UNIVERSITY OF MEDICINE AND PHARMACY CRAIOVA

DOCTORAL DISSERTATION

ADDITIVE PLASTIC SURGERY, MODERN COMPONENT OF MARGINAL PERIODONTITIS COMPLETE TREATMENT

PH D SUPERVISOR : Prof. Univ. Dr. Mihai Surpateanu
DOCTORAL STUDENT : Tiberius Gabriel Stanoiu
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KEY WORDS

chronic marginal periodontitis, guided tissue regeneration, additive bone, bioresorbable barrier membranes, total flap surgery, bone graft.
INTRODUCTION

Marginal periodontitis disorders are now one of the main cause of dentomaxilar system disorders. Chronic marginal periodontitis are microbial caused disorders that in most cases produce destructive and irreversible actions to the entire marginal periodontal causing a resorption of the main alveolar bone, pathological phenomena, which can not be resolved by natural means.

The chronic marginal periodontitis treatment success depends on how early stage it is detected and treated by local and general means of the most agents that caused the beginning of the parodontal disease.

The treatment is going to be established only after a very careful consult of the patient and will be set up a plan of treatment on stages.

TEORETICAL STUDY

In the second chapter “Marginal periodontitis structure” are presented the main structures which take part to the marginal periodontal setting up.: the superficial periodontal (formed of gum) and deep pariodontal (consisting of radicular cement, desmodontal tissue, alveolar bone).

Chapter 3: “Periodontal epidemiology” discusses about the periodontitis etiological factors which are classified in: causal factors and encouraging factors. A special attention is given to the bacterial plaque which is considerated the main local causing factor in producing the periodontal disease. All the other etiological factors of the periodontitis are viewed now like second factors which support the beginning of the periodontal disease, but unable to be initiated without a causal factor. The general factors are considered today secondary factors, because till now was not possible to say that someone got a periodontal disease because some pathological systematic conditions without any local causing factors. The general factors work usually by reducing the defence of the periodontal tissue in front of the bacterial plaque threat or by minimizing the function capability of the periodontal which becomes weak to the causal factors action.

Chapter 4: „Periodontal etiology“ discusses about the periodontal etiological factors which are classified as: causative or decisive factors and favoring or predisposing factors. A special attention is given to the bacterial plaque which is considered the main causative factor with local action blamed for the periodontal disease. All the other etiological factors are considered secondary factors that increase the beginning of periodontal disease without trigger it if it doesn’t relate with the causative factor.

The general factors or systematic are being also considered today secondary factors because till now it couldn’t be said that there was a periodontal disease caused by general pathological conditions without local causative factors.
The general factors act by reducing the defense potential of the periodontal tissues against the bacterial plaque products.

The multitude of etiological factors set the periodontology among the diseases with many factors etiology.

Chapter 5: “The marginal periodontitis diagnosis, classification and symptomatologies” wants to explain the two periodontal anatomo-clinique ways of the periodontitis: the inflammatory and uninflammatory both with the clinic symptomatology which are defined.

The purpose of these is making a strong theoretical base to put a more correct periodontitis diagnosis, this has a special kind of treatment which needs to be individualized by form, periodontitis evolution stage and also the patient’s health.

PERSONAL STUDY

In the sixth chapter, the most important is called “Personal contribution” are presented the guided tissue regeneration GTR, the biomaterials and the surgery techniques used and also the obtained results and conclusions upon the study made in CMDTAMP Bucharest between 2003-2007.

The modern trend in periodontal surgery, based on the process of knowing the bone regeneration made that the bone defects to be treated. These could be resolved by transforming the vertical atrophy in horizontal atrophy by temporary establishing the phenomena or by filling the bone defects with addition biomaterials which can also stimulate the alveolar bone regeneration, partial at least and also reduces the teeth movement. The biomaterials addition is made at the bone defect level after the periodontal defect curettage and after preparation.

The GTR judgement is stopping the epithelium apical movement by putting a membrana at the root canal level for preventing the contact between the gingival tissue and the root surface and so the periodontal tissue is regenerated.

**The biomaterials** used for the study were: biovitroceramics PAW1, used as bone addition material and the reabsorbed collagen barrier as the reabsorbed RECOM membrana, DUO-TECK membrana and BIO-GIDE membrana.

**Biovitroceramics PAW1** is an osteoinductiv material, well tolerated which doesn’t modify the adjacent tissues and doesn’t give reactions as a foreign body.

After putting the granules into the defect bone, the inter and intragranular spaces are filled by a very strong vascularized fiber tissue. The same time happens a chemical interconnecting process which consists in some ionic exchange process at the bone-implant level.

In the study were used three types of **reabsorbed barrier membrane**:
1. reabsorbed RECOM membrana
2. DUO-TECK membrana
3. BIO-GIDE membrana.

The study was made between 2003-2007 CMDTAMP Bucharest on 29 patients ages between 29-58 years old. From the total of 29 patients (76%), 22 were men and 7 women (24%).
The age classification shows most periodontal injuries at the 40-50 years patients (12 cases), followed by the next age groups 30-40 years (8 cases) and 50-60 years (7 cases). There are less periodontal injuries at the 20-30 years (2 cases) and also the age of these patients (29 years) is close to the age group of 30-40 years.

During the study there have been done 4 classic periodontal graft surgeries NEUMA-WIDMAN type without bone addition and 25 graft surgeries in which was done a bone addition at the bone defect level, resulted from cleaning the periodontal defects, and then in the addition area to be put reabsorbed membrana (guided tissue regeneration GTR).

**Surgery techniques** used during the study were the total graft Neuman-Widman surgery and flap graft for the marginal periodontitis between 4-8 mm.

These methods have the advantage by restoring the grafts around the teeth, the roots remain less open and the physiognomy effect is better. The surgeries are classic made on 4-6 teeth on after the other in 2-3 weeks. There can be done in one session on a whole archway at good general health patients who can bear a long surgery. The method will be choose after the clinical and radiological examination. The final decision is made after the aspect and the location of the bone defects. (deepness, position, width).

The surgery treatment objectives aren’t only to control the periodontitis evolution but also to regenerate the affected tissue.

**OBTAINED RESULTS AND DEBATES**

In the statistic study made on the 29 presented cases were shown more interteeth injuries (28 cases) and just one intra root canal injury.

The periodontal injuries by the remained bone walls after the periodontal defects cleaning, can be seen that the two walls bone injuries are compared to the three walls injuries, 19 defects with two walls and 16 defects with three walls.

The one wall periodontal injuries were presented just in five cases.

The graphics show the periodontal injuries by the numbers of the walls.
- 3 bone walls injuries – 16 cases
- 2 bone walls injuries – 19 cases
- 1 bone wall injury – 5 cases

Another criteria for the periodontal defect for classification and also to evaluate the bone addition results is the depth of the periodontal defects. So the injuries were classified by:
- periodontal pockets deep between 2-3 mm shown in 10 cases
- periodontal pockets deep between 4-5 mm shown in 16 cases
- periodontal pockets deep between 6-7 mm shown in 11 cases
- periodontal pockets deeper than 7 mm shown in 5 cases

The graphics show incidence of the periodontal pockets by their depts.

The GTR purpose is to prevent the epithelium cells movement by putting a
membrana at the root canal surface to prevent the contact between the gingival tissue and the root surface and so the cells arrive one by one on the surface of the root and the periodontal tissue is regenerated.

For the 3 walls bone defects there was a 80-90 % bone regeneration from the initial volume.

For the 2 walls defects there was a bone regeneration of 70-75% of the initial volume.

For the bone injuries with one wall there was a regeneration of 30% of the initial volume.

The obtained results evaluation was made after the clinical examinations made from 3 to 3 months, during the consults where were watched the color and the aspect of the gingival mucosa as well as the presence of the periodontal pockets which are evaluated by depth and width.

The main evaluating criteria obtained was the radiological one which shown exactly the bone regeneration at the defect level. If you compare the two x-rays pre and post surgery you can see the bone regeneration that was the base of the evaluation.

The bone addition indications for the bone defects , depends on the bone defect type.

So, the good prognosis for the bone regeneration is for the 3 walls bone defects where there is a bone regeneration almost complete of the bone defects. Good results were obtained also for the 2 walls bone defects where there is a good bone regeneration ( 70-75 % of the actual volume). The same time for the one wall bone defect the prognosis is less favorable ( 30% ).

It was shown a correlation between the obtained results and a mix of factors – the number of the checking made in the healing process, the oral hygiene and the age of the patient.

So, the conclusion is for the best RTG results involves a minimal gingival retraction and a vertical bone defect with minimal bone lose.

During the study I tried to determine the way in which the tissue regeneration through GTR is influenced by the checking and the obtained results after 2-3 years.

The better results were obtained for the patients which made consults at 3 months and was lost for the patients which never came to consults. Because the establishing the gain results depends on the post surgery hygiene the periodical maintenance becomes obligatory for the GTR treatment patients.

It is recommended the professional brushing of the teeth which needs to be made weekly and which has the purpose to clean the bacterial plaque at this level.

That is why if appear membrana exposition is necessary to keep a very attentive oral hygiene for preventing suppurate post surgery complications and to prevent the extension to the regenerated tissue.

It was shown a 87% membrana exposure after the GTR treatment for the 29 patients ( 102 bone pockets ). The exposure average time was of 16.2 days post surgery and the most exposed membranas were during 2 weeks.

So, it is recommended to multiply to controls which have the purpose to maintain the oral hygiene for improving the GTR long results especially for the patients which suffered an advanced stage periodontitis.
CONCLUSIONS

After the clinical trial was shown that the gingival insertion level obtained and the bone regeneration and also the established results during 3-4 years post surgery are better for applying GTR combined with bone graft compared with the classical surgery with NEUMAN-WIDMAN flap without bone addition and barrier membrana. The GTR success is due to the bone graft makes easier maintaining the bone regeneration space because of the position, stability and the barrier membrana characteristics.

The obtained results authenticates the GTR method superiority, and using the method was a big progress in periodontal tissue regeneration.
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CURRICULUM VITAE

PERSONAL DETAILS:

Name: Stanoiu Tiberius Gabriel
Date of Birth: September 23, 1969
Place of Birth: Sighisoara, Mures County
Address: Bucharest, 33rd Vitejilor Street, 3rd district

EDUCATION:

“Mircea Eliade” Highschool – Sighisoara 1984-1988

Carol Davila University of Medicine and Pharmacy, Bucharest, the Faculty of Dentistry 1989-1994

Carol Davila University of Medicine and Pharmacy, Bucharest, the Faculty of Medicine 1993-1999

Oro-Maxillo-Facial Surgery Major (OMF) within Bucharest Dental University Hospital 1995-2000

KNOWLEDGE:

Oral Implantology knowledge formed within the Central Military Hospital Bucharest 2003-2004

Oral Implantology knowledge – Medical Implant System 2005

Improvement Course – Systematic Illnesses and Analgesia through Inhalation Anesthetic in Stomatology 1999

Health Care Activities Management Master 2007

EXPERIENCE:

1995 – 2000 surgical resident doctor OMF within the Bucharest Dental University Hospital

2000- present Surgery OMF Medical Specialist within CMDTAMP Bucharest