5 Treatment planning

5.1 General considerations

Once the diagnosis is established, a number of decisions must be taken as to how to best treat the patient. These decisions include considering the needs of the patient, timing of the procedure, the stability of the move, and type of surgery. As discussed, timing of the surgical procedure will vary with the underlying skeletal discrepancy, growth potential of the patient, and functional needs of the patient. In addition, most orthognathic surgical procedures are performed in close cooperation with an orthodontist and within a complex combined treatment concept. The stability of the individual move can dictate which procedure to use. For example, a patient with a large maxillary transverse discrepancy with vertical maxillary excess may be best treated by a surgically assisted rapid palatal expansion to correct the transverse discrepancy, followed by a Le Fort I osteotomy with ostectomy to correct the vertical component of the problem. A large mandibular advancement may be best accomplished by distraction rather than a bilateral sagittal split. How much the jaws are moved is dictated by the clinical examination, the discrepancy of the patient from the norm, and the orthodontic treatment concept. Cephalometric tracings are used to predict the amount of movement based on the needs of the clinical examination (**Figs 7.1-6**, **7.1-7**). Model surgery is performed based on the cephalometric tracings and in cooperation with the orthodontist (**Fig 7.1-5**, page 326).

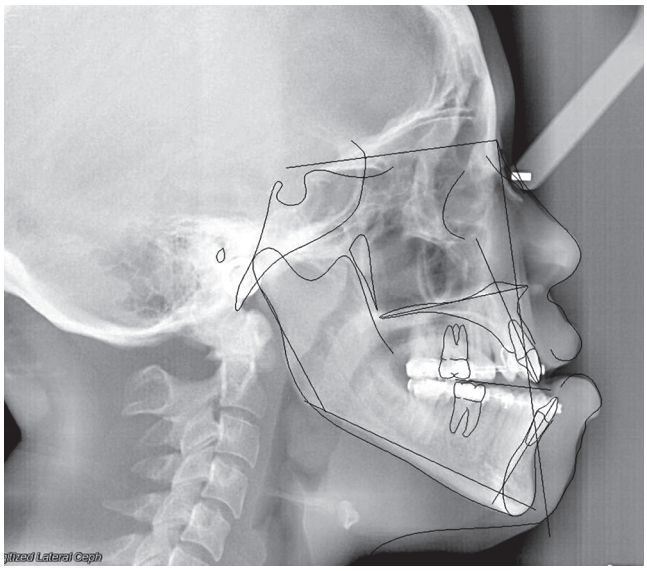

Fig 7.1-6 Tracing of lateral cephalometric x-ray. Vertical maxillary excess with open bite (apertognathia), mandibular excess (prognathism), steep mandibular plane, two steps in the maxillary occlusal plane.

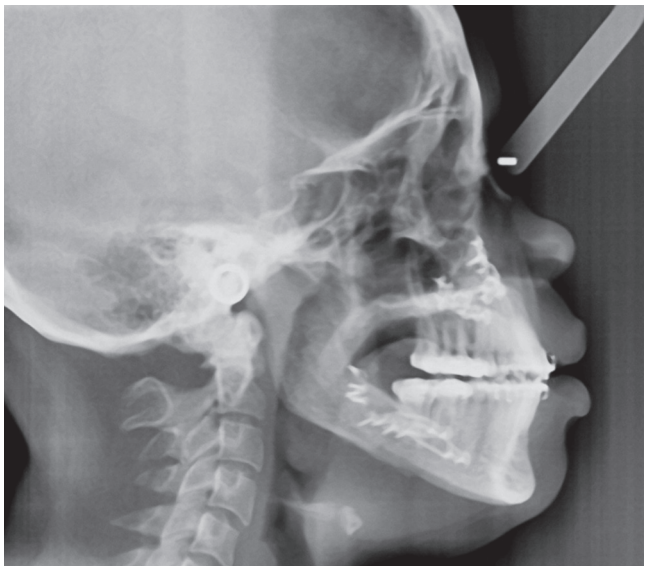

Fig 7.1-7 Postoperative lateral cephalometric x-ray. Situation after moving the anterior portion of the maxilla with the central incisor 2 mm down and 3 mm forward, leveling the maxillary occlusal plane, mandibular setback of 7 mm, closing the open bite, altering the mandibular occlusal plane. 6 weeks postoperatively.

Modern computer-based planning programs help to visualize the position of the bones, the teeth, and the soft tissue profile. They allow to simulate a movement of fragments, in this case a Le Fort I osteotomy and advancement, and to predict the postoperative position of teeth and the expected soft-tissue profile (**Fig 7.1-8**). Combined movements of jaws and teeth can be simulated by combining an articulator based orthognatic surgery and an orthodontic setup. For an orthodontic setup the teeth are subsequently mobilized in the Plaster of Paris models. After that a simulation of the estimated orthodontic movements is done by reassembling the teeth in a wax socket (**Fig 7.1-9**).

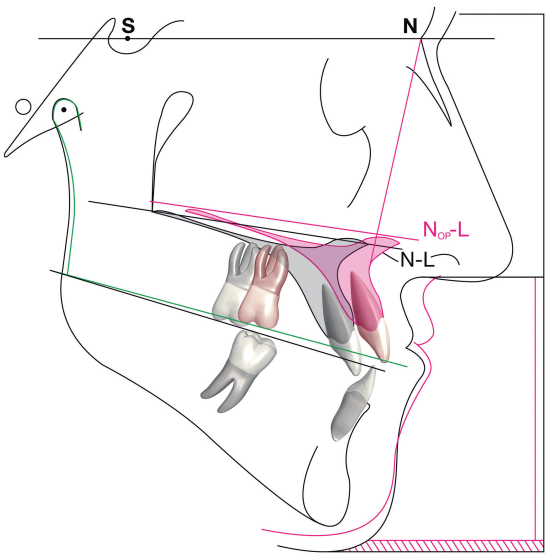

Fig 7.1-8 Computerized prediction of profile, jaw and teeth position. A Le Fort I osteotomy and advancement is simulated for a patient with maxillary retrognathia.

Fig 7.1-9 Combined orthognatic and orthodontic setup. A Le Fort I osteotomy and maxillary advancement in combination with a mandibular setback is simulated in the orthognatic setup. In addition an orthodontic setup is done by moving multiple single teeth Plaster of Paris blocks in a wax socket.