A clinical study of the medical condition of patients requiring tooth extraction in Mosul City

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ABSTRACT

The number of medically compromised patients is increasing in both dental school patient populations and private practices presenting specific challenges to the dental profession. In this clinical study, the population studied consisted of (2943) patients, of them (1737) were males and (1206) females. The patients selected for this study were those attending Department of oral and maxillo – facial surgery in Saddam Dental Hospital, College of Dentistry, University of Mosul, and the author's private clinic between (1–10–2001 and 1–6–2002). The results showed that about the fifth of the patients (19.06%) were medically compromised patients (MCP) who need special care during tooth extraction. Lower and upper first molars showed the highest number of tooth extraction (28.94%). Dental caries and its sequalae were the most common cause of tooth extraction. The age group (15–34 year) contained the highest percentage of tooth loss (49.13%).
Key Words: compromised patients, tooth extraction, Dental caries

الخلاصة

إن عدد المرضى المصابين بالأمراض المزمنة في ازدياد مستمر ضمن كل المرضى الذين يرتـادون المراكز التخصصية لطب الأسنان والعيادات الخاصة مما يزيد من الصعوبات والتحديات التي تواجه أطبــــاء الأسنان في علاج هذا النوع من المرضى.

شملت هذه الدراسة السريرية (٢٩٤٣) مريضاً، منهم (١٧٣٧) ذكور و(١٢٠٦) إنـــاث. المرضـــى الذين شملتهم الدراسة كانوا من ضمن المرضى الذين يراجعون قسم جراحة الفم والوجه والفكين في مستشــفى صدام الجامعي لطب الأسنان التابع لكلية طب الأسنان – جامعة الموصل وكذلك الذين راجعوا العيادة الخاصة للباحث للفترة ما بين (١–١٠–٢٠٠١ و ١–٦–٢٠٠٢). أظهرت النتائج أن ما يقـــارب الخمـــس (١٩,٠٦%) كانوا من المصابين بالأمراض المزمنة والذين يحتاجون إلى عناية خاصة خلال عملية قلـــع الســـن. الرحـــى الأولى للفك الأسفل والأعلى أعطت النسبة الأعلى للقلع (٢٨,٩٤%). تسوس الأسنان ومضاعفاته كان من أهم الأسباب التي أدت إلى قلع الأسنان. الفئة العمرية ما بين(١٥–٣٤) سنة احتوت على أعلى نســـبة (٤٩,١٣%) لفقدان الأسنان.

INTRODUCTION

Tooth loss is a common phenomenon in all of the world[1]. Extraction of tooth is a terminal event in the life of a tooth and is a frequent episode in individuals with un-cared and neglected oral cavity[2]. It is generally accepted that the number of teeth decreases with age and that caries and periodontal disease are the main causes of tooth loss, although the relative impact of these two disease entities may vary in different population groups and geographic areas[3,4].

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Because of the increasing numbers of dental patients with chronic medical problems, it is critical that the dentist remains knowledgeable about patient's medical conditions because many disorders will dictate alterations in the provision of dental treatment. Failure to make appropriate treatment modifications may result in serious consequences [5,6]. The dentist no longer treats "teeth in-patients" but "patients who have teeth". It is now most important for the safety of the patient and the success of treatment for the dentist to identify patients with systemic illness [7].

The aim of the present study was to assess the followings:
(1) Number of MCP out the total number of patients requiring tooth removal.
(2) The incidence of each systemic disease.
(3) Etiology of tooth extraction and tooth type with the highest incidence of extraction.

MATERIALS AND METHODS

The study was implemented in oral and Maxillofacial Surgery Department in Saddam Dental Hospital, College of Dentistry, University of Mosul, and in the researcher's private clinic between (1–10–2001 and 1–6–2002). Two thousands nine hundreds and forty three patients were examined, each patient has his (her) own case sheet which contains the following information, the patient name, age, sex, profession, address, Tel. No., chief complaint (c.c.), History of present illness (H.P.I), past dental history (P.D.H), Medical history (M.H), clinical examination, investigations, diagnosis, and treatment plan.

The case sheet which is used in the Department of oral and Maxillofacial Surgery, University of Mosul, College of Dentistry:

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Patient name :              Sex:       Age:
Martial statues :                      Date:
Profession:
Address                                Tel:
C. C.      _____
H. P. I.   _____
P. D. H.   _____
F. H. and S. H. _____
Medical History
Cardiovascular _____   Allergy _____
Blood Diseases _____   Neurological diseases ____
Diabetes       _____   Tuberculosis _____
Liver diseases _____   Arthritis _____
Renal diseases _____   Others _____
Clinical Examination
E.O.E/     _____
I.O.E.     _____
Investigations _____
Diagnosis      _____
Treatment Plan _____
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Patients were divided into four groups according to age:

First group: Age range from (15 – 34) year.
Second group: Age range from (35 – 54) year.
Third group: Age range from (55 – 74) year.
Fourth group: More than (75) year.

Patients below the age of (15) years, and those with uncontrolled systemic diseases were excluded from the study. The causes for tooth extraction were recorded according to the following criteria:

(1) Teeth with pulpitis that can not be restored by operative dentistry or endodontics.
(2) Devitalized tooth not amenable to root canal therapy.
(3) Periodontal disease beyond treatment.
(4) Impacted or partially erupted teeth with pericoronitis.
(5) Prosthetic indications (i.e. isolated, tilted, hyperocclusion teeth).
(6) Orthodontic indications.
(7) Malposed teeth.
(8) Supernumerary teeth.
(9) Retained deciduous teeth.

RESULTS

The patients included in the present study were (2943). Table (1) shows the sex distribution among the examined patients. Number of males was [1737 (59.02%)], and females [1206 (40.98)], the male to female ratio was (1.44:1).

Table (1): Patient distribution according to sex

Sex	Number of Patients	Percentage
Male	1737	59.02
Female	1206	40.98
Total No. of patients	2943	

The second table shows the number of patients in each age group, the first group (15–34) year shows the highest number of patients [1446 (49.13%)]. However, the age group (more than 75 years) represented the least number (36) of patients (1.22%).

Table (2): Distribution of patients according to age group

Age group	Number of Patients	Percentage %
15 – 34	1446	49.13%
35 – 54	906	30.78%
55 – 75	555	18.85%
More Than 75	36	1.22%

The number and percentage of patients with and without systemic diseases is shown in table (3). Patients without systemic diseases were [2382 (80.93%)] with (1440) males (48.92%) and (942) females (32.01%), while patients with systemic diseases were [561 (19.06%)], among them (297) males (10.09%) and [264 (8.97%)] females.

Table (3): Medical condition of patients

Patient without Systemic Disease			Patient with Systemic Disease		
	No.	%		No.	%
Male	1440	48.92	Male	297	10.09
Female	942	32.01	Female	264	8.97
Total	2382	80.93	Total	561	19.06

Table (4) shows the number and the percentage of the medical problems seen, the cardio–vascular diseases were the highest in number (294) patients (52.4%) of the MCP, the Diabetic patients [117 (20.85%)] followed by Allergy (42) patients (7.48%) of all MCP. However, (36) of the MCP had a history of bleeding disease (6.41%). Renal disease and arthritics showed equal number of patients, (24) patients for each (4.28%). The least number was shown in other diseases like hypothyroidism, pregnancy, Migraine, etc...).

Table (4): Number and percentage of the medical problems seen in dental clinic

Type of disease	Number of Patients	%	Male	%	Female	%
Cardio-Vascular	294	52.4	141	25.13	153	27.27
Diabetes	117	20.85	75	13.36	42	7.48
Allergy	42	7.48	24	4.28	18	3.20
Blood disease	36	6.41	24	4.28	12	2.14
Renal	24	4.28	12	2.14	12	2.14
Arthritis	24	4.28	10	1.78	14	2.49
Others	24	4.28	9	1.60	15	2.67
Total	561					

Distribution of MCP according to the age group was shown in table (5), were the highest age group suffering from cardiovascular diseases was the third group (55–74 year) then the second group (35–54 year). While in diabetic and allergic patients, the second age group (35–54 years) shows the highest number of patients. The least number was noticed in the fourth group (75 year and more) in all age groups except cardiovascular and diabetic patients were the least numbers were noticed in the first group (15–34 years).

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Table (5): Distribution of medically compromised patients according to age group

Type of Disease	15-34 Years	%	35-54 Years	%	55-74 Years	%	More Than 75 Years	%	Total
Cardio-Vascular	9	3.06	90	30.6	168	57.14	27	9.18	294
Diabetes	6	5.12	63	53.84	39	33.33	9	7.69	117
Allergy	9	21.42	18	42.85	15	35.71	0	0	42
Blood disease	18	50	6	16.67	12	33.33	0	0	36
Renal	3	12.5	12	50	9	37.5	0	0	24
Arthritis	0	0	9	37.5	15	62.5	0	0	24
Others	18	75.0	0	0	6	25	0	0	24

Table (6) shows the number and percentage of extracted teeth related to tooth type with a total number of (2943) teeth, those extracted in the upper jaw were (1617) teeth against (1326) teeth extracted in the lower jaw. Lower first molars showed the highest number (456 teeth) of tooth loss (15.49%), followed by upper first molars 396 teeth (13.45%), then upper first premolars (333) teeth (11.3%), then lower third molars (234) teeth (7.94%) of the total teeth loss. However, the least number (69 teeth) was shown in lower central incisors (2.34%).

Table (6): Number of extracted teeth and % of tooth loss related to tooth type

Tooth type		Number of Extracted Teeth					
		Right	%	Left	%	Total	%
Upper	Central Incisor	75	2.54	54	1.83	129	4.37
	Lateral Incisor	48	1.63	36	1.22	84	2.85
	Canine	81	2.75	87	2.95	168	5.7
	1st Premolar	153	5.19	180	6.11	333	11.3
	2nd Premolar	93	3.16	102	3.46	195	6.62
	1st Molar	210	7.13	186	6.32	396	13.45
	2nd Molar	69	2.34	84	2.85	153	5.19
	3rd Molar	84	2.85	75	2.54	159	5.39
Lower	Central Incisor	36	1.22	33	1.12	69	2.34
	Lateral Incisor	48	1.63	30	1.02	78	2.65
	Canine	57	1.93	48	1.63	105	3.56
	1st Premolar	63	2.14	75	2.54	138	4.68
	2nd Premolar	63	2.14	48	1.63	111	3.77
	1st Molar	231	7.85	225	7.64	456	15.49
	2nd Molar	66	2.24	69	2.34	135	4.58
	3rd Molar	81	2.75	153	5.19	234	7.94

of elastic lamina, both in the gingiva and periodontal membrane, this will interfere with the local blood circulation and causing periodontal disease and loss of tooth [1]. This result had also been recorded by other studies [7, 22 - 27, 35].

Diabetes mellitus also recorded high number of patient, this could be attributed to the fact that elevated glucose levels, impaired leukocytic function, altered collegen metabolism, and vascular changes including stasis in the microculation can reduce the resistance to periodontal infection during periods of poor diabetic control and increased glucose concentration.[1] This finding come in agreement with that of Witton _et al._ [28], Hugoson _et al._ [29], Khalil [1], Khamrco _et al._[35].

The third prevalent disease was allergy (42 patients), this was attributed to that histamine levels in chronically inflamed gingiva are higher than levels in normal gingiva, in addition to increase venule dilatation and permeability [30, 31], or it may be attributed to that allergy increases in this generation and it may increase more in the future due to exposure to multiple antigenic factors [7].

Blood diseases especially anemia were seen more in the first age group (15–34 year). Anemia may results from iron deficiency, decreased production of red blood cells (RBC), or increase rate of destruction of circulated RBC resulting in reduction in the oxygen carrying capacity of the blood [32]. Also it could be due to improper and unequal food supplement due to economic sanctions imposed on our country.

The tooth type which was mainly extracted more than others was the lower first molar and upper first molar. This was due to the earlier eruption of these teeth (6–8 year), so that caries started early during the mixed dentition period and neglected by the child and his parents, especially in children who don't use tooth brushing or other caries preventive measures, and when the patient reaches adulthood or later without checking their teeth, the teeth already distracted and indicated for extraction. In addition the lower first molar carried the main burden of mastication for a considerable period and the action of gravity contributed materially to the amount of food stagnation it had endure. Also it was observed that the number of extracted molars in general was more than other teeth, this may be due to the fact that surface anatomy of the molars and the position of these teeth make them difficult to be cleaned rendering them more liable to be decayed than other teeth [7, 33].

Upper first premolars also showed high number of extractions, about one fourth (75 teeth) of extraction of these teeth was due to orthodontic causes. The other causes like caries, periapical lesion, malposition also have been seen related to upper premolars more than the lower premolar, and this explain the high percentage of tooth loss of upper more than lower first premolars. This was also recorded by Jackson [16], Lundqvist [2], Ekanayaka [14], Cahen _et al._ [12], Khalil [1], and Zaidan [7].

Regarding the aetiology of tooth extraction, pulpitis showed the highest percentage (34.65%). This finding was also been recorded by Allen [11], Zaidan [7]. The reason for this may be due to the low fluoride content of the water supply, in addition to neglected oral health and tooth brushing or cleaning methods resulting in poor oral hygiene and more susceptibility to dental caries [1].

Periodontal diseases represented the second common cause of tooth extraction (28.44%). Periodontal disease has been known as the "disease of neglect", neglecting oral health will allow for occurrence and progression of gingival and periodontal disease leading to tooth loss [34].

CONCLUSIONS

- The dentist should interview his or (her) patients carefully to protect them from any complications during tooth extraction.
- Patients should be motivated to seek dental treatment and should be encouraged for regular visits to the dentist.
- Preventive programs should be initiated like water fluoridation and the use of fluoridated toothpaste, dental education programs to minimize tooth loss particularly in young age group.

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