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Long-term Results of Guided Tissue Regeneration Therapy with non-resorbable and bioabsorbable barriers

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Date/Event/Venue:

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Convention Center Toronto, Canada

Objectives

10-year follow-up to evaluate the long-term results after GTR therapy of infrabony defects using non-resorbable and bioabsorbable barriers.

Guided Tissue Regeneration

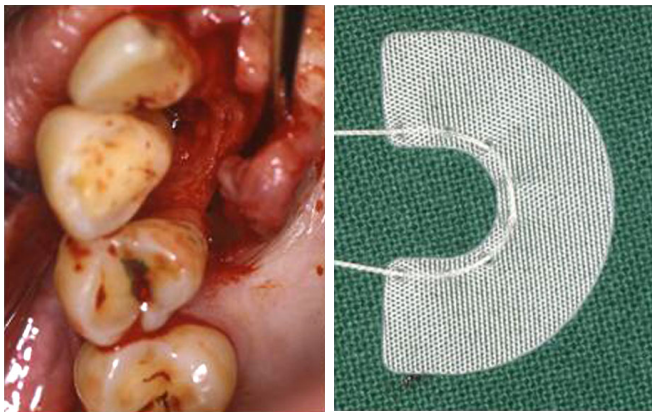


Fig. 1-2: Intraoperative view: Membrane placement (patient #5)



Fig. 3-4: Intraoperative view: Membrane placement (patient #5)

Material and Methods

Patients

- 12 patients aged 32 to 62 years (mean age 46.1 ± 10.1)
- written informed consent
- one pair of similar contralateral infrabony defects per patient
- GTR surgery 10 years before
- random assignment of one defect within each patient to a non-resorbable (control: C) and the other to a bioabsorbable (test: T) barrier

Examination

At 6 sites per tooth at baseline, 12 and 120 ± 6 months after surgery:

- GI and PII [Löe 1967]
- PD and CAL-V to the nearest 0.5 mm using a straight periodontal probe (reference for CAL-V measurements: cemento-enamel junction (CEJ) / margin of restoration)
- At the 120 ± 6 months examination, vertical probing bone level (PBL-V) under local anaesthesia
- samples for Interleukin-1-testing (IAI, Zuchwil/CH; Hain Lifescience, Nehren/Germany)
- detailed questionnaire on smoking, dental care, social status, and nutrition

Statistical analysis

- statistical unit: patient
- primary outcome variable: change of CAL-V
- secondary outcome variable: PBL-V
- Systat™ for Windows Version 10, Systat Inc. Evanston IL, USA

Results

- Eight of 12 patients available for 120 ± 6 months examinations
- Twelve and 120 months after GTR therapy vertical attachment (CAL-V) gain was statistically significant ($p < 0.05$) in both groups
- However, 120 ± 6 months after GTR therapy 3 infrabony defects (2 controls, 1 test) had lost >2mm of the attachment gained 12 months after GTR
- A statistically significant mean CAL-V loss of 1.7 ± 1.3mm was observed from 12 to 120 ± 6 months in the control group
- One tooth in the control group was lost between 60 and 120 ± 6 months.
- The case series failed to show statistically significant differences between test and control regarding CAL-V gain 120 ± 6 months after surgery.

Pat #	Age	Teeth Test/Control	Defect Site	Regular SPT	Number of Recalls	Mean± SD GBI	Mean± SD PCR	Smoking	IL-1β-polymorphism	Other
1	59	31/19	mesial/distal	+	22	1.9 ± 2.1	17.0 ± 6.3	never	-	-
2	49	14/3	mesial/distal	+	21	2.1 ± 2.4	30.7 ± 14.4	never	-	-
3	45	13/5	distal/mesial	-	10	5.7 ± 4.3	13.2 ± 5.1	never	-	-
4	54	19/30	mesial	+	27	2.9 ± 4.3	29.5 ± 12.8	never	-	-
5	35	21/27	distal	+	15	5.1 ± 4.7	21.7 ± 18.6	active	-	-
8	50	27/22	mesial	-	8	7.4 ± 5.1	15.1 ± 11.2	never	-	-
9	32	29/20	mesial/distal	+	17	4.5 ± 3.5	13.9 ± 6.3	never	-	-
10	20	19/30	distal	+	21	5.2 ± 4.3	21.0 ± 12.3	never	-	-
11	37	14/3	distal	+	18	4.2 ± 3.1	32.5 ± 10.3	former	-	-
12	64	13/4	distal	+	19	9.0 ± 8.4	22.4 ± 7.1	active	-	-
13	42	22/27	mesial	+	17	8.0 ± 6.2	23.1 ± 10.2	active	+	-

Pat #	Polydioxanon			Polylactide		
	PAL-V Baseline	12 Months	120 Months	PAL-V Baseline	12 Months	120 Months
1	10.0	4.5	5.0	10.0	4.0	10.5*
2	9.0	4.0	6.5*	9.0	5.0	5.0
3	8.0	6.0	6.5	8.5	5.0	lost
4	9.0	4.0	6.5*	9.0	7.0	5.0
5	9.5	6.0	10.0*	10.0	5.0	9.0*
8	9.0	3.0	5.0	6.0	2.5	4.5
9	8.5	6.0	5.0	9.5	5.5	5.0
10	5.0	2.0	3.5	6.0	2.0	3.5

11	7.0	3.0	3.5	7.0	2.5	3.5
12	9.0	5.5	7.5	10.0	6.0	lost
13	8.5	7.5	8.5	10.0	6.5	8.5

- PBL-V measurements after 10 years could be obtained only in 10 defects of 5 patients
- A PBL-V gain of 2.7 ± 1.7 mm ($P = 0.018$) was observed in the test group and of 0.8 ± 0.6 mm ($P = 0.035$) in the control group.
- However, PBL-V gain in the study failed to show statistically significant differences between Polyglactin 910 and ePTFE.

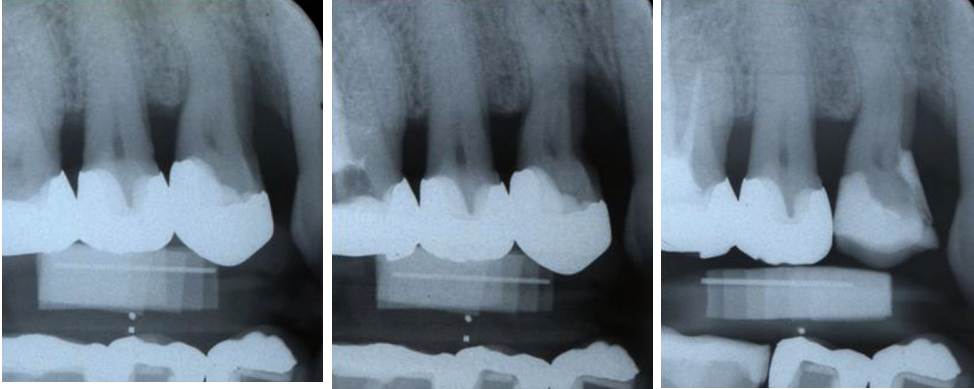


Fig. 5-7: Of each patient standardized radiographs were obtained pre-surgical, 12 and 120 month after surgery (patient #1)

Conclusions

CAL-V gain achieved 12 months after GTR therapy in infrabony defects using both non-resorbable and bioabsorbable barriers was stable after 10 years in 12 of 16 defects.

This Poster was submitted by Dr. Bernadette Pretzl.

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Long-term Results of Guided Tissue Regeneration Therapy with Non-resorbable and Bioabsorbable Barriers

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Objective

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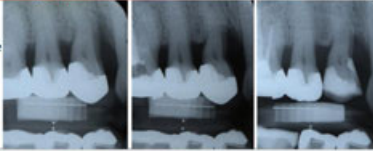
Guided Tissue Regeneration

Intraoperative view: Membrane placement (patient #5)



Standardized Radiographs

Of each patient standardized radiographs were obtained pre-surgical, 12 and 120 months after surgery (patient #1).



Material and Methods

Patients

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- written informed consent
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- random assignment of one defect within each patient to a non-resorbable (control: C) and the other to a bioabsorbable (test: T) barrier

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At 6 sites per tooth at baseline, 12 and 120 ± 6 months after surgery:

- GI and PII [Löe 1967]
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- However, PBL-V gain in the study failed to show statistically significant differences between Polyglactin 910 and ePTFE.

Patient characteristics

Pat #	Age	Teeth Test/Control	Defect Site	Regular SPI	Number of SPIs	Mean±SD GBI	Mean±SD PCR	Smoking	IL-1β polymorphism	Other
1	62	12/5	mesial	+	21	12.5±6.4	35.8±15.6	-	+	-
2	49	31/18	mesial	+	20	3.6±2.6	21.3±9.4	-	+	-
3	46	21/27	mesial	-	13	4.7±4.9	22.5±7.3	+	-	Diabetes
4	57	19/30	distal/mesial	-	15	6.5±5.6	39.1±19.4	-	+	Diabetes
5	46	4/11	distal	+	22	5.3±5.2	28.8±11.0	-	-	-
6	36	22/29	distal/mesial	-	17	7.7±9.3	18.8±15.5	+	+	-
7	41	20/28	distal	+	22	2.1±2.4	18.1±9.0	-	+	-
8	32	13/4	mesial	+	21	1.5±2.3	14.4±10.6	+	+	-

Results II

Pat #	Polyglactin 910				ePTFE			
	INFRA Baseline	CAL-V Baseline	12 Months	120 Months	INFRA Baseline	CAL-V Baseline	12 Months	120 Months
1	4.0	6.5	4.0	5.0	4.5	9.5	5.0	5.5
2	3.5*	7.0	4.0	3.0	1.2*	5.5	2.5	4.5
3	6.0	8.0	3.0	5.5†	4.5*	7.5	5.5	7.5
4	3.0	6.5	5.5	4.0	4.0	8.0	5.0	6.5
5	4.5	11.0	5.5	3.0	5.0	9.0	5.0	9.0‡
6	4.0	10.5	7.5	5.0	4.0	11.5	7.0	lost§
7	5.5	8.0	3.5	4.0	4.0	7.0	3.0	5.5‡
8	3.0	6.0	4.0	6.0	2.0	6.0	4.0	4.5
Mean	4.2±1.1	7.9±1.9	4.6±1.5	4.4±1.1	3.7±1.3	8.0±2.0	4.6±1.4	6.0±1.6
Change to Baseline			3.3±1.6 $P=0.001$	3.5±2.5 $P=0.005$			3.4±1.0 $P<0.001$	1.5±1.2 $P=0.018$
12 to 120 Months				-0.2±2.0 $P=0.795$				-1.7±1.3 $P=0.011$

* INFRA assessed radiographically
† Attachment loss > 2 mm from 12 to 120 months after surgery
‡ CAL-V 24 months after surgery, that led to a 2nd regenerative procedure
§ tooth lost from 60 to 120 months examination

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Conclusions

CAL-V gain achieved 12 months after GTR therapy in infrabony defects using both non-resorbable and bioabsorbable barriers was stable after 10 years in 12 of 16 defects.

Acknowledgement

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