

# Calcium carbonate 가

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I.

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1976 Melcher<sup>2)</sup>가  
 가  
 acetate extended polytetrafluoroethylene filter  
 cellulose acetate extended polytetrafluoroethylene filter  
 1),  
 가  
 8),  
 9),  
 10),  
 (DFDBA)  
 (bone morphogenetic protein)

3-5) , Nyman<sup>6)</sup>  
 11),  
 Gottlow<sup>7)</sup>  
 (Guided Tissue Regeneration: GTR)  
 (filler)  
 12).

ePTFE  
 가  
 가

(combined 5  
therapy) ’  
가  
가 II.  
가 , 가  
1.  
13 - 18)  
39 37 2  
가 가 3 (figure 1 - A)  
19 - 22) 3 (figure 2 -  
A) calcium carbonate(Biocoral )  
, Caffesse 23) 가 ePTFE (Gore -  
DFDBA Tex )  
ePTFE  
5 table 1  
DFDBA 2.  
, Stahl Froum<sup>24)</sup>  
DFDBA ePTFE (1) Calcium carbonate  
(figure 1)  
2 3  
calcium Calcium car -  
carbonate 가 bonate . ePTFE  
, calcium carbonate

Table 1. Presurgical and postsurgical clinical finding at operation site

Patient (material)	Age/Sex	Site	Initial pocket depth (mm)	Mobility	Initial osseous depth (mm)	observation Period (months)	post operative pocket depth (mm)	post operative gingival recession (mm)	Gain in closure (mm)
L (calcium carbonate+ePTFE)	39/F	# 15 m	10	II	6	60	2	2	6
C (autogenous bone+ePTFE)	37/F	# 33 d	12	II	5	60	3	2	7

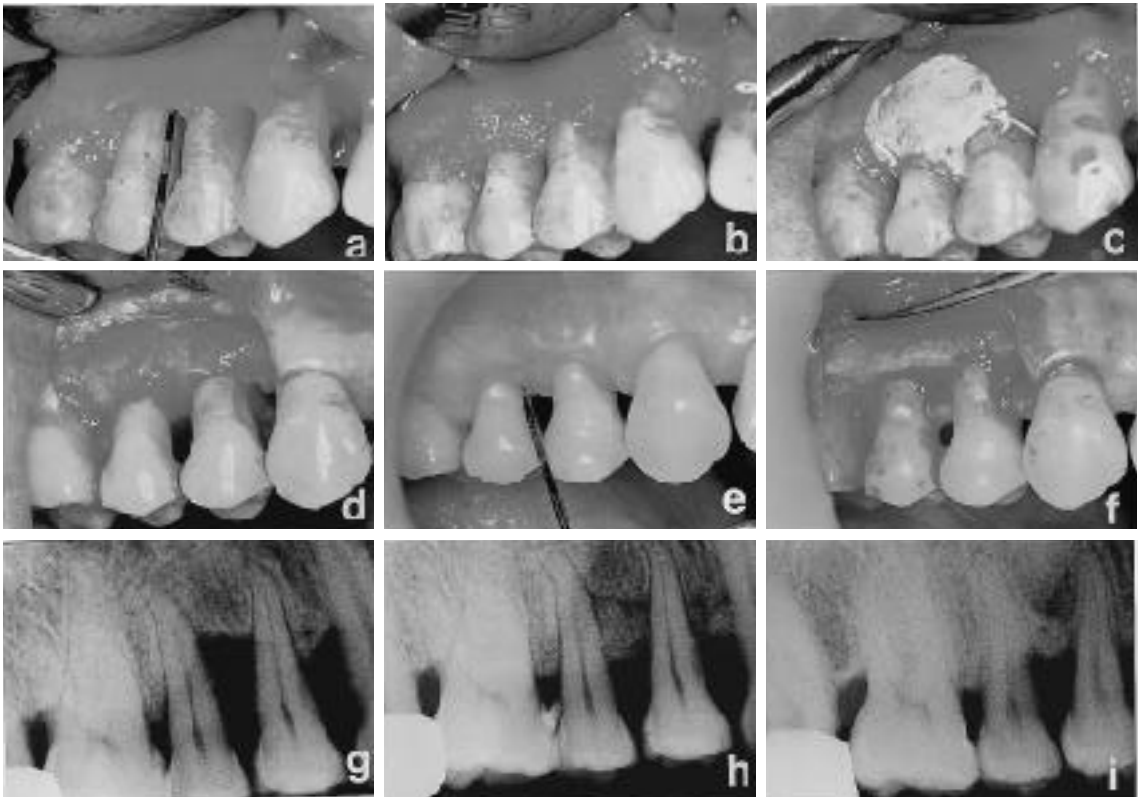


Figure 1. a. intraosseous defect at maxillary right 2nd premolar, b. implantation of calcium carbonate, c. ePTFE membrane coverage, d. regenerated tissue at membrane removal, e. clinical appearance at post-operative 5 years, f. regenerated bone at post-operative 5 years, g. preoperative radiography, h. radiography at membrane removal i. radiography at postoperative 5 years.

6

6

3.

(2) 가  
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2mm × 2mm × 2mm

ePTFE

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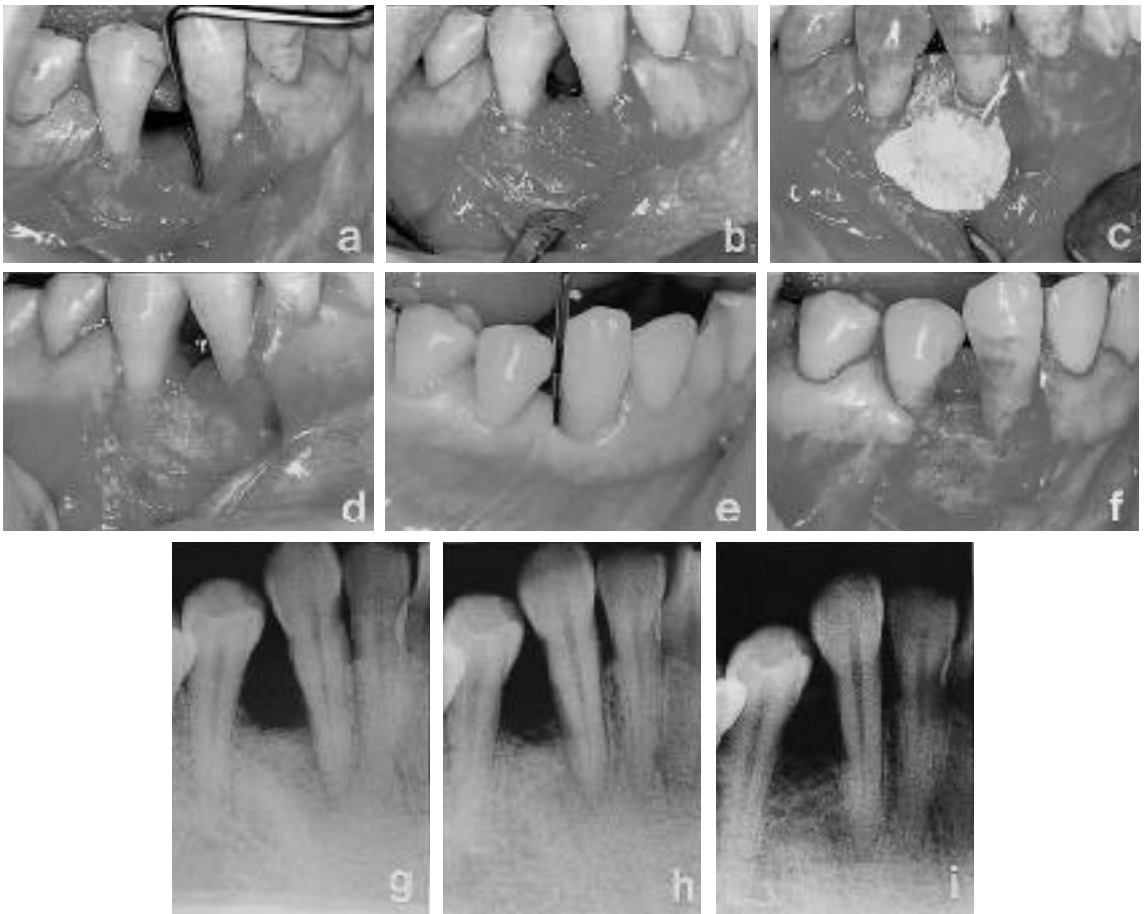


Figure 2. a. intrasosseous defect at right mandibular canine, b. autogeneous bone grafting, c. ePTFE membrane coverage, d. regenerated tissue at membrane removal, e. clinical appearance at post-operative 5 years, f. regenerated bone at post-operative 5 years, g. preoperative radiography, h. radiography at membrane removal, i. radiography at postoperative 5 years.

III.

calcium carbonate

calcium carbonate

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(figure 1d).

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, calcium carbonate

bonate

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6mm 7mm

calcium carbonate

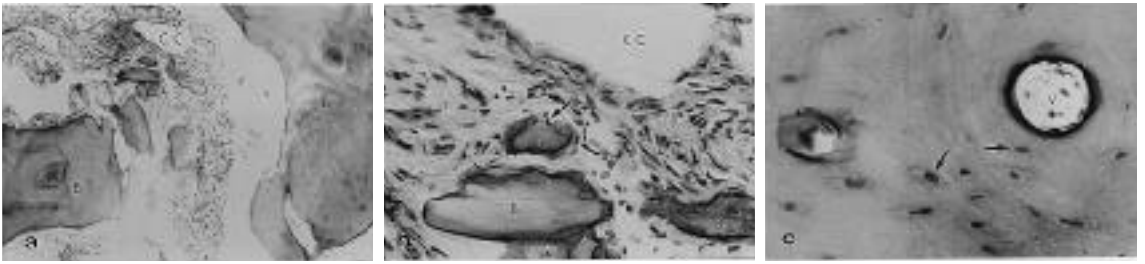


Figure 3. 5-year-postoperative histologic finding of regenerated bone in case with guided tissue regeneration in conjunction with calcium carbonate implantation., a. This specimen is mainly composed of regenerated bone(B) mixed with unresorbed calcium carbonate remnants(CC) which are surrounded by connective tissue. original magnification x25, b. Bone formation(B) is still progressed which is separated from remained calcium carbonate granule(CC) by connective tissue. Arrows indicate osteoblasts. original magnification x100, c. well organized regenerated bone with vascular channel(V) and osteocytes(arrows), original magnification x100.

(fig - calcium  
 ure 1h). carbonate 5  
 5 2  
 3mm  
 (fig - (figure 3a). calcium carbon -  
 ure 1e). 2 ate 가 ,  
 (figure 1f). 5  
 calcium car -  
 bonate가 (remodelling)  
 (figure 1i). 3b). (figure

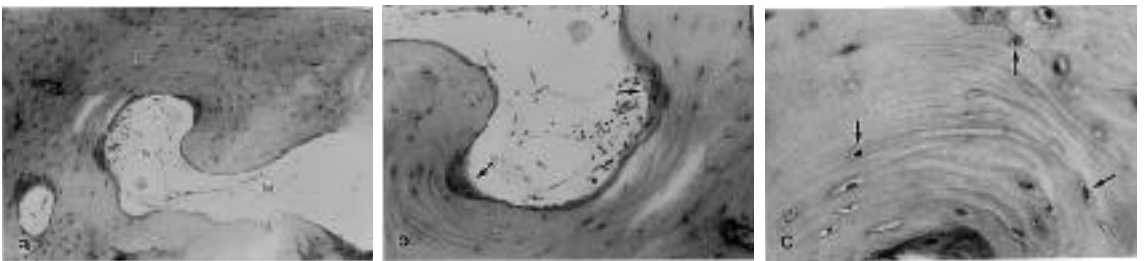


Figure 4. 5-year-postoperative histologic finding of regenerated bone in case with guided tissue regeneration in conjunction with autogenous bone grafting, a. This specimen depicts intact lamellar bone(B) with marrow space(M), original magnification x20, b. Bone apposition(arrow) takes place at marrow side of regeneratred bone, original magnification x50, c. well organized regenerated bone with osteocytes(arrows) in lacunae, original magnification x100.

(figure 3c).

가 ( 6 )

(figure2d)

Calcium carbonate

가 (figure 2h).

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25 - 27)

3mm

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(figure 2e).

calcium carbonate

(figure 2f).

bonate

calcium car -

(figure 2i).

filler)

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(biocompatible

(figure 4a).

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(figure 4b)

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(figure 4c).

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IV.

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apatite . Lecovic<sup>16)</sup> porous hydroxy ePTFE

, Anderegg<sup>17)</sup> 가

McClain<sup>13, 14)</sup> . Schallhorn citric acid 1 5 가

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가 19 - 22) DFDBA 가 19 - 22)

Stahl Froum<sup>24)</sup> DFDBA 12) DFDBA 11)

가 DFDBA 가

가 cal - calcium carbonate carbonate 가

가 가 가

V.

가 calcium carbonate 가

ePTFE 5  
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 calcium car -  
 bonate

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VI.

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- Abstract -

**Histologic observation of regenerated bone in human intraosseous lesion following guided tissue regeneration with calcium carbonate implant and autogenous bone graft**

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For histologic observation of the regenerated bone following guided tissue regeneration(GTR) using ePTFE membranes with calcium carbonate implant and autogenous bone graft, biopsies were collected from 2 patients during 5 - year - postoperative surgical reentry. In both combined cases with guided tissue regeneration in conjunction with calcium carbonate implant and autogenous bone graft, significant bone fill and gain in probing attachment level was observed. In histologic examination, specimen in GTR case with calcium carbonate grafting was composed of a dense bone containing vascular channel with lamellar

structure and viable bone cells in lacunae, however considerable calcium carbonate particles remained unresorbed and isolated from regenerated bone by the dense cellular and fibrous connective tissue. No formative cells could be seen in contact with remained calcium carbonate particles. In GTR case with autogenous bone grafting, specimen show was composed of a dense lamellar bone containing vascular channel, which showed normal alveolar bone architectures. The present observation indicate that guided tissue regeneration in conjunction with grafting, especially autogenous bone graft, has highly osteogenic potential, however resorbable calcium carbonate granules were not completely resorbed at 5 year postimplantation.

Key words : biopsy; bone regeneration; guided tissue regeneration; grafts, calcium carbonate, autogenous bone; osteogenic