Topic 1: Results of the German colonic FTRD® registry - FTRD® now part of clinical routine

Question from Prof. Schmidt to Dr. Meier:
How much training is required to do EFTR properly? Is there any learning curve?

Answer by Dr. Meier:
A special training course provided by Ovesco is mandatory if your clinic wants to use the device. Then it depends on location and indication of course. I think you should start with small lesions in the rectum, small rectal NETs maybe or small rectal adenoma for instance. And then it becomes certainly more difficult depending on location and indication. But I think, all together, it is quite possible to do with a relatively small learning curve, especially in the rectum, and after 5-10 procedures you get very familiar with the technique and then you can go on.

Question from Prof. Schmidt to Dr. Meier:
What would be your personal preference if you would have a recurrence of a, for example adenoma, after an EFTR? Would you repeat FTRD?

Answer by Dr. Meier:
We do repeated FTRD, yes. First of all, you have to see whether the clip is still in place or not. There is quite a good chance that it is gone by then, which is the case in about 70 % of the cases at follow-up. And then you take another biopsy to proof that there is a residual lesion. I think the best option then is to repeat full-thickness resection, since there is no reason why you could not do that. And of course, we are talking about difficult lesions, so EMR probably was not possible in the first place already and will now also not be able an option. So, I think you should proceed with another FTRD.

Further questions not answered during the live webinar

Question: In the German registry there was similar technical success for lesions smaller and bigger than 20 mm. In my understanding 15 -20 mm is the maximum that a lesion can be resected with FTRD. A comment perhaps?

Answer by Dr. Meier:
The ideal size to resect with FTRD is under 20 mm indeed. However, in our experience resection of lesions ≥ 20 mm is possible with FTRD, but of course technically more demanding. Success then depends on lesion characteristics and mobility of the GI-wall. Resection of lesions ≥ 30 mm seems not advisable. It is important to notice that lesion size in the German colonic FTRD registry was not measured but rather estimated by endoscopists. Additionally, hybrid techniques (such as combined EMR/FTRD) were allowed and lesions up to 50 mm were included.

Answer by Dr. Bastiaansen:
Maximum size depends also on location (rectal location for example allows smaller samples), tissue rigidity and bowel mobility. In case of doubt please try a dummy cap first. However, as a general rule, 20 mm will be the upper size limit for adequate R0. But when you have a 22 mm and not too bulky lesion in for example the ascending colon, you could test first with the FTRD prOVE Cap. Keep in mind that the average specimen size is 23-24 mm. And you need 2 mm margin in diameter.

Answer by Prof. Schmidt:
From ex-vivo experiments in normal colon tissue we know that we can get resection specimen of > 4 cm. In the clinical studies we performed, lesion size > 3 cm was an exclusion criterion. However, as Barbara pointed out, the ability to mobilize the complete lesion into the cap strongly depends on tissue rigidity. In the WALL RESECT trial we found that R0 resection rate was optimal for lesions ≤ 2 cm and this is also my everyday experience; however, this wis not confirmed in the German registry data. For lesions > 2cm we currently routinely use the hybrid technique, which in my view helps a lot to ensure complete resection in larger lesions.

Answer by Dr. Haber:
There are two factors which determine the size of lesion amenable to FTR. One is diameter and the other is pliability, which refers to the ability of the tissue to be pulled up into the cap. Ultimately, the cap volume is the limiting factor and not the internal diameter of the cap which is 13.0 mm. As most lesions are not rigidly bound down, the rough guide is 20 mm diameter. However, if the lesion is firm or thick as with a GIST for example, the maximum diameter for resection is 15mm or less.

Topic 2: Results of the Dutch FTRD® registry - How FTRD® closes the gap between endoscopy and surgery

Question from the audience to Dr. Bastiaansen:
Do you perform staging before EFTR in T1 cancer?

Answer by Dr. Bastiaansen:
For the colon, for a suspect lesion that we think is amenable, we do no staging before EFTR. We perform the EFTR and see what kind of risk profile the lesion has and then of course afterwards we perform the staging. For rectal lesions, especially when it is a primary resection for small rectal cancer, I think you do need an MRI to exclude of course any lymph node metastasis, because I think the T-staging from the MRI is NOT reliable. But we only do it to look for the lymph nodes, because after the EFTR, when you have the clip there, your MRI will be completely unevaluable, because of all the clip artefacts. So, no EFTR in the rectum without an MRI. I think that is the most important message.

Question from the audience to Dr. Bastiaansen:
FTRD of carcinomas is only possible if the lesion is quite small and in our experience we find more often bigger carcinomas - what is the percentage of "small enough" carcinomas among all carcinomas detected in the Netherlands?

Answer by Dr. Bastiaansen:
The point is, what is the exact percentage of lesions that were T1 cancers and not amenable to EFTR, I must say I don't have the exact answer to that. But what I do know, is that an invasive focus for cancer, that is still T1 in my experience, and probably Dr. Haber agrees with me, is never larger than 2 cm. So, I don't know any invasive focus larger than 2 cm that is still a T1 cancer. I think that is extremely rare. And usually, the invasive focus is even smaller than 1 cm on histopathology. So, of course you have very large, 6 to 7 cm lesions, but they only have a small focus on cancer. Indeed, I understand why Dr. Haber is embracing the combined EMR-EFTR procedures, because in my opinion there is no T1 cancer focused larger than 2 cm.

Question from the audience to Dr. Bastiaansen:
In the video of the resection, it seemed as if you grabbed the lesion on its basis or even a little bit nearby in the normal mucosa, which seems very interesting. Do you regularly do this for better mobilisation instead of grabbing the tip of the lesion?

Answer by Dr. Bastiaansen:
If I do have the possibility, if it is quite a large lesion, then I tend to take it indeed at the base of the normal mucosa underneath. Why? Because I have a firmer grip there. Especially, if you take this adenomatous tissue, it is kind of bulky, and you put your Grasper there, it is not so tense, you just lose your tissue very easy. Why when in contrast you take the normal colonic wall underneath, you get a nice firm grip and you have much more power to pull the lesion into your cap and you do not injure the lesion. Because if you put the grasper over the lesion, sometimes on histopathology - it never complicates the assessment - but sometimes you can see that you just take a bite out of it and then it is a pity for the histopathology. So, if you can take some normal colonic wall, I think you have a firmer grip.

Further responses to this question

Answer by Dr. Haber:
In the great majority of lesions, I use the grasping forceps on the lesion itself. The first step in securing a lesion is to rotate your endoscope such that the grasping forceps and accessory channel are in the 5-7 o'clock position. I then grasp the lesion by placing the forceps toward the 6 o'clock side or the lesion, as generally the near side of the lesion is most difficult to pull into the cap. As you pull the lesion into the cap, be patient with slow steady tension. I often use suction as well, but expect the normal marginal tissue to be sucked up more easily than the central bound down part of the lesion. The scope and the cap most often are tangential to the lesion, which is why I emphasize the need to grasp the near side (6 o'clock), which is harder to pull in than the far side, which will usually enter the cap with suction. Another important point for beginners is that you should not advance the scope too much on to the lesion but rather pull back a little to allow the lesion and surrounding mucosa to be drawn into the cap. You don't push the cap on to the lesion. I rarely grasp normal tissue adjacent to the lesion as I am concerned too much of the cap volume will be filled with normal tissue and I may not get the entire lesion into the cap, especially the side of the lesion opposite the grasping forceps. Most of our lesions are 15-25 mm and there is not enough cap volume to accommodate the amount of normal tissue that would be grabbed by forceps.

Answer by Prof. Schmidt:
I usually grasp the lesion itself, but I was inspired by Barbara's video and will also try this in the next case. It may especially be helpful for rigid T1 cancers and lesions with a high degree of scarring.

Question from the audience to Dr. Bastiaansen:
What is your management of early and delayed perforation?

Of course, the most feared complication we have is this delayed perforation, which usually comes, the same as with surgical anastomotic leakage, it comes somewhere between day 2 and 5, if they come. Luckily, we know that now the rate of delayed perforation is decreasing and now near 1 % only and I think that is acceptable. The most delayed perforations that we have encountered in our registry were located on the left side, mostly located in the sigmoid. And that was before we introduced standard laxative use. I think that is very important that I would like to stress. If you perform EFTR in the left-sided colon, you always make the lumen more narrow of course, because you do a wedge resection there, right. And the stool is quite firm there. So, I think it's very important, we don't forget to give laxatives to our patients. We always do for at least 10 days and since then I must say, I knock on wood, I didn't encounter a delayed perforation anymore. So that's one important point. A delayed perforation, when it comes in, is usually a fecal peritonitis that needs immediate surgery. You cannot escape emergency surgery for delayed perforation, at least not in our Dutch experience. For of course a direct perforation is usually because the steps of the procedure were not correctly, so you somehow might think the clip is off but wasn't and then of course you might end up with a very large perforation, which in the majority of cases still can be closed endoscopically. Usually, since it is large perforations, I think an OTSC is the best approach.

Further questions not answered during the live webinar

Question: Please elaborate T1 lesion - do you mean both T1a and T1b?

Answer by Dr. Bastiaansen:
Yes, both. If complete diagnostic excision is feasible, we opt for excisional biopsy, also when deeper submucosal invasion is suspected, of course after discussing al options with our patients and after full consent.

Question: Is there not a risk when staging after EFTR procedure that you overstage N diseases?

Answer by Dr. Bastiaansen:
For suspect rectal lesion it is mandatory to perform MRI for N staging prior to the procedure. For colonic lesions we perform CT staging after and depending on the definite histopathological result. CT staging is not reliable regarding N staging in general, so we guide are further treatment on final histopathology and risk stratification, which is shown to be feasible in 99 % of cases.

Topic 3: Hybrid-FTRD® – New options, new horizons

Question from the audience to Dr. Haber:
What is the evidence on safety and efficacy for non-lifting duodenal adenomas?

I think it is very challenging. We don't have efficacy data in the sense of comparing it to surgery or conventional techniques, but we often encounter a problem to the duodenum or duodenal adenomas. The major problem we get into with larger lesions is bleeding, so we have to ensure that we have a very good lift. Frequently in the tertiary referral centers, we get polyps in the duodenum that have been attempted to be removed earlier, so they are scarred down and they are larger. I think the major safety issue in the duodenum of course is to avoid the major and the minor papilla, so we are very careful and we look with a duodenoscope first to assess the lesion. The other concern of course is, can you get the gastroduodenal FTR Device down into the second or the third part of the duodenum and there are technical aspects of that in terms of dilating the pyloric sphincter and the LES to get down there. If you can get down there and especially if you are on the lateral wall or the anterior, you can generally go down with a pediatric colonoscope or 1T gastroscope and successfully remove the lesion without any compromise of the lumen. Having said that, we are relatively new to the game. I have only done about 7 duodenal adenomas in this manner in the second and third part of the duodenum, so it is very early experience. I think you have to be careful, but it can be safely done. The greatest advantage for me is, I don't have to worry about bleeding afterwards which is the biggest problem that we have, that everybody has who does any kind of large number of duodenal adenomas.

Question from the audience to Dr. Haber:
Can hybrid FTR or standalone FTR be considered for duodenal NETs? Especially if there is a depressed lesion in duodenum?

Yes, we have done a couple of these. The area of concerns I have, that I avoided, would be the posterior wall of D1 where the gastroduodenal artery is running oftentimes in that area, you don't see it. I think you have to be extremely careful that you don't suck up the wall because the duodenal wall is thin. If you suck it up, you can catch the edge of a large vessel. We would look with endoscopic ultrasound first to assess that of course. Certainly, if you have it on the anterior wall of D1, it is relatively easy. So, it can be used, but again the same cautions with respect to with adenomas in terms of avoiding critical structures in the cap would be the gastroduodenal artery and in the second and third part of the duodenum the pancreatic an biliary structures.

Further questions not answered during the live webinar

Question: Can we start resection of high-risk polyps with ESD then switch to FTRD if we cannot resect the polyp totally?

Answer by Dr. Haber:
FTR as a rescue maneuver after beginning resection with ESD is possible, but you must remove the tissue already dissected to allow for capture of the non-lifting portion of the lesion into the cap. The hybrid method is usually decided in advance after assessing the topographic features with the aim to use FTR for the non-lifting, depressed, presumed malignant area. This area is generally less than two cm in most polyps with malignancy and the lateral spreading component around the central depression is removed with EMR. This approach is efficient and offers a viable alternative to ESD in most polyps with high-risk features.

Question: Have you tried UEMR as a bridge between standard EMR technique and FTRD in non-malignant LST? And When you perform the hybrid technique, how do you manage recurrency if the clip is still present?

Answer by Dr. Haber:
I am aware of the extensive literature on UEMR for non-lifting lesions and the reported success. I do not use this technique in my practice but accept that it may be an alternative for benign lesions. The problem with lesions that do not lift is that you do not know prior to resection whether malignancy is present or not and if you attempt to achieve an R0 resection, that may be compromised by a snare technique.
It is possible that in cases of recurrent neoplasm post FTR, the clip may interfere with further resection. However, in cases of malignancy, the vertical resection margins have been clear. If you suspect positive horizontal margins or possible recurrence of benign neoplasm (LGD,HGD), frequently the tissue trapped in the base of the clip post resection will necrose over time extending the margin of tissue removed. If there is biopsy proven recurrence of neoplasm at the perimeter of the clip at follow up, then waiting 3 months more is often sufficient time for the clip to fall off. Otherwise, if it is important to remove the tissue, the clip can be removed with the direct current Ovesco generator.

Further questions not answered during the live webinar related to all topics

Question: What is the definition of delayed perforation?

Answer by Dr. Bastiaansen:
Delayed perforations are a post-procedural complication. That means the patient is coming back after an uneventful EFTR procedure, usually post-operative day 1-5, like surgical anastomotic leaks.

Answer by Dr. Haber:
Delayed perforation can be defined in many ways but for the purposes of this technique, it is perforation which occurs any time after technically successful completion of the procedure. If it is going to happen, I suspect it occurs after tissue breakdown due to ischemia or cautery current, likely to manifest 48-72 hours later. Fortunately, I have not had any delayed perforation in more than one hundred procedures.

Question: Is surgery required after FTRD - does it make surgery more risky? Leak or stoma?

Answer by Dr. Bastiaansen:
Not in our experience. Several studies have shown that a preceding endoscopic intervention to for example oncologic surgery did not influence surgical of oncologic outcomes. Of course, EFTR is a relative new technique, but I cannot imagine outcomes will be different from any other endoscopic intervention.

Answer by Dr. Haber:
I have had one patient who required surgery after appendiceal FTR, 72 hours post resection. The surgeon commented on the surrounding inflammation but not really more than seen with the usual appendicitis. Four other patients with cancer (one T1 with LVI, two T2, and one T3) underwent elective surgery post FTR with no detrimental impact on that surgery.

Question: How much suction is safe?

Answer by Dr. Bastiaansen:
I always train never to apply suction from the start, but first fill your cap with tissue and only apply additional suction if you think you cannot completely pull the lesion in the cap. In our Dutch registry (800 cases) we have no complications related to capture of adjacent structures and we like to keep it like this.

Answer by Prof. Schmidt:
My advice is to be cautious with suction. I personally had one case with clipping of adjacent small bowel, and there was similar case in the WALL RESECT trial. However, sometimes gentle suction is needed to ensure complete mobilization of the tissue into the cap, especially in rigid lesions. But do it carefully!

Answer by Dr. Haber:
Suction is safe when used appropriately and often necessary to entrap bulky lesions. However, for large lesions that fill the cap, visualization of the white releasing ring may be lost and the endoscopist must rely on the tactile sensation alone as to when the clip is deployed. Of course, experience is necessary before one will have confidence in the tactile sensation. The other caveat with suction is that it tends to pull up normal mucosa preferentially over thickened adenomatous tissue or bound down tissue. For suction to be beneficial in hard to trap tissue, it must be used with the target tissue already pulled up partly by forceps into the cap and the suction used adjunctively afterwards to pull up more of the lesion. It is often helpful in appendiceal lesions as the grasping forceps may not pull up the neoplasm further down the appendiceal lumen.
I have had one case of a neoplasm in the appendiceal stump post appendectomy. I resected the lesion with grasping forceps and suction and at the follow up 3 months later identified a very clean ileo-cecal fistula in this asymptomatic patient. I assume that due to adhesions post appendectomy, the terminal ileum was adherent to the cecum