13 Anaesthesia for Laparoscopic Urologic Surgery in Malignancies
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Introduction

Although endoscopy of the abdominal cavity was already performed in 1911, it was not until the last few decades that laparoscopic surgery became common clinical practice [1]. Initially, the use of laparoscopic procedures was confined to small and rapid gynaecological interventions such as sterilization and short diagnostic procedures. It was generally carried out in young and healthy women and often performed in a day care setting. Recovery from anaesthesia had to be rapid and with a minimum of residual effects. Therefore, laparoscopic procedures became a challenge to anaesthesiologists.

New intra-abdominal laparoscopic surgical techniques have since been developed, performed and are advocated for older patients also. In contrast to the young and healthy female, these older patients may often suffer coexisting cardiac and/or pulmonary disease. Therefore, a careful preoperative evaluation and optimisation of these patients should take place in order to decrease perioperative morbidity and mortality. Because these new procedures may involve extreme changes in patient position, extensive periods of intra-abdominal carbon dioxide (CO₂) insufflation, unex-
pected visceral injury and difficulty in evaluating the amount of blood loss, anaesthesia for laparoscopy can be considered a potentially high-risk procedure.

Since the early 1990s, elaborate and timely laparoscopic procedures have been performed for the resection of urologic malignancies. The first pelvic lymph node dissection and nephrectomy procedures were soon followed by laparoscopic radical resection of the prostate for treatment of prostate cancer and today even laparoscopic radical cystoprostatectomy with ileal conduit urinary diversion has been reported [2].

These laparoscopic procedures may induce major pathophysiological disturbances. Therefore, the anaesthesiologist must choose an appropriate anaesthetic management technique, apply adequate monitoring and be aware of possible complications. In addition, special attention must be given to the position of the patient lying on the operating table and to perioperative fluid management. Early detection and reduction of possible intraoperative problems can then be achieved.

Finally, during the early postoperative period, special attention must be paid to cardiovascular and pulmonary problems, postoperative nausea and vomiting and pain management.

Preoperative Evaluation

The main goal of preoperative medical assessment of patients is the assessment of risk and a possible reduction of morbidity and mortality of surgery and anaesthesia. Further aims are to increase the quality of perioperative care, to restore the patient to the desired level of function, and to obtain the patients’ informed consent for the anaesthetic procedure [3].

Therefore, preoperative assessment should include
1. Risk/benefit analysis of the operation for the particular patient
2. Anticipation of potential perioperative problems
Table 1. ASA Classification of physical status and the associated mortality rates

<table>
<thead>
<tr>
<th>ASA rating</th>
<th>Description of patient</th>
<th>Morbidity rate (%)</th>
<th>Mortality rate (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class I</td>
<td>A normally healthy individual</td>
<td>4</td>
<td>0.1</td>
</tr>
<tr>
<td>Class II</td>
<td>A patient with mild systemic disease</td>
<td>8</td>
<td>0.2</td>
</tr>
<tr>
<td>Class III</td>
<td>A patient with severe systemic disease that is not incapacitating</td>
<td>14</td>
<td>1.8</td>
</tr>
<tr>
<td>Class IV</td>
<td>A patient with incapacitating systemic disease that is a constant threat to life</td>
<td>34</td>
<td>7.8</td>
</tr>
<tr>
<td>Class V</td>
<td>A moribund patient who is not expected to survive 24 h with or without operation</td>
<td>ND</td>
<td>9.4</td>
</tr>
<tr>
<td>Class VI</td>
<td>A declared brain-dead patient whose organs are being removed for donor purposes</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>Class E</td>
<td>Added as a suffix for emergency operation</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ND No data, NA Not appropriate

3. Improving any existing factors that may increase the risk of an adverse outcome
4. Giving appropriate information to the patient and obtaining consent for the planned anaesthetic technique
5. Prescription of premedication and/or other specific prophylactic measures if required [4].

Thus, the presence of coexisting medical disease must be identified, together with its extent and association of limiting normal daily activity in the patient. The American Society of Anesthesiologists’ (ASA) classification score (Table 1) provides a simple description of the physical state and is one of the few prospective descriptions of the patient that correlates with the risks of anaesthesia and surgery. The formal report of an ASA Task Force on “Practice Advisory for Preanesthesia Evaluation” recommends preoperative evaluation to include:
1. Readily accessible medical records
2. Patient interview
3. A directed preanaesthesia examination
4. Preoperative tests when indicated
5. Other consultations when appropriate.

A directed preanaesthetic physical examination should at least include an assessment of the airway, lungs and heart [5].

Although all conventional complications and concerns of laparoscopy are also applicable to the urologic procedures, two unique extra problems must be kept in mind [6]. First, the large retroperitoneal space with its communications with the thorax and the subcutaneous tissue are exposed to insufflated carbon dioxide. Thus, subcutaneous emphysema occurs frequently and may extend all the way up to the head and neck, with a possible compromising effect on the upper airway. Second, the procedures tend to be lengthy, thus allowing for sufficient absorption of CO₂ to result in acidosis. In general, pneumoperitoneum (PP) and laparoscopy are contraindicated in patients with increased cranial pressure, ventriculoperitoneal shunt, peritoneojugular shunt, hypovolaemia and congestive heart failure [7].

Many hospitals now use questionnaires filled in by the patient, which are specifically designed to identify key features in the medical history that need further clarification. Nevertheless, the fundamental process of taking a detailed history and performing a systematic clinical examination by the attending physician remains the foundation on which preoperative assessment relies.

Further questions about present condition (the most relevant tend to be related to cardiovascular and respiratory diseases), concurrent medical history, anaesthetic history, especially with regard to postoperative nausea and vomiting, family history, drug history and history of allergy are asked, together with smoking and alcohol-intake habits. Although at present usually a manually written anaesthesia record is filled in (see Fig. 1 for an example of the front-page of such a record), in the near future electronic patient data management systems (PDMS) will be used to ensure availability of the record 24 h a day, consistency in data gathering and to enable automatic registration of the intraoperatively and early postoperatively monitored variables.

Apart from a common physical examination, the anaesthesiologist will pay attention to specialized physical examinations such as airway management items (Table 2). According to the recommendations of the ASA Taskforce [5], routine preoperative tests do not make an important contribution to the process of perioperative assessment and management of the patient by the anaesthesiologist. However, selective pre-