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FAKTORI KOJI UTIČU NA TRAJANJE ORTODONSKE TERAPIJE NA STOMATOLOŠKIM FAKULTETSKIM KLINIKAMA

FACTORS INFLUENCING THE ORTHODONTIC TREATMENT DURATION AT DENTAL TEACHING HOSPITALS

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Sažetak

Uvod: *Jedan od primarnih ciljeva u zbrinjavanju ortodontskih pacijenata, pored konačnih rezultata, jeste i briga o ukupnom periodu lečenja. Razumevanje dužine ortodontskog tretmana, kao i faktora koji na to utiču, dragoceno je za produktivno vođenje pacijenata i poboljšanje kliničke performanse.*
Cilj *istraživanja bio je analiza faktora koji utiču na dužinu lečenja pacijenata su fiksnim ortodontskim aparatima u Stomatološkoj nastavnoj bolnici na Stomatološkom fakultetu Univerziteta u Bagdadu.*
Materijal i metode: *Istorije osamdeset definitivno zbrinutih ortodontskih slučajeva (četrdeset zbrinutih angažovanjem jednog operatera i četrdeset zbrinutih angažovanjem više operatera) odabrane su iz arhive ortodontskog odeljenja kako bi se analiziralo sledećih šest parametara: trajanje lečenja, broj supervizora, broj poseta, vrsta malokluzije, metod lečenja, prisustvo ili odsustvo ukrštenog zagrižaja. Hi-kvadrat test korišćen je za ispitivanje razlika između grupa i za proučavanje povezanosti između trajanja lečenja i tipova malokluzije sa indikacijom za vađenje zuba u obema grupama.*
Rezultati*: Rezultati su pokazali značajnu razliku između ispitivanih grupa u pogledu svih analiziranih parametara, osim prisustva ili odsustva ukrštenog zagrižaja. S druge strane, nije pronađena značajna povezanost između vrste malokluzije i trajanja lečenja sa indikacijom za vađenje zuba u obema grupama.*
Zaključak: *Broj supervizora različitih mišljenja u vezi sa lečenjem i vođenjem ortodontskih slučajeva i vrsta malokluzije mogu biti glavni faktori koji utiču na trajanje lečenja ortodontskih pacijenata.*

Ključne reči: *trajanje lečenja, fiksni ortodontski aparat, malokluzije*

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Abstract

Introduction: *One of the primary worries of orthodontic patients, aside from the final results, is the total period of treatment. A superior comprehension of orthodontic treatment period just as variable influencing the treatment length is valuable for productive patient guiding and improved clinical performance.*
The aim *of the study was analysis of factors influencing the length of treatment of finished casestreated with fixed orthodontic appliance at the dental teaching hospital in the College of Dentistry/ University of Baghdad.*
Materials and Methods: *Eighty case sheets belonging to 80 finished orthodontic cases (forty finished with a single operator and fortyfinished with multi-operators) were selected from the archive of the orthodontic department to collect six parameters, namely duration of treatment, number of supervisors, number of visits, type of malocclusion, treatment method, presence or absence of crossbite. Chi-square test was used to test group differences and to study the association between the duration of treatment and the types of malocclusion with the indication for dental extraction in both groups.*
Results: *The results showed highly significant group difference regarding all parameters except the presence or absence of crossbite. On the other hand, no significant association was found between the type of malocclusion andduration of treatment with the indication of extraction in both groups.*
Conclusions:*The number of supervisors with their different opinions in treating and managing orthodontic casesand the type of malocclusion may be the main contributing factor affecting the treatment duration of the finished orthodontic cases.*

Key words: *treatment duration, fixed orthodontic appliance*

Uvod

Uspešan tretman pacijenata fiksnim ortodontskim aparatima, koji uključuje tri glavne faze (početno razmatranje, zbrinjavanje prostora i završna obrada i preciziranje okluzije), može trajati više meseci[1,2]. U najnovijem sistematskom pregledu Tsichlaki i saradnici[3] utvrdili su da je prosečno vreme lečenja fiksnim ortodontskim aparatima zahtevalo manje od dve godine, uz širok spektar trajanja lečenja, koji je varirao između 14 meseci i 33 meseca u pregledanim studijama. To može negativno uticati na pacijente ili ih čak sprečiti da se podvrgnu ovom tipu lečenja.

U pogledu kvaliteta i trajanja lečenja, postoji određena svest o pacijentima koje leče studenti postdiplomskih studija na stomatološkim fakultetima, naročito ukoliko je u tretman ovakvih pacijenata bilo uključeno više operatera. Studenti na postdiplomskim studijama redovno su se menjali svake dve godine nakon završetka kursa, ostavljajući neke od svojih slučajeva nezavršenim, tako da su se morali napraviti aranžmani, kako bi lečenje pacijenata mogao da nastavi drugi student. Promena operatera tokom lečenja može dovesti do dužeg trajanja lečenja, ali do sada nema nikakvih podataka ili dokaza koji to potkrepljuju; izuzetak je studija McGuinnessa i McDonalda[4], koji su zaključili da će promena operatera značajno produžiti trajanje lečenja, u proseku, za 8,43 meseca.

Dugo trajanje lečenja može dovesti do jatrogenih posledica terapije fiksnim aparatom, uključujući resorpciju korena, demineralizaciju gleđi, gingivitis, karijes i lošu usaglašenost pacijenata u pogledu održavanja oralnog zdravlja i redovnih poseta[5,6]. S druge strane, budući da može postojati novčana motivacija u prenošenju progresivnog stručnog tretmana, kraće lečenje nudi povoljne okolnosti za pacijente i operatera i nesumnjivo je povezano sa manjim brojem poseta[7].

U mnogim studijama istraživane su varijable koje bi mogle uticati na trajanje lečenja kod adolescenata i odraslih. Među ovim faktorima su starost[8-12], pol pacijenata[9,11,13,14], molarni odnos na početku lečenja[8,14-19], debljina kortikalne kosti mandibule[8], vrsta bravica, veličina prostora i protokol koji se koristi u tretmanu[11,14,20-22], početna težina malokluzije, tj. teskoba ili rastresitost [9,11,13,14,16,23,24], tretman zasnovan na vađenju zuba, tj. vađenje zuba, bez vađenja zuba i odloženo vađenje uz broj izvađenih zuba[8,9,11,12,14,15,25-33], način postavljanja bravica[14], multidisciplinarni tretman, koji uključuje hipodonciju ili ortognatsku hirurgiju

Introduction

Fixed orthodontic treatment, including three main stages—initial alignment, space management and finishing and detailing of the occlusion—may last for many months to complete perfectly[1,2]. In the latest systematic review, Tsichlaki et al.[3] found that the average treatment time for comprehensive orthodontic treatment with fixed appliances necessitated less than two years with a wide range of treatment durations between 14 to 33 months were reported in the reviewed studies. This may compromise or even halt patients from undergoing the treatment course.

There is some awareness about the patients treated by postgraduate students in the dental schools regarding the quality and duration of treatment especially if those patients were treated with more than one operator. The postgraduate students changed regularly every two years after completing their courses leaving some of their cases uncompleted, so arrangements must be made for patients' treatment to be continued by another student. Changing operator during the course of treatment may result in longer treatment duration, but till now no data or evidence supports that except the study of McGuinness and McDonald[4] who concluded that changing operator would lengthen the treatment duration significantly by an average of 8.43 months.

Long treatment duration may lead to iatrogenic consequences of fixed appliance therapy including root resorption, enamel demineralization[5], gingivitis, caries and poor patient's compliance regarding the maintenance of oral health and in attendance their regular visits[6]. On the other hand, short treatment terms offers favorable circumstances to the patients and operator as there might be monetary motivations in conveying progressively proficient treatment, no doubt connected with less visits and shorter seat side occasions[7].

Many studies have explored the variables that could affect the treatment duration in adolescents and adults. Among these factors are age[8-12], gender of the patients[9,11,13,14], molar relationship at the starting of treatment[8,14-19], mandibular cortical bone thickness[8], type of brackets, slot size and prescription used in treatment [11,14,20-22], initial severity of the malocclusioni.e. crowding or spacing[9,11,13,14,16,23,24], extraction-based treatment i.e. extraction, non-extraction and delayed extraction in addition to the number of teeth extracted[8,9,11,12,14,15,25-33], method of bracket placement[14], multi-disciplinary treatment involving hypodontia

i oslobađanje impaktiranih zuba[12], uz usaglašenost pacijenata uključujući broj propuštenih termina kontrolnih pregleda[9-12], problem sa ortodontskim aparatom (lomovi)[9-12,14], oralna higijena pacijenata[11,13,14,33] i neusaglašenost pacijenata u korišćenju intraoralnih gumica[11,14].

Nedavno su, zahvaljujući razvijenoj tehnologiji, ortodontski aparati napredovali, stvarajući niz terapijskih opcija sa specifičnim indikacijama. Ovi aparati moraju biti pažljivo odabrani; u suprotnom, pogoršanje početne malokluzije biće neizbežno[34]. Na terapijske opcije, koje daju supervizori u stomatološkim ordinacijama, mogu uticati mnogi faktori – njihova starost, vrsta i kvalitet stečenog obrazovanja, lične i psihološke karakteristike.

Stariji operateri imaju iskustvo u donošenju odluka. Uočene su velike varijacije između mlađih i starijih supervizora u vezi sa terapijskim opcijama koje su korišćene godinama (preferirani od strane starijih supervizora) ili pristupima koji se razvijaju (privilegovani od strane mlađih supervizora)[35]. Pored toga, uspostavljena je direktna veza između prednosti ortodontskog lečenja i vremena koje je supervizorima bilo potrebno da završe fakultet. Generalno, stariji supervizori više cene ove prednosti od mlađih supervizora[36].

Što se tiče kvaliteta obrazovanja, danas se terapijske odluke moraju donositi na osnovu naučnih dokaza, koji pružaju najbolji tretman za datog pacijenta[2]. Lečenje fiksnim ortodontskim aparatom može se razlikovati u zavisnosti od tehnika koje su stariji ortodonti primili. Nedostatak osnovnog znanja može dovesti do pogrešne primene ovih tehnika, tako da starije osobe sa dobrom obukom imaju veće šanse da donesu ispravne terapijske odluke[37].

Lične osobine, uverenja i vrednosti značajno utiču na planiranje lečenja, budući da početne odluke o lečenju mogu odražavati sposobnost ortodonata da reprodukuju i razmenjuju ideje sa drugim profesionalcima[38], kao i njihov stav prema alternativnim metodama lečenja i odabiru metode[39].

Konačno, psihološke karakteristike mogu uticati na odluku o lečenju; npr. opsesivna ličnost pokušava da odluku učini komplikovanijom procedurom, dok impulsivni supervizori teže ka donošenju jednostavnih i jasnih odluka[40].

Cilj ovog istraživanja bila je procena određenih faktora koji utiču na trajanje lečenja ortodontskih slučajeva fiksnim aparatom. Za lečenje pomenutih slučajeva bili su zaduženi studenti postdiplomskih studija u Stomatološkoj nastavnoj bolnici na Stomatološkom fakultetu Univerziteta u Bagdadu.

or orthognathic surgery and alignment of impacted teeth[12], in addition to the patient compliance including the number of missed appointments[9-12], problems with the orthodontic appliance (breakages)[9-12,14], patients' oral hygiene[11,13,14,33], and the patients' non-compliance in the use of intraoral elastics[11,14].

Recently, orthodontic appliances have been evolved with advancing technology creating a variety of therapeutic options with specific indications. These appliances must be selected carefully otherwise worsening the initial malocclusion is inevitable[34]. The therapeutic options given by supervisors in the dental teaching hospitals may be influenced by many factors including their age, the type and quality of education received, personal and psychological characteristics.

The senior's age has been related to decision-making. Wide variations between younger and older supervisors were observed regarding their therapeutic options used for many years (preferred by older supervisors) or approaches being evolved (privileged by younger supervisors)[35]. Additionally, a direct relation had been established between the advantages of orthodontic treatment and the time the supervisors took to complete their degree. Generally, older supervisors esteem these advantages more contrasted with more youthful supervisors[36].

Regarding the quality of education, nowadays therapeutic decisions must be made on scientific evidence that provides the finest treatment for a given patient[2]. Treatment with fixed orthodontic appliance may differ according to the techniques the seniors received. Lack of essential knowledge may lead to wrong application of these techniques, so seniors with good training have a high chance in making right therapeutic decisions[37].

Personal characteristics, beliefs and values significantly affect the treatment planning as the initial treatment decisions may reflect their ability to reproduce and exchange ideas with other professionals[38] also reflect their attitude to alternative treatment methods and select the method of choice[39].

Lastly, the psychological characteristics may influence the treatment decision, e.g. obsessive personality try to make decision a more complicated procedure, contrary, impulsive supervisors tend to make decisions simple and clear[40].

The aim of this study was to assess some factors influencing the duration of treating orthodontic cases with fixed appliance by the postgraduate students at the dental teaching hospital in the College of Dentistry/ University of Baghdad.

Materijal i metode

Ova retrospektivna opservaciona studija sprovedena je u aprilu 2019. godine, nakon dobijanja odobrenja od strane naučnog komiteta na Odeljenju za ortodonciju Stomatološkog fakulteta Univerziteta u Bagdadu za 80 istorija završenih ortodontskih slučajeva lečenih fiksnim ortodontskim aparatom od strane master studentata Postdiplomske ortodontske klinike. Četrdeset slučajeva zbrinjavao je po jedan operater, dok je u terapiji preostalih četrdeset slučajeva učestvovalo više operatera.

Starosni raspon pacijenata na početku lečenja bio je od 12 do 27 godina (17,83 godine ± 3,79 godina) za slučajeve u čijem je zbrinjavanju bio angažovan jednan operater, odnosno od 12 godina do 33 godine (20,56 godina ± 4,63 godine) za slučajeve u čije je zbrinjavanje bio uključen veći broj operatera.

Iz istorija slučajeva prikupljene su sledeće varijable:

1) trajanje lečenja;
2) broj supervizora;
3) broj poseta;
4) vrsta malokluzije;
5) metoda lečenja (da li je tretman podrazumevao vađenje zuba ili nije);
6) prisustvo ili odsustvo ukrštenog zagrižaja.

Statističke analize obavljene su korišćenjem softvera SPSS (Statistički paketi društvenih nauka), verzija 24. Korišćene su sledeće statistike:

1) **Deskriptivna statistika**, koja je obuhvatila srednje vrednosti, standardne devijacije, minimalne i maksimalne vrednosti, učestalost (br.) i procente;

2) **Inferencijalna statistika**, koja je obuhvatila Hi-kvadrat test za testiranje bilo koje statistički značajne razlike između grupa i za proučavanje efekta vađenja zuba na trajanje ortodontskog tretmana i (ne)postojanje povezanosti između tipova malokluzije i indikacija za vađenje zuba u obema grupama.

U statističkoj proceni nivo značajnosti bio je postavljen na 0,05.

Materials and methods

This retrospective observational study was conducted on 80 case sheets of finished orthodontic cases treated with fixed orthodontic appliance by the M.Sc. students in the postgraduate orthodontic clinic in April 2019 after gaining approval from the scientific committee in the Department of Orthodontics, College of Dentistry, University of Baghdad. Forty of them finished the treatment with a single operator and the other forty cases with multi-operators.

The age range of the patients at the start of the treatment was 12−27 years (17.83 ±3.79 years) for the finished cases with single operator and 12−33 years (20.56±4.63 years) for the finished cases with multi-operators.

The following variables were elicited from the case sheets:

1. Duration of treatment.
2. Number of supervisors.
3. Number of visits.
4. Type of malocclusion.
5. Treatment method (whether the treatment entailed dental extraction or not).
6. Presence or absence of crossbite.

Statistical analyses were performed using SPSS (statistical packages of social sciences) software version[24]. The following statistics were used:

1. **Descriptive statistics:** including means, standard deviations, minimum and maximum values, frequency (No.) and percentages.
2. **Inferential statistics:** including Chi-square test to test any statistically significant differences between the groups and to study the effect of dental extraction on the duration of orthodontic treatment and whether there is association between the types of malocclusion and the indication for dental extraction in both groups.

In the statistical evaluation, the level of significance was set at 0.05.

Rezultati

Tabela 1 pokazuje distribuciju frekvencija i procente izmerenih parametara za slučajeve zbrinute angažovanjem jednog operatera ili više njih. Rezultati su otkrili da je više od polovine slučajeva (22 slučaja) završeno u roku od godinu dana ili manje angažovanjem jednog operatera; nasuprot tome, svi slučajevi u koje je bilo uključeno više operatera završeni su za više od godinu dana.

Broj supervizora značajno je uticao na završetak terapije i to kada je jedan operater završio 37 slučajeva sa od 2 do 4 supervizora, u odnosu na 3 kod slučajeva sa više operatera.

U 32 slučaja jedan operater završio je postupak za 12 poseta, što se smatra značajnim u odnosu na slučajeve sa više operatera, kojima je za zbrinjavanje bilo potrebno više od 12 poseta.

Najčešći tip malokluzije koji je lečio jedan operater bila je malokluzija klase I; veći broj operatera lečio je 23 slučaja malokluzije klase II.

Results

Table 1 showed the frequency distributions and percentages of the parameters measured for both single and multi-operators finished cases. The results revealed that more than half of the cases (22 cases) were finished significantly within one year or less by the single operator, in contrast, all of the multi-operators' cases finished in more than one year.

The number of supervisors had highly significant effect on the completion of the cases when single operator finished 37 cases with 2−4 supervisors versus 3 only in multi-operator cases.

Single operator finished significantly 32 cases within 12 visits while all of the multi-operator cases finished with more than 12 visits.

The most prevalent type of malocclusion treated by single operator was class I malocclusion in contrast to multi-operators' cases who treated 23 cases of class II.

Extraction was not indicated in thirty four cases treated by single operator, while half of the finished cases were treated with extraction in multi-operators' cases.

Tabela 1: Raspodela frekvencija, procenti i poređenje varijabli između završenih slučajeva zbrinutih sa jednim ili više operatera

***Table 1*:** Frequency distributions, percentages and comparison the measured variables between single and multi-operator finished cases

Parameters Parametri	**Descriptions Opisi**	**No. of operators Br.operatera**				**Comparison Poređenje**	
		Single Jedan		**Multi Više**			
		No.	**%**	**No.**	**%**	**X^2**	**p-value vrednost**
Duration of treatment Trajanje tretmana	**≤ 1 year 1 godine**	22	55	0	0	23.23	0.001
	> 1 year 1 godine	18	45	40	100		
No. of supervisors Br. supervizora	**2-4**	37	92.5	3	7.5	57.8	0.001
	5-8	3	7.5	37	92.5		
No. of visits Broj poseta	**≤ 12**	32	80	0	0	53.33	0.001
	> 12	8	20	40	100		
Types of malocclusion Tip malokluzije	**I**	27	67.5	10	25	15.76	0.001
	II	12	30	23	57.5		
	III	1	2.5	7	17.5		
Method of treatment Metod terapije	**Extraction Vađenje zuba**	6	15	20	50	11.17	0.001
	Non extraction Bez vađenja zuba	34	85	20	50		
Presence of crossbite Prisustvo ukrštenog zagrižaja	**Crossbite Bez ukrštenog zagiržaja**	6	15	7	17.5	0.09	0.762
	No crossbite	34	85	33	82.5		

Tabela 2: Povezanost tipa malokluzije i ekstrakcije kod slučajeva zbrinutih jednim operaterom
Table 2*:* Association between type of malocclusion and extraction in single operator

Type of malocclusion Tip malokluzije		Cases Slučajevi		
		No extraction Bez vađenja zuba	Extraction Vađenje zuba	Total Ukupno
I	N	24	3	27
	%	70.59	50	67.50
II	N	9	3	12
	%	26.47	50	30
III	N	1	0	1
	%	2.94	0	2.50
Total Ukupno	N	34	6	40
	%	100	100	100

X^2= 1,484, df= 2, p-vrednost= 0,476

Tabela 3: Povezanost tipa malokluzije i ekstrakcije kod slučajeva zbrinutih od strane više operatera
Table 3: Association between type of malocclusion and extraction in multi-operator

Type of malocclusion Tip malokluzije		Cases Slučajevi		
		No extraction Bez vađenja zuba	Extraction Vađenje zuba	Total Ukupno
I	N	7	3	10
	%	35	15	25
II	N	12	11	23
	%	60	55	57.5
III	N	1	6	7
	%	5	30	17.5
Total Ukupno	N	20	20	40
	%	100	100	100

X^2= 5.652, d.f.= 2, p-value= 0.059

***Tabela 4*:** Povezanost između trajanja tretmana i terapije vađenjem zuba kod slučajeva zbrinutih jednim operaterom
Table 4: Association between duration of treatment and extraction in single operator

Duration Trajanje	No extraction Bez vađenja zuba		Extraction Vađenje zuba		Total Ukupno	
	N	%	N	%	N	%
≤ 1 year godine	19	86.364	3	13.636	22	100
> 1 year godine	15	83.333	3	16.667	18	100
Total Ukupno	34	85	6	15	40	100

X^2= 0.032, d.f.= 1, p-value= 0.858

Tabela 5: Povezanost između trajanja tretmana i terapije vađenjem zuba kod slučajeva od strane više operatera
Table 5: Association between duration of treatment and extraction in multi-operator

Duration Trajanje	No extraction Bez vađenja zuba		ExtractionVađenje zuba		Total Ukupno	
	N	%	N	%	N	%
≤ 1 year godine	0	0	0	0	0	0
> 1 year godine	20	50	20	50	40	100
Total Ukupno	20	50	20	50	40	100

Vađenje zuba nije bilo indikovano u 34 slučaja tretirana od strane jednog operatera, dok je polovina slučajeva zbrinutih od strane više operatera tretirana vađenjem zuba.

Prisustvo ukrštenog zagrižaja nije imalo značajnog uticaja u rezultatima završetka slučajeva, kako onih tretiranih od strane jednog operatera, tako i onih koje je tretiralo više operatera.

Pregledom Tabele 2 i Tabele 3 nije otkrivena značajna povezanost između tipova malokluzije i indikacija za vađenje zuba u obema grupama. Isto je važilo i za trajanje lečenja – nije bilo značajne povezanosti između trajanja lečenja i indikacije za vađenje zuba u obema ispitivanim grupama (Tabela 3 i Tabela 4).

Diskusija

Master program iz ortodoncije traje dve godine. Ove dve godine bile su isprekidane periodima letnjh, prolećnih i ispitnih raspusta, tako da mnogi studenti možda nisu završili sa zbrinjavanjem nekih od primljenih pacijenata; u takvim slučajevima, pacijenti su u narednoj godini bili prebačeni drugom postdiplomcu.

Osnovni cilj ove studije bio je da ukaže na najvažnije faktore koji utiču na trajanje lečenja pacijenata lečenih fiksnim ortodontskim aparatom u Poslediplomskoj ortodontskoj klinici, zbrinutih od strane jednog operatera ili većeg broja njih.

Glavna ograničenja trenutne studije jesu mala veličina uzorka i nedostatak modela studija pre tretmana, tako da istraživači ne mogu proceniti ozbiljnost i poboljšanje zbrinutih slučajeva koristeći PAR i IOTN indekse; stoga, preporučuju se dalje studije za ispitivanje mnogih faktora koji utiču na vreme tretmana, kao što su npr. PAR indeks, tehnika zatvaranja prostora (dva koraka naspram jednog), vrste protokola (Roth naspram MBT), vrste bravica (nerđajući čelik, keramika ili safir), stepen skeletnih malrelacija u tri prostorne ravni, tipovi lica, efekat odvezivanja

The presence of crossbite had no significant impact on the results of finishing of the cases treated by single and multi-operators.

Reviewing Tables 2 and 3 revealed no significant association between the types of malocclusion and the indication of extraction in both groups. The same was true for the duration where there was no significant association between the duration of treatment and the indication of extraction in both groups (Tables 3 and 4).

Discussion

The duration of M.Sc. program in orthodontics is two years. These two years are interspersed with periods of interruption regarding Summer, Spring and examination holidays, so many students may not finish some of received patients who will be transferred to the follower postgraduate student in the next year.

The major goal of the present study is to highlight the most important factors affecting the treatment duration of single and multi-operators treated cases with fixed orthodontic appliance in the postgraduate orthodontic clinic.

The major limitations of the current study are practically the small sample size and lack of the pre-treatment study models, so researchers can not estimate the severity and improvement of the finished cases using PAR and IOTN indices, hence further studies are recommended to address many factors affecting the treatment time like PAR index, technique of space closure (two versus one step), types of prescription (Roth versus MBT), types of brackets (stainless steel, ceramic or sapphire), the degree of skeletal malrelations in three planes of space, facial types, effect of de-bonding/ de-banding between appointments, holidays, the number of missed appointments, duration between

/razvezivanja između termina, praznici, broj propuštenih termina, trajanje između prenosa slučajeva između učenika, pol, starost i stanje zuba pacijenata na početku lečenja, oralna higijena pacijenata i saradnja u nošenju gumica. Štaviše, treba obratiti pažnju na vreme provedeno u završnoj obradi i kvalitet te završne obrade, zadovoljstvo pacijenata i adekvatnost dijagnoze i plana lečenja. Predmet diskusije biće sledeći parametri dobijeni na osnovu istorija predmeta.

Trajanje lečenja

Analizom Tabele 1 otkriveno je da su 22 slučaja od njih 40 završena u roku od jedne godine od strane jednog operatera; nasuprot tome, svih 40 slučajeva u čijem je zbrinjavanju učestvovalo više operatera završeno je za više od godinu dana, a trajanje tretmana izgledalo je značajno drugačije. Generalno, jedan operater završavao je svoje slučajeve u roku od 12,1 meseca ± 2,92 meseca, dok je u slučaju angažovanja većeg broja operatera bilo potrebno 24,28 meseci ± 4,85 meseci za završetak tretmana.

Uticaj promene operatera na trajanje tretmana u nastavnom okruženju obrađen je u jednoj retrospektivnoj komparativnoj studiji koju su sproveli McGuinness i McDonald 1998 godine[4]. Identifikovane su dve grupe pacijenata, tretirane istim sistemom aparata i za oba zubna luka. Prvu grupu činili su slučajevi koje je tretirao isti operater od početka do kraja, a drugu grupu slučajevi čiji je tretman započeo jedan, a završio drugi operater. Rezultati su otkrili značajnu razliku u vremenu lečenja između dveju grupa (17,67 meseci ± 4,15 meseci za jednog operatera, a 26,1 mesec ± 6,78 meseci za dva operatera). Rezultati McGuinnessove i McDonaldove studije podržali su nalaze ove studije, budući da je 100% prenetih slučajeva značajno završeno za više od godinu dana.

Broj supervizora

Planiranje lečenja može se razlikovati među ortodontima, u zavisnosti od njihovih mišljenja i strategija u lečenju ortodontskih slučajeva. Neki preferiraju terapiju vađenjem zuba, a neki ekspanzionu terapiju. Može se razlikovati i vreme vađenja zuba – do toga može doći na početku lečenja ili nakon nivelisanja i poravnanja.

transferring the cases between the students, the genders, age and state of dentition of the patients at the start of treatment, patient's oral hygiene and cooperation in wearing elastics. Moreover, attention should be paid to the time spent in finishing and the quality of that finish, satisfaction of patient, and the suitability of the original diagnosisand treatment plan.

Regarding the information obtained from the case sheets, the following parameters will be discussed:

Duration of treatment

Reviewing Table 1 revealed that 22 out of 40 cases were finished within one year by single operator, in contrast, all of the cases (40 cases) were finished in more than one year by multi-operators and the duration of treatment appeared significantly different. Generally, single operator finished their cases within 12.1±2.92 months, while multi-operators took about 24.28±4.85 months to finish their cases.

The effect of changing operators on the treatment duration in the teaching environment was addressed in one retrospective comparative study performed by McGuinness and McDonald[4] in 1998. Two groups of patients were identified, treated with same appliance system (edgewise) and for both dental arches. The first group treated by the same operator from the starting to the finishing point and the other group started the treatment with one operator and finished the treatment by other. The results revealed significant difference in the treatment time between the two groups (17.67±4.15 months for single operator and 26.1±6.78 months for two operators). The results of McGuinness and McDonalds'study supported the findings of the present study as 100% of the transferred cases were finished significantly by more than one year.

The number of supervisors

Treatment planning may differ among orthodontists according to their opinions and strategies in treating orthodontic cases. Some prefer to extract teeth while some prefer to expand, and even the timing of dental extraction at the beginning of treatment or after leveling and alignment. The mechanics of space closure also differed between en masse retraction and two steps retraction,

Mehanika zatvaranja prostora takođe se razlikovala (masovno povlačenje ili povlačenje u dva koraka), kao i metoda pripreme sidrenja (pomoću TAD-a ili TPA).

U ovoj studiji, većinu slučajeva zbrinutih od strane jednog operatera nadgledalo je od 2 do 4 supervizora; u slučajevima sa više operatera, 37 slučajeva od njih 40 nadgledalo je od 5 do 8 supervizora. Ovaj nalaz je vrlo važan u produžavanju trajanja lečenja, jer su tipovi malokluzije i planiranja lečenja u vezi sa vađenjem zuba pokazali neznačajnu povezanost (Tabele 2 – 5).

Broj poseta

Rezultati prikazani u Tabeli 1 pokazuju da je jedan operater završio 32 slučaja od njih 40 u okviru 12 poseta, kao i da su svi slučajevi sa više operatera (40 slučajeva) završeni u više od 12 poseta. Ovo se može objasniti strategijom tretmana koju su usvojili supervizori i kvalitetom slučajeva prema vrsti malokluzije, gde je 67,5% slučajeva I klase lečio jedan operater, naspram 57,5% slučajeva II klase lečenih od strane više operatera; kod slučaja III klase koji su bili jedan u odnosu na sedam slučajeva. Štaviše, odluka o vađenju zuba doneta je u pedeset slučajeva tretiranih od strane više operatera, naspram 15% slučajeva tretiranih od strane jednog operatera (Tabela 1).

Tip malokluzije

Jedan od faktora koji utiču na vreme lečenja jeste vrsta malokluzije. Skidmore i sar.[14], Colela i sar.[17] i Venger i sar.[18] otkrili su da je malokluzija klase I zahtevala manje vremena za lečenje nego malokluzija klase II i III.

Landin-Ramos i sar.[8] i Vig i sar.[19] otkrili su da se malokluzije klase II ili klase III duže leče, s tim što je propušten ili prekinut termin imao dvostruko veći efekat u slučajevima malokluzije klase II. Saradnja pacijenata imala je važnu ulogu u smanjenju trajanja lečenja za pacijente sa klasom II malokluzije, ali ne i za pacijente sa I klasom.

U ovoj studiji, tip malokluzije utiče na sve slučajeve, bez obzira na broj operatera zaduženih za njihovo zbrinjavanje. Bilo je 27 slučajeva malokluzije klase I koje je zbrinjavao jedan operater, a deset slučajeva koje je zbrinjavalo više operatera, 12 slučajeva naspram 23 slučaja za klasu II i jedan slučaj prema sedam slučajeva za klasu III, tako da je utvrđena značajna razlika između ispitivanih grupa, koja potvrđuje nalaze prethodnih studija[14,17-19].

moreover the method of anchorage preparation using TADs or TPA.

In the present study, the majority of the finished cases by single operator were supervised by 2−4 seniors and the opposite was true in multi-operator cases where 37 cases out of 40 were supervised by 5−8 supervisors. This finding is so important in lengthening the treatment duration of the cases as the types of malocclusion and treatment planning regarding teeth extraction showed non-significant association (Tables 2−5).

The number of visits

The results obtained from Table 1 showed that single operator finished 32 out of 40 cases within 12 visits; while all multi-operator cases (40 cases) were finished in more than 12 visits. This can be explained by the strategy of treatment adopted by the supervisors also the quality of the cases according to the type of malocclusion where 67.5% of the cases were class I treated by single operator against 57.5% class II cases treated by multi-operators; in addition to the class III cases which were one against 7 cases. Moreover, the decision of extraction was in fifty of the cases treated by multi-operator against 15% in single operator (Table 1).

Type of malocclusion

One of the factors affecting the treatment time is the type of malocclusion. Skidmore et al.[14], Colela et al.[17] and Wenger et al.[18] found that class I malocclusion took less treatment time than class II and III.

Landin-Ramos et al.[8] and Vig et al.[19] found that class II or class III malocclusions needed longer to treat but the missed or broken appointment had twice as great as the effect in class II cases and the patient cooperation played an important role in reducing treatment duration for Class II but not Class I patients.

In the current study, the type of malocclusion has an influence on the cases finished by single and multi-operators. Single operator received 27 cases of class I versus 10 for the multi-operators, 12 cases versus 23 for class II and 1 versus 7 cases for class III, so a significant difference was reported between the studied groups confirming the previous findings[14,17-19].

Metoda lečenja

Drugi faktor koji može uticati na trajanje ortodontskog tretmana jeste izabrana metoda lečenja, odnosno terpaija sa vađenjem zuba ili bez vađenja zuba.

Mnoga istraživanja pripisivala su duže vreme tretmana ortodontskih slučajeva vađenju zuba, koje se smatra jednim od glavnih rešenja za otklanjanje velike teskobe, posebno kada se radi o premolarima[2,8,9,30,32]. U nekim studijama ističe se da vađenje zuba nije imalo uticaja na trajanje lečenja[11,33], te je efekat vađenja zuba ostao sporan.

Shia[31] je istakao da je promena planiranja tretmana u toku terapijske procedure značajan razlog za preticanje vremena, posebno kada je započet tretman bez vađenja zuba; tada je vađenje zuba vršeno ubrzo nakon celog tretmana (zakasnelo vađenje zuba).

U sprovedenoj studiji, metode lečenja nisu uticale na trajanje lečenja, čime su potvrđeni rezultati Bekvita i Akermana[11] i Kelija i Springatea[33].

Prisustvo ili odsustvo ukrštenog zagrižaja

Više od 80% tretiranih slučajeva bilo je bez ukrštenog zagrižaja, tako da ukršten zagrižaj nije imao značajnog uticaja na trajanje lečenja između dveju ispitivanih grupa. Valja istaći i da se ukršteni zagrižaj može rano korigovati lečenjem pomoću quadhelix ili hyrax aparata.

Zaključak

U okviru ograničenja ove studije, glavni faktor koji je uticao na trajanje lečenja ortodontskih slučajeva bio je broj supervizora sa različitim mišljenjima u vezi sa lečenjem i vođenjem ortodontskih slučajeva. Osim toga, tip malokluzije može imati uticaja na trajanje lečenja orotodontskih slučajeva.

Zahvalnica: Nema

Sukob interesa: Nema

The treatment method

The other factor that may influence the duration of orthodontic treatment is the treatment method chosen i.e. extraction or non-extraction.

Many researches[2,8,9,30,32] attributed the longer treatment times of orthodontic cases to the dental extraction which is considered as one of major solutions for resolving severe crowding especially premolars extraction. Some studies reported that dental extraction had no effect on the treatment duration[11,33], so the effect of dental extraction remain edcontentious.

Shia[31] notified that changing the treatment planning at the mid-treatment was a significant reason of time overtook; particularly when non-extraction treatment was commenced then dental extractions were performed soon after throughout the treatment (overdue extractions).

In the current study, the treatment methods did not affect the treatment duration confirming the results of Beckwith and Ackerman[11] and Kelly and Springate[33].

Presence or absence of crossbite

More than 80% of the treated cases were crossbite-free, so crossbite had a non-significant effect on the treatment duration between the two groups, on the other hand, crossbite can be corrected early in treatment by quadhelix or hyrax.

Conclusions

Within the limitations of the present study, the main contributing factor affecting the treatment duration of the finished orthodontic cases was the number of supervisors with their different opinions in treating and managing orthodontic cases, moreover, the type of malocclusion may have an effect.

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