

Conference Report DGVS/DGAV

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14th autumn conference of the German Society of General Surgery and Visceral Surgery (DGAV) together with the working groups of the DGAV

September 16 - 19, 2020, originally planned to be held in Leipzig, due to the SARS-CoV-2 pandemic held in digital form

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| Congress president DGVS: | Prof. Dr. med. Christian Trautwein University Hospital Aachen |
| Chairman endoscopy section: | Prof. Dr. med. Ulrich Rosien, Israeli Hospital Hamburg |
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HemoPill acute® proves small bowel bleeding fast and reliable

First application experience with the telemetric capsule HemoPill acute in 13 patients with acute GI bleeding and negative EGD

T. Brunk et al., Vivantes Hospital in the Friedrichshain, Berlin, presented a study on the application of the HemoPill acute in case of suspected small bowel bleeding. 13 patients (5 female, 8 male, age 28 – 84 years, Glasgow-Blatchford-Score 6 – 12 (median 10, SD 2)) with acute GI bleeding and without findings in esophagogastroduodenoscopy (EGD) were included in the study.

The HemoPill acute is a sensor-based telemetric capsule for detection of acute bleedings in the upper gastrointestinal tract. It photometrically determines an intensity ratio of violet and red light and calculates the so-called HemoPill indicator (HI). The measurement is independent from food components. It is visualized in real time via radio on a mobile HemoPill receiver. HI of 1.0 – 1.5 indicates fresh blood/ haematin, other gastrointestinal content inclusively bilirubin leads to HI 0.5 – 0.9.

Application of the HemoPill acute was performed via swallowing in 9 cases and via endoscopic placement into the duodenum in 4 cases. The application was technically successful in all cases, no complications occurred. In 7/13 cases the HI was ≥ 1.0 (median 1.4; SD 0.7) and indicated bleeding of the small bowel. In these patients double-balloon-enteroscopy was performed within 24 h (median 22 h). Angiodysplasia was detected in all 7 cases, 3 angiodysplastic lesions showed active oozing. All angiodysplastic lesions were treated with Argon-Plasma-Coagulation. Post-interventional bleeding did not occur in any case. In one of the 6 cases with HI < 1 a subsequent video-capsule-enteroscopy provided evidence of a non-bleeding jejunal ulcer.

The authors concluded that based on this preliminary data the HemoPill acute detects small bowel bleeding fast and reliable. The diagnostic-therapeutic sequence of HemoPill acute and double-balloon-enteroscopy could constitute an interesting, accelerated treatment pathway for small bowel bleeding. Further comparative investigation is needed to closer define the role of and indications for the HemoPill acute.

HemoPill acute – First application experience with a sensor-based telemetric capsule for fast detection of bleeding of the small bowel after negative EGD

(HemoPill acute – Erste Anwendungserfahrungen mit einer sensorbasierten, telemetrischen Kapsel zum raschen Nachweis von Dünndarmblutungen nach negativer ÖGD) Brunk T¹, Tauchmann C¹, Berger AW¹, Hochberger J¹, ¹Berlin.

Endoscopic full-thickness resection with the FTRD[®] closes an important gap in the endoscopic treatment of mucosal and submucosal lesions

Evaluation of the German FTRD Register (1178 cases) shows a R0-resection rate of 80.0 % and major complications in 3.1 %

B. Meier, Hospital of Ludwigsburg, presented an evaluation of the German FTRD register. It comprised data on 1178 FTRD applications in 65 centers. Indications for endoscopic full-thickness resection with the FTRD System were: “difficult adenomas” (i.e. non-lifting sign, difficult anatomic localisation) in 67.1 % of cases, early carcinomas in 18.4 %, subepithelial tumors in 6.8 % and resection for diagnostic purposes in 1.3 %. Average lesion size was 15 x 15 mm. 54.1 % of the lesions were pre-treated endoscopically.

The rate for technical success (resection macroscopically complete) was 88.2 %, R0-resection could be confirmed in 80.0 % of all cases. No significant differences were found comparing the R0-resection-rates of smaller vs larger lesions neither in colonic vs rectal lesions. Complications occurred in 12.1 % of cases, in 3.1 % complications were defined as major. Consecutive surgical intervention was performed in 2.0 % of interventions. During follow-up, residual/recurrent lesions were found in 13.5 %, these could be treated endoscopically in 77.2 %.

The authors concluded that this study represents the currently largest study on endoscopic full-thickness resection with the FTRD. It confirms the good effectivity and safety of the FTRD in the real world setting for the resection of difficult lesions in the lower gastrointestinal tract.

Effectivity and safety of endoscopic full-thickness resection in the lower gastrointestinal tract: Results of the German FTRD Register.

(Effektivität und Sicherheit der endoskopischen Vollwandresektion im unteren Gastrointestinaltrakt: Ergebnisse des deutschen FTRD Registers.) Meier B¹, Stritzke B², Kuellmer A³, Zervoulakos P⁴, Huebner GH⁵, Repp M⁶, Walter B⁷, Meining A⁸, Gutberlet K⁹, Wiedbrauck T¹⁰, Glitsch A¹¹, Lorenz A¹², Caca K¹, Schmidt A³.

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EFTR is a safe and fast resection method for small well-differentiated rectal NET

M. Brand, University Hospital Wuerzburg, presented a study which compares trans-anal endoscopic microsurgery (TEM) and endoscopic full-thickness resection (EFTR) for treatment of small well-differentiated neuroendocrine rectal tumors.

Neuroendocrine tumors (NET) of the rectum are rare and mostly discovered during colonoscopy. For well-differentiated tumors without risk factors (G1/2, Ki67 < 10 %, < 10 mm, pT1, L0) local resection is the treatment of choice. It can be performed by transanal endoscopic microsurgery (TEM) or endoscopic procedures (EMR, ESD,

EFTR). While complete resection of submucosal lesions by EMR is often not possible, EFTR completely resects also tumors with deep submucosal infiltration.

For the study, two patient collectives with transanal resection of rectal NET were analysed retrospectively. These were overall 28 patients. Patient collective 1 included 13 patients which had undergone TEM under general anaesthesia, patient collective 2 included 15 patients which had undergone endoscopic full-thickness resection with the FTRD in sedation. In the EFTR collective R0 resection was achieved in all interventions, in the TEM collective one resection was incomplete (R1). In the TEM group the size of the resectates and the diameter of the lesion were tending to be larger (resectate area 2.9 ± 2.2 vs 2.4 ± 1.5 cm²; lesion diameter 6.7 ± 4.2 vs 4.6 ± 2.2 mm). The procedural time was significantly shorter in the EFTR group (19.2 ± 4.2 min vs 48.9 ± 29.1 min, $p < 0.01$). The technical success rate was 100 % in both groups, no peri-procedural complications occurred. In all follow-up examinations of EFTR patients the OTSC Clip had spontaneously detached.

The authors concluded that EFTR represents a safe and fast resection method for small well-differentiated rectal NET and shows various advantages over TEM.

Economic analysis of the endoscopic full-thickness resection (Ökonomische Analyse der endoskopischen Vollwandresektion). Rathmayer M, Schmidt A, Schepp W, Heinlein W, Albert JG, Gundling F. Munich, Freiburg, Stuttgart.

Live-broadcast of a lecture by K. Caca on basis and limitations of endoscopic resection techniques

K.Caca, Hospital of Ludwigsburg, lectured on basis and limitations of endoscopic resection techniques. At the beginning, he presented the techniques of snare polypectomy, endoscopic mucosal resection (EMR) and endoscopic submucosal dissection (ESD) with the aid of different studies and meta-analyses. He pointed out that the success story of endoscopic polyp treatment began with these resection techniques, which relevantly impacts public health in prophylactic but also therapeutic ways. However, the three above-mentioned conventional polypectomy techniques have weaknesses.

Based on the CARE study by Pohl H et al. (Gastroenterology 2013), a prospective study in two centers with more than 1700 patients, K. Caca demonstrated, in which cases the conventional resection techniques reach their limits. The study showed a high rate of incomplete resections in case of large polyps (diameter 15 – 20 mm, resected incompletely in 23.3 %), in case of sessile serrated adenoma (SSA/P, 31.0 % incomplete resection), in case of resection in piecemeal technique (20.4 % incomplete resection) and in case of difficult-to-resect lesions (17.8 % incomplete resection). A current meta-analysis including 32 studies with overall more than 2700 patients by Djindjian R et al. (Gastroenterology Online ahead of print 2020) showed similar findings.

This important therapeutic gap in endoscopic resection of mucosal/submucosal lesions is closed by the technique of endoscopic full-thickness resection (EFTR). EFTR is applied when the concerned lesion is not limited to the mucosa (negative lifting-sign caused by scarring or malign infiltration), when it has an endoscopically-difficult-to-reach localisation (appendiceal orifice, diverticulum, curve/fold), or is a subepithelial lesion (mostly tumors of the upper GI tract). EFTR can be performed with different techniques, these can be categorized in two groups according to the procedural approach: either the resection and thereby de facto a perforation of the gastrointestinal wall is performed at the beginning and closed subsequently (for example in STER submucosal tunnelling endoscopic resection) or closure of the wall is performed primarily by wall duplication before resection (so-called non-exposure techniques i.e. FTRD System or GERDX-suturing System).

By now, there is a multitude of data evaluating the FTRD System, retrospective and prospective, monocentric and multicentric, as well as register data from Germany and the Netherlands. The technical success rate is in the overall view between 75 % and 97 %, the R0-resection rate between 75 and 90 %.

Data of the German colonic FTRD Register is accessible online now (Meier B et al., AJG 2020, 1178 cases), and evaluates cases from medical centers with different care levels. However, results are comparable to earlier studies which shows that the technique is well learnable and performable anywhere. It is an interesting fact that the study did not find differences in R0-resection rates that were dependant on the lesion size (lesion size < 20 mm R0-resection rate 78 % vs lesion size ≥ 20 mm R0-resection rate 81 %).

In a video K. Caca showed a full-thickness resection with the FTRD in a lesion with suspected carcinoma in a 84 year-old patient. Previously performed surface biopsies had not yielded clear results. Full-thickness resection with the FTRD was technically unproblematic, macroscopically diagnosed as R0, histological examination showed a tubular adenoma with HGIEN with focal transition into a moderately differentiated adenocarcinoma. R0 resection could be confirmed histologically, the tumor was classified as pT1 L0 V0 R0, depth of infiltration was < 1 mm. Hence, EFTR had spared the patient a surgical intervention.

A study by Kuellmer A et al. (GIE 2019) analysed data from 159 FTRD applications in lesions with non-lifting sign. The cohort was divided into two groups: in group 1 the lesions were pre-treated endoscopically, yet could not be confirmed histologically as R0-resection (n=64). In group 2 the existence of a carcinoma was primarily suspected due to tumor characteristics (n=92). In group 1, the full-thickness specimen was identified histologically in 76.6 % as scar, in 21.9 % as carcinoma (thereof 84.1 % as low-risk and 15.9 % as high-risk). In group 2 histological diagnosis was a carcinoma in 100 % of cases, thereof 16.3 % low-risk and 83.7 % high-risk carcinomas. In all patients with low-risk carcinoma the FTRD treatment spared a surgical intervention.

After that, K. Caca lectured on lesions, which cannot be completely resected by EMR due to negative-lifting or localisation, but are also too large for enbloc-EFTR. In these lesions, a hybrid technique is applied, in which the lateral margins are removed as far as possible with piecemeal-EMR and the non-lifting region is resected with the FTRD. A first study on this procedure was published by Meier et al. (Surg Endoscopy 2017), it evaluates 10 cases with hybrid EMR-EFTR. Currently, a working group at the Hospital of Ludwigsburg performs a study in 32 patients who underwent hybrid EMR-EFTR. Four treated lesions were located in the left colon, 28 in the right colon. Procedural time was 40 – 140 minutes. No SAEs occurred. During follow-up 3 relapse lesions were found, all could be treated with FTRD again.

Yuen et al presented data on hybrid EMR-EFTR at the DDW 2020 online. The study included 62 advanced colorectal adenomas, 33 of these were resected with FTRD only and 29 with hybrid technique. Median size of the lesions was 19 mm (7-40 mm) in group 1 and 36 mm (15 – 60 mm) in group 2. The technical success rate was 89 % in group 1 and 96 % in group 2. R0 resection was confirmed in 97 % of interventions of group 1 and 96 % of interventions of group 2. Overall two major complications occurred, one appendicitis and one perforation.

K. Caca summarized that almost 100 % of all benign GI lesions nowadays can be resected endoscopically, which was not the case 20 – 30 years ago. He emphasized the immense importance of always aiming for a complete resection of the lesion, which is performed with forceps in lesions < 3 mm, and with cold snare in lesions of 4 – 10 mm size. When enbloc resection is not possible, piecemeal EMR can be performed. It is important to respect the limits of the endoscopic technique: In case of signs for obvious deep submucosal infiltration, endoscopic resection is not indicated, but surgical resection must be performed. The FTRD has closed an important therapeutic gap in endoscopic resection of mucosal/submucosal lesions. Hybrid EMR-EFTR closes a small but annoying therapeutic gap.

K.Caca ended his lecture with a slogan known from surgery, which he extended in his own way: When in doubt, take it out! But take it out endoscopically!

Basis and limitations of endoscopic resection techniques (Basis und Grenzen endoskopischer Resektionstechniken). *Caca K, Ludwigsburg*

The OTSC® is a well-established method of treatment for acute perforations

Live-broadcast of a lecture by J. G. Albert on endoscopic perforations

J. G. Albert, Robert-Bosch-Hospital Stuttgart, lectured on endoscopic perforations. First of all he gave an overview of the pathophysiology of transmural gastrointestinal defects: perforations can develop from ischaemic causes (intestinal obstruction, necrosis, vascular occlusion), infections can play a role (appendicitis, diverticulitis), an inflammation (fulminant colitis ulcerosa) or neoplasia can be the cause, or the defect can result from mechanical injury (trauma, iatrogenic). It is important to keep this in mind during endoscopy, because in case of corresponding findings (i.e. colitis ulcerosa) a defect can already be present or easier to cause.

Generally we distinguish leakage (post-operative anastomotic insufficiency), perforations (acute discontinuity) and fistulas (conjunction between i.e. bowel and cavity caused by inflammation/neoplasia or secondary after perforation/leakage).

Perforations during endoscopy are rare, they occur during EGD in about 0.03 % of cases, during (ileo-) colonoscopy in 0.5 %. In colonoscopy screenings, the occurrence of perforations is also dependent on the indication. In a study by Pox C et al., (Gastroenterol 2012) with data on colonoscopy screenings in Germany a perforation occurred in 0.022 % of cases. If a polypectomy was performed during colonoscopy, the ratio was 0.046 % while in colonoscopy without polypectomy the ratio was 0.012 %. Besides, patient age and sex play a role for the degree of perforation risk. The older a patient is, the higher is the risk, furthermore the perforation risk is significantly higher in female patients than in male patients.

Other studies, however, report significant higher perforation rates (Heldwein W, Endoscopy 2005; Heresbach, Endoscopy 2010), in these too, the risk is dependent on the performed procedure, for snare polypectomy a perforation rate of 1.1 % is reported, for EMR up to 7 %. For ESD, the perforation rate is even substantially higher, retrospective meta-analyses on resections of gastric neoplasias (Facciorusso A 2014, Lian J 2012) show a 4-fold higher risk of ESD in comparison to EMR.

The decision whether the therapy of a perforation is carried out surgically or endoscopically should always be an interdisciplinary decision on/with the patient. It is a fact that a tight suture cannot only be reached surgically, but just as good with endoscopic clips (OTSC, conventional clips). The therapy mustn't focus only on closure of the defect/the leakage, but must also take into account that an infection can have occurred, which also needs treatment (antibiotics, effective drainage). Primary fast diagnostic endoscopy by an experienced endoscopist is reasonable, but subsequently an interdisciplinary decision-making should take place with participation of an endoscopist, a surgeon and a radiologist. Especially in cases of delayed diagnosis of a perforation this interdisciplinary decision-making is very important, in which the appropriate approach for effective drainage and defect closure is discussed. However, emphasis should be laid on a fast course of action, because the mortality rate significantly increases in case of treatment delay > 24h.



The most often applied treatment procedures for endoscopic perforation closure are cSEMS and OTSC. A multicenter retrospective study (Farnik H, Plos One 2015) shows that the stent is more frequently used in larger perforations (median leakage size treated with cSEMS 12.6 mm vs with OTSC 7.1 mm), and also in case of already existing infection the cSEMS was more often applied than the OTSC. The OTSC is favoured in acute perforations as well as in endoscopically iatrogenic perforations, while the cSEMS is rather applied in case of older leakages and in surgically iatrogenic caused defects.

Endoscopic perforation: How do we prevent them? How do we treat them? (Endoskopische Perforation: Wie vermeiden? Wie behandeln?) *Albert JG, Stuttgart*

For questions and further information:

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