

Appendix 1. Standardized treatment strategies

Subgroup 1 (complex appendicitis without enlarged mass and or abscess formation):

Laparoscopic appendectomy:

Patients are admitted to the pediatric (surgical) ward and pain medication and intravenous fluids are administered according to the national guideline.¹³ Antibiotic prophylaxis will be administered preoperatively consisting of a single dose (type of antibiotic according to local protocol). Laparoscopic appendectomy is performed according to daily practice but with the standardized key points as listed in box 1. Postoperative antibiotics are administered intravenously according to local protocol. If, after at least 48 hours of intravenous antibiotics, the patient is without fever for 24 hours, the decision can be made to change to oral antibiotics for a total length of five days. Discharge is allowed when the predefined discharge criteria have been met (Box 2).

Open appendectomy:

Pre- and postoperative care according to the same protocol as the laparoscopic appendectomy group. Open appendectomy is performed by a gridiron incision at McBurney's point and the appendiceal stump is closed by ligation.

Subgroup 2 (complex appendicitis with enlarged mass and or abscess formation):

Non-operative treatment:

Non-operative treatment consists of administration of intravenous antibiotics with or without drainage procedures (in case of abscess formation), reserving an appendectomy for those not responding or with recurrent disease. Antibiotic treatment consists of at least 48 hours of intravenous antibiotics. Proposed antibiotic regimens are a combination of amoxicillin/clavulanic acid 25/2.5mg/kg every six hours (maximum dose: 6000/600mg/day) and gentamicin (7mg/kg once daily) or a combination of intravenous cefuroxime 25mg/kg every six hours (maximum dose: 6000mg/day) and metronidazole 10mg/kg every eight hours

(maximum 4000mg/day). In case of an appendiceal abscess a drainage procedure can be performed either percutaneously or surgical. Prior to removal of the drainage tube imaging studies will be obtained to confirm complete resolution of the drained abscess.

Vital parameters are repeated every eight hours. Intravenous fluid is administered and pain medication prescribed according to the Dutch national guidelines.

If the patient has received 48 hours of intravenous antibiotics, a decrease in infection parameters is noted, and the patient is at least 24 hours without fever, the decision can be made to change to oral antibiotics with a total length of antibiotic treatment of five days.

In case of clinical deterioration, additional imaging studies, additional drainage procedures or an appendectomy can be performed at any time. This decision is left at the treating surgeon's discretion, but consultation with the study coordinators on the appropriate course of action is possible.

Discharge is allowed when the predefined discharge criteria have been met (Box 2).

Operative treatment:

Laparoscopic and open appendectomy are performed as described for patients in subgroup 1.