

# Mandibular Reconstruction Using Free Microvascularized Fibula Flap and Virtual Surgical Planning in Resection of Desmoplastic Fibroma of the Jaw: Literature Review and a Rare Case Report

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Craniofacial tumor resection is one of the procedures in maxillofacial surgery that demand some skills for achieve stability, function and esthetics. Taylor et al first described the microsurgical fibula flap in 1975. The fibula provides approximately 25 cm of bone, which is sufficient to reconstruct any mandibular defect, both a bone flap and an osteocutaneous flap can be obtained.

## Background

Desmoplastic fibroma is a very rare local, benign, and aggressive tumor that occurs before the age of 40, with male predominance. The mandible is the principle site of occurrence, followed by the femur, tibia and pelvis. The most important differential diagnosis is the low-grade fibrosarcoma. Curettage does not eradicate all tumor tissue; therefore, an en bloc resection of the lesion with wide margins is suggested in the literature. We believe this case represents one of the few cases reported in the literature with the subsequent maxillofacial reconstruction.

## Initial Clinical pictures

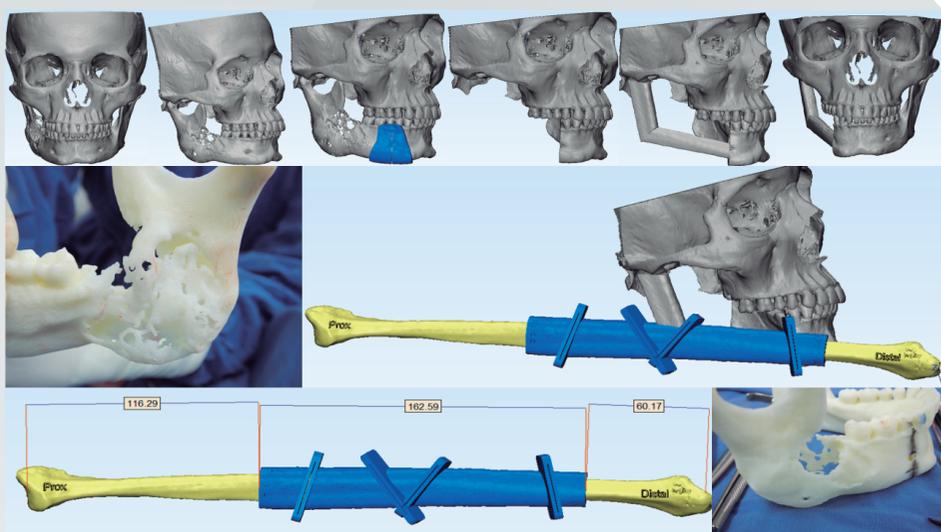


Figure 1. 1 year of evolution between RX images.

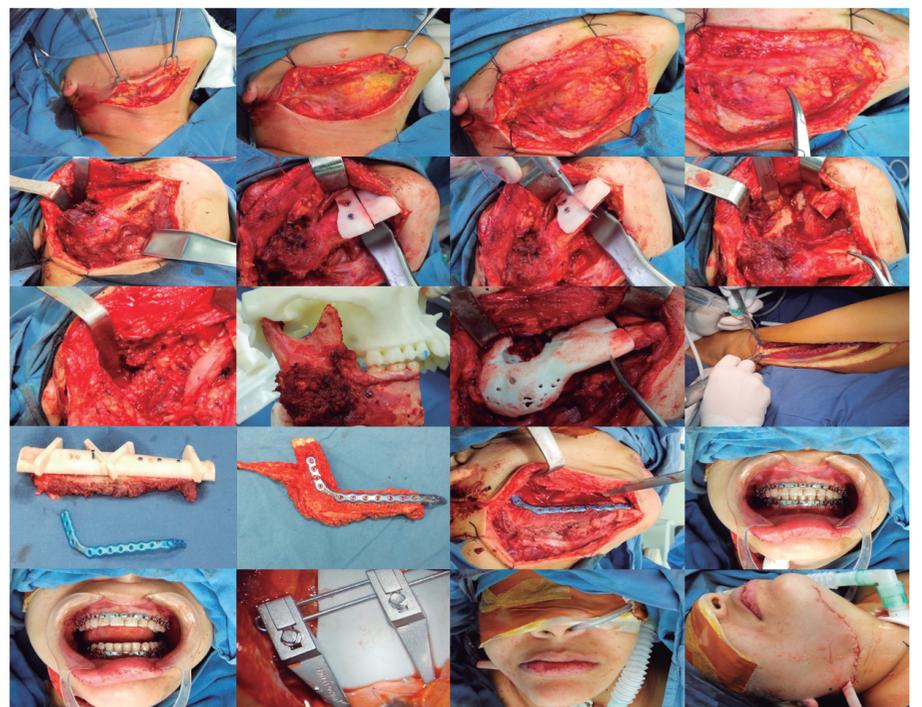
## Materials and methods

This is a female, Caucasian, 40 years old, with the chief complaint of slowly growing painless swelling in the right lower back tooth region since 2 years. The swelling was hard and nontender on palpation. Clinical extra-oral examination revealed expansion of the right inferior border of the mandible and intra-oral examination revealed a solitary bony hard swelling measuring about 4.0 cm x 5.0 cm in size with obliteration of the left buccal vestibule in relation to 47 and 48. An incisional biopsy revealed a desmoplastic fibroma, then the patient was taken to hemimandibulectomy procedure for resection of the tumor with the subsequent mandibular reconstruction using free microvascularized fibula flap, using previous 3D virtual surgical planning for design a custom made plate with its cutting guides

## Pre-treatment pictures



## Surgical Treatment pictures



## Follow-up: pos RX



## Results

The patient has been evaluated for 3 times since her last intervention, the occlusion was the same planned before the surgery, the esthetic was measured by concern of the patient who referred she was satisfied with the results. CT scan was taken for assure good contact between the native and the bone graft, also it was made a ultrasonography for analyze the good irrigation of the microvascularized fibula. The microvascularized fibula flap was assessed for devitalized zones, the facial symmetry was optimum, also the occlusion is stable since the intervention until nowadays

## Conclusions

It is quite probable that the desmoplastic fibroma does occur with a much higher frequency than the present case report seems to indicate. The Free microvascularized fibula flap shows excellent stability when it is use with 3D planning and surgical guides.