

## ORIGINAL ARTICLE

# Review of Dental Operative Procedures and the Causes of Tooth Extraction at the Railway General Hospital Rawalpindi

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## ABSTRACT

**Objective:** To study the frequency of various dental procedures and the causes of dental extractions at Railway General Hospital Rawalpindi and to suggest measures to improve the existing scenario.

**Study Design:** A descriptive cross-sectional study.

**Place and Duration of Study:** The study was conducted at IIMCT, Railway General Hospital from June 2014 to May 2015.

**Materials and Methods:** All consecutive patients undergoing dental operative procedures at IIMCT Railway General Hospital were studied. The patients were examined clinically and by dental X-Ray when required. The extent of caries was ascertained and Miller's Mobility Index was used to grade the extent of Periodontitis. Tooth extraction was done in patients having broken down roots, gross caries, tooth mobility grade >2 and those with impaction, trauma, cysts etc.

**Results:** A total of 3116 dental procedures were done that included 1902 (61.0%) tooth extractions, 930 (29.8%) fillings, 166 (5.3%) scalings and 118 (3.8%) root canal treatments. The number of scalings and root canal treatments significantly increased with addition of an extra dental surgeon ( $p < 0.001$ ). A total of 1902 teeth were extracted from 1560 patients. Caries was the leading cause of tooth extraction (60%). Most of the patients with advanced caries presented with broken down root (763/1902, 40%). Gross caries was the reason for extraction in 380/1902 (20%), periodontitis with mobile teeth (grade >2) in 569/1902 (30%) and other reasons like cysts, impaction and trauma etc. in 190/1902 (10%) of patients.

**Conclusion:** Caries and periodontal infections are the commonest dental problems and the reason for tooth extraction at the Railway General Hospital Rawalpindi where people mostly come from the lower socio-economic status. The quality of work in a public sector dental setting like Railway General Hospital can be improved by providing adequate number of dentists and other resources.

**Keywords:** Dental Caries, Periodontitis, Tooth Extraction, Scaling, Root Canal Treatment.

## Introduction

Tooth extraction is one of the oldest and the most frequently performed operative procedures in dentistry. The frequency of tooth extraction, at least in the developed centers of the world, is on the decline with a corresponding rise in the frequency of tooth restorative procedures like root canal treatment.<sup>1-4</sup> However, tooth extraction is still a preferred choice in dental centers with budget constraints, lack of expertise in using restorative procedures or where the dental surgeon is too busy to spare time for a complex solution.<sup>5,6</sup> When a tooth is removed without taking into account how that gap will be filled the patient may be left with a long term disability and morbidity. Caries ranks as the leading cause of tooth extraction followed by periodontitis.<sup>7-11</sup> Both of these conditions are related to poor oral hygiene and can be prevented by

community based awareness programs.<sup>12</sup> The Railway General Hospital Rawalpindi provides free of cost services to the employees of Pakistan Railway. The hospital also takes care of the non-entitled resident population of the surrounding areas that mostly come from the low socioeconomic group. The hospital is affiliated with the Islamic International Medical College but its dental unit is without any such affiliation. Like most other public sector hospitals the dental unit of the Railway General Hospital Rawalpindi works within a tight budget. The cost restrictions and excessive workload with limited dental chairs often preclude dental restorative procedures like root canal treatment and preparation of dental implants and prostheses. This descriptive study aims to analyze the frequency of various dental procedures and the causes of dental extractions at this hospital and to suggest measures to improve the existing scenario.

## Materials and Methods

This descriptive cross-sectional study was done at the Dental Department of Railway General Hospital Rawalpindi over a period of one year (Jun 2014 to May 2015). All consecutive patients undergoing dental operative procedures were studied. The age

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and gender of the patients was recorded. During the first half of the year (Jun to Nov 2014) two dental surgeons were available whereas the third dental surgeon (FS) joined the department during the second half of the year (Dec 14 to May 15). Only one dental chair was available for the operative treatment. The patients were examined clinically and by dental X-Ray when required. The extent of caries was ascertained according to the destruction of the tooth structure. Miller's Mobility Index was used to grade the extent of Periodontitis.<sup>13</sup> The patients with mild to moderate caries were subjected to filling or root canal treatment. Tooth extraction was done in patients having broken down roots, gross caries, tooth mobility grade >2 and those with impaction, trauma, cysts etc. Statistical analysis was done by Chi square test with the computer software Epi Info version 5.0.

**Results**

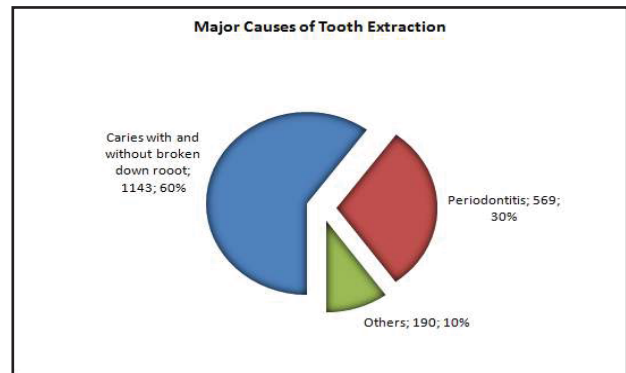
During the period of one year (Jun2014 to May 2015) a total of 3116 dental procedures were done at the Dental Department of Railway General Hospital Rawalpindi. Month wise distribution of the dental procedures is shown in table I.

These included 1902 (61.0%) tooth extractions, 930 (29.8%) fillings, 166 (5.3%) scaling and 118 (3.8%) root canal treatments. With the addition of the third

**Table I: Month wise breakdown of the operative procedures done over one year from June 14 to May 15 at the Dental Department of Railway General Hospital, Rawalpindi**

Procedure	Extractions	Fillings	Scalings	RCT	Total
Jun	178	60	19	4	261
Jul	84	67	6	2	159
Aug	233	72	17	6	328
Sep	221	107	6	20	354
Oct	132	96	-	1	229
Nov	171	89	-	-	260
Dec	138	105	19	5	267
Jan	167	80	20	17	284
Feb	194	60	23	21	298
Mar	197	72	28	24	321
Apr	60	65	28	7	160
May	127	57	-	11	195
<b>Total</b>	<b>1902(61.0%)</b>	<b>930 (29.8%)</b>	<b>166 (5.3%)</b>	<b>118 (3.8%)</b>	<b>3116 (100%)</b>

dental surgeon in the second half of the study year the numbers of scalings and root canal treatments significantly increased. The scaling increased from 48/1591 (3.0%) to 118/1525 (7.7%) (p<0.001) and root canal treatments increased from 33/1591 (2.1%) to 85/1525 (5.6%) (P<0.001). A total of 1902 teeth were extracted from 1560 patients. The ages of these patients ranged from 3 to 80 years (median age 41 years). Their male to female ratio was 1:1.36 and they included 149 (9.6%) children from 3-13 years of age. The main reasons for tooth extraction are summarized in Fig I.



**Fig 1: Major causes of tooth extraction from Jun 14 to May 15 at the Dental Department of Railway General Hospital, Rawalpindi**

Caries was the leading cause of tooth extraction. Most of the patients with advanced caries presented with broken down root (763/1902, 40%). Gross caries was the reason for extraction in 380/1902 (20%), periodontitis with mobile teeth (grade >2) in 569/1902 (30%) and other reasons like cysts, impaction and trauma etc. in 190/1902 (10%) of patients.

**Discussion**

Dental caries and periodontal infection due to poor oral hygiene are the two most common dental health problems in Pakistan.<sup>5,12-15</sup> This is clearly reflected in this study. Most of the patients with caries had advanced disease with the majority having completely lost their teeth and presented with broken down roots while the remaining had major loss of the tooth structure. None of such teeth could be restored by any dental procedure and extraction was the only choice available. Education on improving oral hygiene and timely visit to the dentist are the key components to prevent such unfortunate happenings.<sup>12,15</sup> Community based education and

awareness program through electronic and print media are highly recommended.

Dental Department in a hospital is often neglected and understaffed. This leaves the dentists with no time to undertake more complex restorative dental procedures. This is also highlighted in this study. When the number of dentists was increased from two to three the number of root canal treatments also increased significantly. In a busy dental clinic the dentists are often compelled to extract a tooth rather than spending extra time to salvage it through root canal treatment. The quality of work can also be improved by installing additional dental chairs. In a hospital setting the flow of work is often hindered due to trivial issues like lack of availability of local anesthetic, or X-Ray films etc. A couple of dips in the work load during the months of July 14 and April 15 in this study exemplify such problems.

The overall spectrum of workload and reasons for tooth extraction in this study is comparable to that in the other public sector dental setups in Pakistan.<sup>5</sup> The results from a more developed centre from the private sector showed different results where 42.2% extractions were due to caries, 30.6% were due to periodontal infection and the remaining were for other reasons.<sup>16</sup> Data from many developed countries also suggest that caries is the commonest cause of tooth extraction but its incidence is much lower than in our study and that from the other under-developed areas of Pakistan.<sup>10,11,14</sup> The tooth loss due to caries is also reported to be higher in other developing countries.<sup>6,9</sup> The results from a Nigerian study show that almost 78% of the extractions were related to caries followed by trauma as the next most frequent cause of extraction.<sup>6</sup>

Our results and those from the other places clearly highlight that the incidence of caries and periodontitis is higher in the underdeveloped and the poor socio-economic class of people.<sup>17,18</sup> Though the level of poverty cannot be changed but the awareness can certainly be increased in such communities for reducing the incidence of caries and periodontal infections.

### Conclusion

Caries and periodontal infections are the commonest dental problems and cause of tooth

extraction at the Railway General Hospital Rawalpindi where people mostly come from the lower socio-economic status. The quality of work in a public sector dental setting like Railway General Hospital can be improved by providing adequate number of dentists and other resources.

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