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Laparoscopic appendectomy: State of the art. Tailored approach to the application of laparoscopic appendectomy?



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Acute appendicitis is the most common surgical emergency in developed countries. The treatment of acute appendicitis is either open or laparoscopic appendectomy. The latter has gained wide acceptance in the past years, although the debate on the true merits of laparoscopic appendectomy is still on going. Some authors prefer this approach as the gold standard for all patients, but in our opinion a tailored approach is warranted for specific patient groups. In addition, a standardised guideline on the technical aspects is still lacking. In the current article, open versus laparoscopic appendectomy and several technical aspects, such as stump closure, appendix extraction and single incision

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are discussed laparoscopic appendectomy are being addressed. In the future perspectives we will briefly discuss the third 'newly' introduced antibiotic treatment.

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Introduction

Acute appendicitis is the most common acute gastrointestinal disorder requiring surgery and hospitalization [1]. The occurrence of appendicitis is rare below the age of one year, with the peak incidence around adolescence [2]. In most cases an appendectomy is performed as surgery is considered to be the gold standard. Approximately 16.000 appendectomies are performed annually in the Netherlands [3,4]. Although the lifetime risk in the Western world of acute appendicitis is respectively 7% and 9% for females and males, the risk of undergoing an appendectomy is much higher: 23% and 12 % respectively [4]. This difference reflects a still high number of unnecessary appendectomies and incidental appendectomies. To remove the appendix, two options are available: open appendectomy (OA) through a gridiron incision; the latter first described by McBurney in 1894 and laparoscopic appendectomy (LA) first described by de Kok in 1977 and later by the gynaecologist Semm in 1983 [5–7]. Nowadays an unequivocal guideline regarding the approach for appendectomy is still lacking. The choice between OA and LA depends on the surgeon's preference and expertise. No uniform protocol for the technique of LA is yet available [8–10]. Several (technical) aspects should be considered in the choice for the operative technique, which will be addressed further in this article. As shown in Table 1, guidelines on the aspects of laparoscopic appendectomy do not make recommendation concerning these aspects (Table 1) [8–10].

Laparoscopic appendectomy (LA); is it always the best choice?

After the laparoscopic revolution in the 1980's, the discussion about the value of LA has yet to close. In most developed countries, LA has gained wide acceptance and currently is the preferred operative technique [11]. Advantages of LA are reported to be less postoperative pain and earlier recovery, less postoperative complications, better cosmetic outcomes and its value for diagnostic opportunities (with inspection of the entire abdomen) [8–10]. During an open procedure through a gridiron incision, common surgical sense mandates appendectomy, even when the appendix is not inflamed (because of the scar that signifies appendectomy), while with laparoscopy, it is only recommended to remove the appendix when inflamed [10,12]. In 2010 Sauerland et al performed a Cochrane review including 67 studies, dated until 2010 comparing LA to OA [13]. They showed that superficial surgical-site infections (SSI) were significantly more associated with an OA (OR 0.43 (0.34–0.54)), while the chance of an intra-abdominal abscess (IAA) was increased nearly twofold after LA (OR 1.77 (1.14–2.76)). Additional benefits of laparoscopy in this study were less postoperative pain, shorter hospital stay and earlier return to normal activity, although it is mentioned that the studies included for analysis showed significant heterogeneity. The authors state that the overall effects of LA are impressive and LA should be the

Table 1
Guidelines for LA [8–10].

	SAGES [8]	IPEG [9]	Guideline The Netherlands [10]
Number of trocars	3	3	–
Appendiceal Stump closure	–	Endo-loops, Endostapler, Endoscopic sutures, Extracorporeally	–
Extraction of the appendix	Port extraction (no recommendation)	Umbilical port extraction or retrieval bag	–

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