Incidental micro-GIST found on post-sleeve gastrectomy. A case report and literature review

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Gastrointestinal stromal tumours (GIST) are the most common type of primary mesenchymal tumour within the wall of the gastrointestinal tract. They are usually derived from a mutation of the KIT or PDGFRA genes. The most common sites of GISTs are the stomach and small intestine. Presentation may include local symptoms, such as nausea and vomiting, GI bleeding and abdominal pain. Approximately 25% of GISTs are found incidentally during radiological investigations and 0.7% of resected specimens in bariatric procedures show an incidental GIST. Here we report a case of an incidental micro-GIST found on a post-sleeve gastrectomy specimen.

Key words: GISTs, carney triad, sleeve gastrectomy, DOG-1, c-KIT, imatinib

Introduction
Hirota et al in 1998 reported the distinction of GISTs based on molecular etiology. This was following the discovery of a mutation in c-KIT, encoding a pro-oncogenic receptor tyrosine kinase (KIT) [1]. GISTs arise in the wall of the gut and account for nearly 1% of all GI tumours [2]. They are reported as the most common type of primary mesenchymal tumour within the digestive tract, with an incidence of 7–20 cases/million population/year [3]. They may present with local symptoms, or may be diagnosed incidentally during imaging, endoscopy or histology.

Case report
A 67-year old female with BMI 45 was referred for elective bariatric surgery. Considering several comorbidities (i.e. diabetes, age, hypertension and dyslipidemia), laparoscopic sleeve gastrectomy was performed. The patient had a past history of lower abdominal surgery with hysterectomy, and radiation for moderately differentiated adenocarcinoma of the cervix with recurrence. She also had a history of a papillary urothelial neoplasm of low malignant potential on the left bladder wall. In routine pre-operative practice, ultrasound imaging demonstrated a normal gallbladder and a normal-sized liver with fatty infiltration. Routine gastroscopy and colonoscopy revealed no significant findings. Gastric biopsies did not reveal the presence of Helicobacter Pylori. On laparoscopic visualization, a cirrhotic liver was noted. The lower abdomen had fairly dense-looking omental adhesions. No other intra-operative findings were of note. The resected spe-
cimen consisted of a pouch-like portion of stomach, 23 cm (length) × 4.5 cm × 3 cm, closed along one long axis with metal staples. The serosal surface was smooth and a pale yellow firm nodular area 0.5 cm × 0.2 cm was noted within the serosal surface, 0.8 cm from the stapled resection margin. The mucosal surface had a normal appearance with typical rugae. No masses or polyps were identified. A firm pale yellow area was submitted along with representative sections from the remainder of the specimen. The microscopic assessment revealed a well-circumscribed lesion showing bland spindle cell proliferation with no atypia, necrosis, or increased mitotic rate (Fig. 1, 2). By immunohistochemistry, lesional cells were positive for DOG-1 (Fig. 3), c-KIT (Fig. 4) and CD34 (Fig. 5). These findings support the final diagnosis of micro-GIST with low malignant potential. Four years on from the initial micro-GIST diagnosis, there have been no gastrointestinal symptoms suggestive of recurrence.

**Discussion**

GISTs are rare, yet known to be the most common type of primary mesenchymal tumour within the wall of the gastrointestinal tract. They are primarily caused by activating mutations in the KIT gene, which is related to receptor kinase tyrosine protein or mutation in platelet derived growth factor receptor.
Syndrome elements

GIST

Carney Triad [11]

NF1 [14]

SDH – succinate dehydrogenase, NF1 – neurofibromatosis type-1

Table II. Syndromes known to be associated with GIST [11–14]

<table>
<thead>
<tr>
<th>Mutation</th>
<th>Syndrome</th>
<th>Syndrome elements</th>
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<tr>
<td></td>
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<td>Paraganglioma</td>
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<td>Pulmonary chondroma</td>
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<td>Carney-Stratakis Syndrome</td>
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<td>GIST</td>
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<tr>
<td>[12, 13]</td>
<td></td>
<td>Paraganglioma</td>
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<td>Inactivating mutations in NF1</td>
<td>NF1 [14]</td>
<td>A wild-type small intestinal GIST</td>
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<td>gene</td>
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<td>Neurofibromatosis</td>
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SDH – succinate dehydrogenase, NF1 – neurofibromatosis type-1
levant responses [39]. With new developments in molecular diagnosis and the introduction of tyrosine kinase inhibitors (TKIs) as neoadjuvant treatment prior to GIST surgery, patient outcomes have improved markedly [4].

**Conclusions**

Incidental finding of GISTs after laparoscopic bariatric surgery is rare, yet still a possibility. Radical surgical resection of GISTs is recommended to achieve effective treatment without complications or disease recurrence. A follow-up program according to the agreed guidelines in case of GIST diagnosed after bariatric surgery is advisable to allow early detection and treatment of relapses.

**Conflict of interest:** none declared

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