Chapter 1

Quality control in major abdominal surgery

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In almost all human activities, during, and at the end of a manufacturing process, quality control mechanisms are imposed to check the safety and quality of the work completed. Take for instance the extensive quality control algorithms as seen in aviation. Here ample arguments are proposed for quality control in surgery, engaging surgical societies to put more effort and time into standardize the pre-, per and postoperative concepts regarding quality control and higher demands of effectiveness.
QUALITY CONTROL IN MAJOR ABDOMINAL SURGERY

In almost all human activities, during, and at the end of a manufacturing process, quality control mechanisms are imposed to check the safety and quality of the work completed. Take for instance the extensive quality control algorithms as seen in aviation ¹.

In contrast, surgery is still a manual endeavour, guided by the cerebral process of the surgeon. She or he has consciously prepared the case and deliberated on the indication to operate, which may be considered the most important part of the surgical process. The surgeon envisions the type of procedure to perform with all technical steps and instruments and attempts to foresee possible hazards.

Multidisciplinary meetings play an important part in the preparation of patients, taking into account patient documentation, protocols and guidelines to assess the indication for an operation, and determine how to perform it. Preparation and assessment by an anaesthetist is another essential aspect and process for patient preparation, involving the whole team.

At the start of the operation verification processes, such as the Time-Out Protocol or the WHO Surgical Safety Checklist, provide guidelines and checks to identify the patient and check for the site of the operation, the type of procedure and the necessary instruments ². The introduction of pre-surgical checklists has reduced morbidity and mortality, while adding precision to the whole operation process ³.

Patients who have experienced a complicated postoperative course ask us why there is no routine quality control around surgery, including the postoperative period, allowing us to foresee problems at an early stage and initiate treatment accordingly. They have a point!

The majority of problems arise as a consequence of the performed procedure. Observation of different surgical teams performing the same operation, shows that the type of dissection, resection and reconstruction is frequently performed different ⁴. In gastrointestinal anastomosis problems may arise with tension, viability and patency, and the surgeon should always aim to perform an optimal anastomosis with this regard ⁵.

Despite such risks, practice may often be that surgeons suffice with comments regarding what the procedure looks like, whether the colour of the bowel was good and the anastomosis was considered watertight. These remarks simply violate objective quality standards.

Nowadays, society demands better quality control and patients are becoming savvier in assessing quality, with all the information they can obtain via Internet and social media. Altogether this calls for the application of quality control mechanisms in surgery to improve surgical quality. Consensus should be reached as to what this quality control should entail.
Concerning the remedial approach of surgery, evidence-based medicine is used to assess which approach is the best; for example open surgery versus minimally invasive techniques. Evidence-based surgery should also determine the steps for resection, with dissection strictly along the proven anatomical planes and landmarks, in order to assure proper completeness of the resection. Standardization should be further extended to the type of reconstruction and perfection of seal and stapler devices used in dissection and anastomosis. Proper documentation of this phase of the procedure will assure optimal control and positive audit outcomes. Similar to the critical view of safety, which is now implemented worldwide, to avoid biliary lesions during laparoscopic cholecystectomy.

Pathologists may add to quality control by standardized investigation of surgical specimens for completeness of the resection and number and location of lymph nodes. We must recognize that pathologists differ in their ways to identify, isolate, mark and count the number of lymph nodes, whilst the number of resected lymph nodes is considered a criterion for quality of resection according to oncological guidelines. Evidence-based control and consensus is necessary in order to optimize and standardize these processes.

During the postoperative course the patient is monitored on the ward. Upon absence of progression in recovery or clinical deterioration (i.e. pain, ileus, tachycardia, and fever), additional examinations should rule out or diagnose postoperative complications. Adequate treatment should be commenced without delay.

Many departments do not possess a protocol for postoperative patient recovery. If patients do not show recovery on consecutive days, this means regression and should challenge us to aim for higher quality. A standardized control protocol in the assessment of patient recovery should aim to identify complications in an early phase. Early diagnosis and treatment of complications can decrease in morbidity and mortality.

Here, the role of a step-up plan starting with daily measurement of C-reactive protein or other inflammatory markers may aid to identify which patients are at risk of developing a complication after major surgery. Using a prediction model, when C-reactive protein levels exceed a predefined cut-off for probability of major complications, even in the absence of clear signs through clinical examination, an enhanced CT-scan should be performed in order to further diagnose or rule out major complications. The principle holds that once a major complication is detected, proper treatment should be adopted without any delay. C-reactive protein levels below the established cut-off can be used as a safe discharge criterion, which is especially of interest in Fast Track protocols, where patients are discharged as early as the fifth postoperative day following laparoscopic colorectal resection, whereas the median time to diagnosis of major complications such as anastomotic leak seems to be seven days. Early discharge should always be safe.
Assessment of complications should be conducted in a reproducible manner. The Clavien-Dindo classification grades complications according to necessitated treatment \(^{10}\). Systematic use of such a classification further allows for homogeneity in reporting of studies and audits.

National audits should be established for each surgical event, starting with oncology. These audits may be conducted anonymously, and later even publically. The outcomes may aid in research, quality assessment of centers and organization of volumes for specific procedures.

In the implementation of quality control mechanisms the patient is to remain central. The perception of patients and health related quality of life questionnaires should play a considerable role in establishing the optimal, safe treatment for each patient.

There are ample arguments for surgical societies to engage in more effort and time to standardize the pre-, per and postoperative concepts regarding quality control and higher demands of effectiveness. It should be our vocational pride, as surgeons, which should encourage us to implement these necessary studies in order to improve on our daily work for the safety of our patients.
REFERENCES


