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Istituto Superiore di Sanità



Emocomponenti ad uso non trasfusionale in odontoiatria

Giuseppe Marano

Italian National Blood Centre

EMOCOMPONENTI
AD USO NON
TRASFUSIONALE:
STATO DELL'ARTE
E SVILUPPI FUTURI

21 GENNAIO 2020

Istituto Superiore di Sanità
Aula Pocchiari
Viale Regina Elena, 299 – Roma

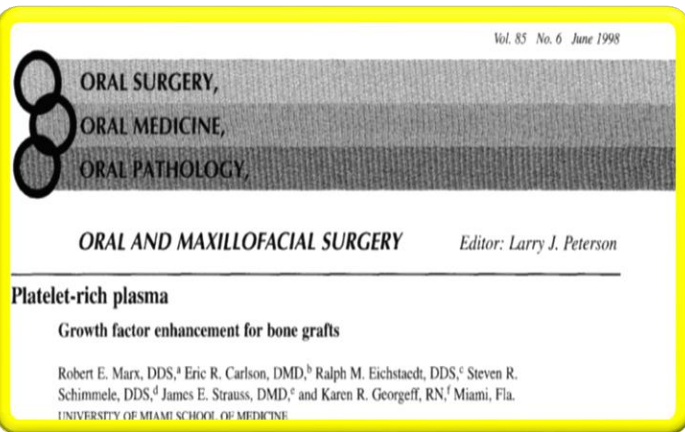
Conflitto di interessi

Il sottoscritto, in qualità di Relatore,

dichiara che

- nell'esercizio della sua funzione e per l'evento in oggetto, **NON È** in alcun modo portatore di interessi commerciali propri o di terzi;
- dichiara inoltre che gli eventuali rapporti avuti negli ultimi due anni con soggetti portatori di interessi commerciali **non sono tali da permettere a tali soggetti di influenzare** le sue funzioni al fine di trarne vantaggio.

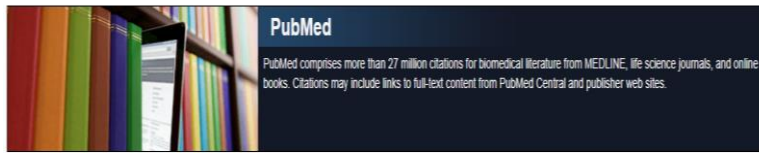
The starting point



Da quando un chirurgo maxillofacciale americano (Marx R.E.) pubblicò nel 1998 i primi risultati riguardanti l'accelerazione della crescita dell'osso mandibolare, ottenuta con l'aggiunta locale al trapianto di osso spugnoso di concentrati piastrinici, si è progressivamente sviluppato un grande interesse per l'applicazione topica delle piastrine, incluse o meno in una matrice fibrinica, quali fonte di fattori di crescita per lo stimolo alla riparazione tissutale.

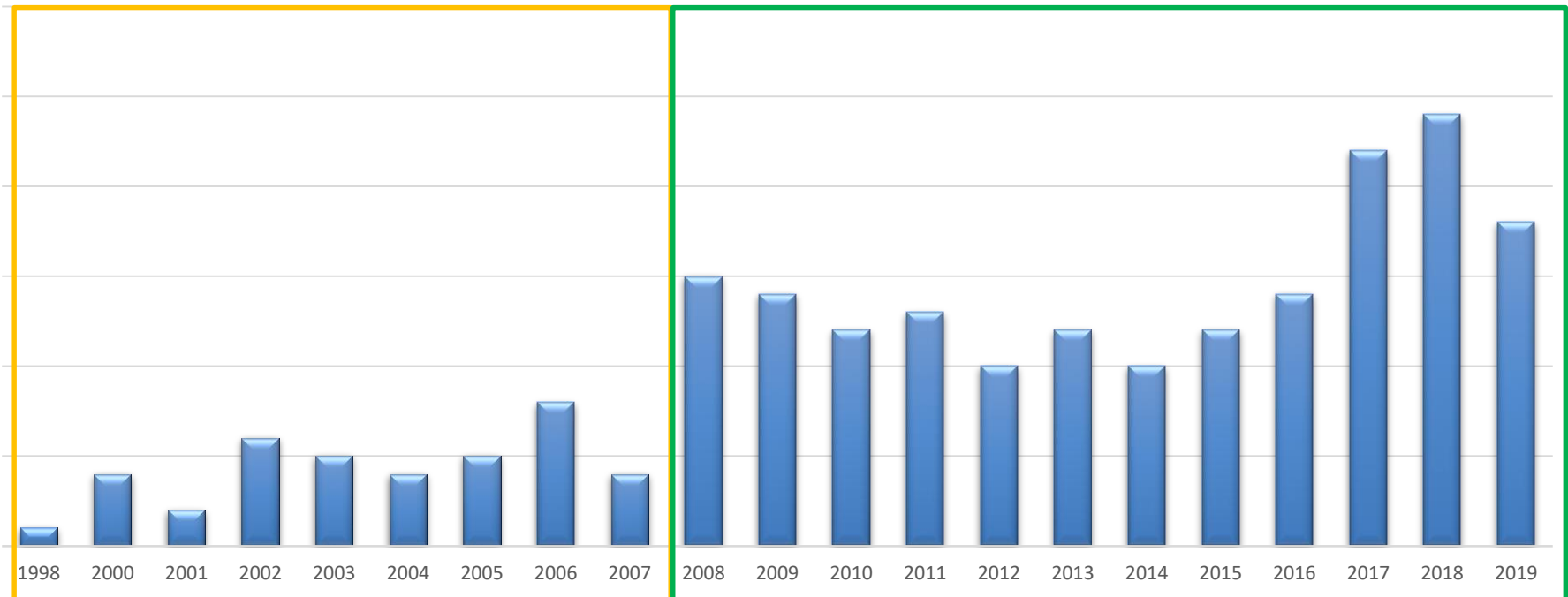


Emocomponenti per uso non-trasfusionale in odontoiatria: letteratura scientifica



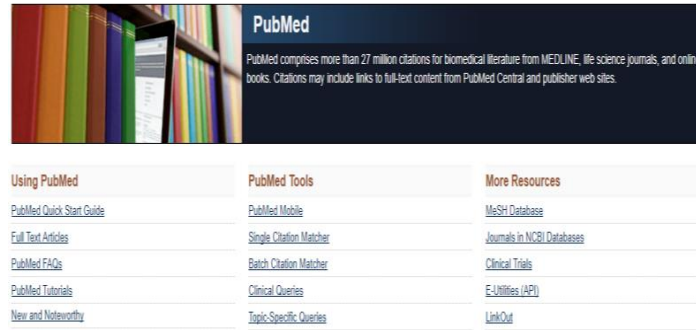
Using PubMed	PubMed Tools	More Resources
PubMed Quick Start Guide	PubMed Mobile	MeSH Database
Full Text Articles	Single Citation Matcher	Journals in NCBI Databases
PubMed FAQs	Batch Citation Matcher	Clinical Trials
PubMed Tutorials	Clinical Queries	E-Utilities (API)
New and Noteworthy	Topic-Specific Queries	Link Out

Pubmed: “platelet concentrate” AND “platelet-rich plasma” AND “platelet gel” AND “PRP” AND “oral surgery” AND “dentistry” AND “dental surgery” AND “periodontal surgery” AND “dentoalveolar surgery” (2000-2019)

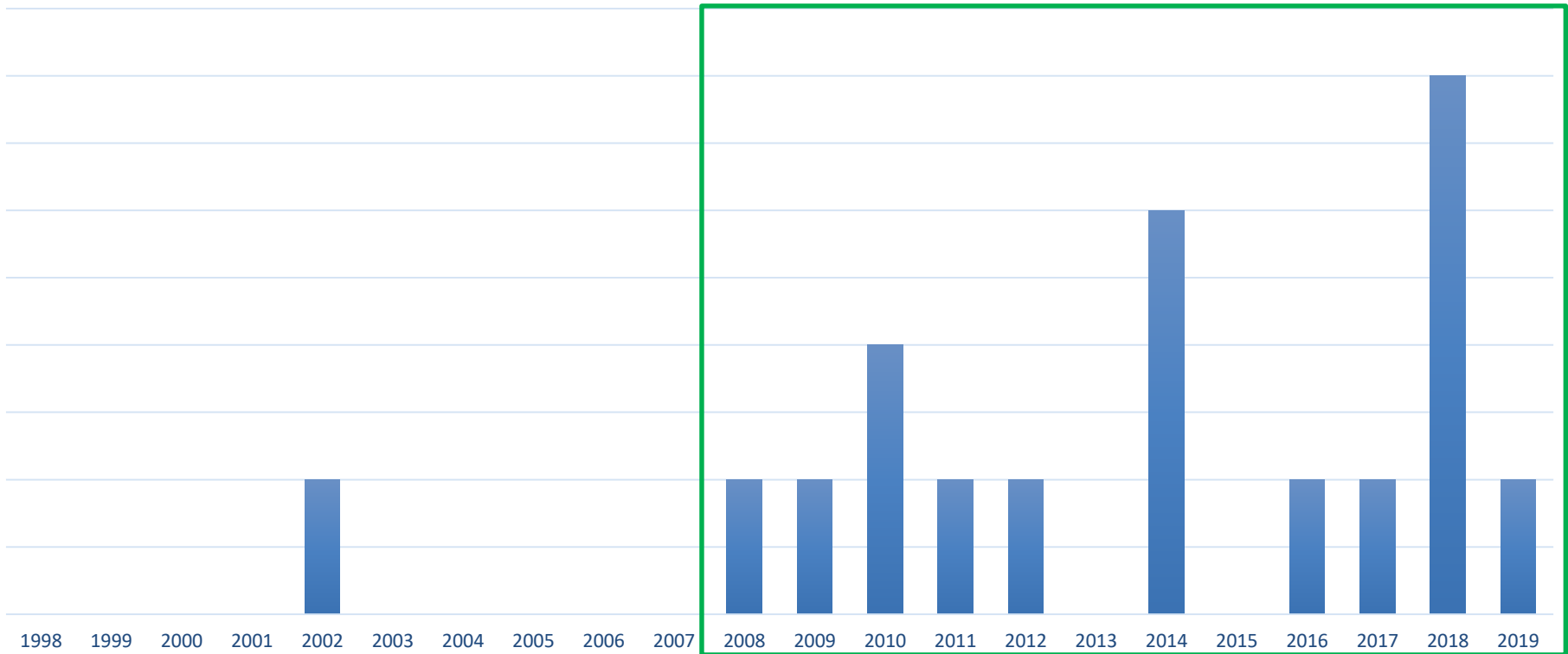


Fonte: <https://www.ncbi.nlm.nih.gov/pubmed>

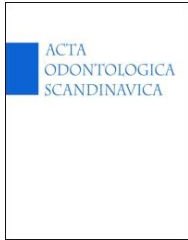
Emocomponenti per uso non-trasfusionale in odontoiatria: letteratura scientifica



- **Revisioni della Cochrane Library**
- **Review Sistematiche**
- **Meta-analisi**



Emocomponenti per uso non-trasfusionale in odontoiatria: revisione della letteratura



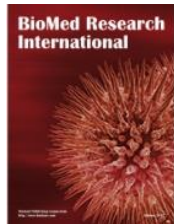
2017

Zornitsa Mihaylova, et al. **Use of platelet concentrates in oral and maxillofacial surgery: an overview.** Acta Odontologica Scandinavica, 75:1, 1-11.

Conclusion:

Evidence described in the literature on the efficacy of platelet concentrates in procedures in oral and maxillofacial region are controversial and limited. In order to clarify the real advantages and priorities for the patients, when the blood-derived products are applied, further in vitro and in vivo research about the activity of PRP and PRF on the dental cells biology should be conducted.

Review Article



Efficacy of Adjunctive Bioactive Materials in the Treatment of Periodontal Intrabony Defects: A Systematic Review and Meta-Analysis

Shuai Zhou,¹ Chengjia Sun,² Shaohui Huang,³ Ximing Wu,² Yan Zhao,¹ Chunling Pan ,¹ Hongyan Wang ,¹ Junchao Liu,¹ Qian Li,² and Yurong Kou ,^{1,2}

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³Department of Oral and Maxillofacial Surgery, School of Stomatology, China Medical University, Shenyang, Liaoning 110002, China

2018

Conclusion:

Our data suggest that PRF/PRP could be taken as a preferred adjunct to facilitate periodontal regeneration of intrabony defects.

Albanese et al. Immunity & Ageing 2013, 10:23
<http://www.immunityageing.com/content/10/1/23>

2013



REVIEW

Open Access

Platelet-rich plasma (PRP) in dental and oral surgery: from the wound healing to bone regeneration

Antonino Albanese*, Maria E Licata, Bianca Polizzi and Giuseppina Campisi

not difficult to obtain and use, PRP can be employed as a valid adjunct to many procedures in oral and dental surgery. However, further RCTs are required to support the use of PRP in current practice.

Among the 7 studies included, substantial heterogeneities were found in our analysis at the end of the screening phase for the characteristics of the patient population, tooth location and type, surgical protocol, method for obtaining the platelet concentrate, outcome variables, success criteria, and follow-up time. These differ-

The Role of Autologous Platelet Concentrates in Alveolar Socket Preservation: A Systematic Review

Marco Annunziata^a Luigi Guida^a Livia Nastri^a Angelantonio Piccirillo^a Linda Sommese^b
Claudio Napoli^{c,d}

Validity	Quality criteria	Study						
		Alissa et al., 2010 [15]	Farina et al., 2013 [21]	Suttapreyasri and Leepong 2013 [17]	Hauser et al. 2013 [18]	Anitua et al. 2015 [16]	Marenzi et al. 2015 [19]	Temmerman et al. 2016 [20]
External	declared use specific protocol guidelines	yes	NR	NR	NR	yes	NR	NR
	representative population group	yes	yes	yes	yes	yes	yes	yes
	eligibility criteria defined	yes	yes	yes	yes	yes	NR	yes
Internal	consecutive enrollment	NR	NR	NR	NR	NR	NR	NR
	random allocation	yes	NA	yes	yes	yes	yes	yes
	allocation concealment	yes	NA	NR	NR	yes	NR	yes
	blinding of the patient	NR	no	NR	NR	NR	NR	NR
	blinding of the examiner	yes	yes	NR	yes	yes	NR	NR
	blinding of the statistician	NR	NR	NR	NR	NR	NR	NR
	reported loss to follow-up	yes	yes	NR	yes	yes	yes	yes
	no. (%) of dropouts	7 (30.4%)	0	0	1 (4.34%)	8 (13%)	0	0
Statistical	treatment identical, except for intervention	yes	yes	yes	yes	yes	yes	yes
	sample size calculation and power	yes [§]	NR	NR	NR	yes	NR	yes
	point estimates presented for primary outcome	yes	yes	yes	yes	yes	yes	yes
	measures of variability for the primary outcome	yes	yes	yes	yes	yes	yes	yes
	intention to treat analysis	yes	NR	NR	NR	NR	NR	NR
Clinical aspects	coherent data presentation	yes	yes	no	no	yes	no	yes
	study design [#]	RCT parallel	CCT parallel	RCT split-mouth	RCT parallel	RCT parallel	RCT split-mouth	RCT split-mouth
	validated measurement	NR	NR	NR	NR	NR	NR	NR
	calibration of examiner	yes	yes	NR	NR	NR	NR	NR
	estimated potential risk of bias	low	moderate	high	high	low	high	moderate



Efficacy of Autologous Platelet Concentrates in Regenerative Endodontic Treatment: A Systematic Review of Human Studies

Joanna Metterska, DDS,* Irini Fagogeni, DDS,* and Alicja Nowicka, DDS, PhD†

TABLE 3. Results Extracted from the Included Case Reports

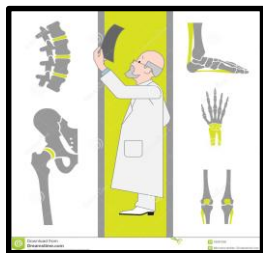
Study		Tooth number	Asymptomatic	Periapical healing	Apical closure	Root lengthening	Wall thickening	Percussion/palpation test	Pulp test	Discoloration	Normal pocket probing depths	Complications-obliterations
PRF	Bakhtiar et al (1)	21	+	+	+		+			+		
		12	+	+	+	+	+			+		
		11, 21	+	+	—		+			+		
		11	+	+	+		+	—	+	+		
	Subash et al (19)	37	+	+	+	+	+	—	+			
	Faizuddin et al (20)	11	+			+		—				
	Jadhav et al (65)	21	+	+	+	+	+					
	Johns et al (66)	11, 21	+	+	+	+	+	—	—			
	Solomon et al (67)	12, 11 21	+	+								
	Shivashankar et al (68)	11	+	+	+	+	+		+			
PRP	Nagaveni et al (69)	21	+	+		+	+	—	+		+	
	Nagaveni et al (70)	11	+	+	+			—	+		+	+
	Mishra et al (71)	21	+	+		+			+			
	Keswani et al (72)	11	+		+	+	+	—	+			
	Sachdeva et al (2)	22	+	+	+	+	+	—	—/+			
	Jadhav et al (7)	12	+	+	+	+	+					
	Jadhav et al (9)	21, 11	+	+	+	+	+					
	Gavino Orduna et al (58)	21	+	+	+		+	—	—			
		11	+	+		+						+
		22	+	+				—				+
	Guyen Polat et al (59)	35	+		+	+						
	Topcuoglu et al (60)	36, 46	+	+	+		+	—	—		+	
	Torabinejad et al (61)	15	+	+	+	+		—	+	+		
	Priya et al (62)		+					—	+			+
	Wang et al (63)	15, 25	+	+	—				—			
	Bezgin et al (64)	25	+		+				—			
		35	+	+				—				

Meta-analysis

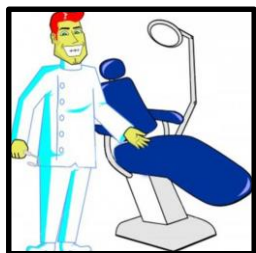
mean difference. The analysis included 2 studies. There were no statistically significant differences between the group in which PRP was used and the control group. The heterogeneity among the studies was low

Preferred Reporting Items for Systematic Reviews and Meta-Analyses statement. The literature search included all publications without a year limit. The last search was performed on January 31, 2018. An electronic search

26 studies met the inclusion criteria. Five were randomized trials, and the others were case reports. All



Ortopedia



Odontoiatria



Oculistica



The use of platelet-rich plasma in oral surgery: a systematic review and meta-analysis

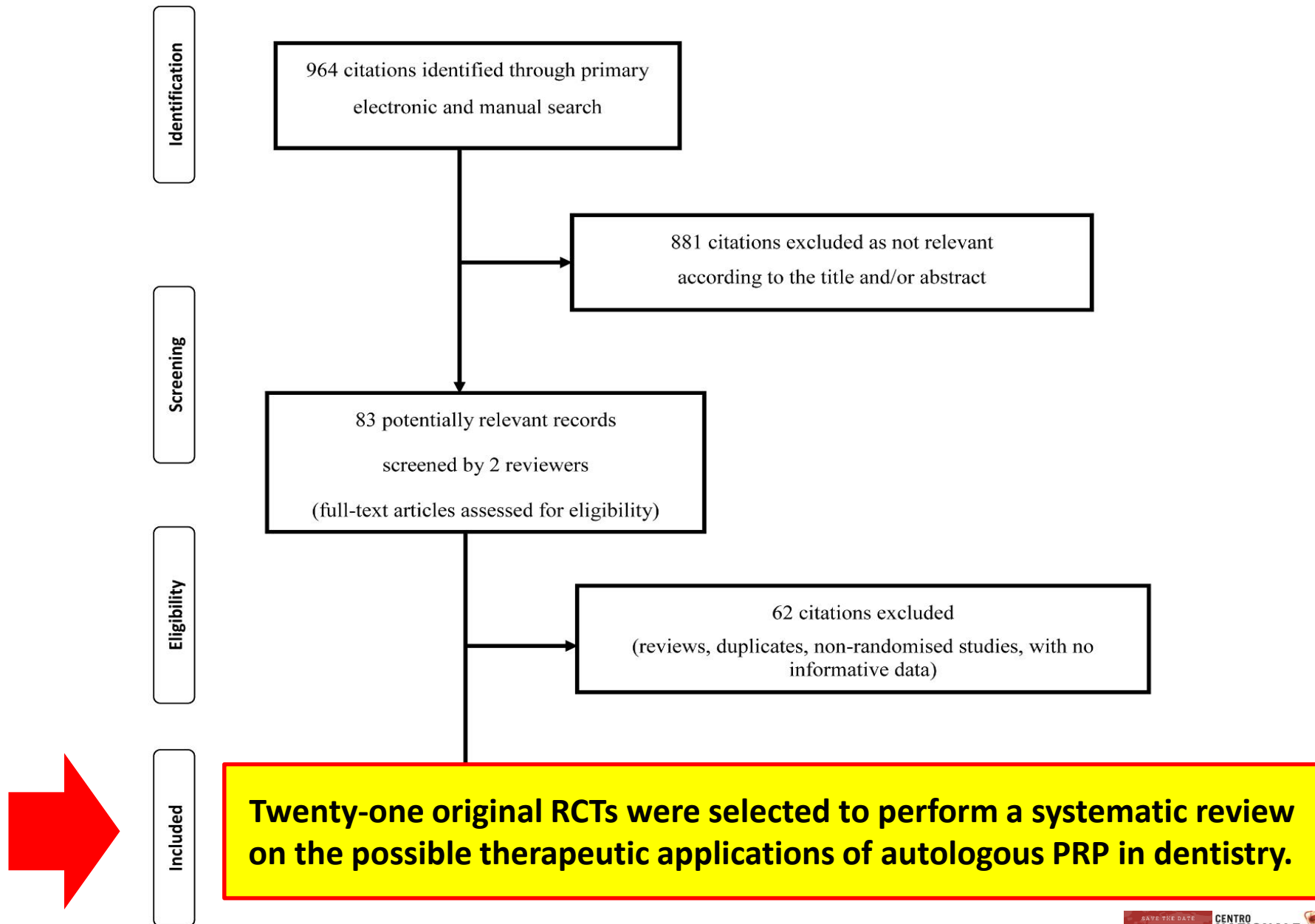
Massimo Franchini^{1,2}, Mario Cruciani^{1,3}, Carlo Mengoli^{1,4}, Francesca Masiello¹, Giuseppe Marano¹, Ernesto D'Aloja⁵, Cristina Dell'Arima⁶, Ilaria Pati¹, Eva Veropalumbo¹, Simonetta Pupella¹, Stefania Vaglio^{1,7}, Giancarlo M. Liumbruno¹

¹Italian National Blood Centre, National Institute of Health, Rome; ²Department of Haematology and Transfusion Medicine, "Carlo Poma" Hospital, Mantua; ³Infection Control Committee and Antibiotic Stewardship Programme, ULSS9 "Scaligera", Verona; ⁴Italian Foundation for Research on Anaemia and Haemoglobinopathies, Genoa; ⁵Studio D'Aloja, Arbizzano di Negrar (VR), Italy; ⁶Postgraduate School of Orthodontics, University of Ferrara, Ferrara; ⁷Department of Clinical and Molecular Medicine, "Sapienza" University of Rome, Rome, Italy

Blood Transfus 2019 Sep; 17(5): 357–367.



Flow chart of the selection of the studies



Principali caratteristiche degli RCT inclusi nell'analisi

Study (year)	Patients (N)	Males/ females	Mean age, years (range)	Treatment	Follow-up
Agarwal (2014)	24	10/14	NR (30–65)	Intrabony periodontal defects	12 months
Alissa (2010)	23	8/15	30.5 (20–52)	Tooth extraction	3 months
Arenaz-Búa (2012)	82	37/45	23 (18–45)	Tooth extraction	3–6 months
Bajaj (2013)	42	22/20	39.4 (NR)	Treatment of furcation defects	9 months
Döri (2008)	26	12/14	NR (32–56)	Intrabony periodontal defects	12 months
Döri (2009)	30	9/21	NR (28–65)	Intrabony periodontal defects	12 months
Dutta (2015)	60	29/31	34.5 (18–50)	Tooth extraction	4 months
Eskan (2014)	28	14/14	NR (19–75)	Alveolar ridge augmentation	4 months
Geurs (2014)	41	12/29	52 (NR)	Tooth extraction	2 months
Harnack (2009)	22	NR	NR	Intrabony periodontal defects	6 months
Keceli (2008)	40	10/30	38 (16–60)	Root coverage	12 months
Menezes (2012)	60	30/30	37.7 (NR)	Intrabony periodontal defects	48 months
Nakkeeran (2018)	20	12/8	24 (NR)	Osseous defects of the jaw	5 months
Ogundipe (2011)	60	25/35	24.7 (19–35)	Tooth extraction	4 months
Okuda (2005)	70	21/49	55.5 (NR)	Intrabony periodontal defects	12 months
Piemontese (2008)	60	31/29	NR (47–72)	Intrabony periodontal defects	12 months
Pradeep (2009)	20	10/10	42.8 (NR)	Treatment of furcation defects	6 months
Saini (2011)	20	8/12	40.3 (22–50)	Intrabony periodontal defects	9 months
Schaaf (2008)	53	NR	NR	Maxillary sinus augmentation	4 months
Torres (2009)	87	40/47	NR (52–78)	Maxillary sinus augmentation	24 months
Wiltfang (2003)	35	8/27	46 (32–64)	Maxillary sinus augmentation	6 months

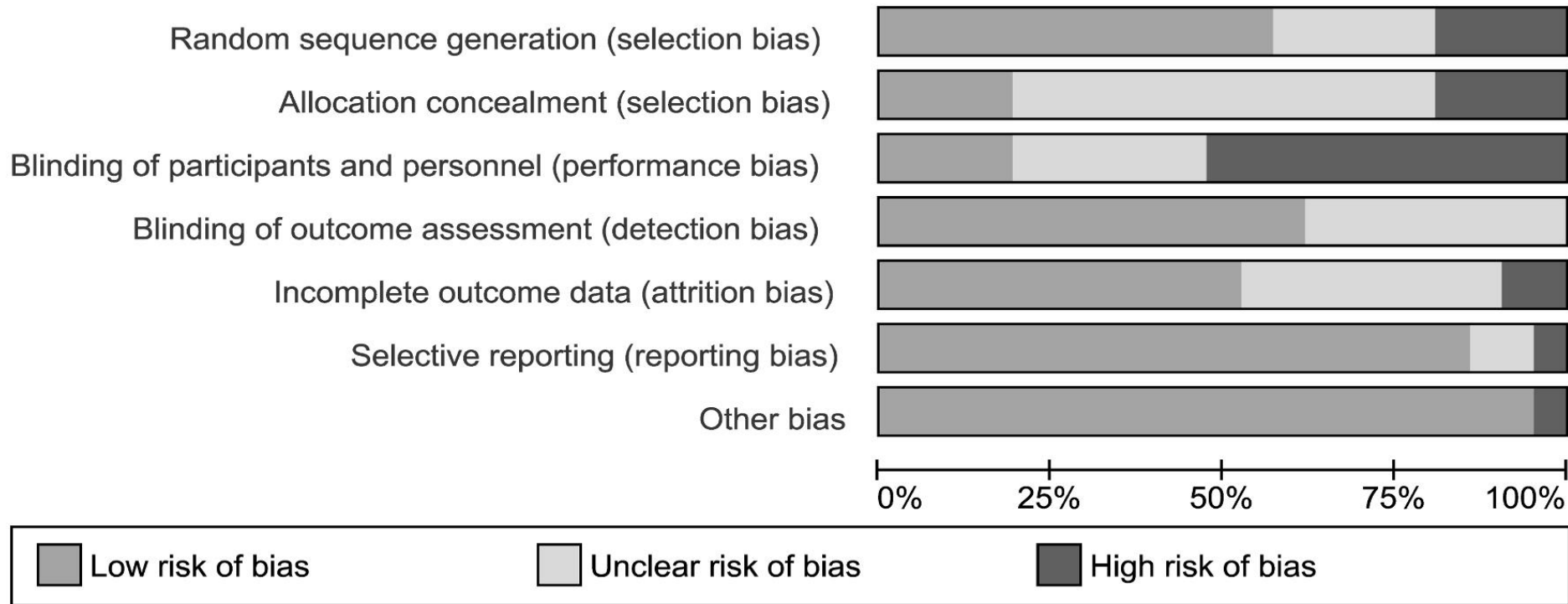
Range
20-87 patients

Range
2-48 months



Risk of bias*

Thirteen (61.9%) studies were at high risk of bias for one or more domains, and 7 studies (33.3%) were at unclear risk of bias for 1 or more domains; one study was judged at low risk of bias in all the domains.



*Review authors' judgements about each risk of bias item presented as percentages across all included studies

PRP in oral surgery: summary of findings

Patient or population: with periodontal defects; **Settings:** outpatient; **Unit of analysis:** periodontal defect;
Intervention: regimens containing PRP; **Comparison:** regimens not containing PRP.

Outcomes	Illustrative comparative risks (95% CI)		Relative effect: mean difference (95% CI)	N. of participants (studies)	Quality of the evidence (GRADE)	Comments
	Assumed risk PRP	Corresponding risk Controls				
Probing depth (PD) Follow-up: 6–48 months	The mean score PD ranged across control groups from 1.52 to 5.85	The mean score in the intervention groups was 0.39 lower (0.80 lower to 0.02 higher)	–0.39 (–0.80/0.02)	566 (11 studies)	⊕⊕⊕⊕ very low ¹	On average, it is unclear whether or not use of PRP compared to controls affects the PD at long-term follow-up. Between group differences were small and unlikely to be of clinical importance.
Clinical attachment level (CAL) Follow-up: 3–48 months	The mean score ranged across control groups from 2.02 to 11.81	The mean score in the intervention groups was 0.57 lower (0.93 to 0.20 lower)	–0.57 (–0.93/–0.20)	566 (11 studies)	⊕⊕⊕⊕ low ²	Very marginal clinical benefit of PRP compared to controls. On average, compared to controls, PRP decreases CAL by 0.57.
Gingival recession (GR) Follow-up: 6–48 months	The mean score ranged across control groups from 0.76 to 4.75	The mean score in the intervention groups was 0.46 lower (0.77 to 0.15 lower)	–0.46 (–0.77/–0.15)	482 (9 studies)	⊕⊕⊕⊕ low ²	Very marginal clinical benefit of PRP compared to controls. On average, compared to controls, PRP decreases GR by 0.57.
Bone defect (BD) Follow-up: 9–12 months	The mean BD ranged across control groups from 1.90 to 3.78	The mean score in PRP group was 0.67 lower (1.19 to 0.15 lower)	–0.67 (–1.19/–0.15)	306 (6 studies)	⊕⊕⊕⊕ low ²	Very marginal clinical benefit of PRP compared to controls. On average, compared to controls, PRP decreases BD by 0.67.

¹Down-graded for imprecision (95% CI includes line of no effect), for inconsistency (due to substantial heterogeneity, $I^2=80-89\%$) and because of high risk of bias or unclear risk of bias in some of the included studies.

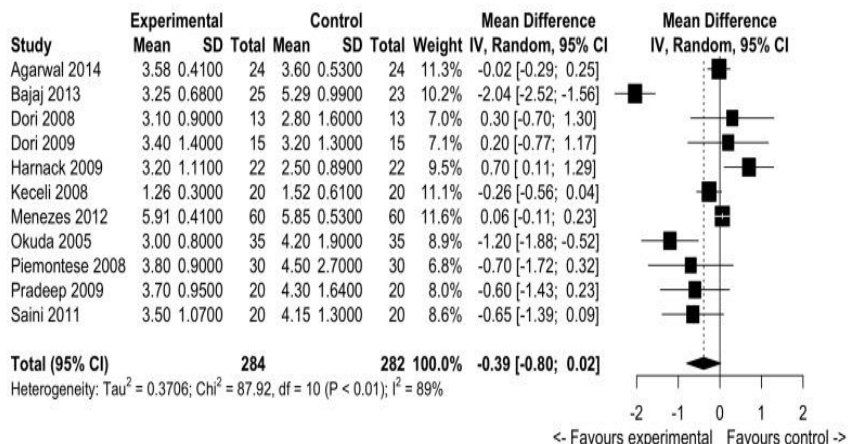
²Down-graded for inconsistency (due to substantial heterogeneity, $I^2=80-89\%$) and because of high risk of bias or unclear risk of bias in some of the included studies.





Forest plots (I)

Probe Depth, MD



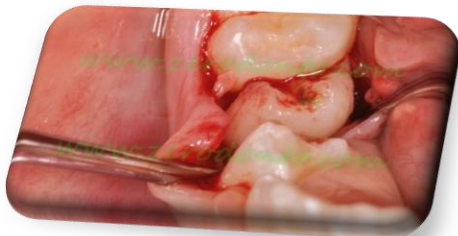
Probing depths

Pooled data from 11 trials showed no clear differences between the test study arm and the control arm: MD: -0.39; 95% confidence interval (CI): -0.80/0.02; p-value=not significant (very low quality evidence, down-graded for serious risk of bias, for inconsistency [due to substantial heterogeneity, $I^2=88.6\%$] and for imprecision [95% CIs include line of no effect]).



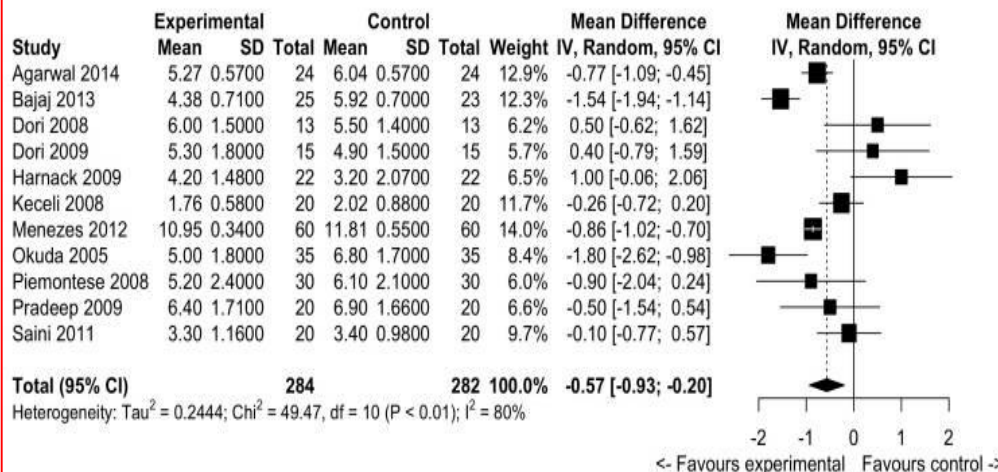
Clinical attachment level

Pooled data from 11 trials showed a slight decrease in clinical attachment level in the PRP group compared to the control arm: MD: -0.57; 95% CI: -0.93/-0.20; $p=0.002$ (low quality evidence, down-graded for serious risk of bias and for inconsistency [$I^2 = 79.8\%$]).



MD: mean difference; 95% CI: 95% confidence interval.

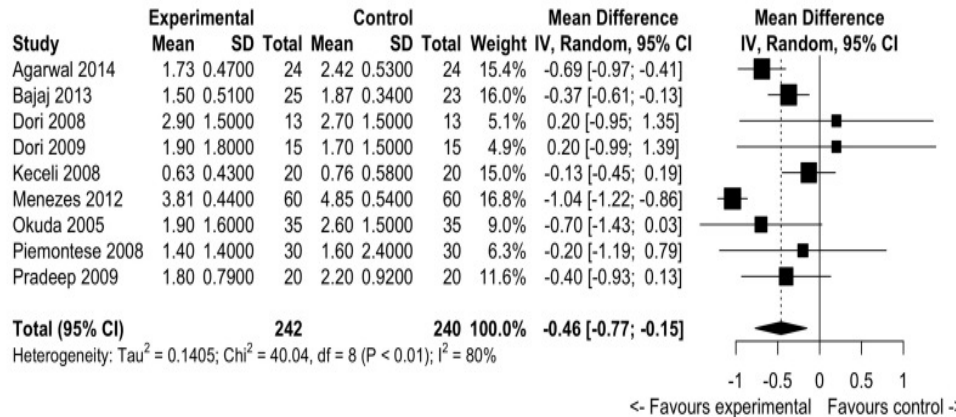
Clinical Attachment Level, MD





Forest plots (II)

Gingival Recession, MD



Gingival recession

Pooled data from 9 trials showed a slight decrease in gingival recession in the PRP group compared to the control arm: MD: -0.46; 95% CI: -0.77/-0.15; $p=0.0035$ (low quality evidence, down-graded for serious risk of bias and for inconsistency [$I^2 = 80.0\%$]).

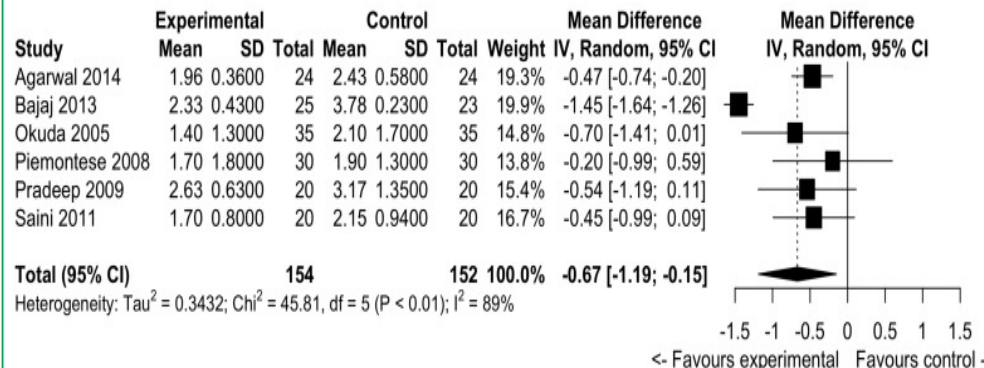


Bone defect

Pooled data from 6 trials showed a slight decrease in bone defects in the PRP group compared to the control arm: MD: -0.67; 95% CI: -1.19; -0.15; $p=0.01$ (low quality evidence, down-graded for serious risk of bias and for inconsistency [$I^2 = 89.1\%$]).



Bone Defect, MD



MD: mean difference; 95% CI: 95% confidence interval.



The use of platelet-rich plasma in oral surgery: a systematic review and meta-analysis

Massimo Franchini^{1,2}, Mario Cruciani^{1,3}, Carlo Mengoli^{1,4}, Francesca Masiello¹, Giuseppe Marano¹, Ernesto D'Aloja⁵, Cristina Dell'Aringa⁶, Ilaria Pati¹, Eva Veropalumbo¹, Simonetta Pupella¹, Stefania Vaglio^{1,7}, Giancarlo M. Liumbruno¹

¹Italian National Blood Centre, National Institute of Health, Rome; ²Department of Haematology and Transfusion Medicine, "Carlo Poma" Hospital, Mantua; ³Infection Control Committee and Antibiotic Stewardship Programme, ULSS9 "Scaligera", Verona; ⁴Italian Foundation for Research on Anaemia and Haemoglobinopathies, Genoa; ⁵Studio D'Aloja, Arbizzano di Negrar (VR), Italy; ⁶Postgraduate School of Orthodontics, University of Ferrara, Ferrara; ⁷Department of Clinical and Molecular Medicine, "Sapienza" University of Rome, Rome, Italy

[...] we limited the quantitative synthesis (meta-analysis) to 11 studies evaluating PRP in the treatment of "periodontal defects" since for other clinical contexts the number of studies was too low and the procedural heterogeneity was too high to allow pooling of data.

The available evidence for all the comparisons was rated as low or very low quality due to inconsistency, imprecision, and risk of bias in most of the selected studies. **The heterogeneity was high**, probably because studies used different criteria for patient recruitment, different length of observation time after surgery, different devices to measure the periodontal defects, and because they included disease of variable severity [...]

This pooled analysis reflects the discordance arising from the evaluation of the single studies.

[...] **There is some evidence to suggest that PRP improves the intrabony periodontal defect, without affecting bone regeneration.** [...] On the whole, these statements are isolated cases and are not suitable for quantitative evaluation, but point to the need for further investigation.

Future research in this field should be directed toward the implementation of well-designed, adequately powered RCTs. The results of such trials will help to elucidate the role of PRP in periodontal and other oral surgical settings.





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GLOBAL EVENT
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*Grazie per
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