

# The Influence of the COVID-19 Pandemic on Surgical Therapy and Care: a Cross-sectional Study

<p><b>Indication</b></p> <p>Upper GI <input type="checkbox"/> malignant <input type="checkbox"/> benign</p> <p>Small intestine <input type="checkbox"/> malignant <input type="checkbox"/> benign</p> <p>Colorectal <input type="checkbox"/> malignant <input type="checkbox"/> benign</p> <p>Appendix <input type="checkbox"/> malignant <input type="checkbox"/> benign</p> <p>Thyroid <input type="checkbox"/> malignant <input type="checkbox"/> benign</p> <p>Parathyroid <input type="checkbox"/> malignant <input type="checkbox"/> benign</p> <p>Pancreas <input type="checkbox"/> malignant <input type="checkbox"/> benign</p> <p>Hepatobiliary <input type="checkbox"/> malignant <input type="checkbox"/> benign</p> <p>Gallbladder <input type="checkbox"/> malignant <input type="checkbox"/> benign</p> <p>Kidney <input type="checkbox"/> malignant <input type="checkbox"/> benign</p> <p>Thorax <input type="checkbox"/> malignant <input type="checkbox"/> benign</p> <p><input type="checkbox"/> Bariatric</p> <p><input type="checkbox"/> Visualization of percutaneous drainage</p> <p>Hernia <input type="checkbox"/> Inguinal <input type="checkbox"/> Umbilical <input type="checkbox"/> Incisional</p> <p>Transplantation <input type="checkbox"/> Current Transplantation <input type="checkbox"/> Small bowel <input type="checkbox"/> Kidney <input type="checkbox"/> Multivisceral <input type="checkbox"/> Liver <input type="checkbox"/> Check-up <input type="checkbox"/> Pancreas <input type="checkbox"/> ERCP/PTCD</p> <p><input type="checkbox"/> Vascular <input type="checkbox"/> Sarcoma <input type="checkbox"/> Peritoneal carcinomatosis</p> <p><input type="checkbox"/> Other</p>	<p><b>Admission</b></p> <p><input type="checkbox"/> Planned (re-) admission</p> <p><input type="checkbox"/> Emergency admission</p> <p><input type="checkbox"/> Transfer</p> <p><input type="checkbox"/> Readmission due to complications</p>	<p><b>Pulmonary Complications</b></p> <p><input type="checkbox"/> Pneumonia</p> <p><input type="checkbox"/> Pleural effusion</p> <p><input type="checkbox"/> Pulmonary artery embolism</p> <p><input type="checkbox"/> Pneumothorax</p> <p><input type="checkbox"/> Respiratory failure</p> <p><input type="checkbox"/> Emypema</p> <p><input type="checkbox"/> Lung edema</p> <p><input type="checkbox"/> Unplanned reintubation</p>
<p><b>Renal complications</b></p> <p><input type="checkbox"/> Ureteral leak <input type="checkbox"/> Acute kidney injury</p> <p><input type="checkbox"/> Urinoma <input type="checkbox"/> Intravenous fluid therapy</p> <p><input type="checkbox"/> Electrolyte imbalance <input type="checkbox"/> Urinary tract infection</p> <p><input type="checkbox"/> Unplanned dialysis <input type="checkbox"/> Pyelonephritis</p>	<p><b>Complications</b></p> <p>Medical <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Organizational <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><input type="checkbox"/> Delayed diagnostics</p> <p><input type="checkbox"/> Intensive care unit capacity</p> <p><input type="checkbox"/> Operating room capacity</p> <p><input type="checkbox"/> Normal ward capacity</p> <p>Others</p> <input type="text"/>	<p><b>Gastrointestinal Complications</b></p> <p><input type="checkbox"/> Paralysis</p> <p><input type="checkbox"/> Ischemia</p> <p><input type="checkbox"/> Perforation</p> <p><input type="checkbox"/> Fistula</p> <p><input type="checkbox"/> Unplanned stoma formation</p> <p><input type="checkbox"/> Mechanical ileus</p> <p><input type="checkbox"/> Anastomotic leakage</p> <p><input type="checkbox"/> Delayed gastric emptying</p> <p><input type="checkbox"/> Gastrointestinal bleeding</p> <p>Others</p> <input type="text"/>
<p><b>Post pancreatic surgery complications</b></p> <p><input type="checkbox"/> Postoperative pancreatic fistula A <input type="checkbox"/> Delayed gastric emptying</p> <p><input type="checkbox"/> Postoperative pancreatic fistula B</p> <p><input type="checkbox"/> Postoperative pancreatic fistula C</p>	<p><b>Surgical site infections (SSI)</b></p> <p><input type="checkbox"/> SSI 1</p> <p><input type="checkbox"/> SSI 2</p> <p><input type="checkbox"/> SSI 3</p> <p><input type="checkbox"/> Fascia dehiscence</p>	<p><b>Hepatobiliary Complications</b></p> <p><input type="checkbox"/> Post-interventional pancreatitis</p> <p><input type="checkbox"/> Intervention necessary</p> <p><input type="checkbox"/> Insufficiency of biliodigestive anastomosis</p> <p><input type="checkbox"/> Bile leakage</p> <p><input type="checkbox"/> Bilioma</p> <p><input type="checkbox"/> Liver abscess</p> <p><input type="checkbox"/> Injury of common bile duct</p> <p><input type="checkbox"/> Cystic duct stump insufficiency</p> <p><input type="checkbox"/> Liver insufficiency</p> <p><input type="checkbox"/> Liver failure</p> <p>Others</p> <input type="text"/>
<p><b>Central nervous system complications</b></p> <p><input type="checkbox"/> Seizure <input type="checkbox"/> Stroke</p> <p><input type="checkbox"/> Postoperative delirium <input type="checkbox"/> Intracranial hemorrhage</p> <p><input type="checkbox"/> Psychoorganic syndrome</p>	<p><b>Bleeding complications</b></p> <p><input type="checkbox"/> Intraoperative bleeding</p> <p><input type="checkbox"/> Postoperative bleeding</p> <p><input type="checkbox"/> Hematoma</p> <p><input type="checkbox"/> Perioperative coagulopathy</p>	<p><b>Post-transplant complications</b></p> <p><input type="checkbox"/> Rejection</p> <p><input type="checkbox"/> Delayed graft function</p> <p><input type="checkbox"/> Graft failure</p> <p><input type="checkbox"/> Vascular complications</p> <p><input type="checkbox"/> "Steal" syndrome</p> <p><input type="checkbox"/> Ischemic type biliary lesion</p> <p><input type="checkbox"/> Graft pancreatits</p> <p><input type="checkbox"/> Retransplantation</p> <p>Others</p> <input type="text"/>
<p><b>Post vascular surgery complications</b></p> <p><input type="checkbox"/> Occlusion <input type="checkbox"/> Bypass infection</p> <p><input type="checkbox"/> Vessel/Bypass occlusion <input type="checkbox"/> Lymphatic fistula</p>	<p><b>Clavien-Dindo classification</b></p> <p><input type="checkbox"/> Grade I</p> <p><input type="checkbox"/> Grade II</p> <p><input type="checkbox"/> Grade IIIa</p> <p><input type="checkbox"/> Grade IIIb</p> <p><input type="checkbox"/> Grade IVa</p> <p><input type="checkbox"/> Grade IVb</p> <p><input type="checkbox"/> Grade V</p> <p>Date and cause of death</p> <input type="text"/>	<p><b>Complication management</b></p> <p><input type="checkbox"/> Surgery</p> <p><input type="checkbox"/> Readmission to the intensive care unit</p> <p><input type="checkbox"/> Percutaneous drainage</p> <p><input type="checkbox"/> Dialysis</p> <p><input type="checkbox"/> Endoscopy</p> <p><input type="checkbox"/> Angiography</p> <p><input type="checkbox"/> Gastric tube</p> <p><input type="checkbox"/> Chest tube</p> <p><input type="checkbox"/> Cardiopulmonary resuscitation</p> <p><input type="checkbox"/> Transfusion of blood products</p> <p>Others</p> <input type="text"/>
<p><b>Cardiovascular complications</b></p> <p><input type="checkbox"/> Arterial occlusion <input type="checkbox"/> Myocardial infarction</p> <p><input type="checkbox"/> Venous thrombosis <input type="checkbox"/> Angina pectoris</p> <p><input type="checkbox"/> Decompensated heart failure <input type="checkbox"/> Arrythmia</p>	<p><b>Infections</b></p> <p><input type="checkbox"/> Sepsis</p> <p><input type="checkbox"/> Candidiasis</p> <p><input type="checkbox"/> Systemic mycosis</p> <p><input type="checkbox"/> Viral infection</p> <p><input type="checkbox"/> Bacterial infection</p> <p><input type="checkbox"/> Clostridioides difficile infection</p>	

**Supplementary Figure 1:** English translation of digital quality management document. QM documents are prospectively collected on the day of discharge and validated daily by a group of senior consultant surgeons. It includes the indication for surgical treatment (blue), complications which occurred during the in-patient stay (red) and the necessary procedure for complication management (green). Complications are classified either as medical or organizational. Medical complications are further classified into renal, post pancreatic surgery, central nervous system, post vascular surgery, cardiovascular, systemic, or surgical site infections, bleeding, post organ transplantation, pulmonary, gastrointestinal, and hepatobiliary complications. Finally, complications are classified according to Clavien-Dindo.

Abbreviations: Endoscopic retrograde cholangiopancreatography (ERCP), Percutaneous transhepatic bile duct drainage (PTCD)