Optimum treatment of condylar head fractures (CHF) remains subject to controversy. There are currently a variety of alternative techniques applied, data in literature are often inconsistent and especially systematic long-term data on results after treatment by open reduction and internal fixation (ORIF) have so far not been available. This study in hand is the first long-term prospective study of ORIF after CHF based on osteosynthesis with 1.7 mm small-fragment positional screws (SFPSO) via a retroauricular transmeatal approach (RA). The study made use of radiologic, anatomic and objective functional parameters (axiography and MRI) to assess vertical height, disk mobility, protrusive and translatory movement as well as potential physical complaints. Included were surgical long-term sequelae after RA, such as incidence of stenosis of the auditory canal, the facial nerve and resulting disturbance of facial skin sensitivity. Retroauricular scars were evaluated according to the Vancouver Scar Scale. Helkimo and RDC/TMD indices were applied for patient's self-assessment of quality of life aspects after ORIF via RA. The sample in the first follow-up trial (FFT) in the years 2003-2004 comprised 26 patients (36 CHF). 22 patients (31 CHF) were re-evaluated in a second follow-up trial (SFT) between 2006 and 2008. A reference collective (43 patients, 56 CHF) treated with ORIF from 1993 to 2000 mainly by mini- or
microplates (MMP) served as a surgical control group. Five years after ORIF all fractured condyles (FC) continued to show stable anatomic restoration of the pre-trauma vertical height. FC treated with SFPSO exhibited a significantly superior range of motion (p< 0.05) of disk and condyle during mouth opening and protrusion compared to a previous MMP reference collective. Also, no difference was found between condylar mobility of FC five years after surgery and non-fractured condyles (NFC). SFPSO had thus successfully achieved a sustainable, stable physiological restoration of protrusive mobility of the articular disk and condyle. Remarkably, these long-term results were even slightly better in SFT vs. FFT (p< 0.05). Except for sporadically occurring minor complaints, the patients' subjective overall long-term perception of the success of the treatment was equally positive to the surgeons' objective assessment. This first long-term prospective follow-up study, based on objective assessment tools, demonstrates that in all cases the major goals of ORIF in CHF could be fully achieved. These goals are: restoration of vertical height viz. prevention of occlusal disorders, physiological function of disk and condyle as well as of the lateral pterygoid muscle. Accordingly, ORIF of CHF e.g. with SFPSO and via the RA secures both a long-term functionally and anatomically stable result and as best as possible pain-free result for the patient, a central prerequisite of optimum perceived HRQoL. The paper has been amended by an extensive review part that covers the current knowledge of the major surgical aspects regarding the treatment of condylar head fractures.