Occlusion of Gastrointestinal Fistulae by Means of Endoscopy


Key-words: Sealing of gastrointestinal fistulae – fibrin sealant – fistuloscopy.

The treatment of 77 patients with postoperative fistulae and 5 with spontaneous ones is reported. For occlusion altogether 197 treatments were performed. The overall success rate was 71%. 52 patients were sealed by conventional gastro- or colonoscopy; occlusion could be achieved in 38 (73%) cases. In 30 patients a new technique was performed. That is the percutaneous endoscopic investigation of the fistular tract (fistuloscopy), which was successful in 66%. Prognosis for occlusion is unfavorable for fistulae shorter than 1 cm and in the presence of active Crohn’s disease. Sealing of gastrointestinal fistulae is feasible by means of fibrin glue in a high percentage of cases which otherwise need prolonged conservative treatment.

Verschluß gastrointestinaler Fisteln mit Hilfe der Endoskopie


Introduction

In surgical patients fistulae are predominantly a postoperative consequence. Spontaneous fistulae caused by inflammatory or malignant diseases are rare in comparison. Postoperative fistulae, arising in general after resecting procedures as result of anastomotic insufficiency, can in the presence of adequate drainage be brought to heal spontaneously under conservative treatment in most cases. This therapy however is of extremely long duration and requires great perseverance of patient and surgeon. Finding a way to shortcut the conservative treatment period and reach a fast obliteration of the fistula or, in the case of unsuccessful conservative treatment, avoid a possible high risk reoperation, therefore seems to be an appealing concept. In the last few years, especially since it is possible to apply fibrin sealant endoscopically, there have been an increasing number of reports about the successful endoscopic obliteration of fistulae (1, 4, 6, 12). Our own experience, gained in contrast to most reports in the literature on a larger number of patients, will be presented. Emphasized is our uniquely developed technique called fistuloscopy, which is the percutaneous endoscopic examination and treatment of fistula tracts.

Patients and methods

In 1982 we undertook the first endoscopic obliteration of a fistula. Consecutive patients were treated at the department of surgery of the Medical University Lübeck, Germany, until June 1989 and simultaneously at the Department of Surgery of the Grosshadern Clinic of the Medical University Munich from August 1988 until August 1990. In 82 patients altogether an endoscopic obliteration of fistulae was attempted. An overview of patient and treatment data is presented in Table 1.

Conventional gastro-, colo-, recto- and proctoscopes are used to visualize and probe the intestinal fistula with the intention of bringing the occluding substance into its lumen. For all fistulae a pretreatment is required consisting of intermittently irrigating the fistula tract for at least 3 days. Isotonic saline preferably with the addition of streptokinase and streptodornase (Varidase) is used. Irrigation is undertaken twice daily or alternatively on a continuous basis via catheter. An endoscopic attempt to occlude a fistula is undertaken when the patient’s body temperature has remained below 38°C for at least 24 hours. A purulent fistula discharge is not considered to be a contraindication. The examination in the presence or absence of sedation is done following fluoroscopy and documentation of the fistula. Another prerequisite is an antibiogram of microorganisms in the discharge. In the case of colocutaneous fistula the bowel is prepared by whole gut lavage. Fistula tracts of narrow calibre are if possible completely obliterated with fibrin sealant (Tissucol) while slowly retracting the biluminal catheter (Duploject) until the fibrin clot becomes visible and doses the intestinal aperture. Large fistula openings in the intestinal wall are reduced in size by circumferential, intramural injections of fibrin sealant or polidocanol thus...
causing the wall to bulge. In the case of large cavities and tracts as well as complex burrows we use a staged procedure. The fibrin sealant is sprayed as a layer on the walls, using 8 ml as the upper limit in 1 session. Control examinations are carried out in 2 daily intervals with facultative reapplication of sealant. Occasionally Prolamin (Ethibloc) was applied in addition, via a common irrigation catheter. Following the sealing of upper gastrointestinal fistulae patients are kept on parenteral nutrition for 5 days, in the case of colon fistulae this regimen is kept up for 7 days. Duodenal fistulae, carrying out bile and mostly pancreatic juice as well, are adjuvantly treated with Somatostatin, if the secretion volume exceeds 300 ml in 24 hours (3, 5). The occlusion of fistulae is carried out under antibiotic protection with an adequate testspecific substance, which is also given for the first 5 post-treatment days. In the case of recurrent secretion the treatment is repeated, as a rule. Fistulae of esophagus and stomach are radiologically controlled with gastrography following treatment, before enteral nutrition is allowed. All other fistulae are just controlled clinically. The sealing of a fistula is considered to be successful if secretion stops completely, immediately and permanently.

Enterocutaneous fistulae, whose intestinal opening cannot be reached or sufficiently visualized, were until now excluded from such endoscopic treatment. In order to give these patients a chance for rapid fistula healing through sealing as well, we developed the so-called fistuloscopic technique, the endoscopic percutaneous interventional treatment of fistula tracts. Diagnostics, pretreatment, sealing technique and adjuvant as well as follow-up therapy do not differ from the above described method, except for the approach. Narrow fistula tracts are intubated with the bronchoscope, larger ones with the children’s gastroscope. Air insufflation into the fistula tract is only possible with the latter one. In the case of poor visibility during examinations with the bronchoscope, water can be instilled via the instrumentation channel, in order to view under water. Solubilized blood or detritus however can limit the view when using this method. A reliable alternative in these situations is the insufflation of air over an irrigation catheter with a perfusor syringe. Necrotic tissue in excavations and tracts can be removed with biopsy forceps. Chronic fistulae with a shiny pseudoeptithelial surface are worked over with biopsy forceps or the cleaning brush for the endoscope until capillary bleeding can be observed. The cutaneous aperture of the fistula is kept open with a cut off catheter of 3 to 5 cm length after the treatment session, thus maintaining access to the fistula in the case of recurrent discharge or planned staged procedure. In some cases we had to dilate the fistula tract with Hegar bougies in order to obtain access for examination. Fistuloscopy was almost exclusively carried out in general anesthesia. In order to meet stable drainage tracts it was never undertaken before the 10th postoperative day. During examination fluoroscopy must be possible.

**Case report**

E.Z., a 67-year-old man had undergone total gastrectomy, splenectomy and lymphnode dissection for diffuse gastric carcinoma. The postoperative course was uneventful and a fluoroscopic control on the 7th postoperative day showed a sufficiently healed anastomosis. He was discharged on the 10th postoperative day. At home he slowly developed epigastic pain and fever. In the 5th postoperative week the right sided drainage tract burst and began to massively dis-