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EVALUATION OF A SURGICAL TECHNIQUE IN THE PERIODONTAL TREATMENT OF MAXILLARY ANTERIOR TEETH

by

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INTRODUCTION

Marginal periodontitis of the incisor region of the upper jaw is usually accompanied, as in other regions, by pronounced approximal bone destruction. Furthermore, periodontal surgical treatment of the front part of the upper jaw is of a special nature, since it involves the consideration of the aesthetic requirements particular to this area.

For this reason tissue-saving methods, especially in the form of the preparation of flaps, together with the accompanying scaling, have been used. These methods are considered necessary especially in cases where the pockets are of such a depth or shape that difficulty is encountered in localizing and eliminating concretment. In addition a more rapid and effective healing is achieved (*Berghagen*, 1959). The methods are partly based on the reattachment principle, about which opinions are divided (*Waerhaug*, 1959).

There are naturally other alternative periodontal surgical procedures which can be considered e.g. partial gingivectomy, »reversed bevel technique». It has been thought that the gingival margin's level should retract if a mucoperiosteal flap is prepared (*Carranza & Carraro*, 1963). According to *Wilderman et al.* (1960) the bone margin should also sink (approximately 2½ mm), if the periosteum is included in the flap. *Wright and Löe* (1965) have, how-

ever, in an experimental investigation, shown that possible bone leveling with the preparation of a mucoperiosteal flap was restricted to minimal values of no practical clinical importance. The investigation which is here reported has been carried out as a contribution to the discussion concerning the problems mentioned above, and according to a special technique.

MATERIAL AND METHODS

The material consisted of 29 patients (23 women and 6 men), who were referred to the Department of Oral Surgery of the General Hospital in Karlstad for surgical correction of the gingiva in the front region of the upper jaw. The age of the patients varied between 26—67 years (average 44). The total number of teeth which were treated was 170. The patients were pre-operatively thoroughly instructed in oral hygiene and all deposits were removed (*Löe & Wright, 1965*).

Each patient underwent a thorough clinical and X-ray investigation pre-operatively and 6 months postoperatively. Coloured photographs were taken and study models constructed. Each tooth was x-rayed with special projection for the alveolar margin according to the »free hand technique».

The following criteria were investigated:

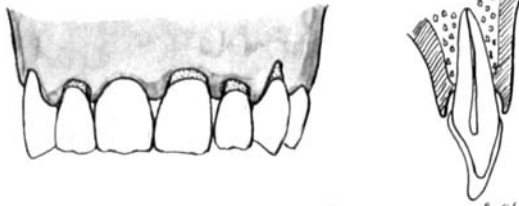
1. The bleeding tendency of the gingiva (judged by probing).
2. The colour of the gingiva (judged by clinical inspection and colour photographs).
3. The depth of the marginal gingival pockets around each tooth in 6 directions: buccally, palatally, distobuccally, mesiobuccally, distopalatally and mesiopalatally (measured with a measuring probe).
4. The distance from the centre of the incisors edge (cusp top) to the centre of the buccal gingival margin in the 6 front teeth (measured on the models).
5. Mobility of the tooth (clinically in 4 grades).
6. *Russel's* index.

The operation technique (Fig. 1) which was employed has previously been described by *Nordenram* (1959). However in some details modifications have been made which are specified below.

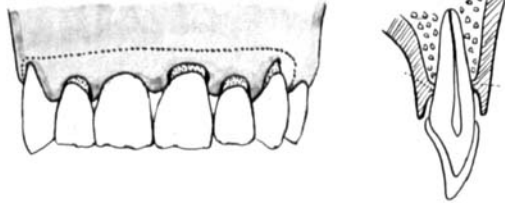
The area of operation was infiltrated with approximately 3½ ml 2 % Carbocain®*) with adrenalin 1:100.000. After this the depth of the marginal pockets was measured and the level of the incision determined buccally and palatally by the use of a Crane-Kaplan forceps. Following this, the gingiva was excised down to the bottom of the pockets. An incision was

*) AB Bofors, Nobel-Pharma, Mölndal, Sweden.

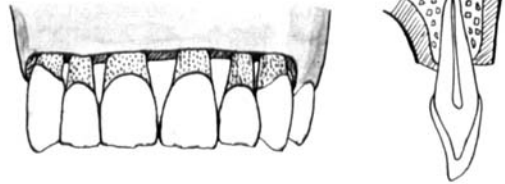
A. Preoperative status



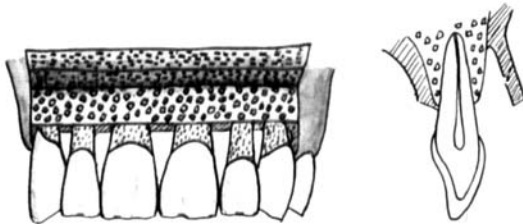
B. Incision



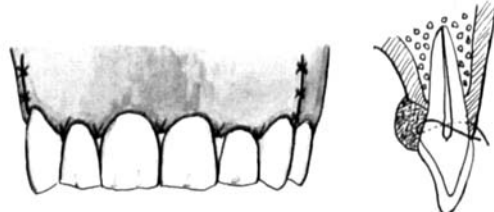
C. Partial gingivectomy



D. Taking up and lengthening of the flap



E. Buccal suturing and palatal periodontal dressing



carried vertically, in the region of the first premolars, up to the fornix. A mucoperiosteal flap was loosened from the buccal bone in this area. The marginal part of the bone, and the cervical part of the tooth were carefully freed from granulations and concretions and the bone margin levelled. The periosteum in the mucoperiosteal flap was incised from side to side to achieve relaxation and lengthening of the flap. This was folded back over the bone and sutured interdentally. Over the palatal gingival wound No-betec®*) packing was applied, which was left in place for two weeks but changed after one (namely when the sutures were removed). The rigorous oral hygiene, in which the patients had been instructed, and which they had learnt to exert preoperatively, was resumed immediately after the removal of the packing.

RESULTS

From the factors which were examined, the following results were obtained:

1. An increased bleeding tendency of the gingiva was confirmed preoperatively in all the 29 patients. At the check-up which took place 6 months postoperatively, there was no increased bleeding tendency in 28 patients and in one patient the condition was unchanged.



Fig. 2. Preoperative status

Postoperative status

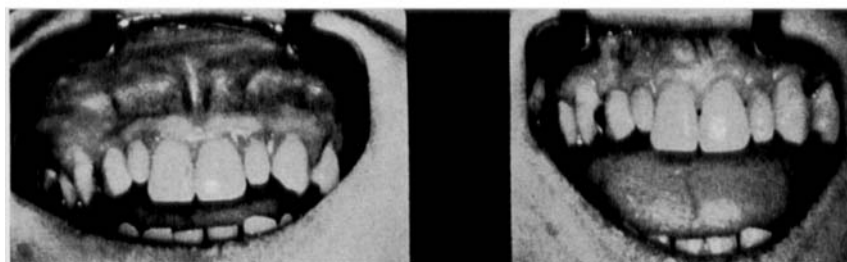


Fig. 3. Preoperative status

Postoperative status

*) AB Bofors, Nobel-Pharma, Sweden.

2. With regard to the gingival colour it was noticed that preoperatively an increased redness was found, in one or several sites in 25 of the patients. Postoperatively, in 21 of these patients, there was pale and completely normal gingiva (Figs. 2 and 3). In 8 patients the condition was unchanged. In the patients which preoperatively had a normal gingival colour (4 patients) there was no change of this condition postoperatively.

3. The preoperative examination of the clinical material revealed 560 gingival pockets exceeding 3 mm in depth. At the postoperative six month check-up only 13 deepened pockets could be discovered.

4. The distance from the incisal edge (top of the cusp) of the six front teeth in the upper jaw to the marginal gingiva buccally, was found to vary between 8 and 17 mm (average = 10,8 mm) preoperatively (Table I). The corresponding figure postoperatively was 8 and 18 mm (average = 11,3 mm). However the degree of gingival retraction varied between 1 and 6 mm (average = 1,0 mm).

5. 100 teeth showed preoperatively an increased degree of mobility. 56 were improved postoperatively whereas 37 were unchanged and in 7 there was a slight increase in mobility.

6. Russel's index (clinical part) was judged preoperatively and postoperatively (Table II).

Table I.
Distance between the incisor-edge (cusp-top) buccal gingival margin (pre- and postoperatively)

Tooth	Central incisor		Lateral incisor		Cuspid	
	Range	Mean	Range	Mean	Range	Mean
Preoperative distance	9-16	11.2	8-14	10.0	9-17	11.1
Postoperative distance	10-18	12.3	8-15	11.6	9-17	11.8
Gingival retraction	0-6	1.2	-1-3	1.1	-1-3	0.7

Table II.
Evaluation of the material according to Russel's index pre- and postoperatively

Preoperative values	Russel index values												
	8				6				2				1 0
Postoperative values	6	2	1	0	6	2	1	0	2	1	0	0	0
Number of teeth	1	1	6	15	2	2	35	87	1	4	10	4	2

Only in 5 teeth the condition remained unchanged. Of these, 2 had been considered non-pathological even preoperatively. Of those which were improved 3 were judged as 6, 4 as 2, 45 as 1, while the remaining 113 showed no pathological sign in any way according to the index system.

DISCUSSION

Before making use of the results of this investigation as a basis for an estimation of the value of the application of the methods here in question, it should be pointed out that the limitations of the material and the clinical judging techniques must be taken into account. However, the results indicate the value of the described method because of:

1. Good visual access to the operation field.
2. Rapid elimination of the chronic inflammation and infected gingival margin both buccally and palatally.
3. Relaxation and good stretching properties of the buccal flap ensure good coverage of the wound.
4. A very acceptable result aesthetically.

The application of the method would not seem to be advisable in cases where the buccal pockets are so deep, that they reach the gingiva areolaris or its immediate vicinity. In such cases the method described by *Wright* (1965) would seem to be more advantageous.

SUMMARY

Twentynine patients with periodontal disease in the frontal region of the upper jaw have been treated surgically with a modified flap technique combined with gingivectomy.

The results have been evaluated by examining such factors as the bleeding tendency and colour of the gingiva, the depth of the marginal pockets, the distance from the incisor edge (top of the cusp) to the middle of the buccal gingiva the amount of mobility, together with Russel's index (clinical part).

RÉSUMÉ

ÉVALUATION D'UNE TECHNIQUE CHIRURGICALE POUR LE TRAITEMENT PARODONTAL AU NIVEAU DES DENTS ANTÉRIEURES SUPÉRIEURES

Chez 29 patients présentant une parodontopathie au niveau de la région antérieure de la mâchoire supérieure, on a effectué un traitement chirurgical combinant l'opération de Kirkland et la gingivectomie.

L'évaluation des résultats a été faite en examinant des facteurs tels que la tendance à l'hémorragie de la gencive et sa couleur, la profondeur des culs-de-sac marginaux, la distance entre le bord incisif (sommets de la cuspide) et le milieu de la gencive vestibulaire, le degré de mobilité, ainsi que l'indice de Russel (partie clinique).

ZUSAMMENFASSUNG

BEURTEILUNG EINER PARODONTALCHIRURGISCHEN BEHANDLUNG DER OBEREN FRONTZÄHNE

Ein aus 29 Patienten bestehendes Krankengut mit parodontal erkranktem Frontzahnggebiet im Oberkiefer wurde parodontalchirurgisch mit einer modifizierten Schleimhautlappentechnik, kombiniert mit konventioneller Gingivektomie behandelt.

Die resultate wurden nach des Blutungstendenz und Farbe der Gingiva, Tiefe der marginalen Taschen, Abstand von der inzisalen Schneidekante (bzw. Höckerspitze) zur Mitte des bukkalen Randes der Gingiva, Lockerungsgrad de entspr. Zähne zusammen mit der Indexbeurteilung nach Russel (klinischer Teil) prae- und postoperativ beurteilt.

REFERENCES

- Berghagen N.*, 1959: Den kliniska behandling av marginala parodontopatienter (parodontalkirurgi). *Nordisk Klinisk Odontologi* 13—III—1.
- Carranza F. A. & J. J. Carraro*, 1963: Effect of removal of periosteum on postoperative result of mucogingival surgery. *J. Period.* 34: 223.
- Nordenram Å.*, 1959: Parodontalkirurgisk rekonstruktion av gingivalranden efter partiell gingivektomi i samma seans. *Svensk Tandl. Tidskr.* 52: 373.
- Waerhaug J.*, 1959: Gingivas og det marginale periodontiums kliniske patologi. *Nordisk Klinisk Odontologi* 13—II—1.
- Wilderman M. N., F. M. Wentz & B. J. Orban*, 1960: Histogenesis of repair after mucogingival surgery. *J. Period.* 31: 283.
- Wright W. H.*, 1965: The scalloped bevel incision in mucogingival surgery. *Odont. Tidskr.* 73: 515.
- Wright W. H. & H. Löe*, 1965: Tissue reactions incident to osseous surgery by an intercircular reduce. *Scand. Symp. in Period.* 1965 *Odont. Tidskr.* 73: 625.
- Löe H. & W. H. Wright*, 1965: Gingivectomy. *Odont. Tidskr.* 73: 501.

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