to exposure of radiation over a lifetime. According to American College of Radiology, four checkup X-rays are equivalent to about the same amount of radiation we get in a normal day of sun light.

Goepfert denotes that “the indolent behavior of most differentiated thyroid cancers may have physicians more afraid of potential complication of extensive thyroid treatment than be mindful of cancer itself.” Working as a dental assistant I am fortunate to work around many people. I had the pleasure to work with a kind and devoted hygienist. At 35-years-old she was diagnosed with thyroid disease. She immigrated from Brazil to the United States at the age of twenty and has been working as a hygienist for ten years. During the course of this disease she started losing her hair, and she also experienced pain in neck area. There was no known cause for this growth development and she was recommended surgery. After thyroidectomy surgery was performed she was able to recover in a short period of time. Thyroid cancer cause is unknown and there is no significant source that proves this to be linked to radiation. Dental X-rays are fundamental for identifying any malignancy present in the oral cavity.

“We carry with us the wonders, we seek without us: There is all Africa, and her prodigies in us; we are that bold and adventurous piece of nature, which he that studies, wisely learns in a compendium, what others labour at in a divided piece and endless volume.”

Paul Kalanithi

We are inquisitive about our surroundings in this earth. We live in a world of various phenomenon, diversity, and different opinions. Although, nobody should be criticized against their own believes. I believe technology is an innovating phenomenon and diagnostic x-rays are

fundamental in determining an accurate picture of dental health. On the other hand many people believe dental x-rays are harmful.

According to the article “Occupation and Thyroid Cancer” by Aschebrook, and colleagues a study on group of technologists was conducted from 1983 to the present. The objective was to obtain data on employment history and cancer risk factors. There was estimated risk of thyroid cancer of 1.5%. The risks of thyroid cancer diagnosed before completion of the baseline questionnaire (1983-89) were higher among those who began working in earlier decades. Chances were significantly elevated among those working more than five years prior to 1950. Recently, staff that had worked for resalable amount of years as radiologic technologist were not associated with thyroid cancer.

Many pregnant women evade the dentist because they are afraid that dental procedures could affect the fetus development, especially during the first trimester. There is no evidence of harmful effect of dental radiographs on pregnant women. Pregnant women should maintain frequent visits to the dentist to maintain their oral health. Expectant mothers are at higher risk of periodontal disease due to hormonal changes.

According to the American College of Radiology, dental X-ray as a radiation is safe and it is not strong enough to cause adverse effects on the developing embryo. There is a higher possibility that women with dental disease are at greater risks of having low birth weight infants than those with healthy teeth. Furthermore, maternal smoking and late prenatal care can be associated with low birth weight.

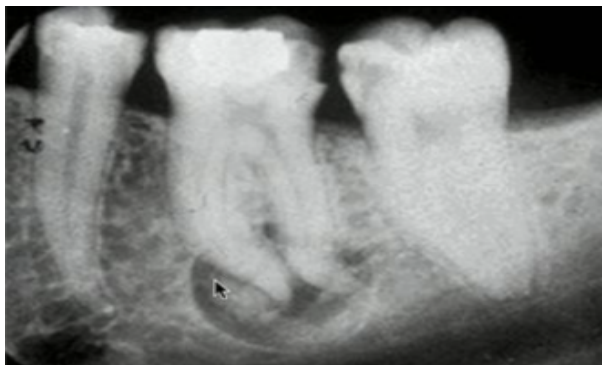
During my first trimester of pregnancy I was presented with a toothache. I was frightened to go to the dentist because I supposed this could lead secondary effects to the fetus. The dentist was helpful on making me feel at ease. He explained that it was essential for me to

visit the dentist every four months. Conducting frequent dental examinations and cleanings will lower the risks of pregnant women developing periodontal disease. Hormonal changes during pregnancy can affect women's oral health and cause changes in the gums and teeth. Many dental and medical associations recognize that dental health during pregnancy is the key to overall health and for the delivery of a healthy baby. The American Congress of Obstetricians and Gynecologists indicates dental x-rays while pregnant are safe. It is essential that woman during gestational period maintain a healthy oral cavity to avoid complications that may worsen from delaying the required dental treatments.

“Already painless dentistry is within your grasp by aid of electricity and simple anesthetics, and now the x-ray more than rivals your exploring mirror, your probe, your most delicate sense of touch, and your keenest powers of hypothetical diagnosis.”

Morton, W. (1896)

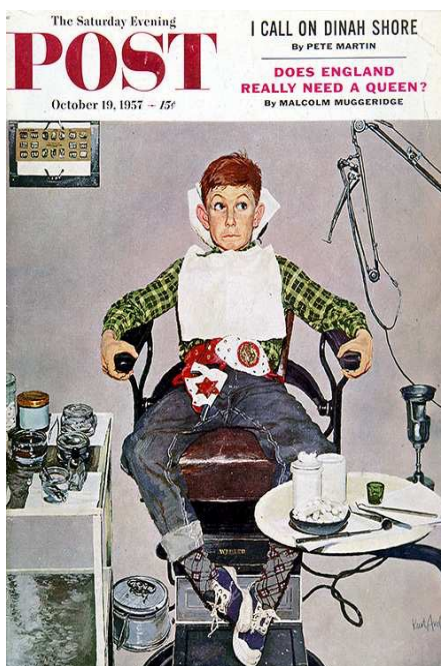
Dental x-ray is an important asset in dentistry to obtain an accurate diagnosis along with the other tools. During the 1950s, x-ray radiation became universal in dentistry and continues to improve. Subsequent to the 1950s, x-ray technology expanded to three dimensional and digital x-rays in dentistry. Dentist depend heavily on dental images to gain access to the parts of the mouth that are not visible by a traditional exam. This fundamental step of the dental exam was not available prior to the introduction of x-ray technology at the end of the nineteenth century. The advantages of using dental radiographs is that dentist can identify immediately the problem that is present and prevent further problems. Once the problem is identified the dentist can move forward conducting the correct treatment for the patient.



Patient A is 68 years old female. She is native from Dominican Republic. This patient reported with Atherosclerosis. “Atherosclerosis is fatty deposits that can clog arteries. These buildups are called plaque. They are made up of cholesterol, fatty substances, cellular waste products, calcium and fibrin, a clotting material in the blood” (American heart association, 2017). She also reported with insomnia. She visited the dentist three years ago and claims that due to taking a daily aspirin her gums tend to bleed after every dental cleaning. She is anxious about visiting the dentist because of her previous dental experiences. She experienced traumatic events at the dentist in Dominican Republic. She was raised in a low-income family household, and she could not afford visiting the dentist. The patient would only visit the dentist when she was experiencing pain. She recalls the first time she visited the dentist in 1960. She was suffering from a toothache. The dentist advised her that the tooth could not be saved and needs to be extracted. At that the time of her dental appointment no dental x-rays were taken. She claimed that the dentist at the time was not friendly and she felt intimidated during her appointment.

She moved to the United States in 2001. She currently resides in Yonkers, New York. She was able to obtain health insurance through Medicaid. She decided to return to the dentist after being absent for many years due to her fears. Unfortunately, many dental problems had

arisen since her last dental visit. After several years she was able to overcome her fear and she felt disappointed that her socioeconomic status and her fears kept her away from the dentist. She felt that x-rays are an essential part of dental exam and they were not reinforced in her home country when she first started visiting the dentist in her home country in the 1960's.



Artist Kurt Ard's image illustrates a patient in a dentist's office in the late 1950s.

***“O Eternal One,
O Graceful and Mighty One,
In thee we rejoice
And the universe has filled
With light”
Naguib (p.146). “Akhenaten.”***

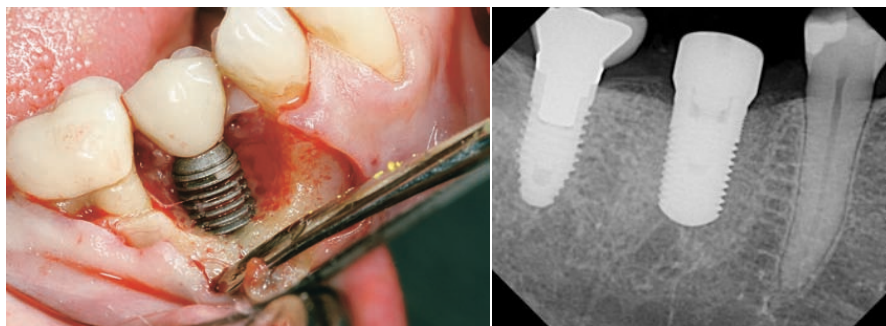
The light the universe offers is eternal. It is also beautiful and immense. The planet is rejoiced with light. In dentistry, we have the invisible light of an x-ray. The phenomenon of x-ray production can be best understood by considering the tungsten atom and the possibilities that arise when a high-speed electron enters its orbit, as it would at the target of a dental x-ray

machine (Frommer 18). The x-ray photons produced at the target in the dental x-ray tube and leave the tube as a divergent beam. The central ray is the x-ray coming from the center of the beam (Frommer 27). Dental radiographs had progressed dynamically since the discovery of x-rays. They are harmless and are presented with higher diagnostic image resolution.

Dental professionals face frequent patient reaction regarding dental x-rays regularly. They find it necessary to explain to the patients the biologic effects of dental x-ray exposure and the diagnostic benefits. A precise dental diagnosis in dentistry cannot be done without the accuracy of diagnostic radiographs. Ionizing radiation produces biological changes in living tissue. The old reply to patients' questions regarding radiation safety that "dental x-rays are safe because the dosage is so small it doesn't matter," no longer satisfies informed healthcare consumers. Dental radiographs are obtained under optimal conditions and when indicated and the diagnostic benefits far outweigh potential risks. According to various sources, cancer can be caused by radiation but it is also caused by smoking, chronic irritation and exposure to certain chemicals (Frommer 78). A full-mouth series is equivalent to seven days of background radiation exposure, and it is compared to 0.150 mSv (15 mrad) (Frommer 111).

In the 4 years that I have been working in the dental field, I have come across many patients who outright refuse to take x-rays believing them not important. For instance, patient B is a 50 years old female. She was born in china and she is now a resident of New York City since 1987. She is a healthy patient with no medical concerns. She works at a bank as a consultant. She did not believe x-rays were an important asset of a dental visit because they take too much time. She claimed that since she has a full mouth of dental implants she did not need to take dental radiographs. I explained to her the benefits of taking radiographs for her oral health and most importantly to monitor the bone level on her implants. Perhaps, she did not see the

importance of dental visits because back in her home country she only visited the dentist when she was in pain. Currently she visits the dentist every 6 months but the doctor recommended her to come every two months due to her condition. During her previous dental visits she refused to take X-rays. The last time she took dental radiographs was in 2005. The dentist stressed that next time she comes to the dentist she will have to take x-rays in order to monitor her bone loss and oral health. This patient was presented with peri-implantitis, an inflammation of soft tissues leading to loss of supporting bone around implants. Peri-implant disease treatments would be determined based on clinical and radiographic assessment. I reinforced oral hygiene instruction and the dentist prescribed a chlorhexidine mouth rinse and systemic antibiotics. According to the severity of the disease, patients might require periodontal surgery. It is crucial to take checkup x-rays for every patient. Especially patients with implants to monitor bone level. This can prevent implant failure which is referred to as peri-implantitis (Weinberg 52).



Radiographs are the light in healthcare that succor health professionals. It assists health professionals on making the correct diagnosis and also improving patients' life style. The dentist is able to see on a radiograph the tip of the roots and bone underneath the gums which are not visible to the naked eye. The manifestation of a cysts and other masses can be diagnosed through an x-ray. Additionally, congenitally missing or impacted teeth such as wisdom teeth are often identified. According to the Academy of general Dentistry(AGD), presence and extent of bone loss due to periodontal disease is easily seen through dental radiographs. Low income

populations experience greater dental problems because of the lack of visits to the dentist. Many patients have a low health literacy and are not aware of the importance of keeping a healthy oral cavity. I want to help ease patients concerns about x-ray exposure and inform patients about the importance of taking the prescribed dental radiographs.

***Your profession is not what brings home your paychecks,
your profession is what you're put here on earth to do,
with such passion and such intensity that it becomes spiritual calling.***

Vincent Van Gogh-

Your profession should not be only about money. It should go beyond money and touch your soul. Your profession should be valuable and contribute to succor people around you. As a health professional, I want to be able to demonstrate a positive attitude and develop healthy relationships with my patients. One would like a health provider that one can completely trust. It takes a genuine and observant healthcare provider to earn a patients' trust.

Going to the dentist can be frightening to many patients but once they develop a close relationship with their dentist, the personal connection between them can ease the fear. Dr. V has been a dentist for 45 years. He was raised in the southern region of the Bronx. He received a Bachelor of Science from Fairleigh Dickinson University and graduated from New York University College of Dentistry Summa Cum Laude. Years later Dr. V. opened his own practice in Yonkers, NY. While in Yonkers, he received five awards from excellence in Dentistry. Currently, he presents as a speaker at dental conventions and schools. My mother was a dental assistant for Dr. V for seven years and he also gave me the opportunity to work with him as a dental assistant. Working with him was a constructive learning experience because he was always willing to further my knowledge. He offered his support when I decided to continue my

education as a dental hygienist. Patients are fond of him because he is very attentive and kind towards them. He takes the time to explain the dental procedures in a detailed manner.

In the 45 years that Dr V has been practicing he has been fortunate to experience the development of dental x-rays as it has progressed. He mentions that he relies on radiographs to develop his treatment plans. He is grateful for digital x-rays because they have simplified the exam processes for both dental professionals and the patients. Patients spend less time in the dental chair and are exposed to less radiation. Direct radiography is a semiconductor sensor that directly converts x-ray energy into electrical signals, eliminating the middle step of latent image.

The manual process of film development takes several steps and it is rarely used in current dentistry. This process takes place in a darkroom. The Dental staff would stir the solutions to equalize the temperature and the chemical distribution of the processing solutions.

This procedure consists of five steps (Fromer):

1. Developing process
2. Rinsing the films for 20 seconds in water bath
3. Permanent fixation for 10 minutes
4. Washing of the films for 20 minutes
5. Final drying of the films.

Dr. V emphasizes the environmental benefits of using digital x-rays. The fixer solution used for processing radiographic images is a hazardous solution because it contains large concentrations of silver. Concentrations of silver above 5,000 PPM are considered hazardous, and these concentrations contain up to 8,000 parts per million (PPM). Fixer solution cannot be disposed of down the drain or in the garbage. Developer contains hydroquinone a toxic

compound and is considered to be hazardous to the environment as well. Fixer and developer can be sold back to the manufacturer to avoid pollution of the environment.

Developing a connection with your patients is fundamental because they will feel comfortable at their dental appointments and less anxious. Patients will also develop higher trust toward their healthcare provider. For better treatment outcomes health practitioners should create a positive atmosphere for their patients. Dental radiographs are a fundamental contribution of developing an accurate diagnosis. Improvements of digital radiographs reduces the amount of radiation exposure delivered to the patient and reduces the time in the dental chair. Additionally, digital radiographs protect our environment by diminishing the use of fixer and developer fluids.

*“And whatsoever we ask, we receive of him, because we keep his commandments,
and do those things that are pleasing in his sight.”*

1 John 3:22

I enjoy working as a health provider and I am delighted to be able to help patients. When patients come to me requesting help my job is to provide patients with the help they seek. Likewise, if they do not request help it would not be given. As a dental professional, it is fundamental to educate patients on the advantages of following a protocol to develop the correct dental treatment. One of the vitals points on developing the right dental treatments for patients is updating dental X-rays.

I treated Mr. P as my patient; he is a 32-year-old male from Puerto Rico. He moved to Westchester county at the age of 15 with his parents and his siblings. He is currently residing in Middletown, New York. The first time I saw him as a patient he was due for a full mouth series

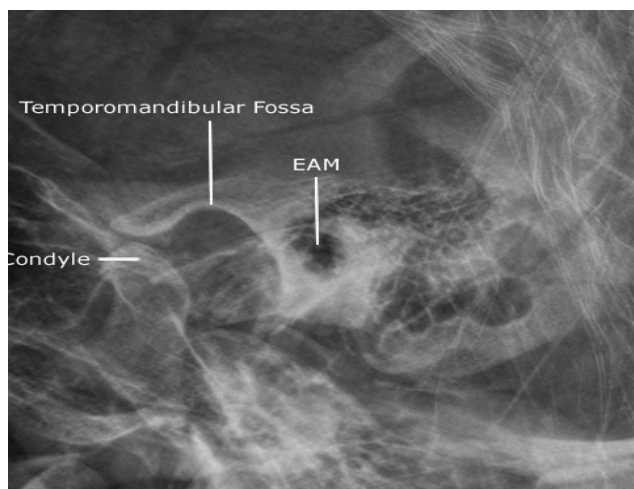
of dental X-rays. He mentioned that he did not mind taking dental x-rays since his insurance would cover the cost. He said, "I do not think x-rays are important, but I would just get them out of the way." He claimed that dentist used dental x-rays as a method to bill his insurance more money. He was a healthy patient and he was presented with a healthy oral record. After conducting an extra-oral examination on the patient, I noticed his temporomandibular joint presented with popping sounds when he opened and closed his mouth. He also mentioned that when he opened and closed his mouth he experienced pain and his jaw would lock. He shared with me that he used to be a professional boxer three years ago. He suffered several head traumas while he was boxing. Injuries on the head could had been the cause of his temporal mandibular joint disorder. I informed the dentist about the patient's case and he referred the patient to a TMJ specialist. Pain involving the temporomandibular joint are common symptoms expressed on patients with TMJ disorders. Dental professional must be able to identify the problems involving TMJ. Early detection is important to assist with initial treatments. The TMJ imaging can be done in the dental office. Sometimes patient may be referred to advanced imaging centers.

Dental professional must understand the hard and soft tissue anatomy of the temporal mandibular joint. This joint is bounded laterally by the zygomatic arch and medially by the petrous ridge of the temporal bone. Dental professional should be able to identify following structures the on radiographs; the external meatus of the ear, the mastoid air cells, the mandibular condyle, the articular fossa, the neck of the condyle, and the articular eminence. The internal and external pterygoid muscles and the articular disc are not seen with routine radiographic imaging. The articular disc is linked to major sources of TMJ disorders and it is not seen on conventional radiographic images. Computer Tomography facilitates the view of an area in three planes and it

is an excellent system for examining the bones of the TMJ. The scans do not include diagnostic images of the articular disc.

It is important to treat temporal mandibular disorder before it progresses to avoid invasive treatments. Simple treatments can be conducted if diagnosed at an early stage. For example, patients can take over the counter pain reliever to alleviate the pain. They can use hot and cold treatments to reduce the jaw inflammation. Softer food is often recommended over harder foods to limit jaw movements. Patients that experience grinding of the teeth will require a mouth guard to avoid teeth wear.

According to the American Dental Association, adults without dental problems do not need dental X-rays every six months to a year. Adults who properly care for their teeth and have no symptoms of cavities for up to three years between check-ups, Bitewing X-rays are recommended. We can only provide assistance when patients request support or treatment. Unfortunately, many patients wait until the last minute to take care of their dental issues. When dental issues are caught in an advance stage, it will require more invasive treatments. I would like to educate patients and raise awareness on the importance of preventive dental treatments before it reaches an advance stage. A major step in the data collection process are dental x-rays.



Fear of Death by Sylvia Chidi

*In death, we die alone
to dust and bone
we return to take our
rightful place on earths throne*

*Dying of an endless cancer
Whispers on the cold clay earth*

*A stillness in the air
Filled by sudden fear
When the shadows of darkness
are knowingly very near*

*A stillness in the air
Filled by sudden fear
What's next, When and where
Curiosity of thoughts
above or beyond
A heart beats endlessly
pondering on what is out there
which remains a mystery.*

I chose the poem *Fear of Death* by Sylvia Chidi because it relates to my topic about dental x-rays. Although we all fear death and everything that could precipitate the process, x-rays are responsible for raising many fears among patients. Some patients believe that dental x-rays could be linked to cancer. They prefer avoiding dental radiographs. A wind of fear will always be present and it is up to us to learn how to evade it.

Working in the dental field I came across several patients that refused to take dental radiograph because they believed them to be harmful, costly and a list of unfavorable things toward themselves. At times, I feel guilty for trying to convince patients to do something they do not want to do. I explain to patients that the reason we take x-rays is to monitor diseases of the

head and neck. Early detection is often the key to healthy lifestyle. Some patients will agree while others decline. You can only do what the patient allows you to do.

Working in the clinic at NYU College of Dentistry, I had the opportunity to work with many patients from different backgrounds ethnicities. One occasion I was working with a 70 year old female. She was born in Puerto Rico and came to New York at a young age. She shared with me that she was currently going through a drug rehabilitation program and that she abused drugs. She “hated” visiting the dentist. She had very poor oral health and she was anxious of being in the dental chair. I explained to her the procedures that will be done the day of her first visit. First, we needed to collect information about her overall health. Next, we would be conducting extra-oral and intra-oral examinations and dental X-rays. I further explained that this would determine what treatments she would benefit from. We started by taking a full mouth series of X-rays. The student doctor was able to identify a few cavities that could turn into root canals. She had a few missing teeth as well. As the doctor was conducting her head and neck examination the patient started getting impatient claiming that it was taking too long. She resented doing all these “insignificant exams” since no work was being done. I tried to explain to her that she first needed to be evaluated before we can develop a treatment plan. She was not happy with the way things were being handled and decided to walk out of the treatment room. She said that we were just using her as a practice patient and nothing was being accomplished during her visit. It is unfortunate that people think we want to waste their time and our time for no reason. We are only trying to do our best to assist patients’ needs.

I consulted with Dr. V regarding his experience with patients and dental X-rays. He said he came across many patients who refused to dental X-rays. He was able to discover things patients were unaware thanks to dental X-rays. For instance, he took a panoramic X-ray on a

patient in 2004 and was able to identify she had a brain tumor. This patient has been coming to Dr. V for 20 years. She is a resident of Yonkers, NY. She was astonished by this discovery of her tumor but grateful it was identified on time. She was referred to a specialist to proceed with further treatments. Thanks to a regular check-up visit to the dentist this patient was able to discover her brain tumor at an early stage and was able to be treated before this reached a metastatic stage.

According to Memorial Sloan Kettering Cancer Center, metastatic brain cancer, also known as secondary brain cancer, occurs when cancer spreads to the brain from another part of the body. It is about ten times more common than primary brain cancer, which starts in the brain. Each year, about 100,000 people in the United States are diagnosed with brain metastases. Nearly 20 to 40 percent of people with cancer develop metastatic brain cancer. More than half of them will have more than one tumor in the brain. The risk of a metastatic brain tumor depends on what kind of cancer you have and how advanced it is when it is diagnosed. Therefore, it is important to maintain required screening exams updated for any abnormalities that might arise. A simple check-up X-ray can change people lives.

Working with patients in the dental field I came across many patients who refused a dental X-ray or believed they were not necessary. Patients fear that radiation from dental X-ray could lead to cancer. The amount of radiation that is used now is extremely low due to the high-speed film and it is not known to be a contributing factor in the cause of cancer. Thanks to advancement in technology, we are able to identify dental caries, and tumors at an early stage. The enhancements in imaging technologies allow us to see beneath tissue in superior detail.

The Road Not Taken

*Two roads diverged in a yellow wood,
And sorry I could not travel both and one traveler,
Long I stood and looked down one as far as I could
To where it bent in the undergrowth;*

*Then took the other, as just as fair,
And having perhaps the better claim,
Because it was grassy and wanted wear;
Though as for that the passing there
Had worn them really about the same,*

*And both that morning equally lay
In leaves no step trodden black.
Oh, I kept the first for another day!
Yet knowing how way lead on to way,
I doubted if should ever come back.*

Robert Frost

I chose the poem, *The Road Not Taken* by Robert Frost, because it relates to my topic; Relationship of Dental x-rays and Treatment. When patients choose their pathway in the dental field, they tend to pick the faster road. This road consists of basic dental hygiene and avoiding complex processes such as X-rays. Although taking the faster road might sound better, long term, it is not realistically beneficial for their overall health. Many patients prefer to choose the route of avoiding dental X-rays because it involves less time and less money. Oral disease cannot be seen with a simple oral examination. Dentists can identify any abnormality, or benign tumors in the oral cavity with a simple dental radiograph. Early detection of an oral disease can prevent the spreading of it and decrease the chances of needing an invasive treatment.

Using X-rays can assist clinicians to determine if the tumor detected is either benign or malignant. Benign are well defined in a radiograph and they grow at a lower rate; they might not be painful. On the other hand, Malignant neoplasms can be painful and be presented with

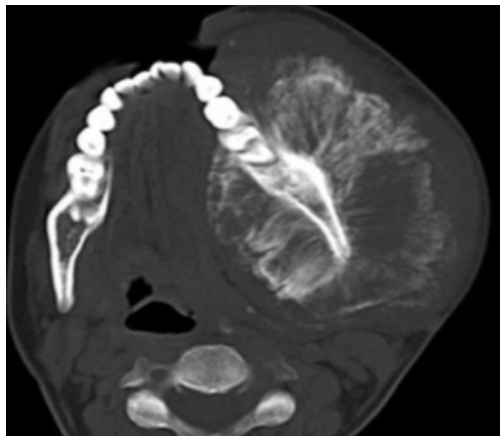
ulceration of the underlying tissue. There are four types of benign tumors; mesenchymal, epithelial, salivary gland tumors, and cysts of soft tissue.

Osteosarcoma is a malignant bone tumor that originates from mesenchymal. A twenty percent of osteoma is all bone cancer and seven percent originates in the jaw. This type of cancer is normally found in the mandible. Clinical signs swelling of the tissue and erythematous. Symptoms of Osteosarcoma includes pain and loosening of teeth. This cancer is predisposed to occur on adults around 35 years old. The radiograph findings look like a speculated “sun ray” appearance. The treatment for osteosarcoma consist of preoperative chemotherapy and surgery. Moreover, osteosarcoma can be mistaken as a chondrosarcoma due to the similarity in the radiographic appearance. Chondrosarcoma is also a malignant tumor of cartilage generating cells. It is the second most common primary malignancy of bone and one of the most difficult bone tumors to diagnose and treat. This can occur in ether maxilla and mandible area. Radiographs appearance presents with a spiking resorption of bone. The treatment for this type of malignant tumor is wide surgery excision.

Fox Chase Cancer Center shares the story the patient Patricia Cantwell, who is an osteosarcoma cancer survivor. At 33 years old, she was diagnosed with osteosarcoma of the jaw. Before the diagnosis she constantly experienced pain in the oral cavity. She assumed this pain was coming from her wisdom teeth. She made an appointment to get her wisdom teeth extracted and expected to get rid of her pain. After having her wisdom teeth removed, the pain remained persistent. Her oral surgeon then detected a bone fragment on an X-ray and took a biopsy for further evaluation. Six weeks later she found out she had osteosarcoma, a cancer affecting jaw bone. She started on four cycles of chemotherapy and after the two first treatments the tumor increased in size. The next step was to perform surgery to remove the tumor; a plastic and

reconstructive surgery was conducted. This procedure lasted about 10 hours, and the bottom left side of her jaw was removed. Her jaw was reconstructed with bone from her calf. After surgery, she began physical therapy.

Although at times patients prefer to take the easy road of avoiding dental X-rays, this could become a critical disadvantage in the long run. A person could have a malignant tumor and be unaware of it. Dental X-rays can save many lives, because a dentist can detect oral abnormalities, or tumors through a dental radiograph. Taking X-rays is one of the safest and most effective methods of preventing oral diseases. These tests can reveal if a cancer has spread to other parts of the body, which is known as the metastasis stage. A biopsy is the process of a doctor taking a small sample of tissue for testing in a laboratory and it is the most accurate method for the doctor to identify a cancer.



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Relationships Between Dental X-rays and Treatment

Outline

I. Introduction

1. The history of dental x-rays and patients from Yonkers, NY, and Dominican Republic.
2. The advancement of dental x-rays over the years.
3. The possible biologic effects of dental x-rays.
4. The importance of dental x-rays to develop the correct treatment plan for patients.

II. Claim of fact

1. Case histories from patients and dental professionals from Yonkers, New York, New Jersey, and Dominican Republic.
2. Patients point view regarding taking dental x-rays.
3. Dental professionals raising awareness of the Importance of dental x-rays.
4. The importance of dental x-rays to improve patients' health status.
5. The purpose of dental radiographs serves as a diagnostic tool.

III. Claims of value

1. Why do patients fear dental x-rays?
2. Why do Patients refuse to pay for dental x-rays?
3. Why do Patients think x-rays are not an important in the process of developing the correct treatment plan?
4. Do patients consider that benefits outweigh the risks?

IV. Claim of policy

1. I would like to share my understanding of dental x-rays.
2. Explain to the patients the role dental x-rays play in developing the correct treatment plan.
3. How a dental x-ray could change a person's lifestyle.
4. The benefits of dental x-rays for patient's oral health.
5. I would like to make patients feel at comfortable about dental radiographs.