Recension of dissertation work

Evaluation of a composite synthetic bone substitute material Fortoss Vital in the treatment of periodontal intrabony defects

Sujith Sukumar – doctoral study program in dentistry

The topic of dissertation work engages in an up-to-date problem of tissue regeneratiion. Composite material consisting of ß-TCP and calcium sulphate (Fortoss Vital) is for a long time at the market, but very limited volume of scientific references is at a disposal in literature.Substantially greater volume of literary references relevant to lot of aspects of this composite material application is possible to find in other medical specializations as for example in orthopedics. This material could be very attractive for stomatological applications because it represents an integration of osteoconductive matrix and barrier effect of calcium sulphate and its outstanding feature is a very simple application. It is also a material which deserves evaluation on the scientific basis.

Dissertation work is extensively introduced by problems of periodontal diseases in epidemiological aspects (at the populations and affected locations level), in mechanisms of periodontal destruction, literarly perspectives on nonsurgical and surgical approaches to the periodontal therapy including of periodontal wound healing mechanisms were compiled. The extensive part of the work is formed by the overview of principles of guided tissue regeneration including the whole system of resorbable and nonresorbable membranes and characteristics of materials used as a substitution of bone tissue.

Offered work was composed as a retrospective follow-up study and its aim was to evaluate clinical results of composite material Fortoss Vital by the treatment of intrabony periodontal defects using the method of guided tissue regeneration.

47 defects in 26 patients were treated by this method and within the two years follow-up following parametres were evaluated:
Periodontal pocket depths (PD), changes in clinical attachment level (CAL), extent of gingival recessions (GR), presence of microbial plaque, bleeding on probing (BOP) and changes of alveolar bone in X-ray pictures. Frontal teeth, premolars and molars with 2 and 3-wall defects were treated.
In the chapter of clinical measurements I miss detailed specification of plaque evaluation bacause formulation „present/absent“ (plaque staining?) together with unclear localisation is not usual in this type of studies. And the like nonspecific looks also used BOP, although as a including criterion of the study is presented surely the more accurate PBI.
In the chapter of results is visible in the bounds of used methods a significant plaque reduction and with this fact connected decrease of BOP values. The average pocket depths and CAL values as well diminished by affected teeth after one and two years of circa 2 mm, in the category of pockets deeper than 5 mm was visible a substantial reduction of their number in all teeth practically. In the case of CAL the same convincing improvement was not recorded.

Remarkable is behaviour of gingival margin level after surgery, where changes in positive and negative direction were recorded. In a similar manner may be evaluated also values of average differences in periodontal pocket depths and CAL.

In addition to clinical parameters at the conclusion were undermentioned X-ray pictures of some treated cases before surgery and after 2 years.

Results of the study evoke a couple of questions tightly connected with elected methods of research work. An unquestioned result of this study is a finding, that this method leads to improvement of periodontal parameters and X-ray pictures document an increment of dense tissue with X-ray attributes of alveolar bone. Pleasurable are findings that this easy workable method reach to the same results as in the case of classic GTR protocol with membranes. Maybe it will be useful in discussion to correlate own experiences with the broad range of observations obtained in other medical specializations.

In conclusion may be stated, that within the range determinated by elected methodologies, the aims of research work were realized and obtained results could be suitable for next stages of research work. It is indispensable to verify the regenerative potential of Fortoss Vital by the correlation with the classical periodontal surgical procedures. The final step of evaluation is then histological examination of regenerate tissue.

Evaluation of research study brings a couple of questions:

1. The control examinations after 1 and 2 years revealed a statistically significant reduction of locations positive for microbial plaque. What about the tendency of plaque accumulation during the initial phase of treatment and how to explain this next progressive improvement?
2. Author presents perfect results on the vestibular aspects affected teeth (for example in frontal teeth vestib. 8 pockets $\geq$ 5 mm before treatment, after 1 year – 0 pocket. In agreement with my experiences, in the case of vestibular bone of frontal teeth, the complete loss of bone lamina is present, but no intraalveolar bone defect – is it really true regeneration?
3. The number of CAL $\geq$ 5 mm in molars was practically unchganged after 1 year, the remarkable improvement was visible as late as 2 years. How to explain this process?
4. Which way were evaluated recessions mesially and distally as is visible in tab. 5.10. and 5.11. and how to explain the postoperative regression of recessions mesially and distally as far as 3 mm?
5. On the X-ray picture No. 2 is really a 2 or 3-wall bone defect?

Despite of some remarks on methodology and interpretation of results I recommend submitted dissertation work for dissertation defence.

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Doc.MUDr. Pavel Poleník,CSc.
Stomatological Clinic

Medical Faculty, Charles University Plzeň