Original Article

Determination of Preferences and Practices of Fixed Prosthodontics Treatment Modalities by Dental Practitioners

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ABSTRACT

Objective: The current study focused on determination of preferences of procedure and material while providing fixed prosthesis to their patients in clinical circumstances.

Study Design: Cross sectional

Place and Duration of Study: This study was conducted at the Prosthodontics Department, Peshawar Dental College from April, 2022 to July, 2022.

Materials and Methods: A total of 120 practitioners were approached to record their responses on a self-structured questionnaire, for information regarding different materials used through many procedures involved during tooth preparation for fixed prosthesis including, but not limited to, type of impression material and its disinfection, use of gingival cord, shade selection for patients' metal try-in and etc.

Results: Study included 58% male and 42% female practitioners (ratio 1.4) which were divided into two groups depending upon their clinical experience of up to five years or more. With a 78% response rate, 93% of practitioners used Alginate impression material, 55% used study casts and performed disinfection of impressions. More than 2/3rd was providing provisional restoration before final cementation. About 43% of practitioners suggested their patients that fixed prosthesis will last for more than ten years

Conclusion: The study observed weak practices in terms of responses like disinfection of impression, prescribing radiographs for every abutment tooth and not availing the opportunity of doing the metal try-in before final cementation of crown and fixed partial denture.

Key Words: Fixed partial denture, Preferences, Impression disinfection, Retraction cord, Shade matching

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INTRODUCTION

Replacing missing teeth with a good quality prosthesis or substitute is the main concern of patients owing to expensive treatments like implants and fixed partial dentures. Quality and service life of replacement prostheses mainly depend on prevailing intraoral condition, quality of laboratory work and expertise of practitioner.[1]

Selection and choices of material during different procedural steps in clinical circumstances is merely a matter of preference by practitioners, however the burden of choice in terms of expenses is borne by patients.[2]

Different impression materials are available in market and practitioners choose materials based on advantages, disadvantages and cost of materials being used. Most of the studies are in favor of using rubber based impression materials in single or multiple viscosities, through a variety of techniques, nevertheless, alginates are still widely used in underdeveloped countries.[3] A study in UK observed an unacceptable quality of impression sent to laboratories.[4]

Various studies observed a wide range percentage of error in impression sent to laboratories and the defects/errors ranged from as low as 36% to as high as 97%.[5,6] Transfer of material and information from dental operatory to dental laboratory must ensure to communicate full required details and at the same time must ensure to safeguard health of people working in laboratories. This is mandatory to have a good quality treatment. This will reduce practitioner affliction during clinical prosthesis adjustment, avoid unnecessary remakes, save patient time/ money and avoid legal measures.[7] Equally important is to safeguard the laboratory personnel from contaminated infected cast and impression material sent to laboratories.[8] For

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successful fixed prosthodontics treatment outcome, importance of provisional restorations and try-in appointment before final cementation and use of diagnostic casts cannot be overlooked. This has been termed as the most neglected treatment step.[9] Similarly involving patient in shade selection procedure is equally important and a local study found that a negligible amount of patients were asked their opinion about the shade selected by practitioner.[10]

As the struggle for good quality materials and equipment is being carried out globally, it is more pertinent to utilize them in order to provide good quality oral health care for the patients. A better prosthesis can only be provided if proper and adequate treatment planning is supplemented by good quality impression materials, dental cast materials, and application of retraction cords, burs accordingly selected and used during different procedural steps of crowns and bridges preparations. Taking meticulous care at each phase and step of treatment will finally lead to a good quality prosthesis, which a patient deserves. This study will be helpful to gather the procedural information of various steps of crown and bridges in different practicing dental centers, providing oral health facilities in the form of fixed prosthodontics treatments in local circumstances. This will also highlight the preferences and choices of materials and equipments used by practitioners at various stages of dental treatments.

MATERIALS AND METHODS

The present cross sectional study was started at Peshawar Dental College, Peshawar (April – July; 2022). An ethical approval certificate (Prime/IRB/2022-438) was obtained from Institutional Review Board before commencing study. The sample size of this cross sectional study was 120 with a 95% confidence interval with a margin of error 5%. A convenient sampling technique was used for this study. Participants of the study included registered dental practitioners with basic qualification of Bachelor of Dental Surgery or equivalent. It also included practitioner having postgraduate qualification of any specialty and actively involved in clinical practice of fixed prosthodontics treatments. All those dental graduates not involved in clinical practice were excluded from the study along with those not involved in providing fixed prosthodontics treatments to their patients An informed consent was sought before filling the questionnaire. Practitioners were approached in personal to distribute the questionnaire. For those who did not have time to fill the questionnaire at the first visit, an equal amount of two weeks were spared between two visits, so as practitioners had enough time to fill it.

Participants of the study were divided in two groups, having equal number (60) of practitioners, depending upon their independent clinical practice experience. Group-I included participants having experience five years or less, while Group-II included clinical experience of six years or more. The questionnaire consisted of various procedural information concerning fixed prosthodontics treatments including crowns and bridges. Responses of practitioners regarding the choice of impression materials, use of retraction cords, provision of provisional restorations, performing metal try-in, explaining of prosthesis service life and use of diagnostics casts for treatment planning are few to mention. Statistical Package for Social Sciences (SPSS) version 22 was used for computing the data. For demographic data frequencies, percentages and mean for the age were calculated. Pearson's Chi square test was applied for comparison of responses recorded for various variables by two groups based on their clinical experience. The value for significance was set to be $p<0.05$.

RESULTS

This cross sectional study included 58% males (n=70) and 42% (n=50) females with the mean age of 28 years and a male/female ratio of 1.4 (Table-1). A total of 155 questionnaires were distributed where 120 were collected back with response rate of 78%, which is reasonable keeping in mind the busy schedule of practice time by practitioners. Most of the practitioners (n=78) had basic bachelor qualifications while others had postgraduate qualification along with basic dental qualifications.

Table No.1: Frequency of gender and qualification

Gender	Male: 70(58%)	Female: 50(42%)
	Male: Female	1:4
Qualification	BDS: 78(65%)	BDS and above: 42 (50%)
Age (years)	Maximum: 61	Minimum: 26
	Mean: 28.42	Standard Deviation: 5.80

The responses for various questions in two groups were almost similar with a slight difference. It can be seen in Table-2 that 89% (n=107) of practitioners were using irreversible hydrocolloid (Alginate) impression materials, while the rest used rubber base impression materials. A total of 56% (n=67) practitioners used study cast for treatment planning before tooth preparation while the rest never used such kind of study casts. The response to disinfection of impressions revealed that out of a total of 120 practitioners only 64 (54%) dental practitioners were performing the procedure of impression disinfection. Before final cementation of completed crowns and bridges a metal try-in of crown and bridges were performed by 65 % (n=78) of practitioners only. A total of 62% (n=74) suggested prostheses longevity of up to 10 years to their

patients while the rest suggested more than 10 years. The statistics for the rest of variables is given in table-2. It can be seen that responses for various questions by practitioners in both groups have slight differences.

Table No.2: Frequency of responses for variables by two groups of practitioners

Variable	Responses						
	Group-1 Experience 5 years or less (n=60)		Group-II Experience 6 years or more (n=60)		Combined Group-I and II (n=120)		p-value
	Yes	No	Yes	No	Yes	No	
Use of Diagnostic Casts	32	28	35	25	67 (56%)	53 (44%)	0.09
Impression with Alginate	58	2	49	11	107 (89%)	13(11%)	0.14
Abutment tooth radiograph	48	12	49	11	97 (87%)	23 (13%)	0.00
Impression Disinfection	33	27	31	29	64 (54%)	56 (46%)	0.04
Longevity of prostheses more than 10 years	21	39	31	29	52 (43%)	68 (57%)	0.95
Doing Metal try-in	38	22	40	20	78 (65%)	42(35%)	0.86
Sending Complete information to lab	48	12	51	9	99(83%)	21(17%)	0.41
Involvement of patient in shade selection	51	9	55	5	106(88%)	14(12%)	0.18
Use of gingival retraction cord	46	14	56	4	102(85%)	18(15%)	0.44

Figure-1 shows the frequency of provisional restorations for abutment teeth by practitioners. It can be seen that only a small numbers 7% of practitioners were providing provisional restorations on regular basis while 75% responded that they sometimes provided it. Those who never provide such restorations were 18% (n=18).

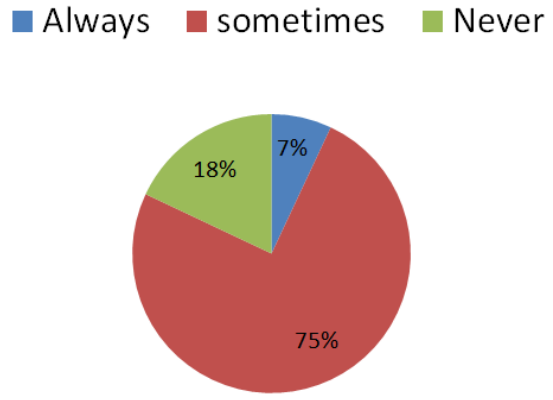

Figure No.1: Provision of provisional restoration by practitioners

DISCUSSION

The current study focused on practitioners' preferences and practices of procedural information regarding provision of crown and fixed partial dentures. The study was deemed necessary to have information in a collective form and to identify the areas having laps and to suggest improvement where necessary. Although choice of material is purely a matter of practitioner's choice, however, literature recommends adequate material and procedure for each treatment modality.

A good impression is a prime prerequisite for any prosthesis. Combination of low and high viscosity rubber based impression materials has shown acceptable results. A study found that around 68% dental students used addition silicone as a choice of material.[2, 11] A different study found Alginates as a choice of impression material. [12] Our study revealed that about 93% of practitioners were using Alginate as final impression material. Apart from practitioner's choice, preference of low cost material (Alginate) over the expensive materials like rubber based impression materials might be a reflection of the low socioeconomic status of people in local population coupled with currently high inflation rate.

Use of diagnostics casts for proper evaluation of individual occlusion and treatment planning cannot be overlooked. Our study observed that 45% of practitioners did not make study casts. A similar Indian study revealed around 29% of practitioners proceeded for final tooth preparation without using diagnostics casts.[11] Increase in number of patient visits and extra time may be the avoiding factor. Another study

concluded that 32% of practitioners avoided using study casts.[12] Provisional restorations on prepared teeth maintain acceptable esthetics, health of tissue and masticatory efficiency. Our study found that 18% practitioners never gave provisional restorations to their patients. A similar kind of trend was found in study where 14% of practitioners avoided this procedure.[13] Study from Riyadh reinforces our findings where around 10% practitioners never provided provisional restorations to their patients.[2]

Spreading of infection can be reduced through disinfections of materials exchange between laboratories and dental clinics. When compared to silicone impression materials, Alginate has been shown to have more bacterial load.[14] Our study showed that 54% of practitioners disinfect the impression, not investigating the type of disinfection material and method used, this being the study limitation. A similar study locally done earlier reported that 58% of practitioners did not use any kind of disinfections after recording impressions finding of which is somehow closer to our study. [15]

Shade selection is critical and should satisfy patient esthetic demand. Our study found that a small percentage (13%) of practitioners did not involve their patients in shade matching procedure, as shown inTable-2. This finding is in contradiction to a study done earlier where 92% of patients were of the opinion that their practitioners did not involve them in shade matching procedure.[10] This contradiction may depicts improvement in this regard with due course of time.

For optimum impression of finish line location use of gingival retraction has been advocated not only for subgingival but for supragingival finish line as well. The current study observed a good practice of using gingival retraction cord being 85%. An earlier study observed that around 61% of practitioners did not use gingival retraction cord before making final impression of the prepared abutment teeth.[16] The difference in statistics might be due to different condition of the abutment teeth and its location in the arch, which was out of scope current study.

Statistics in table-2 denote no significant difference between two groups regarding different variables except for the use of radiograph for abutment teeth before starting the procedure. Our study revealed that around 87% of practitioners prescribe radiograph for every abutment tooth. The current study did not take into consideration the clinical conditions under which practitioners prescribe radiographs and the type of radiograph prescribed. However, in the absence of sign/ symptoms / sound evidence, prescribing radiograph for every abutment tooth cannot be justified. A thorough screening can prevent patients from unnecessary exposure to radiations. A study observed that around 77% of practitioners prescribed panoramic radiograph for no obvious reasons.[17]

The service life of prosthesis depends on a number of factors including the choice of material, clinical expertise of practitioners coupled with proper treatment planning, oral hygiene of patients, post cementation care and regular follow ups. [18] Foster observed that gold based prosthesis life span (10 years) was better than porcelain fused to semi-precious metal prosthesis life span (3-9 years). [19] Around 57% of practitioners suggested their patients a prosthesis life of less than 10 years. This finding is consistent to local studies which observed average prosthesis life of around five years.[20, 21].

CONCLUSION

Majority of practitioners were using Alginate impression material, infrequently providing provisional restoration., largely prescribing radiograph, using gingival retraction cord and not availing the opportunity for metal try- in before final cementation.

Author's Contribution:

Concept & Design of Study:	Muhammad Sartaj Khan
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