

Management of Post-Implant Fibrous Dysplasia in the Maxilla: A case report

Saad Zafar BDS | Yousef Amrou DDS | Anass M. Koleilat DDS, MS | Abdusalam E. Alrmali BDS, MFDS RCS, MDS

Felipe Nor DDS, MS, PhD | Hom-Lay Wang DDS, MSD, PhD

Introduction :

Fibrous dysplasia (FD) is a rare yet significant benign lesion in the maxillofacial region, posing particular challenges due to bone pain, deformities, and fractures. FD accounts for approximately 7% of benign bone tumors according to one study. While another study suggests that FD constitutes about one in ten bone tumors. FD can present as an isolated condition, or as part of multisystem disorders such as McCune-Albright syndrome (MAS), which includes FD, café-au-lait spots, and endocrine hyperfunction like precocious puberty, hyperthyroidism, or Cushing syndrome.

Evidence suggests that dental implants can have a high survival rate in patients with FD, diagnosing this condition can be challenging especially with atypical presentations and older age. A systemic evaluation ruled out underlying systemic diseases further complicating the diagnosis. However, through clinical, radiographic, and histopathological examination a definitive diagnosis was made of fibrous dysplasia. Tissue sampling and bone reshaping was performed for optimal patient outcome. Ultimately, the patient healed well and was satisfied with the aesthetic results.

Method :

A 63-year-old African American female presented in December 2023 with a chief complaint of a bump on her gums on the right side (**fig 1 a,b**). Her medical history was unremarkable. Imaging, including periapical radiographs and CBCT scans, showed a radio-opaque area in the right upper alveolar process (**fig 2 a-d**). These revealed a radio-opaque area involving the teeth #5,6 and implants #3 and 4, resulting in a thickened and irregular shape. The typical homogeneous ground-glass appearance, with no distinction between cortical and spongy portions suggesting monostotic fibrous dysplasia.

Figure #1

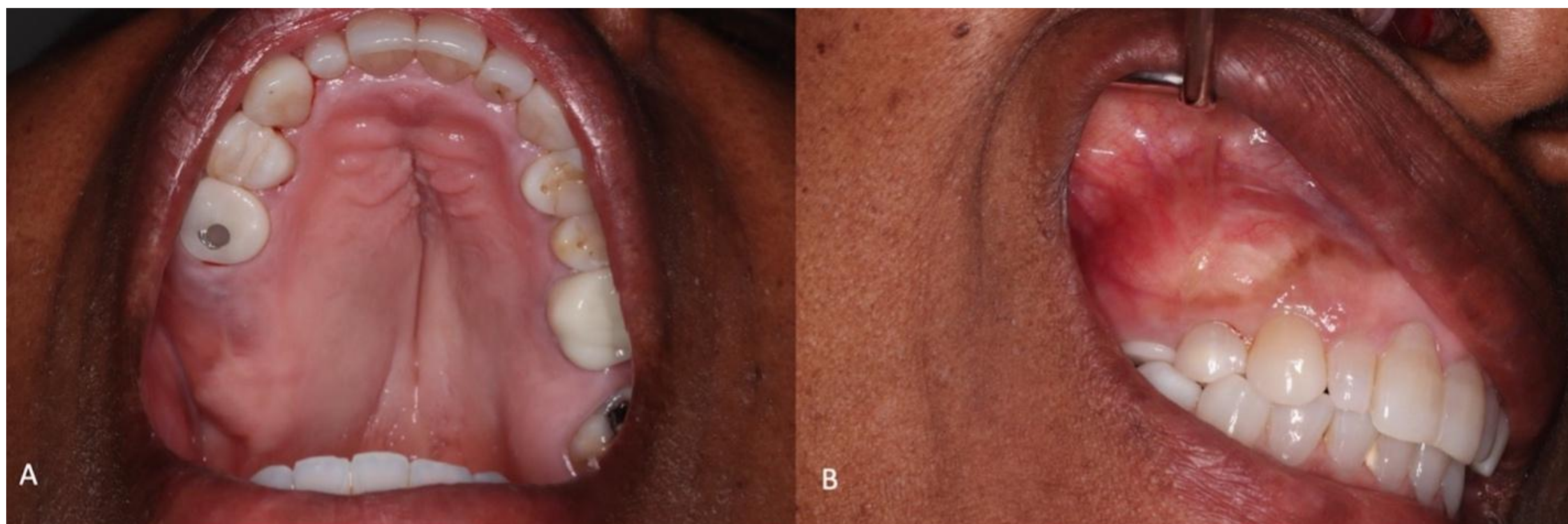
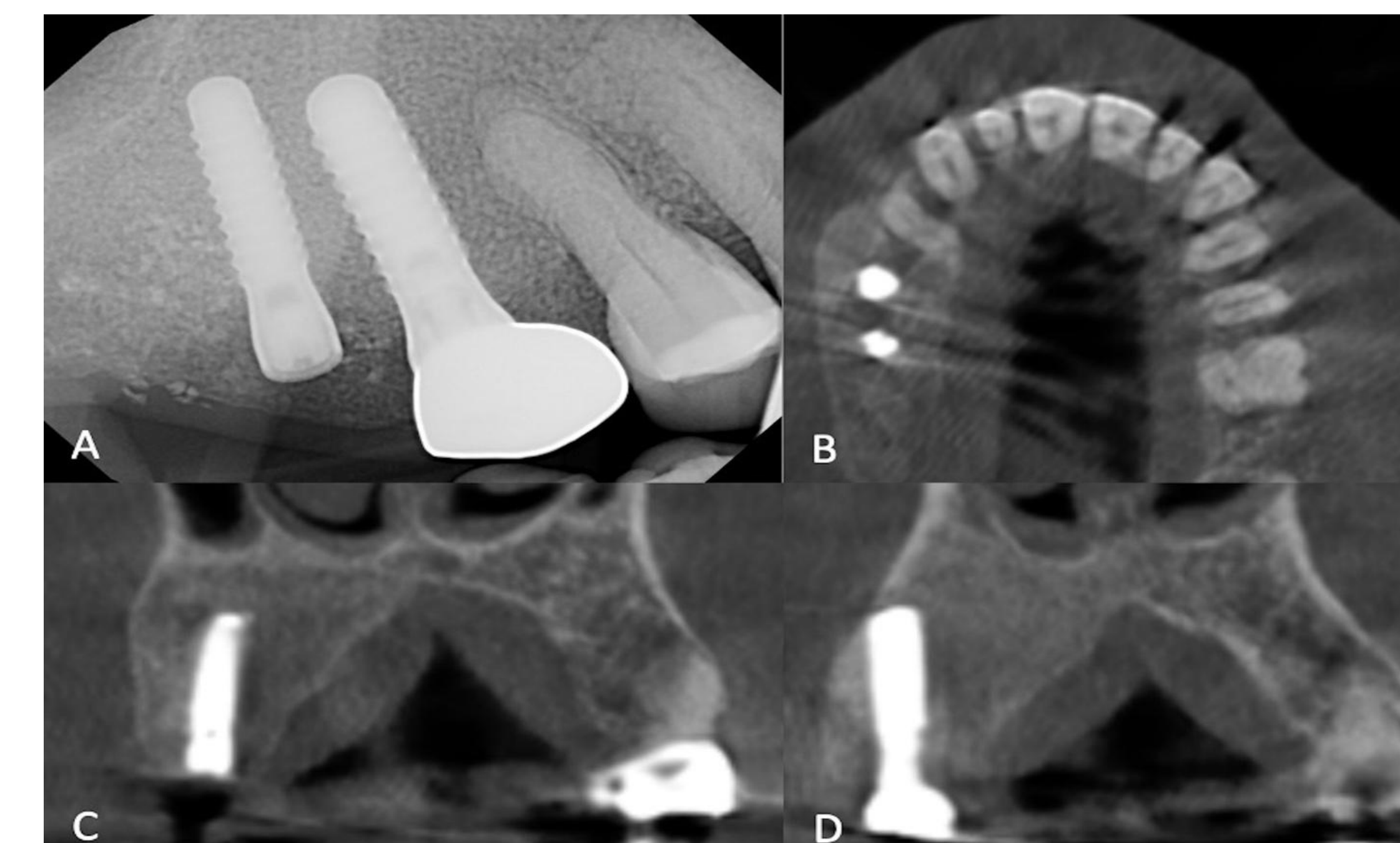


Figure #2



M & M (cont.) :

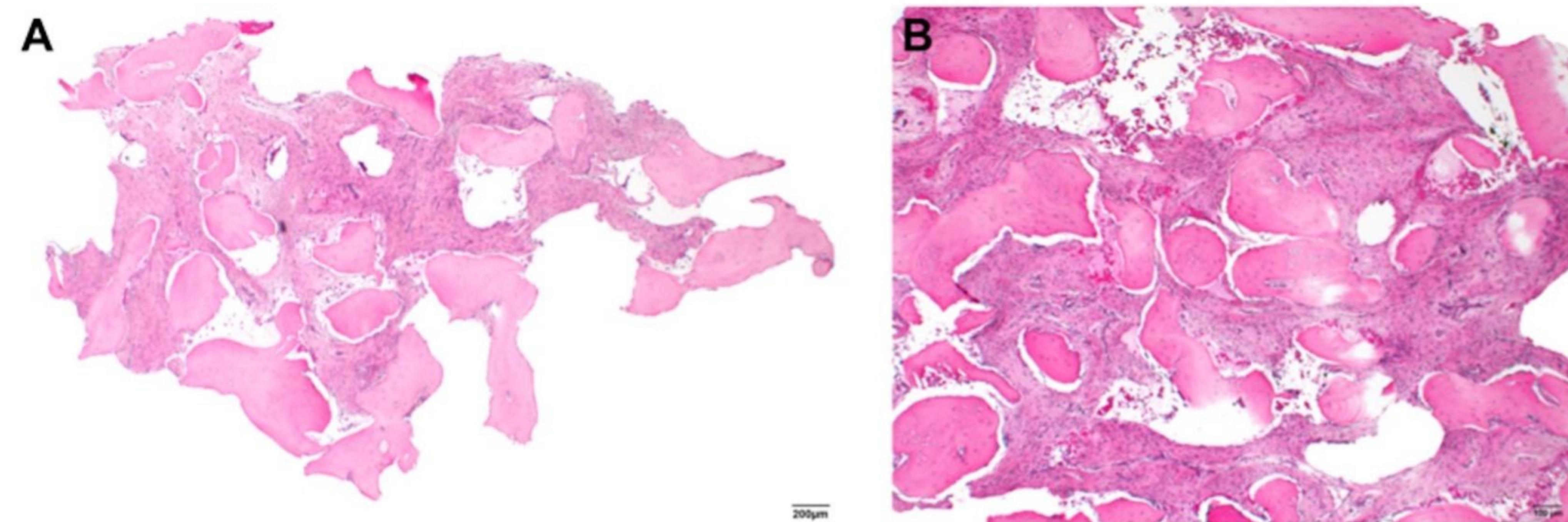
Step 1: (Incisional Biopsy surgery)

The biopsy procedure began with obtaining informed consent from the patient for both hard and soft tissue biopsies. Once consent was secured, local anesthesia was administered using 2% lidocaine with 1 to 100:000 epinephrine to ensure the patient was comfortable and pain-free during the process.

A full thickness mucoperiosteal flap with a vertical releasing incision on the mesial aspect of #6 was carefully reflected to expose the biopsy site. Using a rongeur, an incisional biopsy of the bone was then taken, ensuring a sufficient sample for accurate diagnosis. Next, a small wedge incision 5 x 5mm was made to obtain the necessary soft tissue sample. Following the biopsy, the patient was referred to a medical doctor for a comprehensive systemic workup. The results of this workup came back negative, allowing the focus to remain on the local findings from the biopsy.

Microscopic examination of the incisional biopsy sample revealed fragments of irregularly shaped hard tissue surrounded by stroma with moderate cellularity (**fig 3a**). At higher magnification, the hard tissue component presented lamellar maturation as well as single osteocytes in the lacunae, consistent with mature vital bone. Retraction artifact was a prominent finding at the periphery of the bone trabeculae (**fig 3b**). There was no evidence of cellular atypia or increased mitotic count. Although the microscopic findings are not entirely specific, their correlation with the clinic-radiographic presentation was determinant for the diagnosis of fibrous dysplasia.

Figure #3



M & M (cont.) :

Step 2: (Osseous recontouring surgery)

To address the overgrowth of bone, a definitive treatment plan involving osseous recontouring was established. The patient underwent osseous surgery to reshape the bone architecture and establish a positive osseous scalloped structure. The surgical team reflected a full thickness mucoperiosteal flap with a distal releasing incision on the tuberosity to expose the bone fully. Throughout the procedure, the neurovascular bundle, including the greater palatine artery and nerve, was carefully preserved. During bone reshaping, copious amounts of saline irrigation were used. Additionally, implant issues were addressed, and implant #3 was left submerged for future considerations (**fig 4 a-f**). Following the surgery, the surgical site was closed with 3-0 chromic gut sutures (**fig 5 a, b**). The patient received detailed post-operative instructions, including guidelines specific to osseous surgery, to promote healing and educate her on signs of recurrence and the importance of periodontal maintenance. Due to the extensive bone removal and extended surgery time, amoxicillin 500 mg was prescribed three times a day for 7 days. Furthermore, another bone biopsy was sent to confirm the initial diagnosis.

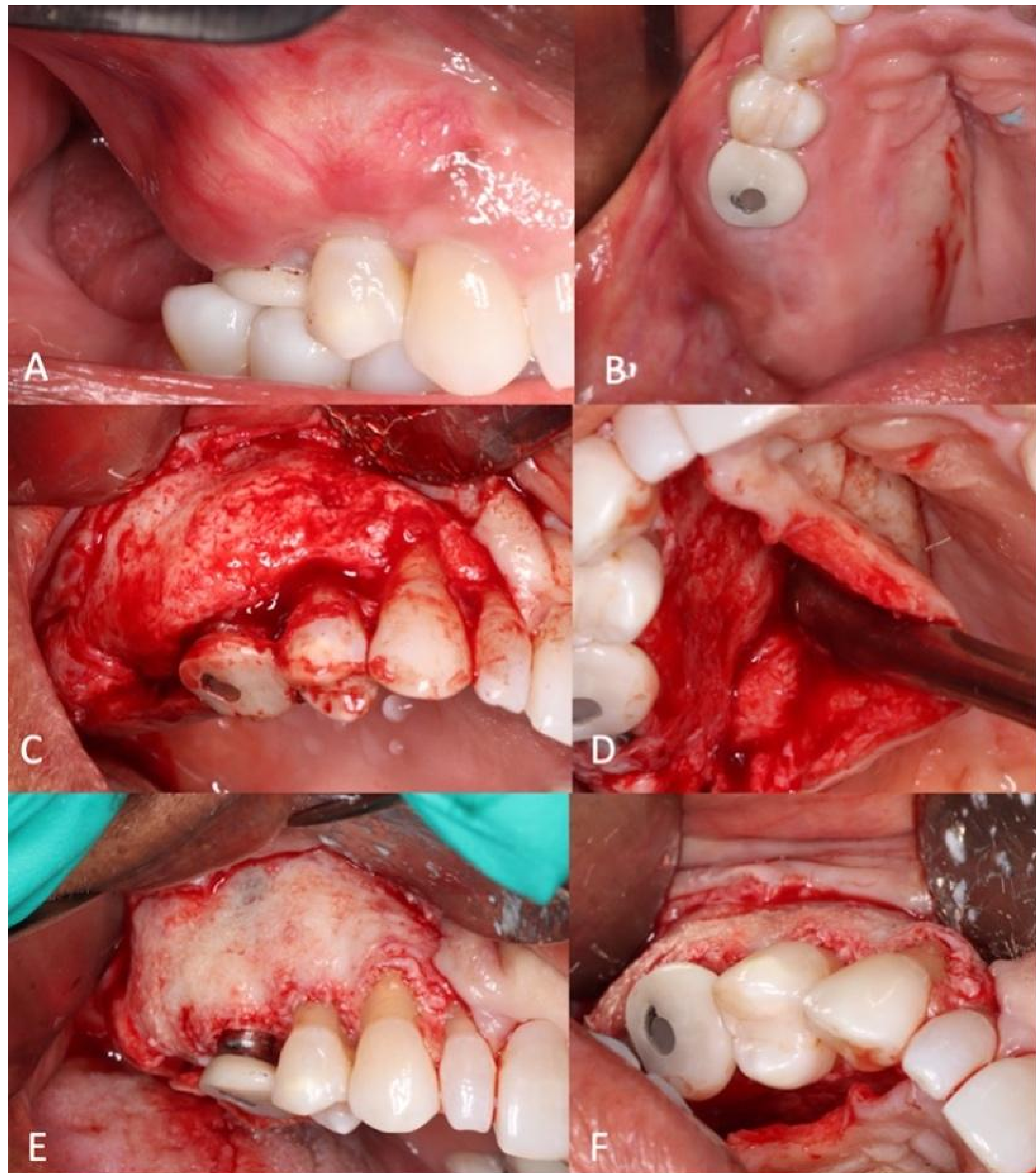
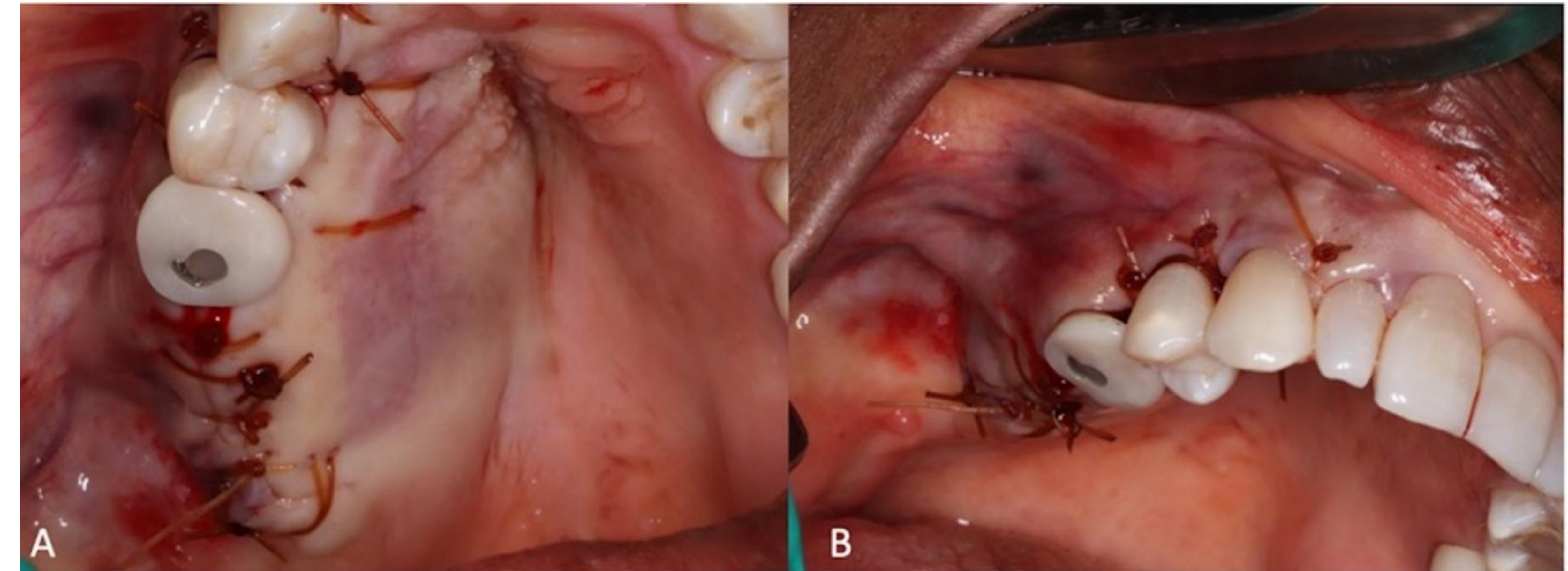


Figure #4

Figure #5



Results:

Six months after the surgery, both clinical photos and 3D scans showed that the bone remained stable and well-shaped (**fig 6 a,b**) (**fig 7 a,b**). The dental implants were intact, and there were no signs of complications or regrowth of the fibrous dysplasia. The patient was very satisfied with the outcome, reporting no discomfort and appreciating the improved appearance of her jaw. This successful case indicates that careful surgical intervention can effectively manage fibrous dysplasia while preserving the function of dental implants.

Figure #6

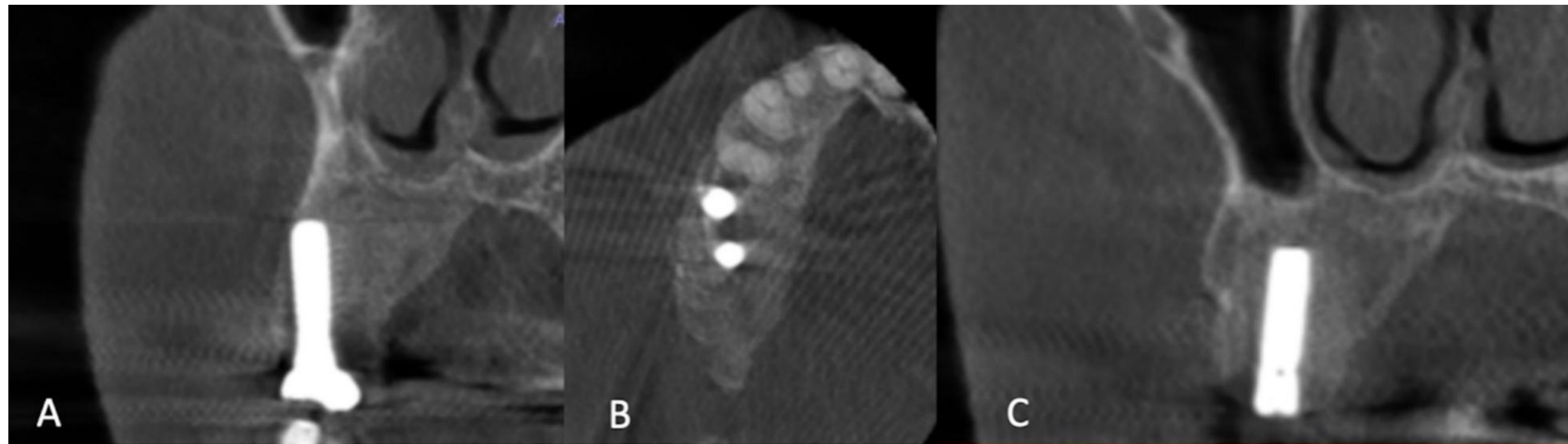
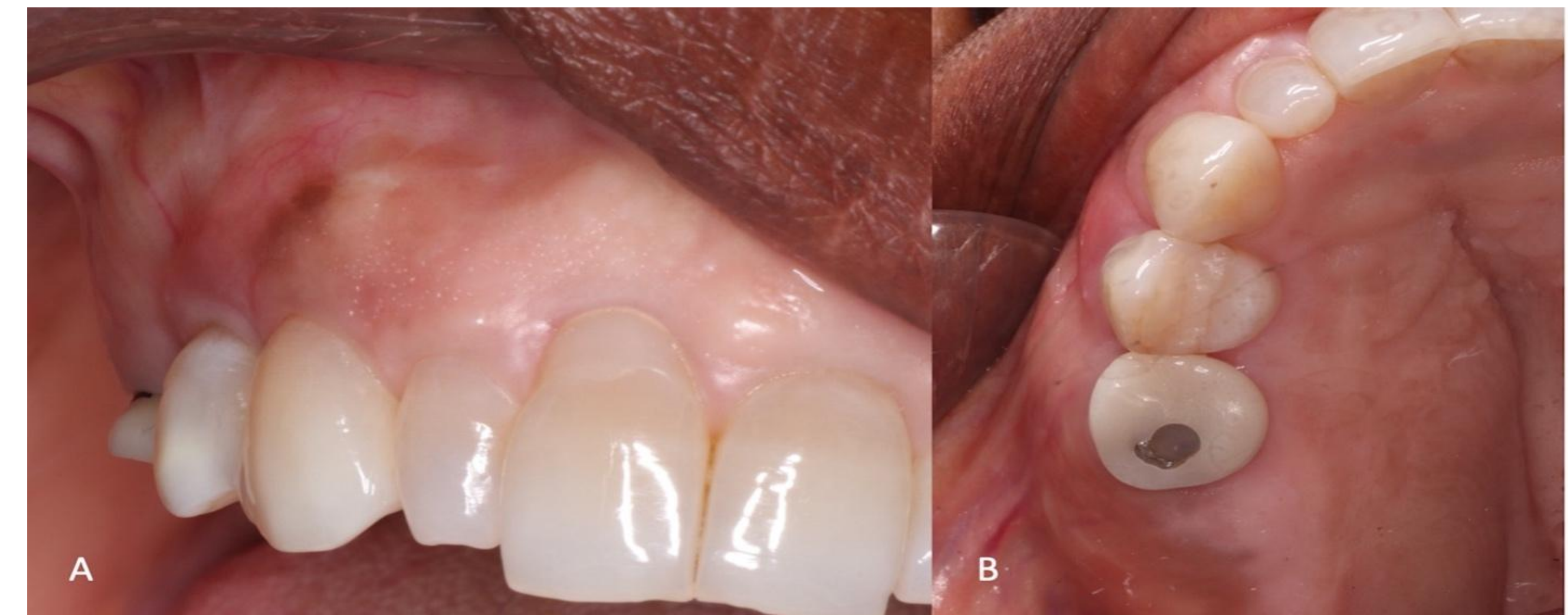


Figure #7



Discussion :

Surgical intervention is required only when anatomical structures are at risk of compression or when patient's function or aesthetics are compromised. Even with complete excision, lifelong monitoring is recommended due to potential late growth, dysfunction, and the small risk of malignant transformation. Recurrence of FD is uncommon in adults but more common during growth phases. In the present case, the implants had been placed five years before the disease developed. Longer follow-up studies with larger sample sizes are needed to validate these findings.

Given that bone-to-implant contact is essential for successful dental implantology, it is crucial to explore the interaction between titanium surfaces and bone or other tissues more thoroughly. The dynamics of peri-implant bone healing involve the initial resorption of bone responsible for primary stability, affected by osteotomy-related trauma. This is followed by a pattern of intramembranous bone formation, maturation, and remodeling.

To the best of our knowledge, this case report is one of the limited attempts using periodontal osseous surgery to reshape the bone back to its original function and esthetics, while preserving the function of the implants with stable surrounding bone.

Conclusion :

This case demonstrates that it is possible to successfully treat fibrous dysplasia in the upper jaw while preserving dental implants. Through careful surgery to reshape the overgrown bone, we were able to maintain the stability and function of the implants. The patient showed no signs of complications and was very satisfied with the results. This suggests that even challenging conditions like fibrous dysplasia can be managed effectively with the right approach, allowing for successful and lasting oral rehabilitation.