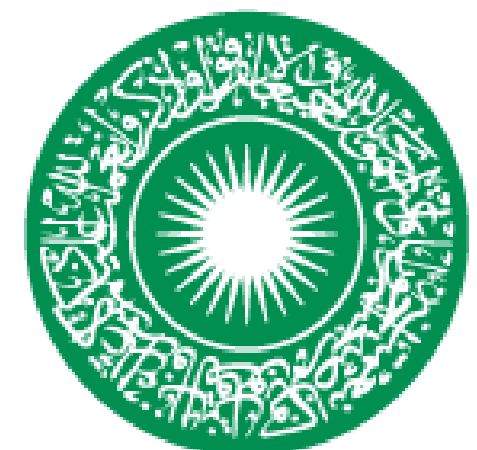




Effect of bone grafting in jumping distance on the outcome of immediate implants in the anterior maxilla: A systematic review & meta analysis

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Review Question

Does bone grafting in jumping distance affect the outcomes of immediately placed implants in anterior maxilla?

Methodology

Electronic and manual searches were conducted in four major databases including PubMed, Dentistry and Oral Sciences, Cochrane and Cinahl Plus

- Participants:** Patients undergoing immediate implant placement
- Intervention:** Bone grafting in jump gap
- Comparison :** No bone grafting in jump gap
- Outcomes:** Radiographic outcome (bone resorption)
- Study Design:** Randomized controlled trials, Cohort studies

Identification

- Search = 108
- CINAHL = 08
 - Cochrane =27
 - PubMed = 39
 - Dent & Oral Science = 27

Eligibility

Relevant titles n = 60

Included

Included studies = 07

Duplicated articles = 47
Not in English = 01

Irrelevant objective =21
Trials Protocols only= 12
No full text = 0
Study design = 20

- Case reports = 13
- Animal Studies = 07
- Reviews = 0

Figure: 1 Literature Search PRISMA Flowchart

Table: 1 Included studies and primary outcome

Author	Study groups	Outcome	Measurement tool	Conclusions
Grassi <i>et al.</i> 2019	Test: Open flap+graft	HR= -0.2mm VR= -5.9mm	CBCT	Flap-graft exhibited lower HR. No significant difference between groups. ($p \geq 0.05$) No flap no graft more effective in reducing VR
	Test: Open flap+ no graft	HR= -0.1mm VR= -5.7mm		
	Control : Flapless+ no graft	HR= -0.3 mm VR= -6.4 mm		
Kabi <i>et al.</i> 2019	Test: Bone grafting	MBL= 0.9mm	Periapical radiographs	Greater MBL in no grafting group. ($p= 0.00$)
	Control: No grafting	MBL= 1.4mm		
Paknejad <i>et al.</i> 2017	Test : Bone grafting	BBH= -1.30mm	CBCT	More resorption in no grafting group. ($p= 0.72$)
	Control : No grafting	BBH= -1.66mm		
Tarnow <i>et al.</i> 2014	Test: Bone grafting	RT= 9.3	Cast Analysis	Smallest amount of change in ridge thickness was seen in bone grafting group
	Control: No graft	RT= 10.2		
Spinato <i>et al.</i> 2012	Test: Bone grafting	MBL= 0.94 mm	Periapical radiograph	There was no significant difference in the mean bone loss at proximal sites between grafted & non grafted sites ($p \geq 0.05$)
	Test: No Bone grafting	MBL= 0.90 mm		
Chen <i>et al.</i> 2007	Test: Bone grafting+membrane	HDD= 1.5mm (81%) VDH= 7.2mm (70%) BBR= 0.6mm (20%)	Periodontal Probe	Marginal bone defects adjacent to immediate implants heal predictably whether bone graft used or not. More buccal bone resorption in control group. ($p=0.02$)
	Test: Bone grafting	HDD=1.5mm (71%) VDH= 8.2mm (81%) BBR= 0.4mm (15%)		
	Control: No bone grafting	HDD= 1.1mm (55%) VDH= 6mm (68%) BBR= 1.1mm (48%)		

* **HDD**=Horizontal defect depth, **VDH**=Vertical defect height, **HR**= Horizontal resorption, **VR**= Vertical resorption, **BBR**= Buccal bone resorption, **BBH**= Buccal bone height, **MBL**: Marginal bone loss , **RT**= Ridge thickness

Results

Out of the seven studies that fit the inclusion criteria, six were RCTs and one was N-RCT. Among included studies, only one study reported statistically significant bone loss in no grafting group ($p=0.001$). Four studies showed some bone loss in no grafting group but the difference was statistically non-significant ($p\geq0.05$). The forest plot depicted slightly less bone loss in bone grafting group but the difference was statistically non-significant ($p=0.50$). Only three studies measured the jumping gap distance before implant placement.

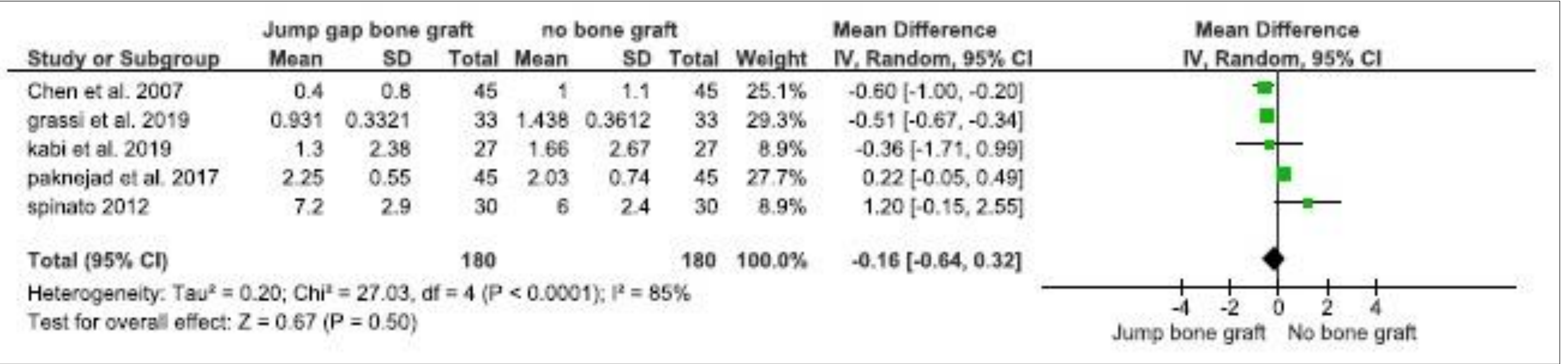


Figure: 2 Forest plot depicting mean difference in bone resorption



Figure: 3 Overall Risk of Bias

Conclusion

Bone grafting in the jump gap appears to yield less bone resorption among immediately placed implants in anterior maxilla (irrespective of the jump gap). However, in comparison to no graft approach, the difference is not statistically significant.