

Aesthetic Evaluation After Application of a Modified Tunnel Technique for Root Coverage

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Introduction

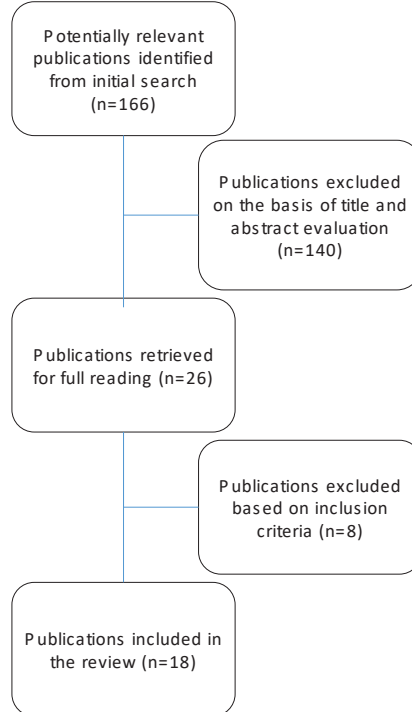
Nowadays, aesthetics has become an increasing concern in our society, which has driven Dentistry to provide effective and aesthetic solutions for the issues related to oral pathology, particularly in the field of Periodontology. The exposure of the root surfaces and the changes of periodontal tissues resulting from gingival recession are an aesthetic compromise with high appreciation by the patients. In recent decades, several root coverage procedures capable of meeting the growing aesthetic demands of patients were proposed. Consequently, methods were developed to allow the postoperative aesthetic evaluation of the results obtained with these different techniques, in an objective and reproducible manner.

Aims

- 1º - To assess the applicability of objective aesthetic evaluation indexes for analysis of the outcomes obtained after periodontal plastic surgery procedures, by conducting a systematic review.
- 2º - To evaluate retrospectively the aesthetic results obtained after application of a modified tunnel technique in the treatment of gingival recessions, using the aesthetic evaluation scale Root Coverage Esthetic Score (RES).

Systematic Review - Material & Methods

- Electronic search in primary (PubMed) and secondary (b-on) databases;
- Search terms: "soft tissue evaluation"; "aesthetic index"; "esthetic score"; "esthetic assessment"; "esthetic outcomes"; "root coverage procedure", combined with the boolean connector "AND";
- Manual search of Journal of Clinical Periodontology and Journal of Periodontology.
- Inclusion criteria:
 - Publications between 2005 and June 2015.
 - English or Portuguese languages, with available abstract.
 - Human studies (case series, randomized controlled trials and systematic reviews).
 - Publications describing a new objective index for aesthetical evaluation, which included a soft tissue component evaluation, and/or assessing the validity and reproducibility of those indexes.
- Exclusion criteria:
 - Animal studies;
 - In vitro studies;
 - Articles referring the mere clinical use of an aesthetic evaluation index, without any critical appraisal.

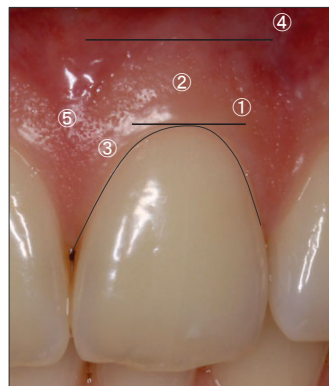


Systematic Review - Results

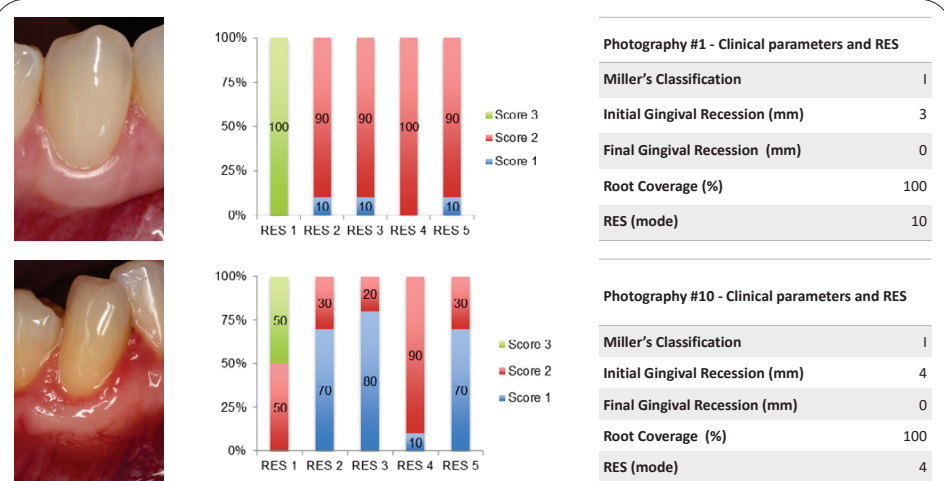
Index	Authors	Year	Pink Aesthetic	White Aesthetic	Type of Treatment
Pink Esthetic Score	Fürhauser <i>et al.</i>	2005	+	+	Implant-supported restoration
Implant Crown Aesthetic Index	Meijer <i>et al.</i>	2005	+	+	Implant-supported restoration
Subjective Esthetic Score	Evans & Chen	2008	+	-	Implant-supported restoration
Root Coverage Esthetic Score	Cairo <i>et al.</i>	2009	+	-	Root coverage
Pink Esthetic Score/White Esthetic Score	Belser <i>et al.</i>	2009	+	+	Implant-supported restoration
Copenhagen Index Score	Dueled <i>et al.</i>	2009	+	+	Implant-supported restoration
Complex Esthetic Score	Juozdzbalsys <i>et al.</i>	2010	+	+	Implant-supported restoration
Modified Implant Crown Aesthetic Score	Vilhjalmsson <i>et al.</i>	2011	+	+	Implant-supported restoration
Peri-Implant and Crown Index	Tettamanti <i>et al.</i>	2015	+	+	Implant-supported restoration

Aesthetic Evaluation - Materials & Methods

- 11 patients (10 ♀ and 1 ♂, mean of ages: 33,1 ± 9,1 years) submitted to a modified tunnel technique for root coverage (Zuhr *et al.* 2007) by the same operator (SM) were retrospectively selected;
- 21 treated gingival recessions for evaluation on post-operative photographs;
- 4 random negative controls photographs with and without gingival recessions;
- 10 examiners:
 - 7 professionals of different specialties (3 periodontists, 2 orthodontists, 2 prosthodontists)
 - 3 finalists pre-graduated dental students.
- Root coverage esthetic score (RES) (Cairo *et al.* 2009):
 - Level of the gingival margin: zero points = failure of root coverage (gingival margin apical or equal to the baseline recession); 3 points = partial root coverage; 6 points = complete root coverage.
 - Soft tissue texture: zero points = scar formation and/or keloidlike appearance; 1 point = absence of scar or keloid formation.
 - Marginal tissue contour: zero points = irregular gingival margin (does not follow the CEJ); 1 point = proper marginal contour/scalloped gingival margin (follows the CEJ).
 - Mucogingival junction alignment: zero points = MGJ not aligned with the MGJ of adjacent teeth; 1 point = MGJ aligned with the MGJ of adjacent teeth.
 - Gingival color: zero points = color of tissue varies from gingival color at adjacent teeth; 1 point = normal color and integration with the adjacent soft tissues.



Aesthetic Evaluation - Results



Case	Age	Gender	Tooth	Miller's Class	Initial Recession (mm)	Final Recession (mm)	Root Coverage (%)	RES (Mode)
#1 (V)	23	Female	43	1	3	0	100	10
#2 (V)	23	Female	44	1	2	0	100	10
#3 (TM)	23	Female	31	2	4	0,5	87,5	6
#4 (TM)	23	Female	41	2	2	0	100	4
#5 (SS)	38	Female	33	1	2	0	100	10
#6 (SS)	38	Female	34	1	3	0	100	7
#7 (SS)	38	Female	35	1	2	0	100	7
#8 (MC)	46	Female	43	1	4	0	100	5
#9 (MC)	46	Female	44	1	3	0	100	5
#10 (NQ)	36	Male	43	1	4	0	100	4
#11 (OR)	42	Female	33	2	3	0	100	7
#12 (OR)	42	Female	34	2	4	0	100	7
#13 (OR)	42	Female	44	2	4	1	75	7
#14 (MG)	30	Female	31	2	3	0,5	83,3	4
#15 (JM)	22	Female	31	2	6	2	66,7	7
#16 (AF)	22	Female	33	2	4	2	50	6
#17 (AR)	33	Female	42	1	3	0	100	6
#18 (AR)	33	Female	41	1	3	0	100	10
#19 (AR)	33	Female	31	1	2	0	100	10
#20 (AG)	49	Female	11	1	3	0	100	10
#21 (AG)	49	Female	21	1	3	0	100	10

Conclusions

- This systematic review identified 9 objective esthetic indexes, in which the Root Coverage Esthetic Score is, up till this day, the only objective evaluation system specifically centered on the esthetic results after root coverage procedures.
- The modified tunnel technique allowed a significant root coverage (mean: 93,45%) in cases of single or multiple classe I and II of Miller gingival recessions.
- The clinical results were associated with good esthetics (RES = 7.4 ± 2.270), in which 62% of the cases obtained a RES ≥ 7.

Clinical Implications

- The RES seems to be a useful tool for assessing the esthetic outcomes of root coverage procedures. However, it may not be representative of the clinical esthetic reality, being desirable to introduce new objective esthetic indices that allow a balanced appreciation of the parameters to be evaluated.

Parameters	Alfa de Cronbach	Internal consistency	Comparison between groups of examiners				
			Groups	N	Mean	Standard Deviation	ANOVA
RES 1	0.941	Very good	Student	63	6.78	2.331	0.017
RES 2	0.791	Fair	Orthodontist	42	7.67	2.032	
RES 3	0.836	Good	Prosthodontist	42	8.12	1.978	
RES 4	0.693	Weak	Periodontist	63	7.38	2.217	
RES 5	0.840	Good	Total	210	7.40	2.210	

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