

Treatment of Fractures caused by Osteoporosis

Dr. Steffen Heck: increased Stability due to Treatment with a new photodynamic Polymer

COLOGNE – Is there a new strategy in geriatric traumatology? Dr. Steffen Heck introduces intramedullary stabilization with use of a photodynamic polymer.

With application of conventional methods of osteosynthesis the traumatology does not often penetrate the osteoporotic bones in border areas. Implant failure is a frequent complication. The photodynamic polymer (IlluminOss), inserted worldwide for the first time in the humerus, presents the opportunity to more stably treat osteoporotic-related fractures.

The methods used combine the properties of the plastic materials utilized successfully in the last 10 years in dentistry with the Dacron balloon catheters known and tried and tested in interventional radiology and cardiology. Both materials find new use in modern trauma surgery/orthopedics.

The methacrylate used was approved for fracture stabilization in human medicine at the end of 2008. In the Seldinger technique, after repositioning of a fracture a balloon catheter is inserted into medullary space previously reamed with use of a flexible cannulated drill. The balloon is filled with liquid monomer and converted into a hard polymer by application of visible blue light.

The implant design permits locking by screws in any angle, at every reasonable anatomical site. Thereby the stability can be additionally increased. The individually adjustable implant has an exceptionally high restoring force and allows unrestricted evaluation of the bones overall due to its lack of opacity to X-rays.

In both of the present cases, patients over 80 years of age each having conditions after plate osteosynthesis for distal humeral multiple fragment fracture and ipsilateral humeral shaft fracture were treated at the proximal end of the plate.

The proximal screws of the two plates at the distal humerus were temporarily removed, the plastic balloon was inserted antegrade in the medullary space, filled with monomer and hardened. Next the two distal plates left in place could be firmly fixed in position with screws in the plastic-reinforced bone. After proximal locking a very stable situation could be achieved minimally-invasive.

Especially stable constructs result from the use of the intramedullar plastic implant with an extramedullary osteosynthesis such as a plate. Thereby the bone quality plays a minor role, because the osteosynthesis plate is screwed primarily on the hardened plastic and not solely on the bone. Herewith an implant is available, which adjusts itself to the individual medullary spatial configuration of the person and heals either alone or in combination with proven osteosynthesis techniques and above all can augmentatively stabilize pathologically weakened bones.

The two left images: Fracture at the proximal end plate after double plate osteosynthesis at distal humeral fracture; the two right images: Condition after minimally-invasive revision with monomer in situ, proximal locking and anchoring of both distal plates in the bone-plastic-construct.

top left: Drilling of the medullary space after removing the proximal screws of both osteosynthetic plates; top center: after repositioning the balloon catheter inserted into the medullary space; bottom left: Applying blue light to harden the monomer; bottom right: Refixation of the plates or of the distal fracture fragments at the bone/implant; top right : clinical result

*Congress hall I, 1st floor
Monday 2:00 – 3:30 PM*

ABOUT THE PERSON

Dr. Steffen Heck: Intake 1967, promotion 1997; since 2009 Managing Senior Physician of Trauma Surgery/Orthopedics, Hand and Plastic Surgery at St. Vincent Hospital Cologne.