CASE REPORT

Simultaneous endoscopic full-thickness resection of two synchronous colonic granular cell tumours

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SUMMARY

Granular cell tumours (GCTs) are rare soft tissue tumours originating from Schwann cells. Due to potential malignant transformation, complete endoscopic resection should be aimed for. We report on a 49-year-old patient with two synchronous GCTs found in the caecum and the ascending colon, respectively. Synchronous endoscopic full-thickness resection (EFTR) using an all-in-one full-thickness resection device (FTRD) was performed under propofol sedation. Completeness of resection was proven histologically. No adverse events occurred. We report safe and complete simultaneous EFTR of two synchronous colonic GCTs.

BACKGROUND

Granular cell tumours (GCTs) are rare soft tissue tumours originating from Schwann cells. They can affect any human organ, but have predominance for the oral cavity and the subcutaneous tissue.^{1 2} GCTs occur in 9%–12% in the gastrointestinal (GI) tract.^{2 3} The oesophagus is most likely to be affected, followed by the stomach and the colon.^{4 5} The tumours are usually benign, but rare cases of malignant behaviour of GCTs have been reported.^{5 6} Given the unpredictable behaviour based on histopathology, complete resection of granular cell tumours is favoured over regular surveillance, especially in young patients. GCTs are frequently not limited to the mucosa but expand to submucosal layers. Therefore, classic techniques such as endoscopic mucosal resection (EMR) fail to achieve R0 resection. Endoscopic submucosal dissection (ESD) may therefore be indicated, but the technique is laborious and only available in expert

centres. Furthermore, ESD bears a substantial risk for haemorrhage or perforation in submucosal lesions depending on the localisation within the GI tract and the lesion's size. Since the introduction of the full-thickness resection device (FTRD),⁷ an all-in-one close-before-resect tool is now available to perform safe and effective full-thickness resection of submucosal GI lesions. Given the full-thickness nature of endoscopic full-thickness resection (EFTR), R0 resection can easily be evaluated by histopathological analysis. We here report a case of a 49-year-old male patient, who was diagnosed with two synchronous colonic GCTs undergoing double therapeutic EFTR.

CASE PRESENTATION

A 49-year-old patient was referred for colonoscopy prior to elective sigmoidectomy for repeated sigmoid diverticulitis. A polypoid lesion in the caecum was diagnosed on screening colonoscopy 2½ years earlier ago. Histological analysis of a classic biopsy specimen taken at that time showed normal colonic mucosa without inflammation or dysplasia. No further diagnostic steps were taken at that time.

At the time of colonoscopy, we diagnosed a polypoid (8 mm), yellowish, submucosal lesion in the caecum and a smaller polyp (3 mm) in the ascending colon (figure 1). Buttonhole biopsies of the submucosal lesion were taken and endoscopic snare resection of the 3 mm polyp was performed. Because of a firm consistency of the 3 mm polyp, a clip was placed after removal to detect the resection site again in a potential second endoscopy. Histological examination of both lesions revealed large elongated and epithelioid tumour cells with broad granular basophilic periodic acid-Schiff positive cytoplasm. Immunohistochemical analysis showed expression of S100 protein, SOX10, inhibin alpha, calretinin and TFE3 (Transcription factor E3) and negativity for HMB45 (Human Melanoma Black 45) allowing the diagnosis of two simultaneous granular cell tumours within the colon. Because complete resection was uncertain at the basis of both specimens, EFTR of both lesions using the FTRD (Ovesco Endoscopy, Tübingen, Germany) was performed in a second procedure 2 weeks later. The method has been described previously.⁷ Briefly, after prior protective over-the-scope clip (OTSC) deployment, the full-thickness gut wall of the former polypectomy area is drawn into the OTSC cap and safe EFTR is performed above the deployed OTSC (figures 2 and 3). Histopathological analysis of both resection specimens proved full-thickness resection, an MIB-1 labelling of 1% of the tumour cells and R0

Figure 1 Yellowish, submucosal lesion in the caecum.

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Figure 2 Over-the-scope clip (OTSC) deployment and full-thickness resection of the polypoid lesion.

resection with sufficient healthy tissue to the resection margins (see figures 4–6).

OUTCOME AND FOLLOW-UP

No periprocedural adverse events occurred and short follow-up was uneventful.

DISCUSSION

After the first description of GCTs by Abrikossoff in 1926, only a few cases of colonic GCT have been reported. GCTs are normally benign tumours that resemble schwannomas under electron microscopy and that are immunohistochemically typically positive for S100 and SOX10.^{5–8} In the last years, probably thanks to the improvement of diagnostic endoscopy, more gastrointestinal GCT and even malignant variants have been detected and reported.^{5–10} Patients are typically asymptomatic and GCTs are found incidentally on screening colonoscopy.^{11–13} The predilection site within the colon is in the ascending part in 45%,^{5,8} which applied to our case as well.

On endoscopy, GCTs are typically yellowish sessile, small (<2 cm) lesions that resemble polyps or lipomas.^{6–8,14} Only a few cases with multiple synchronous GI tract GCTs have been published so far.^{15–17}

Figure 3 Endoscopic full-thickness resection of the polypoid lesion.

Figure 4 Full-thickness resection demonstrating complete excision of a submucosal expansive granular cell tumour (H&E).

As described earlier, malignant GCTs are extremely rare. Fanburg-Smith established diagnostic criteria to classify histological malignant GCT in soft tissues. These criteria are not always transferable to their visceral counterparts to evaluate necrosis, spindling, vesicular nuclei with large nucleoli, increased mitotic activity (>2 mitoses/10 high-power fields at $\times 200$ magnification), a high nuclear to cytoplasmic ratio and nuclear polymorphism. Soft tissue tumours that meet three or more of these criteria are regarded as malignant.¹⁸ But due to the fact that GCTs are rare tumours and prospective studies are lacking, reliability of these criteria based on a small number of patients is limited. In a Korean study, a malignant colonic GCT was found that was considered as a benign variant according to the criteria provided by Fanburg-Smith.⁵ This case challenges the established criteria and therefore the preferred treatment of detected colonic GCT is complete resection. Furthermore, if a GCT shows histologically malignant features, it should be considered as a high-grade sarcoma with a high recurrence and mortality rate with a median survival of 3 years.¹⁸

Due to this malignant potential, complete resection of any GCT is now the accepted approach. Although the established criteria for possible malignant GCT did not apply to our patient, but due to the fact that endosonographic evaluation of the ingrowth depth was not feasible, we decided to perform EFTR of both lesions during the same procedure. EFTR using the FTRD has the advantage of being an effective and safe all-in-one tool compared with sophisticated ESD. The right hemicolon with its thin gut wall as in both of our GCTs is less accessible to ESD making the procedure more perforation prone. The tumour is believed to derive from the submucosal layer. Furthermore, the base of gastrointestinal GCTs frequently presents with substantial submucosal fibrosis making an ESD approach even more challenging. In addition, the EFTR is a time-efficient modality with a median procedure time of 50 min (including marking, resection and reinspection of the lesion) and the diagnostic yield of EFTR may be higher compared with EMR or ESD.¹⁹

Figure 5 Immunohistochemical staining for S100 demonstrated a positive submucosal tumour (3,3'-Diaminobenzidine, DAB).

Figure 6 Classical granular cell tumour morphology with polygonal and spindle cells with abundant eosinophilic granular cytoplasm and bland slightly elongated nuclei.

Although EFTR is a safe, cost-efficient and feasible procedure, some adverse events have to be mentioned. Bleeding is the most frequent complication after EFTR with rates around 4%–10%.^{19 20} Postpolypectomy syndrome has an incidence of approximately 8%.¹⁹ The most feared complication is an anastomotic leak and consequently perforation. In a small retrospective study, the perforation rate was low, but not negligible with up to 3%.²⁰ Another study did not show any perforations.¹⁹ Another limitations of EFTR, but also for EMR and ESD, are lesions in anatomically difficult locations. A new technique of combined endoscopic and laparoscopic surgery could be helpful in these cases.²¹ Conversion to standard surgical resection would be possible in case of inability to resect the entire lesion endoscopically. Additionally, immediate surgical assistance can be provided in case of perforation.

In our case, completeness of resection of both lesions was easily judged on the single full-thickness specimens which were harvested during the procedure. No adverse events occurred.

Learning points

- Our report describes the first double endoscopic full-thickness resection (EFTR) of two synchronous colonic granular cell tumours (GCTs) performed during the same colonoscopy.
- EFTR using the full-thickness resection device (FTRD) allows safe, efficient and complete endoscopic resection of rare colonic GCTs bearing malignant potential.

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critical revisions. EMM: drafting the article, making critical revisions, interpreting the biopsy, creating the biopsy images. PB: planning, drafting the article, making critical revisions.

Competing interests None declared.

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