Oral Surgery, Oral Medicine, Oral Radiology, 2015, Vol. 3, No. 1, 1-5
Available online at http://pubs.sciepub.com/oral/3/1/1

DOI:10.12691/oral-3-1-1

Different Radiological Findings in Turkish Edentulous Patients

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Received December 08, 2014; Revised December 22, 2014; Accepted January 04, 2015

Abstract **Objective:** Radiological examination for the detection of asymptomatic pathology in edentulous patients is very important. The aim of this study is to evaluate different significant radiological findings in the panoramic radiographies, which were routinely taken for a group of edentulous patients. **Materials and Methods:** This study was performed on 200 edentulous patients who admitted for various reasons to Inonu University, Faculty of Dentistry, Department of Oral and Maxillofacial Radiology. Each radiograph was observed for retained roots, impacted teeth, radiolucency and radiopacity changes, maxillary sinus close to crest of the ridge and mental foramen on crest. The data were analyzed using descriptive statistics. **Results:** Radiological findings were found in 48% (56.03% female, 39,28% male) of edentulous patients. Patients examined in this study had retained roots as the most common positive findings (15%). Most of the findings were observed in patients between 45-60 years of age in this study. **Conclusion:** According to these results, panoramic radiography is still advisable to study before making the prosthesis to edentulous patients.

Keywords: *panoramic radiography, retained roots, impacted teeth, edentulous patients, complete denture*

Cite This Article: Numan Dedeoğlu, Mustafa Hayati Atala, and Bekir Eşer, "Different Radiological Findings in Turkish Edentulous Patients." *Oral Surgery, Oral Medicine, Oral Radiology*, vol. 3, no. 1 (2015): 1-5. doi: 10.12691/oral-3-1-1.

1. Introduction

Panoramic radiography of the maxillary and mandibular dental arch is a commonly used technique that allows a single tomographic imaging of the structures that support them [1]. Panoramic radiography, which is an intraoral one-film showing the general condition of the patient with easy implementation requiring low patient dose has been an indispensable part of the planning of diagnosis and treatment [2]. Radiological examination of the edentulous jaw is not usually considered as important, however radiological examination for the detection of a symptomatic pathology in edentulous patients is very important [3,4]. Construction of dentures can be delayed, impression techniques can be modified and it makes us have an idea about the prognosis of the prosthesis [4]. Additionally, the increase of requests in implant-supported prosthesis in recent years made the panoramic X-rays that display the anatomical structures become more important [5].

The aim of this study is to evaluate the retained roots, impacted teeth, radiolucency and radiopacity changes, maxillary sinus close to crest of the ridge, mental foramen on crest in the panoramic radiography, which were routinely taken for a group of edentulous patients living in Eastern Anatolian region of Turkey.

2. Materials And Methods

This study was performed on edentulous patients that admitted for various reasons to Inonu University, Faculty of Dentistry, Department of Oral and Maxillofacial Radiology between May 2011 and February 2013. For this purpose, 200 edentulous patients' panoramic radiographies which were routinely taken by panoramic X-ray unit Planmeca Proline XC (Helsinki/Finland) were examined at the same times by two researchers for some diagnostic criteria such as retained roots, impacted teeth, radiolucency and radiopacity changes, maxillary sinus closed to crest of the ridge, mental foramen on crest, foreign body and positive findings were recorded. Statistical analysis of data was carried out by SPSS 19.0 software generated table. According to the findings obtained in the radiographic examination of the age and gender distribution were calculated as a percentage.

3. Results

In our study, 116 (58%) female, and 84 (42%) male of 200 patients' panoramic radiography were examined. Selected patients were in the 45-85 year of age range and mean age was 63.8. A total of 200 patients (48%) were observed in 96 positive findings. Similar studies in the

literature are shown in Table 1. Patients examined in this study had retained roots as the most common positive findings (15%). 60% of retained roots were in upper molar region. It was detected that 14 (7%) patients had radiopaque lesions. Impacted teeth were observed in 6 (3%) patients, and the upper canine teeth were 57.4% of them. Respectively, the number of patients with sinus sagged o the crest edge was 23(11.5%), and the over crest of the mental foramen were followed up in 23 patients. In addition, over the crest, mental foramen and sagged sinus were generally observed bilaterally. The gender distribution of positive findings detected in the patients is shown in Table 2. By age group, most findings were observed in patients between 45 to 60 years of age in this study (Table 3). Different positive findings are shown in Figure 1-Figure 6.

Table 1. Similar Studies in Literature

Author name	Year of publication	The number of patlents studied	The percentage of positive findings
Swenson et al	1944	381	40.8
Perrelet et al	1977	287	41.0
Lloyd & gambert	1984	112	12.8
Jones et al	1985	114	34.4
Lyman & boucher	1990	150	0.33
Masood et al	2007	327	42.5
Sumer et al	2007	338	47.6
Jlndal et al	2008	525	32.0
Awad et al	2011	271	51.7
Mloglu et al	2012	283	56.5
Ourrent study	2014	200	48.0

Table 2. The Gender Distribution of Positive Findings

Gender Distribution	Retained Roots	Impacted Tooth	Radiopaque Lesion	Radiolusent Lesion	Foramen mentale on crest	Sagged sinus
Female	19	3	12	-	16	15
Male	11	3	2	2	7	8
Total	30	6	14	2	23	23

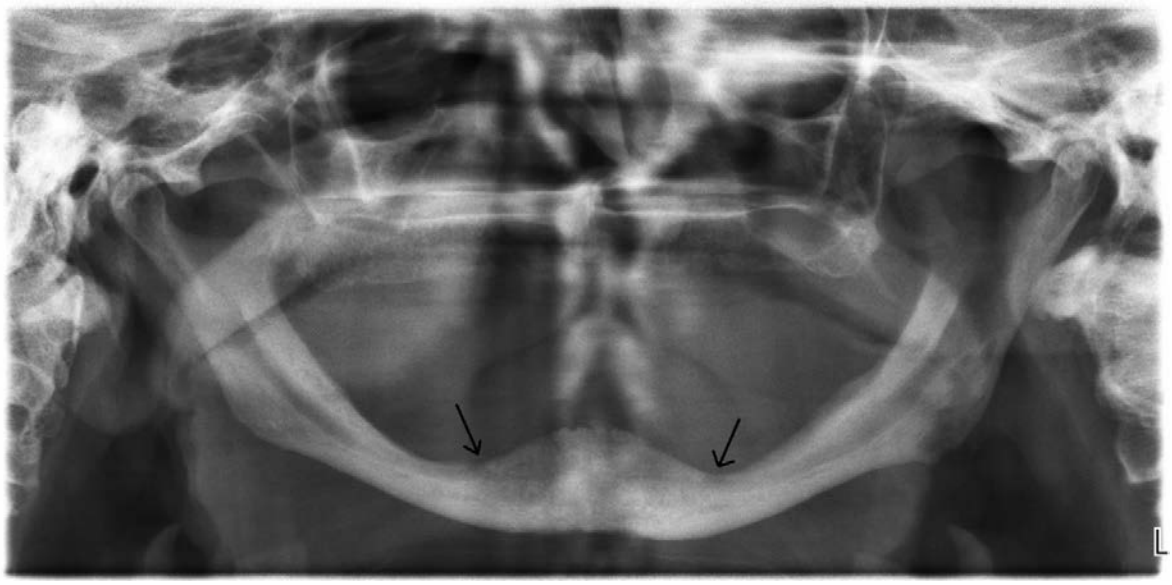

Figure 1. Panoramic Film Showing Mental Foramen on Crest

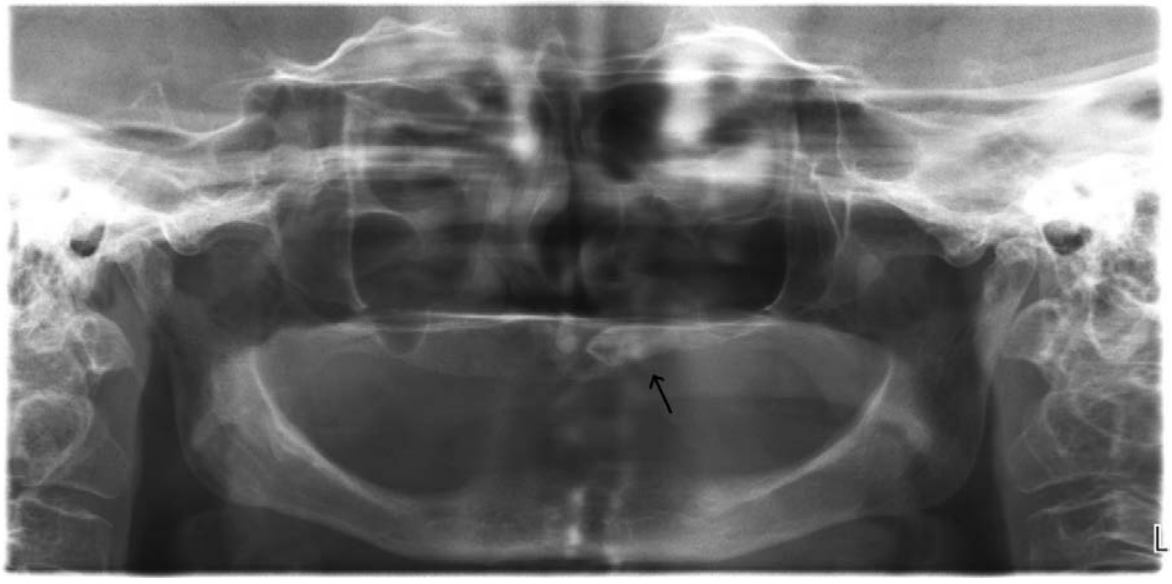

Figure 2. Panoramic Film Showing Impacted Canine Tooth

Figure 3. Panoramic Film Showing Retained Teeth

Figure 4. Panoramic Film Showing Sagged Maxillary Sinus

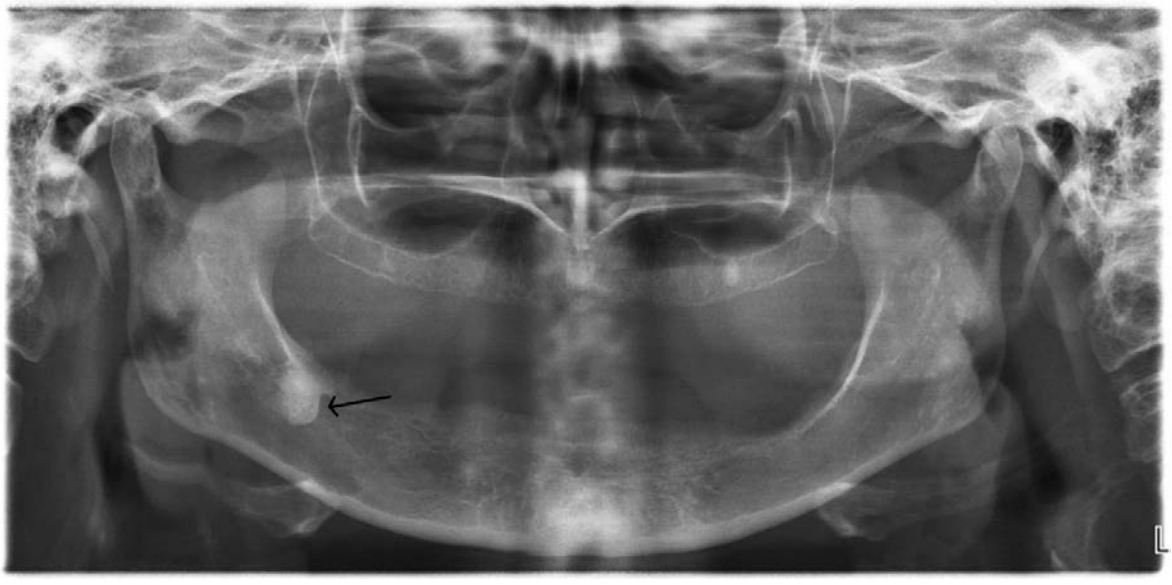

Figure 5. Panoramic Film Showing Radiopaque Lesion

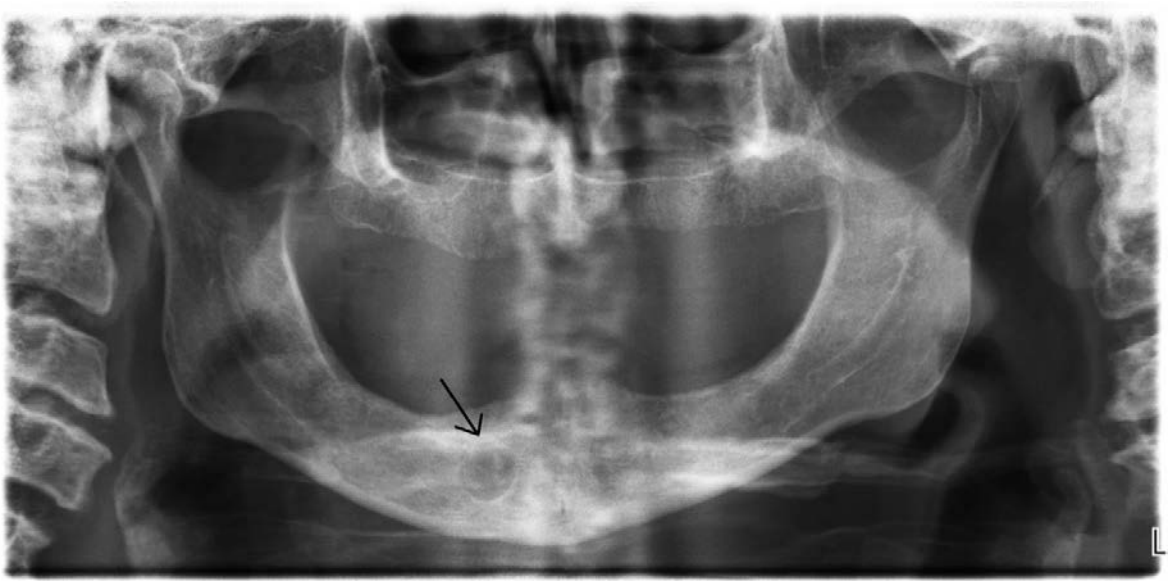

Figure 6. Panoramic Film Showing Radiolusent Lesion

Table 3. Age Distribution of Positive Findings

Age range	Number of cases	Retained root	Impacted tooth	Radiopaque lesion	Radiolusent lesion	Foramen mentale on crest	Sagged sinus
45-60	72	13	2	2	1	6	13
60-70	71	10	3	9	-	13	4
70-85	57	7	1	3	1	4	6
Total	200	23	6	14	2	23	23

4. Discussion

In previous studies, frequent presence of radiographic findings in patients undergoing complete dentures showed that radiography should be routinely taken prior to treatment [6,7,8]. In patients examined in this study, the retained roots were the most common positive findings. This result is in concordance with previous studies [7,9,10,11]. In this study, retained root ratio was found to be 15%. Swenson [12] and Axelsson [10] reported that retained roots had existed more in the upper molar region. This may be attributed to the small diameter of the upper jaw roots, since the roots are inclined and left in mouth due to being close to sinus [10,12]. In this study, 60% of retained roots were found in the upper molar region. This result is analogous to the literature [9,10,11,12]. Extraction or non-extraction of impacted teeth in the mouth is a moot point. It has been reported that leaving the impacted teeth that do not show signs of infection and completely impacted teeth would prevent bone resorption [13,14]. Of the patients in our study, 3% had impacted teeth. Similar to previous studies, impacted teeth were encountered more in canine and third molar region. Radiopacities are another widely reported findings in the literature. In this study, the incidence of radiopaque area was 7%. Sumer et al [15] found that the incidence of radiopaque areas was 12.1%. The same rate was reported as 3.5% in the study conducted by Miloglu et al. [9]. In another study [16] radiopaque area ratio was reported as 4.8%. Additionally, our study demonstrated that radiopaque areas were observed mostly in lower molar teeth and women.

The most significant findings that showed crest resorption are maxillary sinus adjacent to the crest edge and mental foramen over the crest. In our study, similar to Miloglu et al. [9], the rate of mental foramen over the crest was 11.5%. 95.7% of those with mental foramen over the crest were seen bilaterally in this study. On the other hand, in our study, the rate of maxillary sinus that sagged to the hill of the crest was 11.5%. Miloglu et al [9] reported that this ratio was 30.9%. Also Sumer et al. [15] found that the sagging sinus rate was 4.4% in their study. In our study, 56.52% of sagged maxillary sinus cases were detected as bilaterally.

5. Conclusion

The results of our study demonstrated that 48% of patients had positive signs according to the criteria. According to these results, panoramic radiographies are still advisable to study before making the prosthesis in edentulous patients. This examination will be useful both to prevent pathological conditions and to establish a healthier treatment plan.

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