Biomechanics of the mandible

Biomechanics is a branch of biophysics that studies the mechanical properties of living tissues, organs and the body as a whole, as well as the physical phenomena occurring in them during vital activity and movement of the body in space.

The biomechanics of the chewing apparatus studies the movements of its organs and tissues (lower jaw, chewing and facial muscles, dentition, individual teeth, tongue, soft palate, etc.). This is a big and difficult problem of orthopedic dentistry. But here we will focus only on a particular issue, namely, the biomechanics of the mandible. The main issues will be covered in the following chapters of the textbook.

The biomechanics of the mandible is based on the laws inherent in the movement of material bodies. Without knowledge of the movements of the lower jaw, it is normally impossible to identify disorders in the activity of muscles, joints, teeth closure and periodontal condition. The revealed patterns are used primarily in the design of devices that prevent its excursions - articulators necessary for the manufacture of prostheses.

The lower jaw moves in three directions: vertical (up and down), sagittal (forward and backward) and transversal (right and left). When the dentition is disconnected, the movements of the lower jaw are controlled by the joints and proprioreceptors of the neuromuscular apparatus. When teeth come into contact, the movements of the lower jaw are directed mainly by their chewing surfaces, and the joints perform a more passive role.