

Mandibular reconstruction using ViviGen Formable® Cellular Bone Matrix following ameloblastoma resection.

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CASE STUDY

Ameloblastomas are the most common clinically significant odontogenic tumor, characterized by being slow-growing and locally invasive.¹ Ameloblastomas can cause significant morbidity as they expand, and can become quite large without surgical treatment. Rarely, mortality can occur if the tumor envelopes vital structures. Treatment modalities vary from enucleation and curettage to en bloc resection. One bone grafting option following ameloblastoma resection is autograft bone. Autograft bone can provide the osteoconductive, osteoinductive and osteogenic properties needed for successful bone fusion; however, the retrieval of the autograft can cause pain and site-morbidity to patients.²

An allograft alternative, ViviGen®, also provides all three of these properties while avoiding donor site morbidity. ViviGen is processed from donated human tissue and is intended for repair, replacement or reconstruction of musculoskeletal defects. ViviGen is an osteoconductive scaffold that contains viable cells committed to produce bone in concert with osteoinductive signals naturally found in demineralized bone. Preclinical studies suggest bone cells might improve fusion over mesenchymal stem cells by providing better bone deposition³ while remaining in the defect site longer.⁴

The following describes the use of ViviGen Formable to reconstruct a mandible following ameloblastoma resection.

Patient

76-year-old female with a history of hypertension, insulin-dependent type 2 diabetes, and GERD.

The patient presented with a lesion in the anterior mandible. One year prior, the patient had a tooth extracted in the area of the lesion, but continued to have multiple local infections with multiple rounds of antibiotics. Radiographic imaging showed a large, radiolucent anterior mandibular lesion (Figure 1). Biopsy confirmed a diagnosis of ameloblastoma.

Procedure

The ameloblastoma was treated with a marginal resection via a transoral approach, packed open and plated using a DePuy Synthes 2.0mm reconstruction plate (Figure 2). A secondary bone graft was planned following healing. Five months later, a secondary reconstruction bone grafting procedure was performed. Due to multiple comorbidities and the patient being a poor surgical candidate for autogenous bone graft harvest, ViviGen Formable was used instead. The

resection defect was reopened, debrided of soft tissue ingrowth, and 2cc of ViviGen Formable was placed into the defect (Figure 3) and covered with platelet-rich fibrin membranes from the patient's blood.

Results

The patient did well post-operatively. The hardware was removed at 4.5 months post-implantation. The graft site showed excellent healing with viable bone (Figures 4 & 5). Total treatment time from initial presentation to final healing and hardware removal was 11 months. The patient was functioning well and tolerating an oral diet throughout treatment.

Conclusions

This case demonstrates the successful reconstruction of a mandible using ViviGen Formable following ameloblastoma resection. The mandible was well-healed and stable with viable bone formed at 4.5 months after ViviGen Formable implantation.

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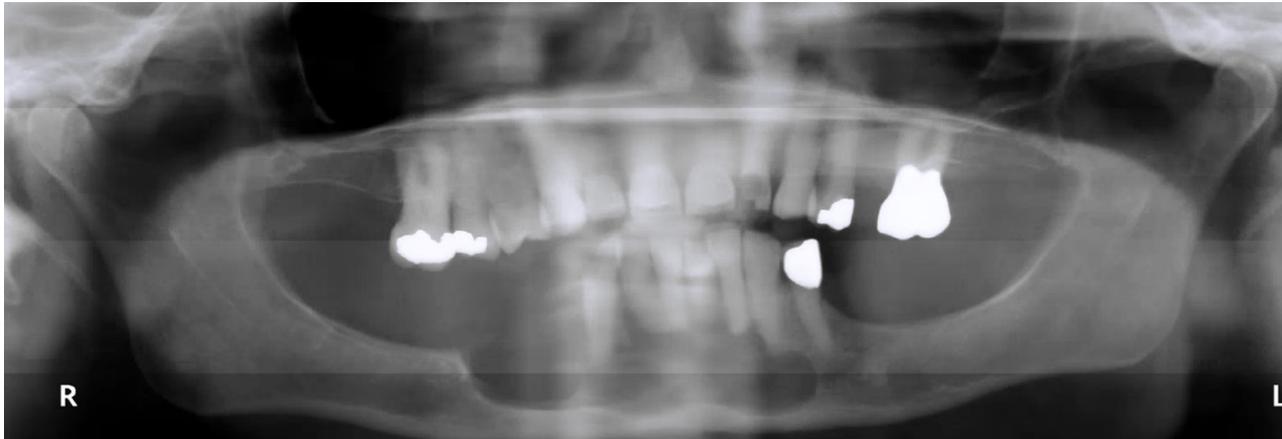


Figure 1.

Initial presentation X-rays showed a large, radiolucent anterior mandibular lesion.

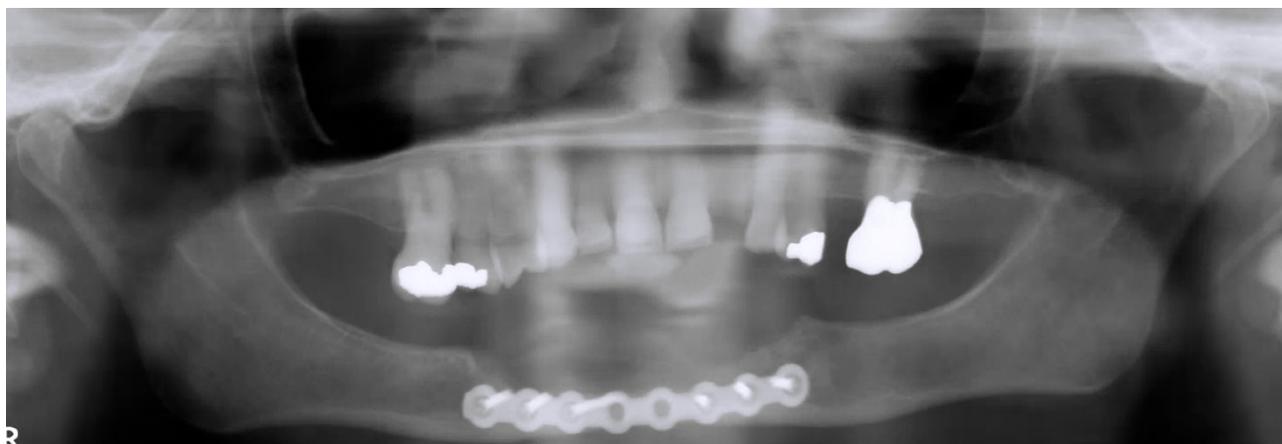


Figure 2.

Initial treatment involved surgical resection of the ameloblastoma, followed by covering the defect site with a reconstruction plate.

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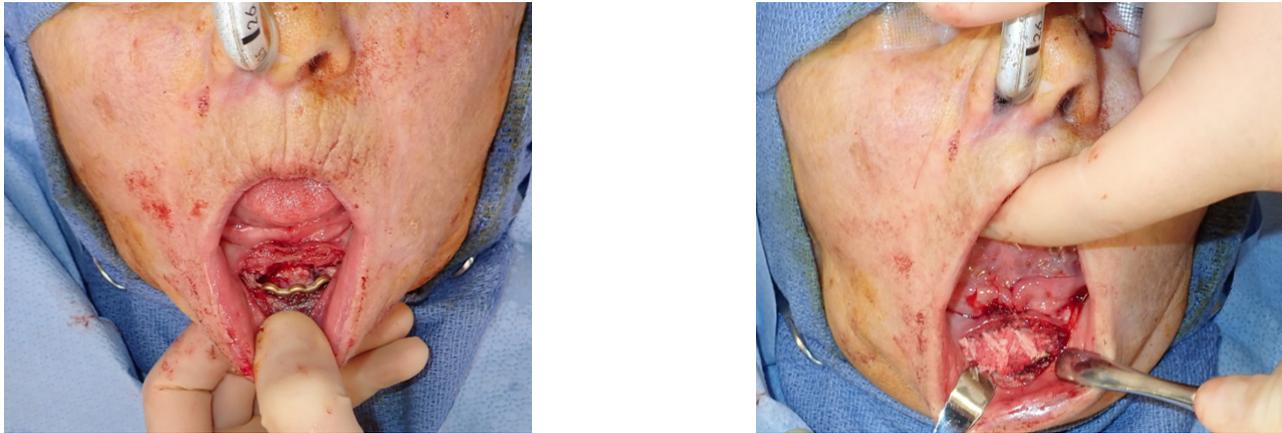


Figure 3.

Five months post-resection, images showing defect site before (A) and after (B) ViviGen Formable implantation.

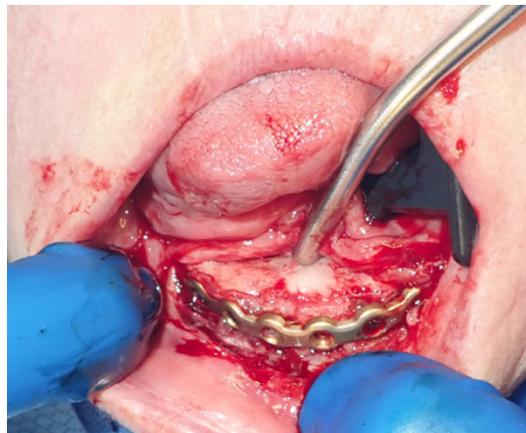


Figure 4.

Image of the graft site 4.5 months after ViviGen Formable implantation showing excellent healing and viable bone formation.

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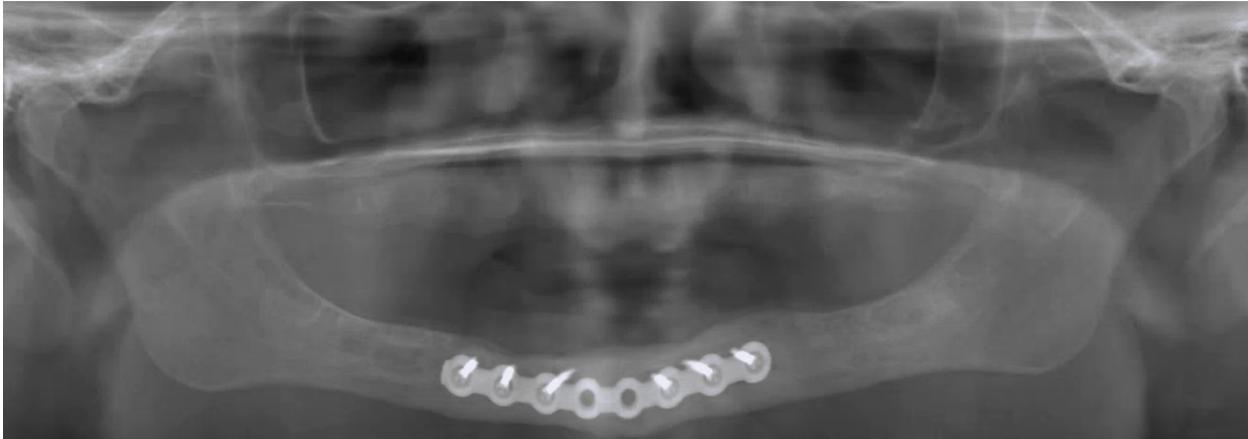


Figure 5.

Radiographic image 4.5 months after ViviGen Formable implantation showing new bone formation at the graft site.

Results from case studies are not predictive of results in other cases. Results in other cases may vary.

References

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