Introduction: Advancements in the development of laparoscopic instruments have mainly been made at the instrument tips, where a large variety of different graspers are available now. Stress syndromes like “surgeon’s thumb”, “surgeon’s wrist” and “surgeon’s elbow” are widely known amongst laparoscopic surgeons and have already been reported in literature. Handle design with special regards to ergonomic aspects of the surgeon’s hands has been neglected up until now.

Material: A special ergonomic universal handle for laparoscopic graspers according to the needs of high volume laparoscopic surgeons was developed based upon our idea in cooperation with Olympus, Germany. It consists of a lightweight modular handle with a rotatable thumb ring, which is easily adaptable to 3 different hand sizes using differently sized silicone inlays for the thumb ring and the 4th finger ring.

Method: The ergonomic universal handle was evaluated by different experienced laparoscopic surgeons, using different types of graspers in a large variety of laparoscopic procedures. Additionally, ergonomic laboratory tests have been performed including stress evaluations by electromyography.

Results: The ergonomic universal handle was subjectively judged significantly better in terms of forearm and wrist stress by all surgeons. Laboratory tests showed a significantly decreased muscular stress of approximately 35% with the ergonomic handle when compared to standard handles.

Conclusions: The new ergonomic universal handle is safe and feasible and represents a valuable option for laparoscopic surgeons of all specialities with special regard to comfortable and stress-free laparoscopic surgery for the surgeon’s hands, wrists and forearms.