The Role of CBCT in Management of Severe Bilateral Condylar Fractures in the Growing Patient

by Daniel R. Cullum, DDS

Cone beam imaging (i-CAT) was introduced to my Oral and Maxillofacial Surgery practice in 2004 and has been a pinnacle event; there is no going back! Comprehensive diagnosis and treatment planning have been greatly facilitated, including comprehensive interdisciplinary orthodontic cases. We were among the first to upgrade to the i-CAT FLX to offer our patients low-dose exposures using the newly released touchscreen interface SmartScan STUDIO. The Tx STUDIO software provides impressive treatment tools for cephalometric, 3D diagnostic and orthodontic functions.

A challenge is presented when patients are seen over an extended treatment interval requiring follow

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up evaluation and imaging. In the QuickScan+ setting, the i-CAT FLX generates a full-dentition 3D scan at a lower dose than a 2D panoramic image.* For cases when re-evaluation is critical, an interval scan offers more information than a panoramic view. This is an awesome advancement for our patients as we can follow their treatment course more closely and offer early intervention when necessary to improve the long-term prognosis.

Case Study

An eight-year-old boy was involved in a significant accident where he struck his jaw, sustaining multiple mandible fractures and bilateral comminuted displaced condylar fractures (Figs. 1-3). Subsequently, he was treated with an open reduction of the body fracture and three-and-a-half weeks of closed reduction of the condyles due to the multiple comminuted segments. The patient was followed with low dose 3D imaging through a period of progressive mobilization and “guiding” elastic inter-maxillary fixation with physical therapy using Rocabado 6x6x6 protocol. The goal was to improve his range of motion, gain consolidation of the condylar fragments, and prevent ankylosis. Over the intervening months, follow up was completed to monitor consolidation of the condylar segment, the development of new artic-
ulation and growth of the condyles to a more normalized position (Figs. 4-5).

Images from a follow-up low-dose i-CAT FLX scan demonstrate the patient’s progress at nine months. The condylar healing and remodeling is demonstrated (Figs. 6-8). The patient has maintained excellent range of motion in spite of this severe injury. Orthodontic consultation and treatment is being coordinated with Dr. Mike Chaffee, and the patient is being monitored for joint stability and timing to begin active therapy to optimize skeletal growth possibly with the use of TADs.

The i-CAT scans were integral to monitoring the patient’s progress during this time period. Without the office-based capability to capture 3D scans, the patient would need to be sent to an imaging center for a medical-grade scan (with a significantly higher dose). With our in-office i-CAT 3D cone beam system, we can offer the very best to our patients with reduced expense and greater convenience.

*data on file with Imaging Sciences

**Author’s Bio**

Dr. Dan Cullum completed his DDS with distinction at the University of Alberta, Canada, and residency training at Westchester Medical Center, New York. Dr. Cullum is a Diplomate of the American Board of Oral and Maxillofacial Surgery and is on faculty as a Visiting Lecturer at Loma Linda University, Department of Oral and Maxillofacial Surgery and UCLA, Department of Oral and Maxillofacial Surgery. He speaks internationally and has contributed articles and textbook chapters on implant reconstruction. Dr. Cullum has served in leadership roles at national, state and local societies. At Implants Northwest (Coeur d’Alene, ID), he practices Oral and Maxillofacial Surgery with emphasis on immediate and minimally invasive techniques in aesthetic implant reconstruction. Dr. Cullum is also president of Implants Northwest LIVE Learning Center, which emphasizes training in advanced techniques for surgeon/restorative teams using LIVE surgery and hands-on application in a small group environment.

Dr. Cullum is not employed by Imaging Sciences. He does not act as a consultant for them, nor does he have any financial interests in the company.