SUMMARY

The introduction of laparoscopic surgery two decades ago, provided great benefits for patients in terms of recovery, cosmesis, pain and wound related complications. Laparoscopic surgery makes it no longer necessary to perform large incisions in the abdomen. Through several small incisions working channels (trocars) are inserted in the abdomen, through which carbon dioxide is inflated. This so-called pneumoperitoneum ensures that there is enough space to perform safe operations. Nowadays almost all abdominal procedures can be performed with laparoscopic surgery.

Chapter 1 is a general introduction and outline of this thesis. New minimal invasive treatment strategies are introduced. Natural Orifice Transluminal Endoscopic Surgery (NOTES) is one of the most recent innovations. In this technique a natural orifice, for instance mouth, vagina or rectum, is used to gain access to the peritoneal cavity instead of an incision through the abdominal wall. Another technique is Single-Incision Laparoscopic Surgery (SILS), in which only one small incision in the umbilicus is necessary. Both procedures have advantages for patients with regard to cosmesis, recovery and wound related complications. The introduction of these techniques is slow due to perceived complexity, fear of increase in peri and postoperative complications and slow development of specialized instruments.

In chapter 2 we report our results of a case-control study for cholecystectomy in 120 patients. SILS was compared to conventional laparoscopic cholecystectomy (CLC). SILS cholecystectomy seems to be safe and feasible with complication rates comparable to CLC. Shortly after we started to use the SILS technique for colectomies. Chapter 3 describes the results of our first 50 consecutive cases with Single-Incision Laparoscopic Colectomy (SILC). SILS proved to be feasible for use in colorectal surgery. In a two-centre, case-controlled study, chapter 4, we compared the short-term surgical outcomes between SILC and Multiport Laparoscopic Colectomy (MLC) for right-sided colectomies. Short-term surgical outcomes were similar. In both papers we didn’t encounter major difficulties with the SILC technique. Therefore, we regard SILC as a safe and feasible procedure when performed by experienced laparoscopic surgeons.

In chapter 5 we describe the introduction of NOTES in the Netherlands to a large group of healthcare professionals in the Netherlands. This manuscript describes the technique of a hybrid transvaginal cholecystectomy (TVC) as an example of a NOTES procedure. Chapter 6 discusses more in more detail our clinical results on TVC and incorporates patient reported outcomes. In a large series of 50 consecutive women excellent cosmetic outcome was reported. Furthermore, there were no access related or perioperative complications. Chapter 7 describes a case-control study with 90 patients comparing TVC, SILS cholecystectomy and CLC. Clinical outcomes and complication rates were similar. CLC is a faster procedure, but SILS and especially TVC offer better cosmetic results.

In chapter 8 we have studied the SILS port for transanal use. In a feasibility study we used the SILS port to remove large rectal polyps in 12 patients. Our results were promising and we conclude that with this technique many more surgeons will be able to perform transanal endoscopic minimal invasive surgery.
Chapter 9 describes a whole new concept for the treatment of rectal cancer, the transanal hybrid NOTES procedure. In a down-to-up principle we start transanally and perform a mesorectal dissection of the rectum through a SILS port placed in the anus. After mobilising the sigmoid and colon descendens and dividing the vessels through an abdominal SILS port, the specimen is extracted transanally. Five patients were treated with this technique with only one minor complication. We believe that this technique could have great impact on future rectal surgery.