Is a New Approach Possible to Lesions of T1-T5 as the Classic Ones? The High Transaxillary Endoscopic Approach to T1-T5 as High Advanced ESS

D. Brücher

1Municipal Clinic of Karlsruhe, Center for Orthopedics and Traumatology, Karlsruhe, Germany

Introduction: The fractures and DDD of the upper thoracic spine are extremely rare and only publishable as case reports. The classic approaches to the cervico-thoracic junction and upper thoracic spine are anterior midline approaches like Smith-Robinson, Field, Nazarro, Binet and others. They are very invasive with high damage of tissue and classic open ones. The remained and well-known problems beside tissue damage are to reach target to T3 and T4 and below. Therefore the indication for dorsoventral instrumentation even in instabil B- and C-type fractures are decreased to pure posterior instrumentation.

Purpose: The purpose of this investigation is to show,that the new approach to T1-T5 is endoscopic possible,as a standardized approach technique with a low complication rate.

Methods: 11 patients of one center are retrospectively enrolled in 10 years with instabil fractures between C7 - T5. They had been operated by one specialized endoscopic surgeon. All patients showed B- or C-type fractures (AO-classification of Magerl, Aebi M. et al. 1994). All of them underwent CT - scanning after 6-12 months and clinical follow-up, analyzing general complication rate, approach related morbidity and neurological follow-up. The CT-scan with 2D-reconstruction in sagittal, coronar and transversal plane analyzes the control of fusion to strut graft and rate of correction losses.

Results: 11 patients were collected since 2000 to 2009 with mono - bi - tetra segmental fractures as B-/C-type fractures. No A-type fracture was treated anterior. 10 patients underwent purely the high transaxillary endoscopic approach (HTEA). 1 patient with etage-fractures between C7-T4 afforded a combined approach of HTEA with Smith-Robinson approach for fusion C6 - T5 in one session. All patients underwent acute posterior instrumentation. One temporary lesion of long thoracic nerve was found with complete remission. No other complication was found esp. no lesion of brachial plexus or frozen shoulder. The fusion rate in CT-scan 2D was 100%. The positioning of patient and OR-performance were standardized. The morbidity of iliac chrest belonged to 17,5%. No general complication occurred.

Discussion/conclusion: The new approach affords a special positioning of patient in lateral decubitus positioning with an anteflected-abducted shoulder as a 4 point fixation. The prerequisite is a normal ROM of shoulder. The approach is a lateral intercostal endoscopic approach regarding the thoraco-dorsal vessels and long thoracic nerve. There is no damage of bone or vessel necessary to reach the target area of T1-T5. Other classic approaches afford diverse osteomies of clavicle, sternum or ribs to reach the spine. Nevertheless they are classic open approaches and the oppersite of Minimal-Invasive-surgery. Especially the combination of the new approach with extended Smith-Robinson for fusion of C6-T5 showed the correct, standardized and suitable solution to a difficult etage-fracture of cervico-thoracic junction and upper thoracic spine.

The new approach is completely a diverse approach to classic ones as anterior midline approaches and performed firstly in 2000 by author. It is a good alternative approach for treatment of fractures and DDD in T1-T5 spine.