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Changes in Temporomandibular Joints after Unilateral Mandibular Vertical Osteotomy

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Abstract:

Nine adult mongrel dogs were used to evaluate the radiographic and histologic changes of temporomandibular joints following unilateral vertical osteotomy of the ramus. Measurements of mandibular dimensions were taken utilizing eleven distances on the contact radiographas. Condylar new bone formation started with the second month postoperatively and increased on both condyles at the third month. Changes in 6 different measurements were significant at 0.05 level. Histological changes due to function adaptation were pronounced during the period of the experiment on both sides of temporomandibular joints. Increased thickness of the disc, new bone formation, fibrosis in the bilaminar zone and compression of the meniscus were the most pronounced changes in both condyles. All changes returned back to normal after 3 months on both sides. These changes could be attributed to function adaptation to the new positions of the osteotmatized condylar segment.

Vertical ramus osteotomy or modified condylotomy was used for treatment of painful temporomandibular joint. The relief of pain depended upon the detachment of the inferior 50% to 60% of the medial pterygoid muscle from the proximal segment to permit "sag" or anterior and inferior displacement of the condyle with an increase in joint space. Good relief of pain had occurred after modified condylotomy. Clicking, locking and other signs of disc dysfunction were usually eliminated by this method[1].

Wang et al.[2] had investigated the effects of vertical ramus osteotomy on normal mandibular condyles and those altered surgically to simulate trauma to the articular surface in dogs. Their results revealed progressive remodeling of articular cartilage for the first group. In the second group of dogs which had grooves cut into the articular surface, they showed more rapid healing on the side receiving vertical ramus osteotomy than the other side without vertical ramus osteotomy. In the third group the vertical ramus osteotomy appeared to protect articular cartilage from progressive remodeling after extraction of molar teeth and prevent decreased vertical dimension.

Intraoral vertical subcondylar osteotomy was found to be more advantageous than sagittal split osteotomy and extraoral vertical subcondylar osteotomy. The advantage of this technique over the others was the less frequent damage to the mandibular nerve. The procedure can be performed interaorally easily and safely. Also the operative time and hospitalization time can be reduced and it is well accepted by patients[3,4].

Extraoral vertical subcondylar osteotomy was used to correct highly asymmetric and prognathic mandible. The procedure did not create morphologic changes that differ in the

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