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CAN WE REGENERATE A MANDIBLE? TREATMENT OF CRANIOFACIAL TUMORS IN THE ERA OF TARGETED THERAPY

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Objective: We aim to describe the first ever report of in - vivo mandibular regeneration. Three children presented to our CMF clinic, suffering from large size mandibular ameloblastoma, a neoplasm of the jaws for which the standard treatment mandates aggressive surgical resection and reconstruction. Ablative surgery of large tumors in the facial region, poses major challenges - controlling the disease while minimizing sequela, as the face is the most individualized area of the human body. Current reconstructive strategies are unable to optimally restore the multiple complex of this region. **Methods:** Ameloblastoma treatment and regeneration of the mandible, was achieved by the use of molecular targeted therapy as a neoadjuvant agent. Alterations in the mitogen-activated protein kinase (MAPK) cascade, and the activating BRAF V600E mutation were correlated with ameloblastoma. We decided to imply the drug Dabrafenib - a BRAF inhibitor, as the first line treatment. **Results:** In a period of a few months, the children experienced substantial tumor size reduction with subsequent regeneration of functional mandible with inherent growth potential. Clinically evident as normal facial contour. Diagnostic imaging revealed close to complete resolution of the tumor, with evidence of new cortical and cancellous bone formation. Targeted therapy replaced the need for radical surgery. **Conclusion:** Targeted therapy enabled tumor remission and in vivo tissue regeneration. Targeting the tumor specific gene, carries the potential of becoming the ideal treatment and reconstructive strategy, as it eliminates the disease while enabling endogenous healing that regenerate cells and tissues, with restoration of impaired esthetics and function.