

## Conference Report DGVS/DGAV

73<sup>th</sup> annual conference of the German Society of Gastroenterology, and Digestive and Metabolic Diseases with Endoscopy Section (DGVS)

12<sup>th</sup> autumn conference of the German Society of General Surgery and Visceral Surgery (DGAV) together with the working groups of the DGAV and annual conference of the Society of Surgical Coloproctology (CACP)

September 12-15, 2018; Munich

Congress presidents: Prof. Dr. med. Wolfgang Schepp, Congress president DGVS  
Prof. Dr. med. Jörg C. Kalff, president DGAV 2018/2019  
PD Dr. med. Andrea Riphaut, Chairwoman endoscopy section

Ovesco products were presented in talks, posters, research, innovation and video forums and hands-on training sessions. Dr med. Edris Wedi (University Hospital Goettingen) received the DGVS endoscopy research award and the award of the Olympus Europe foundation 2018 for his work.

**FTRD<sup>®</sup> is described as effective and safe resection device for lesions otherwise difficult to treat endoscopically.**

### colonic FTRD<sup>®</sup>

**Meta-analysis of all to date published data (777 patients) regarding FTRD application in the colorectum shows 78 % R0 resection rate and < 1 % surgery because of complications**

A Wannhoff et al. presented a pooled analysis of all published data (full texts and conference contributions) evaluating FTRD application in the colorectum. 21 studies comprising overall 777 patients were included. The target lesion was reached in 746 (96 %) cases. Resection was technically successful in 684 (88 %) cases. Main reason for technical failure were problems with the snare in 35 cases, in 29 of these cases resection succeeded with subsequently introduced conventional snare. Histological examination confirmed full-thickness resection in 326 of 401 (81.3 %) cases and R0 resection in 383 of 494 (78 %) cases; respective information was not available for the remaining cases. Complications occurred in overall 8 %, thereof 13 post-polypectomy-syndroms (1.7 %), 16 minor haemorrhage (2 %), 2 major haemorrhage (0.3 %), 12 perforations (2 %, partially due to wrong order of operational steps), and 5 appendicitis (0.6 %); surgery because of complications was necessary in < 1 % of patients. The authors concluded that FTRD application in the colorectum is safe and the target lesion can be successfully resected in the majority of cases.

**Effektivität und Sicherheit des Full-Thickness Resection Device (FTRD) im Kolorektum: Ergebnisse einer gepoolten Analyse bisher veröffentlichter Daten (Efficacy and safety of the Full-Thickness Resection Device (FTRD) in the colorectum: Results of a pooled analysis of to date published data).** Wannhoff A, Meier B, Caca K, Ludwigsburg.

## **University Hospital of Erlangen achieves 85 % R0 resection rate of adenomas and early adenocarcinomas with FTRD**

T Rath and colleagues presented the experiences gathered at the University Hospital of Erlangen with the FTRD System. Between 06/2015 and 09/2017, the FTRD was applied in 14 patients (7 m, 6 f, median age  $64.5 \pm 6.1$ y) with colorectal adenomas and early T1 adenocarcinomas. The lesions had a median size of  $16 \pm 4.7$  mm and were located in the rectum (n=6), caecum (n=2), ascending colon (n=2), left flexure (n=1), and right flexure (n=3). The technical success rate was 100 %. The procedural time was  $72 \pm 40$  min. R0 resection was achieved in 85 % of cases (11/13). Histological examination of the specimen yielded the following findings: adenoma with low-grade intraepithelial neoplasia (n=6), adenoma with high-grade intra-epithelial neoplasia (n=4), fibrotic area without dysplasia (n=2), adenocarcinoma (n=2). No complications occurred. In one patient, a relapse lesion was found at the resection site during follow-up, which could be resected once again with the FTRD. In conclusion, the authors rated the endoscopic full-thickness resection with the FTRD a procedure with few complications and high technical success and R0 resection rate.

**Endoskopische Vollwandresektion mittels FTRD für die Resektion von kolorektalen Adenomen und frühen T1 Adenokarzinomen: eine Single Center Erfahrung (Endoscopic full thickness resection using the FTRD for resection of colorectal adenomas and early T1 adenocarcinomas: A single centre experience).** *Vitali F, Naegel A, Siebler J, Neurath M, Rath T, Erlangen.*

## **colonic FTRD is suitable for therapy of early colorectal carcinoma**

S Herrmann et al. presented the experiences of the Clinical Center in Neuperlach, Munich, with the FTRD System. Between 01/2015 and 04/2018 indication for eFTR was present in 30 patients. In 11 patients malign histology was previously known (8 adenocarcinomas, thereof 2 verified by biopsy, 6 pre-treated with resulting Rx/R1 situation, 3 NETs). The remaining 19 patients showed residual or recurring adenoma, non-lifting sign or difficult localisation. Technical success was achieved in 25 of 30 patients (83.3 %). In 5 patients, the procedure had to be discontinued due to insufficient mobilisation of the lesion into the cap (n=4) or due to failure of the snare (n=1). 4 of the 5 technically unsuccessful procedures took place in the first 12 patients. The R0 resection rate in technically successful procedures was 92 % (23/25). Resected lesions were  $27.8 \pm 6.4$  mm in size. 12 of the 25 resected specimen proved to be malignant, 11 (91.7 %) of those were resected in R0. Oncological surgery was necessary in 3 patients. Thus, colonic FTRD was the curative treatment in 84 % (21/25) of patients. Complications occurred in 3 cases: post-polypectomy-syndrome (n=1), clip failure (n=1), and perforation (n=1). All complications could be managed conservatively. In 1 patient, a relapse polyp was found during follow-up after 3 months (SSA without dysplasia). In conclusion, the authors stated that the future primary application field of the FTRD could be small pretherapeutically verified carcinomas, because eFTR yields a save R0 resection option and enables definitive evaluation of sm-invasion for histologically based therapy stratification.

**Endoscopic full-thickness resection (eFTR): Effektivität der eFTR für komplexe kolorektale Läsionen, insbesondere als Therapie des kolorektalen Frühkarzinoms (Efficacy of eFTR for complex colorectal lesions, especially for the treatment of early stage colorectal carcinomas).** *Herrmann S, Götzberger M, Blöching M, Dollhopf M, Ulm.*

## **Retrospective multicenter study shows 71 % R0 resection using the FTRD in different conventionally-not-resectable lesions**

I Krutzenbichler and colleagues presented “real life” data gathered in the Clinical Center in Munich evaluating FTRD application in various cases. Overall, data from 61 procedures in 59 consecutive patients undergoing eFTR was retrospectively analysed. Indications for eFTR were: 25 % adenocarcinoma in colon and stomach, 11 % flat

adenoma with non-lifting sign, 12 % relapse adenoma and 11 % neuroendocrine tumors. The size of the resected lesions was  $20.2 \pm 5.5$  mm. The primary technical success was 70.5 %. Minor peri-interventional bleeding occurred in 4.9 %. Post-interventionally, further complications occurred in 4 cases (3 bleedings, 1 gangrenous appendicitis treated by emergency ileocecal resection). The R0 resection rate was 71 %, the full thickness resection rate was 80.36 %. The authors concluded, that eFTR shows a high success rate in resecting different lesions across the entire colon and a low rate of procedural complications. The FTRD is regarded as alternative to surgery for lesions that cannot be resected with conventional methods (EMR/ESD).

**Anwendung der endoskopischen Vollwandresektion mithilfe des „full thickness resection device“ (FTRD) bezüglich technischer Erfolgsrate sowie prozeduraler Komplikationen – eine Single Centre Studie (Application of the endoscopic full-thickness-resection using the “full thickness resection device” (FTRD) regarding technical success rate and procedural complications – a single-center study).** *Krutzenbichler I, Fuchs M, Lewerenz B, Leimbach T, Nehrlich A, Schepp W, Gundling F, München.*

### **FTRD resection at the appendiceal origin can spare over 80 % of patients a surgical procedure**

T Kreutzer and colleagues presented a study evaluating the risk of post-interventional appendicitis following FTRD application at the appendiceal origin. All patients of the Clinical Center Ludwigsburg and the University Hospital Ulm undergoing endoscopic full-thickness resection at the appendiceal area using the FTRD between 2014 and 2018 were analysed retrospectively. The available follow-up data was analysed in regard of the development of appendicitis. Patients that had undergone an appendectomy prior to FTRD application were not included in the study. Overall 38 patients (65.8 % female, median age at FTRD application 68 years (47-85)) met the inclusion criteria. FTRD application was successful in all cases. During follow-up (average of 21 weeks, range 0-126 weeks) 9 patients (23.7 %) developed acute appendicitis. In 5 patients the appendicitis occurred within 10 days after FTRD application, in the 4 remaining cases more than a month after the procedure. In 6 cases, an appendectomy was performed, the remaining 3 patients were treated conservatively. The authors concluded that about a fifth of all patients undergoing FTRD application at the appendiceal origin developed acute appendicitis. The complication may occur early after FTRD application or with greater latency. Patients should be informed about the risk of appendicitis development before FTRD application at the appendiceal origin.

**Untersuchung des Appendizitis-Risiko nach endoskopischer Vollwandresektion von Adenomen im Bereich der Appendix mit dem FTRD System (Evaluation of the risk of appendicitis following endoscopic full-thickness resection of adenomas close to the appendix using the FTRD System).** *Kreutzer T, Walter B, Schmidt A, Meier B, Wannhoff A, Schmidbauer S, Meining A, Caca K, Ludwigsburg/Ulm.*

### **gastric FTRD**

#### **RESET study: reliable dignity determination of gastric SETs using gFTRD**

Meier B and colleagues presented a multicenter prospective pilot study evaluating the use of the gFTRD for endoscopic full-thickness resection of sub-epithelial tumors (SETs) of the stomach. Gastric SETs are rare, mostly benign and usually coincidentally found during gastroscopy. Superficial biopsy is often insufficient for reliable histological assessment. Endoscopic resection with standard methods (EMR/ESD) is often not possible and associated with an increased risk for complications. The study assessed feasibility, efficacy and safety of endoscopic full-thickness resection using the gFTRD for resection of gastric SETs in 29 patients. Lesions up to 15 mm in size were included. In 77 % of cases initial histology could not provide a reliable dignity determination of the SET. With full-thickness resection, the dignity of all SETs could be reliably determined. Average lesion size was 11 mm (range 5 – 15 mm). Median procedure time was 36.3 min (24 – 90 min). 76 % (22/29) of the specimen

were resected in R0, 65.5 % (19/29) in full-thickness. In 31 % of cases peri-interventional minor bleeding occurred, which could be directly treated endoscopically. In the follow-up examination after 3 months, clips were already dislocated in 81 % of the cases, there was no evidence for relapse or residual lesions in any case. The authors concluded, that endoscopic full-thickness resection with the gFTRD is a safe and effective procedure, which enables in contrast to conventional biopsy a reliable dignity determination of gastric SETs. Sufficient risk stratification (in case of GIST/NET) is possible. Besides, sufficient therapy by R0 resection is achieved in most cases.

**Endoskopische Vollwandresektion subepithelialer Tumoren des Magens mit dem gFTRD-System – Eine prospektive Pilotstudie (RESET Studie) (Endoscopic full thickness resection of sub-epithelial tumours of the stomach with the gFTRD-system – A prospective pilot study (RESET study)).** Meier B, Schmidt A, Meining A, Caca K, Ludwigsburg, Freiburg, Ulm.

## **OTSC® System – presented studies confirm superiority of the OTSC in acute gastrointestinal haemorrhage**

### **Marburg: OTSC highly effective for the treatment of acute ulcer bleeding**

A Waldthaler presented retrospective data gathered in the University Hospital of Giessen and Marburg evaluating different endoscopic modes of therapy for non-variceal upper gastro-intestinal bleeding (NV-UGIB). Between 09/2016 and 1/2018, 131 patients (median age 68 years, 77 male) with NV-UGIB were treated. In 68 patients, the bleeding required intervention at the time of examination. Cause of hemorrhage was a peptic ulcer in 47 cases (69.1 %; 31 duodenum, 13 stomach, 1 cardia, 2 anastomosis), a Mallory-Weiss syndrome in 7 cases (10,3%), tumor bleeding in 6 cases (8.8 %), angiodysplasia in 5 cases (7.4 %), and other causes in 3 cases (4.4 %). Primary endoscopic therapy consisted of a combination approach using injections and hemoclipping (n=15), injections (n=10), hemoclipping (n=9), OTSC (n=12, thereof 8 for duodenal ulcer) and thermal coagulation (n=1). 9 of the 68 treated patients suffered from recurrent ulcer bleeding (6 from a duodenal ulcer, 2 from anastomosis, 1 patient with Mallory-Weiss syndrome), none of these had received OTSC as primary therapy (rebleeding rate primary OTSC vs primary other treatment 0 % vs 8 %; p=0.001). 4 of the 6 patients suffering rebleeding from duodenal ulcer were treated with OTSC. The two remaining patients received a combination therapy consisting of injection and hemoclipping, both patients developed a second rebleeding which in turn was treated using an OTSC Clip. The authors concluded that therapy of acute ulcer bleeding with the OTSC proves to be highly efficient as primary and secondary therapy. They enhanced the fact that none of the patients included in the present study, which received an OTSC, developed recurrent bleeding. Advantages of OTSC treatment especially arose in the therapy of duodenal ulcer not only in cases of recurrent bleeding but also as primary therapy.

**OTSC Therapie der nicht varikösen oberen gastrointestinalen Blutung im Klinikalltag – eine retrospektive Analyse (OTSC treatment of non-variceal upper gastrointestinal bleeding in hospital routine – a retrospective analysis).** Lerner C, Waldthaler A, Wißniowski TT, Bauer C, Grote T, Gallmeier E, Gress TM, Denzer U, Marburg.

### **Augsburg: closure of ulcer bleedings with high risk of recurrence: one and done in 75 %**

S Gölder et al. presented a retrospective study comprising all patients with high-bleeding-risk ulcers (Forrest Ia-Ib), treated with OTSC at the Augsburg Hospital. A total of 100 patients with peptic ulcer, primarily or secondarily treated with OTSC, were included (n=25 with gastric ulcer, n=75 with duodenal ulcer, primary OTSC treatment n=66, secondary OTSC treatment n= 34). Primary hemostasis by OTSC without further endoscopic treatment was achieved in 92 patients (92 %, n=60 primary therapy, n=32 secondary therapy). In 8 cases hemostasis could not be achieved with one single OTSC clip. In 17 cases recurrent bleeding occurred 1-12 days after initially successful

hemostasis (n=10 primary therapy, n=7 secondary therapy). The group of patients with unsuccessful OTSC treatment showed significantly larger ulcers (median size 3 cm, IQR 2 – 3, 13; p=0.03), more frequent bleeding in the duodenal bulb (22 vs. 2, p=0.033), more frequent negative H.p. status (p=0.045) and significantly higher number of transfused ECs (p=0.002). No significance was reached regarding the Rockall score (median 7.5, p=0.69) nor regarding the Glasgow-Blatchford score (median 15.5, p=0.15). Also, NSAID or anticoagulant treatment was not significantly different between the groups (p=0,53 and p=0,44, respectively). The authors concluded, that OTSC Clip application for peptic ulcer bleeding shows high clinical success rates as primary and secondary therapy. Possible risk factors for therapy failure are ulcer size, localization of the bleeding source in the duodenal bulb, negative H.p. status and increased demand for transfusion.

**Over the Scope Clip (OTSC) bei Magen- und Duodenalulcera mit hohem Blutungsrisiko – One and done? (Over-the-Scope Clip (OTSC) for gastric and duodenal ulcers with high bleeding risk – one and done?)** Gölder S, Neuhaus L, Stückle J, Ebigbo A, Braun G, Probst A, Weber T, Freuer D, Messmann H, Augsburg, Deutschland.

### **Analysis of the STING treatment cases: haemorrhage treatment with OTSC in comparison to standard therapy not only cost-effective, but cost-cutting**

A Küllmer et al. presented results of a study based on data gathered during a prospective randomized study (STING), exploring whether OTSC treatment is more cost-effective than conventional clips due to the higher success rate, despite of the higher price per clip. Two parameters for cost effectivity were calculated: (1) ICER (Incremental Cost Effectiveness Ratio): defines additional expenses for additional clinical results, meaning  $\Delta$ costs of both alternatives divided by  $\Delta$ clinical effect. (2) ACER (Average Cost Effectiveness Ratio): costs arising from a specific clinical result. The clinical status that had to be achieved was similar to the primary outcome of the STING study: successful hemostasis without any recurrent bleeding. The parameters for the total procedure, including costs for accommodation etc. were calculated as well as the costs for the endoscopic treatment only. The overall costs of standard treatment approaches were 13,025.95 €, versus 12,776.19 € for OTSC treatment; costs for the endoscopic procedure alone were 2,100.03 € (standard therapy) versus 1,960.17 € (OTSC-therapy). The ICER regarding the overall treatment was -589.01 € and -329.86 € for the endoscopic treatment. The ACER for the overall costs was 30,721.58 € for standard therapy and 15,066.26 € for OTSC therapy. ACER for the endoscopic procedure showed 4,952.90 € and 2,311.52 € for standard and OTSC treatment respectively. As a conclusion, OTSC therapy of recurrent ulcer bleeding was rated cost-effective and cost-cutting when compared to standard approaches.

**OTSC- versus Standard-Therapie der Rezidiv-Ulkusblutung: eine Kosteneffektivitätsanalyse (OTSC versus standard treatment of recurrent ulcer bleeding: an analysis of cost effectiveness).** Küllmer A, Behn J, Glaser N, Thimme R, Caca K, Schmidt A, Freiburg Ludwigsburg, Deutschland.

### **Cross-sector routine data from social health insurance confirms safety and efficacy of colonic OTSC**

D Horenkamp-Sonntag et al., German Technicians' Health Insurance, Hamburg, presented a study based on cross-sector routine data gathered by social health insurance (>10 million insured parties), examining OTSC application in the colon. Indication, patient characteristics, outcome and complications were assessed in the actual care setting. 348 patients (median age 67 years, 60 % male) were subject to colonic OTSC (OPS-Code 5460s3). Using further codes from different performance sectors, suspected indications were identified: (iatrogenic) perforation (n=58), polypectomy (n=210), bleeding (n=34) and others (n=46). A total of 16 patients (4.6 %) underwent an additional endoscopic intervention within 10 days of the initial procedure, 43 patients (12.4 %) within 100 days of the initial procedure. 12 patients (3.4 %) received abdominal surgery within 10 days after OTSC procedure, 41 patients (11.8 %) within 100 days of the procedure. Surgery after more than 30 days after OTSC application was

mostly due to treatment of the underlying disease (carcinoma, diverticulitis etc.). Overall 9 patients (2.6 %) deceased within 100 days after the intervention. The authors concluded that, in the actual care setting, OTSC is mostly applied for polypectomies and iatrogenic perforations. The presented data supports first findings indicating that OTSC application in the colon is safe and helps to prevent surgery due to iatrogenic complications.

**Sind OTS-Clips am Kolon effektiv und sicher? Evidenz-Generierung von endoskopischen Innovationen durch GKV-Routinedaten (Are OTS-Clips in the colon effective and safe? Evidence generation of endoscopic innovations with health insurance routine data.** *Horenkamp-Sonntag D, Liebenraut J, Engel S, Knoop H, Hamburg bzw. Berlin, Deutschland.*

## **OTSC as part of combination therapy of esophageal perforations and anastomotic insufficiencies following oncological resections**

C Jung et al. presented a retrospective evaluation of all patients, that had been treated since 2014 at the University Hospital Goettingen for iatrogenic esophageal perforation (IEP) or post-surgical anastomotic insufficiency (PAI) with the EndoVac system, with esophageal stents and OTSCs. A total of 21 patients were recorded, 4 out of these with iatrogenic esophageal perforation and 17 with PAI. 12/17 PAI patients had received a preoperative radio/chemotherapy (5 CROSS, 1ICF, 1 FLOT+RTC, 2 FLOT, 1 RTC, 1 GASTRIPEC, 1 unknown). Overall 8 patients received a fully-covered esophagus stent as primary therapy whereas 13 patients received an EndoVac as primary therapy. Complementary therapy was necessary in 6 patients (28.6 %) (2 stent + EndoVac, 1 EndoVac + Stent, 1 EndoVac + stent + fibrin, 1 stent + EndoVac + OTSC, 1 stent + OTSC). In overall 16/21 patients (76.2 %) complete restoration of the anastomosis was achieved. In 5 cases, continuity could not be restored, 2 of the patients died, 3 patients received a cervical drainage. The authors concluded that the group of patients examined was heterogenic and showed complex disease courses. The concept of combination therapy using EndoVac, esophageal stent, OTSC and endoscopic debridement seems to be promising. Further large scale studies are necessary to reliably describe the efficacy of this approach.

**Multimodale endoskopische Behandlung von Ösophagusperforationen und postoperativen Anastomoseninsuffizienzen nach onkologischen Resektionen. Was ist die richtige Strategie? (Multimodal endoscopic treatment of esophageal perforation and post-surgical anastomosis insufficiency following oncological resection. Which is the correct strategy?)** *Jung C, Kunsch S, Müller-Domieden A, Gaedcke J, Schüler P, Seif Amir Hosseini A, Ghadimi M, Ellenrieder V, Wedi E, Göttingen, Deutschland.*

## **remOVE – registry study on clip removal and first multicenter case series evaluating the BougieCap**

### **remOVE System – endoscopic removal of OTSC and FTRD clips is effective and safe**

M Bauder and colleagues presented multicentric prospective registry data regarding application of the remOVE System. Data on 119 patients from 63 centers were submitted. Main indications for clip removal were: necessity of local re-therapy (62/119), local clip-associated complications (27/119), and ineffective clip placement (16/119). Cutting of the clip through both bows was successful in 89.1 % of cases, endoscopic retrieval of both clip fragments was possible in 82.4 %. Uncovering the clip from granulation tissue before application of the remOVE System was necessary in 23 cases. Average procedure time was 62 min, whereby a correlation to the thickness of the nitinol scaffold of the clip was seen (statistically significant between OTSC 11 and FTRD). Complications occurred in 3.4 % (4/119). These were in all cases minor bleedings, which could be managed endoscopically. The authors concluded that removal of OTSC and FTRD clips using the remOVE System is effective and safe.

**Prospektive multizentrische Registerstudie zur Entfernung von OTSC und FTRD-Clips mit einem Gleichstrom-Schneideinstrument (Prospective multicenter registry study evaluating removal of OTSC and FTRD clips with a DC cutting instrument)** *Bauder M, Wannhoff A, Meier B, Caca K, Ludwigsburg.*

### **BougieCap – visually controlled dilatation with the BougieCap is effective and prevents complications due to overdilatation**

B Walter et al. presented a multicenter study (Ulm, Southampton and Essen) evaluating dilatation of benign esophageal stenoses with the BougieCap. The BougieCap allows, in contrast to Savary bougies, direct visual control of the process without the need for x-ray. 50 patients (25 f, 25 m, median age  $67.1 \pm 16.8$ ) with benign stenosis of the esophagus and clinically apparent symptoms of dysphagia were included. Genesis of the stenosis was peptic (n=23), radiation (n=13), anastomotic (n=6), caustic ingestion (n=4), Post-ESD (n=2), EoE (n=1) and unknown (n=1). Dilatation was successful in 96 % of all cases (48/50). In eight cases a pediatric gastroscope with guidewire was used. In two cases a standard gastroscope with guidewire was used. In the two cases, passage of the stenosis was not possible, no attempt with guidewire had taken place. The number of subsequent endoscopic bougienages was median  $2.3 \pm 0.7$ . Dysphagia symptoms were regressive from a median DS value of  $3.0 \pm 0.6$  before dilatation to  $1.6 \pm 0.7$  after dilatation (Mann-Whitney,  $p < 0.0001$ ). Severe complications did not occur. In two cases, a BougieCap was lost in the stomach; no clinical discomfort or complications resulted. The authors stated that endoscopic treatment of benign esophageal stenoses with the BougieCap allows direct visual control of the dilatation process and of beginning mucosal lacerations. Thus, in contrast to the conventional blind method, overdilatation and re-traumatization are reduced and the dilatation process can be performed with better adaptation to the stenosis. Usage of a guidewire is reasonable and necessary in special cases (i.e. very high-grade stenosis, usage of a pediatric gastroscope).

**The BougieCap: a new method for endoscopic treatment of esophageal stenosis** *Walter B, Schmidbauer S, Rahman I, Schumacher B, Albers D, Meining A.*

### **RESECT+ – presented studies on first (pre-)clinical data confirm beneficial effort of the additional working channel (AWC®) and a new injection solution (LiftUp®) for optimized endoscopic resection**

#### **EMR+ – new endoscopic resection technique for en-bloc resection of lesions up to 30 mm**

B Meier und K Caca presented a preclinical study evaluating a new endoscopic resection technique, which allows en-bloc resection of large lesions. The endoscopic mucosal resection (EMR) is regarded as standard procedure for endoscopic resection of mucosal intestinal neoplasms. However, when the lesion size surpasses 20 mm, the en-bloc resection rate is below 40 %. For lesions > 20 mm with urgent need of en-bloc/RO resection, the endoscopic submucosal dissection is on hand, which albeit proves to be very sophisticated and time-consuming and associated to a higher complication rate. Submucosal injection is a crucial part of both techniques, with longer duration of the intervention, however, the so created cushion is more and more absorbed. The authors reported on a new procedure technique (EMR+). For the EMR+ technique, a standard endoscope with additional working channel (AWC) is used. Through the working channel of the endoscope, a grasping anchor is conducted, a resection snare through the additional working channel. The grasping anchor is led through the resection snare. For submucosal injection of the lesion, a new polymer injection solution (LiftUp) is used. After injection, the target lesion is lifted with the anchor, the snare is conducted over the lesion and the tissue below the lesion is cut. For the preclinical study, EMR+ was performed in two sessions with 11 resections each in ex-vivo porcine

models. The en-bloc specimen had an average size of approx. 30 x 26 x 11 mm (maximal 40 x 33 x 14 mm). The overall procedure time was in average 6-7 minutes. Perforations did not occur. The authors rated the EMR+ as technically easy and fast technique for the en-bloc resection of lesions up to 30 mm in size.

**Neue endoskopische Resektionstechnik zur en-bloc Resektion für Läsionen bis 30 mm (EMR+) (New endoscopic resection technique for lesions up to 30 mm (EMR+))** Meier B, Caca K, Ludwigsburg.

### **First clinical data shows that the AWC (additional working channel) makes en-bloc resection of large polyps in the upper and lower GI tract possible**

B Walter and colleagues presented first clinical results with the AWC (additional working channel). The AWC, through which an additional instrument can be introduced to allow bi-manual working, can be fixed at the tip of a standard endoscope. In contrast to the double-channel endoscope, the distance between the working channels can be adjusted individually. In 4 patients, an ESD was performed and in 4 patients an EMR in a modified "grasp-and-snare-technique". For this technique, the target lesion is lifted by submucosal injection and subsequently with an OTSC anchor, which was previously conducted through a snare (EMR+) or the target lesion is held in tension with a grasper during the cutting process (ESD+). Lesions for ESD+ were located in the stomach (n=2, size 17 and 37 mm, respectively) and rectum (n=2, size 33 and 37 mm, respectively). Lesions for EMR+ were located in the stomach (n=1, size 31 mm) and colon (n=3, size 42 mm and two times 45 mm). En-bloc resection was successful in 6 cases, 1 EMR in the colon was achieved in two fragments and 1 EMR in the colon in 3 fragments. Median procedure time was 68.5 min. Complications occurred in the form of acute arterial bleeding directly after EMR in 2 cases. No perforations or latent haemorrhage occurred. The authors concluded, that the AWC makes en-bloc resection of large lesions possible. Advantages are the usability for ESD as well as EMR, the possibility of bi-manual working without 2-channel endoscope and the individual adjustment of the channel distance.

**Verwendung eines zusätzlichen externen Arbeitskanals (AWC) zur verbesserten endoskopischen Großflächenresektion (Usage of an additional external working channel (AWC) for improved endoscopic resection of large areas).** Walter B, Schmidbauer S, Hann A, Meining A, Ulm.

### **LiftUp – first preclinical data shows that this high-viscosity injection solution creates a stable and long-lasting cushion thereby increasing safety and efficacy of EMR and ESD**

LiftUp is a polymer injection solution consisting of surface-active mass polymers, which is used for submucosal injection of early neoplasms in the course of endoscopic submucosal dissection (ESD). E Wedi et al. presented a prospective randomised study comparing LiftUp, NaCl 0.9 % and hydroxyl-ethyl-starch (HES 6 %) in an EASIE-R model. Overall 60 standardised ESD procedures were performed (n=20 per injection solution) in artificial lesions of 3 x 3 cm size in the corpus of a pig's stomach. ESD technique led to successful resection of all 60 lesions. R0 resection was achieved with LiftUp in 95 % (n=19), with HES in 100 % (n=20), and with NaCl in 80 % (n=16). Adequate mucosal lifting was reached in 80 % (n=16) with LiftUp, in 30% (n=6) with HES and in 30 % (n=6) with NaCl (p<0.0002). Three perforations occurred, one in the HES-group and 2 in the NaCl-group. The authors rated the LiftUp injection solution a safe alternative for HES and NaCl. A particularly advantageous characteristic of LiftUp is the creation of a stable submucosal cushion, which retains for hours. Thereby, the ESD procedure as well as presumably the EMR procedure could become more safe and effective.

**Evaluierung einer neuen submukosalen, hochviskösen Injektionslösung (LiftUp) für die Endoskopische Submukosa Dissektion (ESD) am EASIE-R Model: Eine prospektiv randomisierte Vergleichsstudie (Evaluation of a new high-viscosity solution (LiftUp) for submucosal injection in the course of endoscopic submucosal dissection (ESD) in the EASIE-R model: a prospective randomised comparison study).** Wedi E, Köhler P, Hochberger J, Dammer SS, Maiss J, Kunsch S, Ho N, Conrad G, Baulain U, Ellenrieder V, Jung C, Göttingen.

## **New demilune ESD-device (Coag Dissector) allows for rapid, effective and safe endoscopic submucosal dissection**

Endoscopic submucosal dissection (ESD) has been established as an effective treatment option for early gastrointestinal cancer. To date, various devices for ESD are available. H Neumann and colleagues presented a prospective preclinical study evaluating the efficacy and learning curve of a new demilune device for ESD, which potentially allows for fast submucosal cutting above the muscular layer due to its special design. In addition, the device can be opened like scissors therefore also acting for hemostasis. The study was performed in two steps. First, ex vivo porcine models were utilized in an advanced endoscopic simulator or interventional endoscopy. After the initial learning curve, the study was repeated in living pigs under general anesthesia. For both study arms, artificial lesions, each 25 x 25 mm in size, were created in the fundus, corpus and antrum of the stomach. ESD was performed after marking of the lesions with the ESD instrument, followed by lifting of the mucosa with submucosal injection of colored saline. Afterwards, circular incision of the lesions was performed with the new ESD instrument. For resection, the submucosa was lifted with a distal clear cap and cut with the new demilune device. Resection specimen were retrieved to evaluate if all marks were included (R0). Average size of removed lesions was 30 mm. En-bloc resection rate was 100 % and R0 resection rate was 95 %. Mean total procedure time was 25 minutes and not dependent on the location or if the resection was performed in ex vivo models or in vivo. No perforations occurred during the study despite the rapid dissection speed through the submucosa. Satisfaction of the endoscopist and the supporting nurse staff was high throughout all cases. The authors concluded that the new demilune device for ESD is safe and efficient and allows for rapid dissection of the submucosa due to its inherent design.

**Preliminary report of a new demilune device for rapid endoscopic submucosal dissection (ESD).** *Neumann H, Zimmermann T, Grimminger P, Rahman F, Thieringer F, Galle PR, Kneist W, Mainz.*

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