Radiographical Errors in Dental Students Work

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Abstract: Background: Radiography is useful in the diagnosis and treatment planning of various oro-facial pathologies. Changes in the quality of radiographs may lead to misinterpretation, resulting in incorrect diagnosis and treatment planning. Aim of the study: To evaluate the prevalence of radiographical errors in intraoral films taken by undergraduate dental students. Material and method: 950 dental radiographs taken by undergraduate students were retrieved from archives and examined. Patient's age ranged between (5 – 86) years. Female patients were 473 and males were 477. X-ray films were examined on x-ray film viewer and classified according to type of film, type of errors and area examined. Results and discussion: Higher percentage of errors were found in males than females, higher in peri-apical than bitewing and occlusal films, higher percentage of errors were found in posterior area than anterior area, and the most common error is cone-cut. Conclusion: The dental radiographer must be able to recognize and identify the causes of exposure and technique errors, and must know what steps are necessary to correct such errors, we can reduce these errors by increasing the training course for students and by using film holder.

Keywords: radiographical errors, dental students

1. Introduction

Radiography is one of the useful tools employed in the diagnosis and treatment planning of various oro-facial pathologies. Changes in the quality of radiographs may lead to misinterpretation, resulting in incorrect diagnosis and treatment planning [1].

Intra oral images can be divided into three categories: Periapical projections, bitewing projections and occlusal projections. Periapical radiograph should show all of a tooth, including the surrounding bone. Bitewing images show only the crown of the teeth and the adjacent alveolar crests. Occlusal images show an area of teeth and bone larger than Periapical images [2].

A diagnostic dental radiograph is one that has been properly placed, exposed, and processed; errors in any one of these three areas may result non diagnostic film. Film exposure problems include films that are not exposed, accidentally exposed to white light, over exposed, or under exposed. All these errors produce non diagnostic radiographs that are too light or too dark. Technique errors include film placement, angulation, and PID alignment problems. Miscellaneous technique errors include film bending, film creasing, double exposure, patient movement, and reversed film. [3].

The dental radiographer must be able to recognize and identify the causes of exposure and technique errors. In addition, the dental radiographer must know what steps are necessary to correct such errors [3].

2. Material and Method

About 950 dental radiographs taken by undergraduate students (from 2013 to 2016) in radiology clinic oral diagnosis department / college of dentistry / university of Baghdad were retrieved from archives and examined. Patient's age ranged between (5 – 86) years. Female patients were 473 (49%) and males were 477 (51%).

X-ray films collected, examined on x-ray film viewer and classified according to gender, type of film, type of errors and area examined.

3. Results

The Sample of study consist of 950 intra oral films, (473) for females and (477) for males. Males had more radiographical errors compared to females, About 180 errors had been found. As shown in table [1]. Intra oral films classified according to type of film into Periapical, bitewing and occlusal film, the higher percentage of errors had been occur in Periapical film. As shown in table [2].

Examined areas classified into anterior and posterior teeth, the higher percentage occur in posterior area. As shown in table [3]. Radiographical errors classified into [Concut (the most common one 24.6 %) followed by elongation, overlapping, dark film, pale film, fingerprint, shortening, position of the dot, blurred film, brown discoloration, double exposure, blank film (least one 0.1 %)]. As shown in table [4].

Table 1: Prevalence of radiographical errors according to gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>normal films</th>
<th>error films</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Percentage %</td>
</tr>
<tr>
<td>Female</td>
<td>322</td>
<td>33.89</td>
</tr>
<tr>
<td>Male</td>
<td>297</td>
<td>31.26</td>
</tr>
<tr>
<td>Total</td>
<td>619</td>
<td>65.15</td>
</tr>
</tbody>
</table>

Table 2: Prevalence of radiographical errors according to type of film

<table>
<thead>
<tr>
<th>Type of film</th>
<th>normal films</th>
<th>error films</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Percentage %</td>
</tr>
<tr>
<td>Periapical film</td>
<td>395</td>
<td>41.57</td>
</tr>
<tr>
<td>Bitewing film</td>
<td>150</td>
<td>15.78</td>
</tr>
<tr>
<td>Occlusal film</td>
<td>74</td>
<td>7.78</td>
</tr>
<tr>
<td>Total</td>
<td>619</td>
<td>65.13</td>
</tr>
</tbody>
</table>
In this study of Arachchi et al [8], the prevalence of radiographical errors found were (26.1% Conectut, 25.2% improper vertical angulation, 23.2% film position, 13.1% improper horizontal angulation, 9.5% processing errors and 2.9% from other errors) and these result disagreed with the result of present study because of different sample size, different student's level and different machine efficacy.

5. Conclusion

The most common radiographical error found among undergraduate dental students work is Conectut and the least on is blank film. The most common errors found in posterior teeth and Periapical film type. We can reduce these errors by increasing the training course for students and by using film holder.

References