Available online at http://www.journalcra.com

International Journal of Current Research
Vol. 8, Issue, 02, pp.26385-26396, February, 2016

INTERNATIONAL JOURNAL OF CURRENT RESEARCH

ISSN: 0975-833X

RESEARCH ARTICLE

COMPARISON STUDY BETWEEN TWO TYPES OF ESTHETIC TREATMENT (DIRECT AND INDIRECT VENEERS)

***,[1]Roula Albounni, [2]Haya A Alkanhal and [3]Mohammed S Alqahtani**

[1]PhD. Restorative & Endodontic Dept. Riyadh Colleges of Dentistry and Pharmacy, Riyadh, Saudi Arabia
[2]College of Dentistry, Riyadh Colleges Dentistry and Pharmacy, Riyadh, Saudi Arabia
[3]College of Dentistry of King Saud University, Riyadh, Saudi Arabia

ARTICLE INFO

Article History:
Received 04th November, 2015
Received in revised form
16th December, 2015
Accepted 23rd January, 2016
Published online 14th February, 2016

Key words:

Veneers, Esthetic, Ceramic treatment,
Composite laminate.

ABSTRACT

Re-establishing a patient's lost dental aesthetic appearance is one of the most important dental demands, new treatment materials and methods have been coming on the sense. In order to achieve this aim, most dentists prefer more conservative and aesthetic approaches, such as direct and indirect veneers. This paper shows that each type of treatment has advantages and disadvantages but we can choose the best technique due to some personal factors of the patient and from his preferable side, we tried to clarify these factors to present the best treatment for long term benefits.

Citation*:* Roula Albounni, Haya A Alkanhal and Mohammed S Alqahtani, 2016. "Comparison study between two types of esthetic treatment (direct and indirect veneers)", *International Journal of Current Research,* 8, (02), 26385-26396.

INTRODUCTION

New ceramic and composite materials have increased conservative treatments of compromised anterior teeth. Indirect additive veneering introduced in the 1980s as an alternative to full-coverage crowns has given rise to the concept of no-preparation or minimal-preparation has followed the development of appropriate enamel bonding procedures. Laminate veneers are restorations which are envisioned to correct existing abnormalities, esthetic deficiencies and discolorations. (Zorba and Ercan, 2008; Dino Re *et al*., 2014) Laminate veneer restorations have two different types: direct and indirect laminate veneers. Direct laminates are applied on prepared tooth surfaces with a composite resin material in the dental clinic, while indirect veneers fabricate from ceramic materials. The esthetic treatment of anterior teeth with porcelain veneers is a conservative and lasting treatment option. The cosmetic improvement of the smile is possible with both direct (Korkut *et al*., 2013; Zorba *et al*., 2010) and indirect techniques (Mangani *et al*., 2007; Horvath and Schulz, 2012) the latter being preferred by most dentists (Gurel *et al*., 2012; Magne and Magne, 2006 Porcelain laminate veneers can be used to correct tooth forms, color and other esthetic problems like: diastemata; old composite restorations; spaces, non caries lesions, as abrasion and erosion; hiding tooth discolorations. (Garber, 1988; Friedman, 2001; Fradeani, 1998) but also there are some contraindications in this type of treatment as parafunction habits. Although known to be poor in patients with parafunctional habits the success rate could be increased if we can control the parafunction activities. (Peumans *et al*., 1998; Walls, 1995; Peumans *et al*., 2000) Composite based direct laminates need a wide background of knowledge about the manipulation of composite resins, suitable preparation, and good realization of optical properties of the tooth structure. (A Composite Laminate Veneer Techniquefor Diastema Closure: A Report of Ten Cases, 2012) However these veneers offer greater control to the dentist (Bora Korkut *et al*., 2013). The dentist is able to visualize the final aesthetic result before starting treatment which is useful for the clinician and the patient, this type of restoration will give us a new smile and make a decision before teeth preparations. (Bora Korkut *et al*., 2013) Given the above mentioned gaps in literature the aim of this study is comparing between the two previous techniques from the patient preferable side and patients comfortable side,

****Corresponding author: Roula Albounni,***
PhD. Restorative & Endodontic Dept. Riyadh Colleges of Dentistry and Pharmacy, Riyadh, Saudi Arabia.

in addition the longevity of the treatment and aesthetic demands.

MATERIAL AND METHODS

20 patients with different esthetic problems in anterior teeth were selected, after doing the patient assessment and treatment planning for each patient, they were divided into two groups; the 1st group was underwent to indirect veneers technique, and the 2nd group was treated by direct composite veneers technique, after scaling and cleaning for the entire teeth we started each treatment with full respect of the rules for each technique and following the instructions of the materials applications,

Three objectives were studied to compare between both techniques in our research

1- The comfortable of the patient during the treatment period
2- Time consuming of each technique.
3- The current satisfaction of the patient with the final result.

Tooth preparation

For each restoration, the shade was determined before starting any clinical procedure. For optimal tooth preparation reduction, we used a silicone index, which derived from a wax up. For indirect veneers preparation, Axial reduction was achieved through tapered round-ended burs, controlled by a silicone index. Buccally, the preparation thickness ranged from 0.5 to 0.7 mm. The incisal reduction was up to 1 mm. It is mandatory to preserve enamel as much as possible; according to Friedman,10 the best long-term retention for porcelain veneer restorations is achieved when 50% of the supporting substrate is enamel and all finish lines end within enamel. A light chamfered facial finish line is normally recommended for this type of technique, with the preparation extended only as far interproximally as necessary to hide the restoration margins. The presence of a Class III composite restoration can sometimes make it advisable for us to open the interproximal contact points between the teeth. The incisal finish line consisted of either a butt or a conservative palatal light chamfer extended to the palatal incisal third but not involving the palatal concavity. The location of the cervical margins was carefully selected for each restoration, the margins were located slightly into the crevice.

Impression taking

As for intracrevicular margins, we applicate retraction cord (No. 00 Ultrapack, Ultradent) soaked in a hemostatic solution (Hemodent, Premier Dental; Ultradent Aluminum Chloride, Ultradent) Then we did the final impression by means of a polyether material (Permadyne or Impregum, ESPE). We used composite provisional restorations, as temporary veneers until the final veneers are ready.

Luting

At the try-in stage, first we assessed the individual veneers for, shade match, good contour, marginal adaptation and proximal contacts. Also occlusion was examined after cementation. We used ideal, translucent cement to ensure the best esthetic result. we chose the appropriate cement in color and viscosity using try-in pastes. After that we etched The internal surface of ceramic restorations for 2 minutes with 9.5% hydrofluoric acid (Porcelain Etch, Ultradent; Porcelain Etchant, Bisco). Then acid was rinsed with water and dried. A silane agent (Monobond S, Ivoclar Vivadent; Porcelain Primer, Bisco; Ceramic Primer, 3M) was applied and gentle dry on the veneer restorations. At the same time, we etched the prepared surface of the tooth for 30 seconds with 37% phosphoric acid (Ultra-etch, Ultradent). After water rinsing and drying, dentin adhesive was applied to the etched tooth and the inner surface of the restoration (Syntac, Ivoclar Vivadent; All Bond 2, Bisco; Multipurpose, 3M). Finally, luting procedures were performed. We removed the excess cement with a brush and tried dental floss inter- proximally. The light cure was applicated from each side for 40 seconds. then we used the finishing burs and rubber cups to enhance the marginal adaptation and remove the hidden access. The preparation of direct veneers were done conservatively by only bevel for all facial surfaces of the teeth in the same visit (one visit) the started the application of the composite layers as usual by etching the enamel first, applying the bonding agent, extending the composite material on the entire surface, and then the finishing and polishing step by Sof- Lex disks (3M ESPE).

The responses were measured on a 5 point (Likert scale) with

1 - as very dissatisfied 2- dissatisfied 3- mild satisfied 4- moderate satisfied, and 5- as very satisfied. Data was collected from a convenient sample patients, and submitted to the statistical analysis.

Statistical analysis group

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Direct	10	50.0	50.0	50.0
Indirect	10	50.0	50.0	100.0
Total	20	100.0	100.0	

Gender

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Male	7	35.0	35.0	35.0
Female	13	65.0	65.0	100.0
Total	20	100.0	100.0	

Age group

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 18 to less than 30	13	65.0	65.0	65.0
30 to 40	7	35.0	35.0	100.0
Total	20	100.0	100.0	

Education

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Primary School	1	5.0	5.0	5.0
Secondary School	3	15.0	15.0	20.0
High School	6	30.0	30.0	50.0
University	10	50.0	50.0	100.0
Total	20	100.0	100.0	

Statistics

	comfort of the patient	time consuming of the technique	current final result
N Valid	20	20	20
Missing	0	0	0

Comfort of the patient

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid dissatisfied	1	5.0	5.0	5.0
Mild satisfied moderate satisfied	2	10.0	10.0	15.0
Very	5	25.0	25.0	40.0
Satisfied	12	60.0	60.0	100.0
Total	20	100.0	100.0	

Time consuming of the technique

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid dissatisfied	1	5.0	5.0	5.0
Mild satisfied moderate satisfied	2	10.0	10.0	15.0
Very satisfied	8	40.0	40.0	55.0
Total	9	45.0	45.0	100.0
	20	100.0	100.0	

Current final result

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Mild satisfied	2	10.0	10.0	10.0
moderate satisfied	2	10.0	10.0	20.0
Very satisfied	16	80.0	80.0	100.0
Total	20	100.0	100.0	

T-Test

Group Statistics

	group	N	Mean	Std. Deviation	Std. Error Mean
average	Direct	10	4.333	.8012	.2534
	Indirect	10	4.567	.6488	.2052
comfort of the patient	Direct	10	4.20	1.033	.327
	Indirect	10	4.60	.699	.221
time consuming of the technique	Direct	10	4.30	.675	.213
	Indirect	10	4.20	1.033	.327
current final result	Direct	10	4.50	.850	.269
	Indirect	10	4.90	.316	.100

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means
		F	Sig.	t
average	Equal variances assumed	.388	.541	-.716
	Equal variances not assumed			-.716
comfort of the patient	Equal variances assumed	1.161	.295	-1.014
	Equal variances not assumed			-1.014
time consuming of the technique	Equal variances assumed	1.245	.279	.256
	Equal variances not assumed			.256
current final result	Equal variances assumed	11.184	.004	-1.395
	Equal variances not assumed			-1.395

Independent Samples Test

		t-test for Equality of Means		
		df	Sig. (2-tailed)	Mean Difference
average	Equal variances assumed	18	.483	-.2333
	Equal variances not assumed	17.254	.484	-.2333
comfort of the patient	Equal variances assumed	18	.324	-.400
	Equal variances not assumed	15.818	.326	-.400
time consuming of the technique	Equal variances assumed	18	.801	.100
	Equal variances not assumed	15.502	.801	.100
current final result	Equal variances assumed	18	.180	-.400
	Equal variances not assumed	11.445	.190	-.400

Independent Samples Test

		t-test for Equality of Means	
		Std. Error Difference	95% Confidence Interval of the Difference Lower
average	Equal variances assumed	.3260	-.9183
	Equal variances not assumed	.3260	-.9204
comfort of the patient	Equal variances assumed	.394	-1.229
	Equal variances not assumed	.394	-1.237
time consuming of the technique	Equal variances assumed	.390	-.720
	Equal variances not assumed	.390	-.729
current final result	Equal variances assumed	.287	-1.002
	Equal variances not assumed	.287	-1.028

Independent Samples Test

		t-test for Equality of Means 95% Confidence Interval of the Difference Upper
average	Equal variances assumed	.4516
	Equal variances not assumed	.4538
comfort of the patient	Equal variances assumed	.429
	Equal variances not assumed	.437
time consuming of the technique	Equal variances assumed	.920
	Equal variances not assumed	.929
current final result	Equal variances assumed	.202
	Equal variances not assumed	.228

Case Processing Summary

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
group * comfort of the patient	20	100.0%	0	0.0%	20	100.0%
group * time consuming of the technique	20	100.0%	0	0.0%	20	100.0%
group * current final result	20	100.0%	0	0.0%	20	100.0%

Group * comfort of the patient

Crosstab

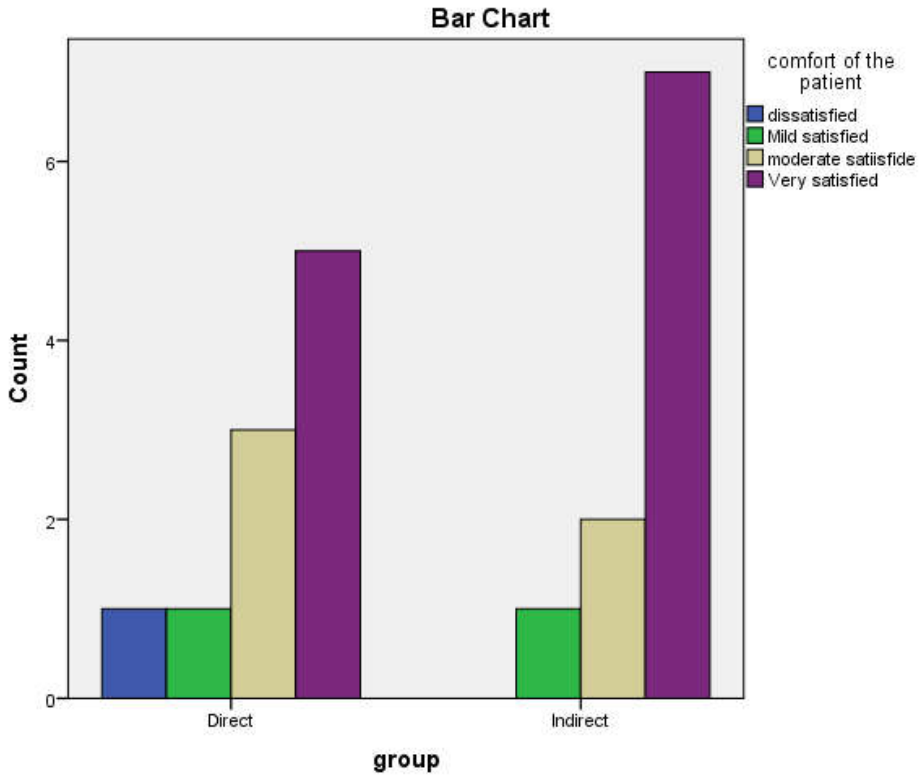
			comfort of the patient		
			dissatisfied	Mild satisfied	moderate satisfied
group	Direct	Count	1	1	3
		% within group	10.0%	10.0%	30.0%
		% within comfort of the patient	100.0%	50.0%	60.0%
	Indirect	Count	0	1	2
		% within group	0.0%	10.0%	20.0%
		% within comfort of the patient	0.0%	50.0%	40.0%
Total		Count	1	2	5
		% within group	5.0%	10.0%	25.0%
		% within comfort of the patient	100.0%	100.0%	100.0%

Crosstab

			comfort of the patient Very satisfied	Total
group	Direct	Count	5	10
		% within group	50.0%	100.0%
		% within comfort of the patient	41.7%	50.0%
	Indirect	Count	7	10
		% within group	70.0%	100.0%
		% within comfort of the patient	58.3%	50.0%
Total		Count	12	20
		% within group	60.0%	100.0%
		% within comfort of the patient	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.533[a]	3	.675
Likelihood Ratio	1.923	3	.589
Linear-by-Linear Association	1.027	1	.311
N of Valid Cases	20		



Group * time consuming of the technique

Crosstab

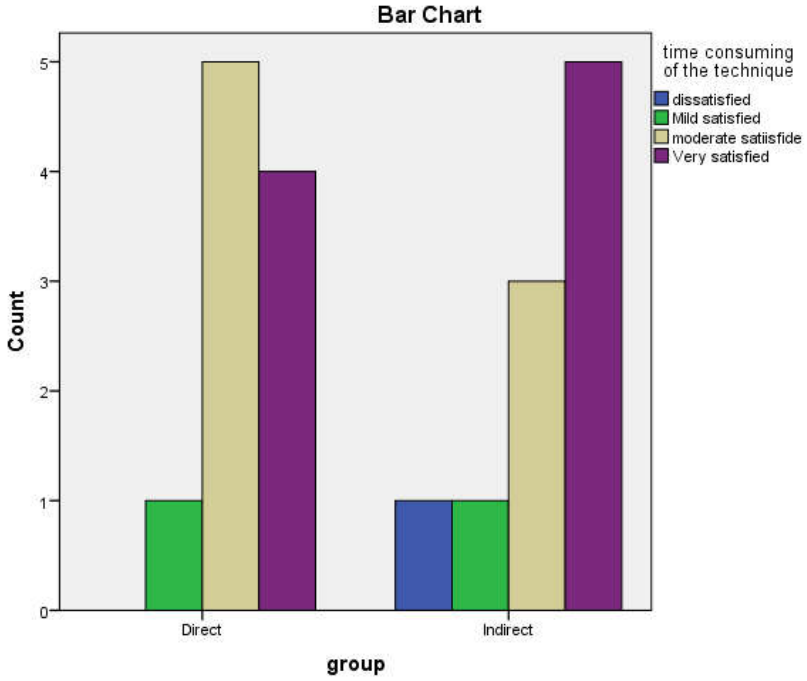
			time consuming of the technique		
			dissatisfied	Mild satisfied	moderate satisfied
group	Direct	Count	0	1	5
		% within group	0.0%	10.0%	50.0%
		% within time consuming of the technique	0.0%	50.0%	62.5%
	Indirect	Count	1	1	3
		% within group	10.0%	10.0%	30.0%
		% within time consuming of the technique	100.0%	50.0%	37.5%
Total		Count	1	2	8
		% within group	5.0%	10.0%	40.0%
		% within time consuming of the technique	100.0%	100.0%	100.0%

Crosstab

			time consuming of the technique Very satisfied	Total
group	Direct	Count	4	10
		% within group	40.0%	100.0%
		% within time consuming of the technique	44.4%	50.0%
	Indirect	Count	5	10
		% within group	50.0%	100.0%
		% within time consuming of the technique	55.6%	50.0%
Total		Count	9	20
		% within group	45.0%	100.0%
		% within time consuming of the technique	100.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.611[a]	3	.657
Likelihood Ratio	2.003	3	.572
Linear-by-Linear Association	.069	1	.793
N of Valid Cases	20		



Group * current final result

Crosstab

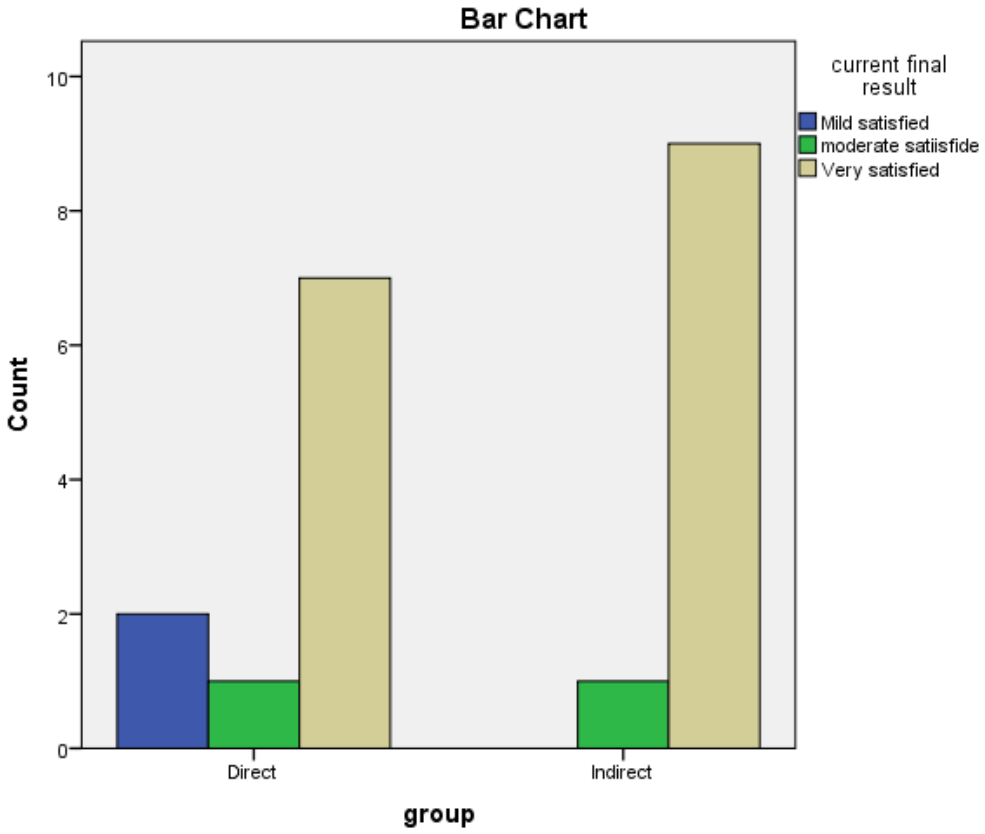
			current final result		
			Mild satisfied	moderate satisfied	Very satisfied
group	Direct	Count	2	1	7
		% within group	20.0%	10.0%	70.0%
		% within current final result	100.0%	50.0%	43.8%
	Indirect	Count	0	1	9
		% within group	0.0%	10.0%	90.0%
		% within current final result	0.0%	50.0%	56.3%
Total		Count	2	2	16
		% within group	10.0%	10.0%	80.0%
		% within current final result	100.0%	100.0%	100.0%

Crosstab

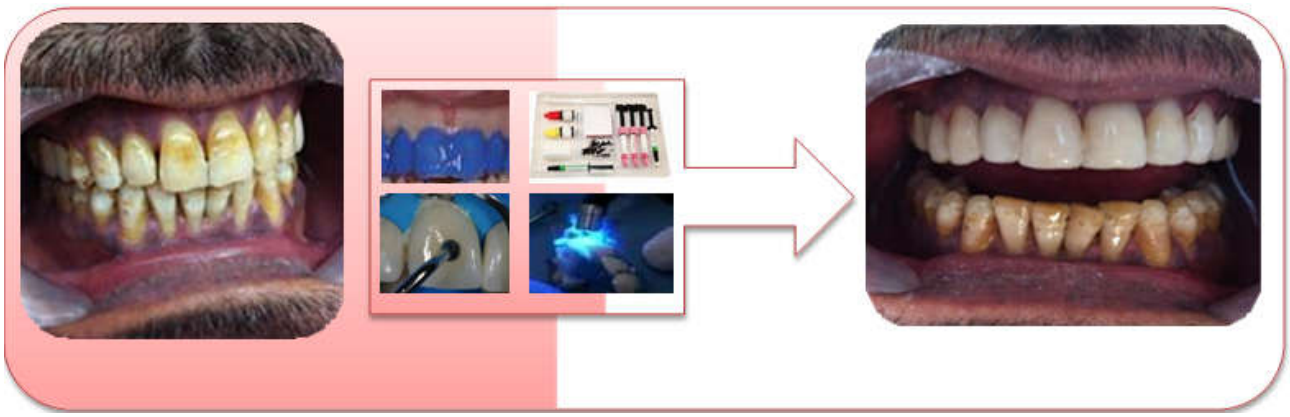
			Total
group	Direct	Count	10
		% within group	100.0%
		% within current final result	50.0%
	Indirect	Count	10
		% within group	100.0%
		% within current final result	50.0%
Total		Count	20
		% within group	100.0%
		% within current final result	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square Likelihood Ratio	2.250[a] 3.023	2 2	.325 .221
Linear-by-Linear Association N of Valid Cases	1.854 20	1	.173



Clinical cases:



Direct veneers

Indirect veneers

DISCUSSION

Also, different treatment options have been suggested for the esthetic reestablishment of the anterior teeth and dental structure preservation. In our study we do agree with (Rodrigo Carlos Nahas de Castro Pinto-2013) who stated that PLV can be considered excellent esthetic alternatives because of their optical properties, greater mechanical resistance, and preservation of the dental structure. Also, we agree with (Luciana Favaro Francisconi-2012) who proved that predictable, repairable, low-cost, and relatively easily applicable approach that associates direct dental recontouring can restore the esthetics of the smile and the face, thereby rescuing patients' self-esteem and improving their quality of life. As a result the reestablishment of the Function towards to esthetics is now considered the ideal outcome of any treatment. New restorative materials, techniques and PPS procedures have been studied with the purpose of providing more predict- able and minimally invasive dental procedures. But in the side of satisfaction about the final esthetic outcome, it looks more tending to indirect veneers due to high mechanical and physical properties of ceramics. While the comfortable of the patient during the treatment is attributed to the personal and psychological sides of the patients. Few studies of the clinical performance of porcelain veneers are available to date, whereas several papers dealing with in vitro studies of the system have been published. However, in vitro studies do not have the same value as in vivo studies. In addition we can say that each modality of esthetic treatment relates with many personal factors like the priority of the patient, expectations, the oral hygiene, following the instructions, and the commitment of recall visits. In our study we found that both direct and indirect restorations were satisfied with all three questions, may be this is because of the limited number of the implemented patients in this study. It was clear that time consuming seems to be more valid with direct veneers because of the short time of achievement. Patients demands for improved esthetics have led to significant change in the field of dentistry.

Conclusion

In this study the two techniques were satisfied and present excellent results, all implemented patients were pleased, but as a general rule the best choice of veneer treatment depend basically on the personal factors of the patient, the dentist should make the decision after a complete review with proper clinical examination and concentrate on the subjective dental factors of the patient, preferable demands, socioeconomic status, and esthetic expectations.

REFERENCES

A Composite Laminate Veneer Techniquefor Diastema Closure: A Report of Ten Cases doi: 10.5577/intdentres. 2012. Vol2.no3.2 .

Bora Korkut,Funda Yanıkoğlu, and Mahir Günday, Direct Composite Laminate Veneers: Three Case Reports, J Dent Res Dent Clin Dent Prospects. 2013 *Spring*; 7(2): 105–111.Published online May 30, 2013. doi: 10.5681/joddd. 2013.019.

Dino Re, Gabriele Augusti,Massimo Amato, Giancarlo Riva, and Davide Augusti, Esthetic Rehabilitation of Anterior Teeth with Laminates Composite Veneers, Case Rep Dent. 2014; 2014: 849273. Published online Jun 11, 2014. doi: 10.1155/2014/849273 .

Fradeani M. Six-year follow-up with Empress veneers. *Int J Periodontics Restorative Dent,* 1998; 18:217–225.

Friedman MJ. Porcelain veneer restorations: A clinician's opinion about a disturbing trend. *J Esthet Restorative Dent,* 2001; 13:318–327 .

Garber DA, Goldstein RE, Feinman RA. Porcelain Laminate Veneers. Chicago:Quintessence, 1988:14–23.

Gurel G, Morimoto S, Calamita MA, Coachman C, Sesma N. Clinical performance of porcelain laminate veneers: outcomes of the aesthetic pre-evaluative temporary (APT) technique. *International Journal of Periodontics & Restorative Dentistry*, 2012;32(6):625–635.

Horvath S, Schulz C-P. Minimally invasive restoration of a maxillary central incisor with a partial veneer. *The European Journal of Esthetic Dentistry*, 2012;7(1):6–16.

Korkut B, Yanıkoğlu F, Günday M. Direct composite laminate veneers: three case reports. *Journal of Dental Research, Dental Clinics, Dental Prospects*, 2013;7(2):105–111 .

Magne P, Magne M. Use of additive waxup and direct intraoral mock-up for enamel preservation with porcelain laminate veneers. *The European Journal of Esthetic Dentistry*, 2006;1(1):10–19 .

Mangani F, Cerutti A, Putignano A, Bollero R, Madini L. Clinical approach to anterior adhesive restorations using resin composite veneers. *The European Journal of Esthetic Dentistry*, 2007;2(2):188–209

Peumans M, Van Meerbeek B, Lambrechts P, Vanherle G. Porcelain veneers: A review of the literature. *J Dent*, 2000;28:163–177

Peumans M, Van Meerbeek B, Yoshida Y, Lambrechts P, Vanherle G. Five-year clinical performance of porcelain veneers. *Quintessence Int*., 1998;29:211–221.

Walls AWG. The use of adhesively retained all-porcelain veneers during the management of fractured and worn anterior teeth: Part 2. Clinical results after 5 years of follow-up. *Br Dent J*., 1995;178: 337–340.

Zorba YO, Bayindir YZ, Barutcugil C. Direct laminate veneers with resin composites: two case reports with five-year follow-ups. *The Journal of Contemporary Dental Practice*, 2010;11(4):E056–E062 .

Zorba YO, Ercan E. Direkt uygulanan kompozit laminate veneerlerin klinik değerlendirilmeleri: iki olgu sunumu. SÜ Dişhek Fak Der. 2008;17:130–5.

****