Magnetic Resonance Imaging (MRI) is a powerful and versatile imaging modality utilized in various medical fields. With the emergence of commercial medical MRI in the 1980s, several MRI applications, such as cardiac, abdominal, and cranial, started to evolve medical diagnostic imaging. Three-dimensional MRI assessment of morphology and function without ionizing radiation attracted attention in dental applications during 1980s [1]. Dental applications of MRI, however, was sparse compared to other medical applications. Most work in the field of dental MRI aimed at imaging soft tissues, testing the potential of implant planning [1], and imaging of the morphology and function of the temporo mandibular joint [2].

MRI has not been commonly used for oral and maxillofacial imaging because the acquisition of the sequences can be negatively influenced by motion of the body, respiration, air in the oral cavity and nasal cells, implants and metal materials [3]. However, the utilization of MRI, enabled evaluation of spatial relationship between anatomic structures and intraosseous lesions when CT imaging cannot provide clear depiction of the mandibular canal. MRI can also be useful to the typing of different expansive lesions, and to evaluate the possible infiltration of the soft tissue [3].

Also, Dynamic Contrast Enhanced (DCE) Magnetic Resonance Imaging (MRI), in which multiphase MRI scans are taken following the intravenous injection of a contrast agent, has been widely used in clinical practice. Asaumi et al. [4] demonstrated that DCE-MRI features of odontogenic myxomas are different from those of ameloblastomas and that a very slow gradual increase of Signal Intensity (SI) is characteristic of odontogenic myxomas. The utility of the DCEMRI in the differential diagnosis of salivary gland tumors, and lesions in the jaw bone was reported [4].

High-resolution anatomical detail is a feature for TMJ imaging. MRI may assist the clinician in determining whether primary or delayed treatment is indicated in cases of trauma to the TMJ. The sagittal and coronal MRI of TMJ articulation are complimentary, and is important for a full assessment of joint dysfunction [5]. Using high-field strength surface coil MRI specific changes associated with disc derangement, trauma and previous surgery can be illustrated. In addition, the presence of soft tissue ingrowths, fibrosis and joint effusions can be determined [5]. Gadolinium may be used as a contrast agent in order to detect pannus formation in active rheumatoid or other inflammatory joint disorders. Natl J Maxillofac Surg 3: 2-9.

References


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Received January 26, 2014; Accepted January 28, 2014; Published January 30, 2014.