International Journal of Clinical Images and Medical Reviews

ISSN 2771-6309

Case Report

The using of biphasic calcium sulfate in two-stage treatment of odontogenic fibroma of the mandible – case report

Damian Dudek[1,3], Karolina Walach[1], Oliwia Warmusz[2], Edyta Reichman-Warmusz[2,3].

[1]Ambulatory Oral Surgery and Implantology, Thorn, Poland.

[2]Department of Histology and Cell Pathology in Zabrze, School of Medicine with the Division of Dentistry, Medical University of Silesia in Katowice, Poland

[3]University of Technology, Department of Medicine, Katowice, Poland.

Introduction

Among the patients of the Oral Surgery Department, a significant percentage are people requiring treatment due to the diagnosis of odontogenic cysts in the jaw bones. Most of these cysts, of various etiologies, require surgical treatment. The most common lesions of various origins include the germinal cyst, while the broadly understood root cyst, as a chronic inflammatory pathological condition, may constitute the highest percentage of recognizable lesions of this type in the jaw bones. Statistically, it is over 60% of odontogenic cysts and over 50% of bone cysts[1,2].

Various methods are used in the surgical treatment of odontogenic cysts; from savers through aggressive to extremely rarely radical. In the group of sparing methods, an interesting alternative to the well-known marsupialization is a two-stage treatment, in which cyst decompression is used first. It consists in making a decompression hole through all tissue layers, including the cyst wall, which is obligatorily verified by histopathological examination. The created hole is secured with a rubber drain and then an acrylic obturator is made, which may be a part of a prosthesis or orthodontic appliance. The obturator protects the created opening and allows the bone to slowly rebuild after the pressure inside the cyst cavity is removed. This stage of the procedure is also known as Drozdowski's modification. After an appropriate period of time and the reduction of the lesion volume is achieved, curettage of the remaining cysts is performed in conjunction with peripheral mechanical bone curettage. The entire biopsy is verified histopathologically. A wide panel of available bone substitutes can be used for bone cavity augmentation [1-6].

Bond Apatite® (Augma Int.) is an interesting biomaterial used in bone surgery in terms of its physicochemical properties. The material consists of fine-grained crystals of biphasic calcium sulfate and macro-grains of synthetic hydroxyapatite. Biomaterials with a similar chemical composition are well known to science. The first use of cement containing biphasic calcium sulfate dates back to 1892. However, the innovation of Bond Apatite® is a simple procedure to use. Well, the material is contained in a disposable sterile syringe with a capacity of 1 cm3. After an appropriate shift of the plunger, the physiological saline solution is introduced into the solid components. After such activation, a strong chemical reaction takes place between saline and calcium sulfate within a few minutes, where it becomes hydrated. As a result of this reaction, the material takes on the consistency of hardening cement, and what is extremely important, without the release of thermal energy. The augmentation procedure does not require the use of barrier membranes and tight closure of the flap, which significantly simplifies and shortens the procedure, and also reduces the risk of inflammatory complications related to the exposure of the augmentate after suture separation or soft tissue shrinkage. The manufacturer allows a gap of up to 5 mm between the wound edges, which is important, for example, in "socket preservation" procedures. According to the authors, the material maintains the desired shape within bone defects and is a significant alternative to classic granules or bone grafts [7-9].

So, the authors would like to present a case of two-stage treatment of odontogenic fibroma of the right corpus and branch of the mandible. Bond Apatite® was used in the regeneration of the bone defect.

Case Report

Male patient, age 43 years. In the right side of the cheek and lip the first sympthoms were a swollen, pain and Vincent symphtom and of course another inflammation signs. The patien had earlier not so big swolen and pain from time to time (Fig.1). We make a two-steps treatment. First step in local anestesia was a decompression of the cyst(including a extraction of impacted tooth 48) and fixation of the drainage for 7 days(Fig 2-5). We also take a sample to histopathology (diagnosis: dentigerous cyst). Than the obturator was done and we observed clinically and radiologically the status in 9 months follow-up(the clincal control was done once a month, and X-rays after 3,5,7 and 9 months, Fig.6). The Vincent symphtom was dissapeared spontaniously after 3 months.

***Corresponding Author:** Damian Dudek, Ambulatory Oral Surgery and Implantology, Thorn, Poland.

Mail : damiandudek@op.pl

Received: June 08, 2022 Accepted: June 09, 2022 Published: June 18, 2022

Citation: Damian Dudek[1,3], Karolina Walach[1], Oliwia Warmusz[2], Edyta Reichman-Warmusz[2,3]. The using of biphasic calcium sulfate in two-stage treatment of odontogenic fibroma of the mandible – case report.. Int Clin Img and Med Rew. 2022; 2(3): 1075.

***DOI:** 10.55920/IJCIMR.2022.02.001075*

Figure 1: *X-ray on the begining*

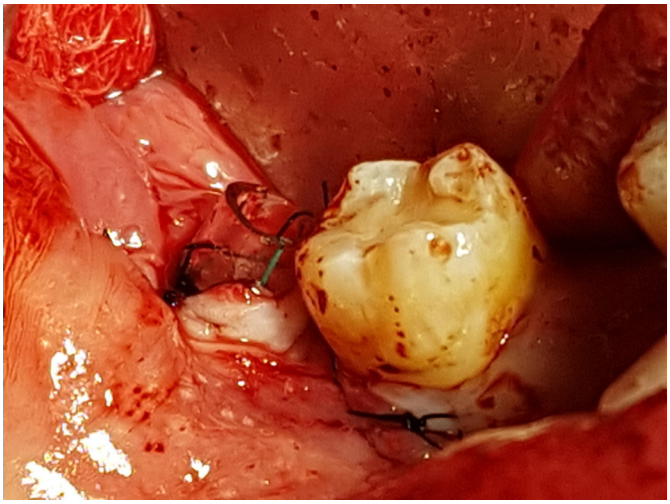

Figure 2: *Fixed drainage*

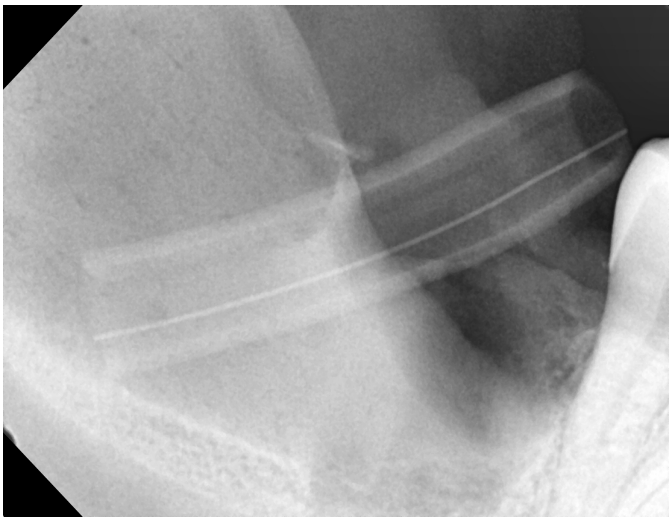

Figure 3: *Control x-ray with drainage*

Figure 4: *Obturator*

Figure5: *Obturator inside the tumor*

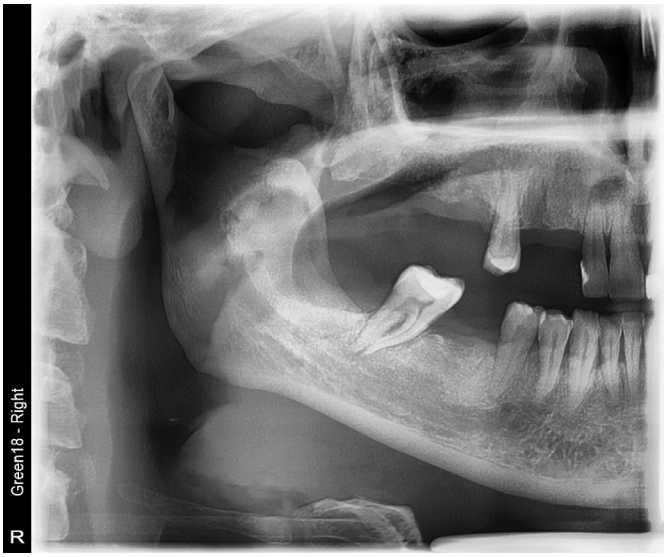

Figure 6: *control x-ray 9 months*

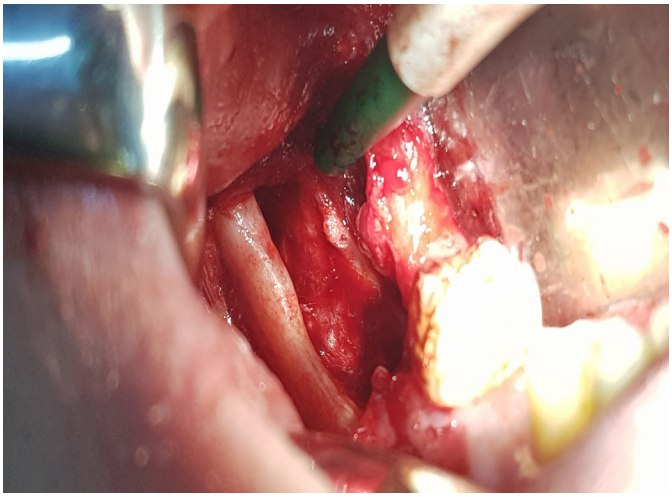

Figure 7: *Second step of surgery.Bone defect after tumor removal*

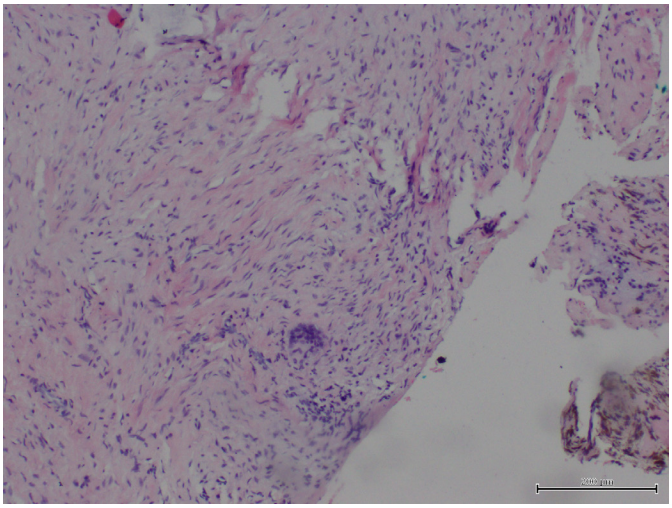

Figure 8: *Histological structure of the tumor. H&E steaming, focus 100x*

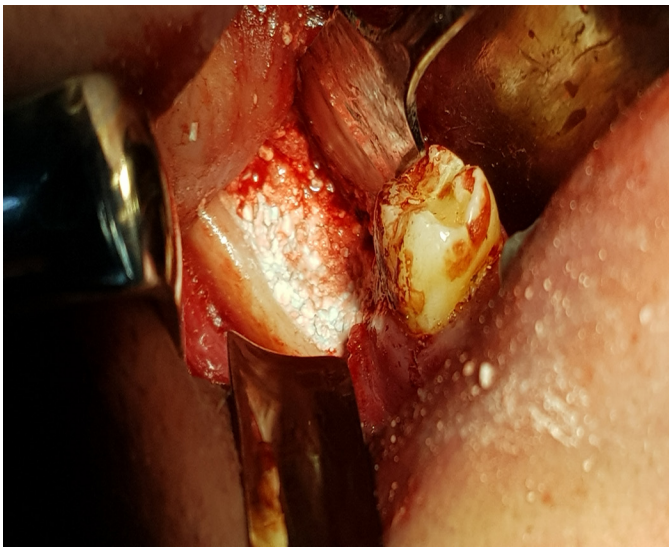

Figure 9: *Bond apatite inside the defect-5 cc was used.*

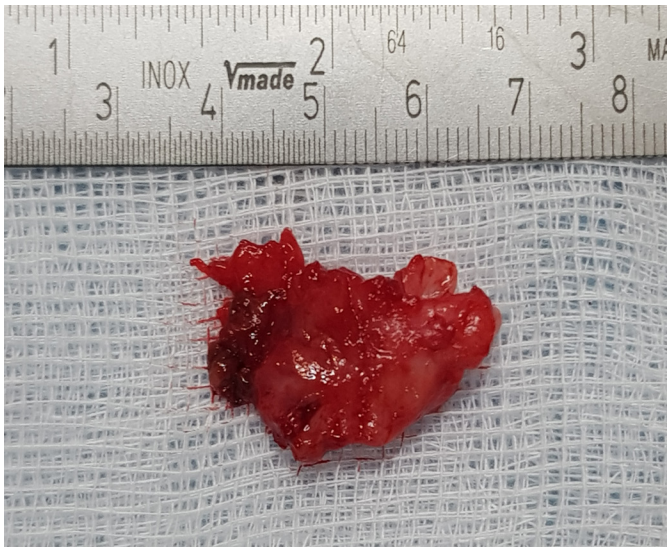

Figure 10: *Size of the tumor*

Figure 10: *Control x-ray 7 days after surgery*

Figure 10: *Control X-ray 4 months after surgery*

After this time we do the next step of the treatment. In global anestesia we removed this pathological laesion (sended all to the histoapthology, confirmed as a odontogenic fibroma in the begining of growth). Moreover the peripheral bone curretage around the defect up to deep about 1 mm was done. We filled the bone defect with Bond Appatite (Hydroxyapatite+biphasic Calcium Sulphate, 5 cc)(Figure 7-11). The patient reported medium pain and discomfort in the first four days after surgery. We take uot the sutures and correct the overdenture after 7 days. In next 4 months follow-up we observed very good bone remodeling and keeping the shape of the bone deffect(Fig.12). No inflammatory sympthoms was observed and until now patient reported no clinical symthomps.

Conclusions

Based on this case report and own clinical experiences the Bond Apatite® formulation seems to be effective in the support of surgical treatment of benign tumors of the jaws. Moreover, its easy of clinical application and lack of the requirement for the use of resorbable collagen membranes simplifies its use and decreases material costs that may hamper patient acceptance of treatment without a decrease in expected clinical results. Furthermore, soft tissue flap elevation and manipulation is not necessary to get complete primary wound closure without compromise to clinical results. Biphasic Calcium Sulfate, comparable with other osseous graft materials, at the 6 month follow-up, a high clinical effectiveness was observed.

Reference

1. Kaczmarzyk T, Stypułkowska J, Tomaszewska R. Torbiele Obszaru Szczękowo-twarzowego.
2. Kwintesencja. Warszawa. 2009.
3. Morgan PR. Cysts and cystic lesions of the jaws. Current Diagn Pathol 1995; 2: 86-93.
4. Tsuneki M et al. Combined immunohistochemistry for the differential diagnosis of cystic jaw
5. lesions: its practical use in surgical practice. Histopathology 2010; 57: 806-813.
6. Ward JP, Magar V, Franks SJ, Landini G. A mathematical model of the dynamics of odontogenic
7. cyst growth. Anal Quantat Cytol Histol 2004; 26: 39-46.
8. Enislidis G, Fock N, Sulzbacher I, Ewers R. Conservative treatment of large cystic lesions of the
9. mandible: a prospective study of the effect of decompression. Br J Oral Maxillofac Surg.
10. 2004;42:546-550.
11. Rao S, Rao S. Decompression as a treatment for odontogenic cystic lesions of the jaw. J Oral
12. Maxillofac Surg. 2014;72:1231
13. Yahav A, Kurtzman GM, Katzap M, Dudek D, Baranes D. Bone Regeneration. Properties and
14. Clinical Applications of Biphasic Calcium Sulfate. Dent Clin N Am 2020; 64: 453-472.
15. Baranes D, Kurtzman GM. Biphasic Calcium Sulfate as an alternative grafting material in various dental
16. applications. J Oral Implantol 2019 May 1. doi: 10.1563/aaid-joi-D-18-00306.[Epub ahead of print].
17. Dudek D, Reichman-Warmusz E, Kurtzman GM, Mahesh L. The use of grafting material biphasic
18. calcium sulfate for the treatment of osseous defects resulting from radicular cysts. Clinical
19. study and six-month follow up. J Osteointegration 2020; 3: 1-6.