

## Diagnostic challenges of intra-operative frozen consultation for gastrointestinal signet ring cell carcinoma

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**目的：**印環細胞癌（Signet Ring Cell Carcinoma：SRCC）は、手術中凍結切片での認識が難しく、誤診率が高い。術中凍結切片の診断と永久切片を再検討し診断不一致の要因を明らかにし、SRCCの手術中凍結切片の誤診を防ぐことを目的とする。

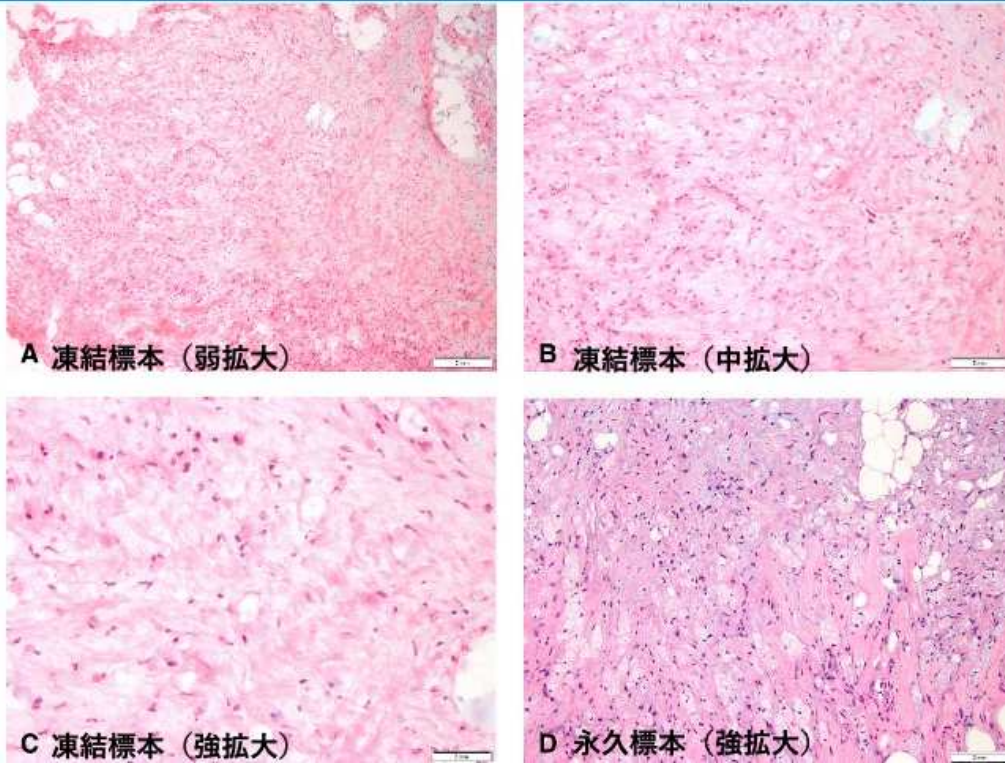
**方法と結果：**2000年5月25日から2018年1月1日までの期間に、永久切片でSRCCが確認された標本の手術中凍結切片と永久標本を再検討した。対象は50症例83病変である。正診率は85.5%であった。術中凍結標本と永久標本との間で不一致または保留の主な要因は①粘液様の背景がSRCC細胞集塊と似ているため区別出来ないこと、②細胞質粘液が相対的に明瞭または減少し、正常または反応性変化（組織球、マクロファージ、反応性リンパ球、内皮細胞または脂肪細胞）と区別出来ないこと、および③組織サンプリングエラーにより凍結切片で微小なSRCCが見逃されることが挙げられる。

**結論：**手術中凍結診断でのSRCCの正確な診断は依然として難しいものの、誤信を減少させるための重要な方針は以下のとおりである。①凍結切片でのSRCCの組織学的特徴の把握（細胞質粘液の減少、線維性増殖の欠如、隣接した前癌変化が見られないこと）、②正常な構造（胃固有腺腺または粘膜下の緩い結合組織）から粘液または炎症像への急激な変化に注意することである

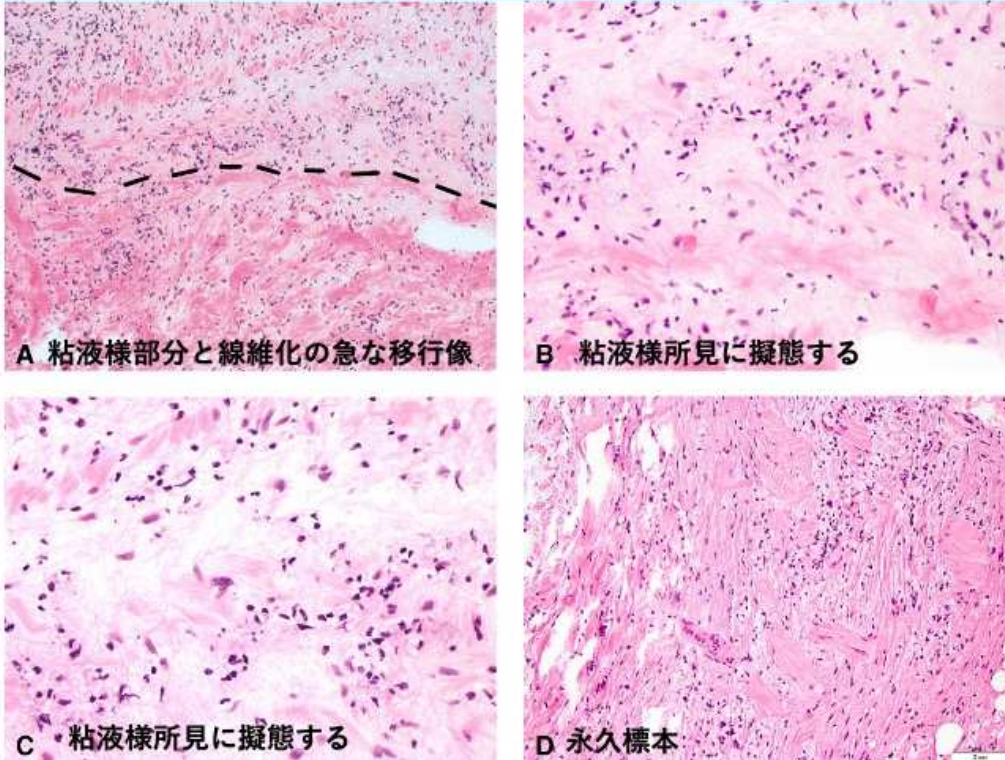
### Take home message：

1. SRCCは術中診断の正診率は85%程度である。
2. SRCCは凍結標本と永久標本での見え方が異なる。

**Fig 1. 間質の粘液/炎症性背景における印環細胞癌集塊の見え方の違い**

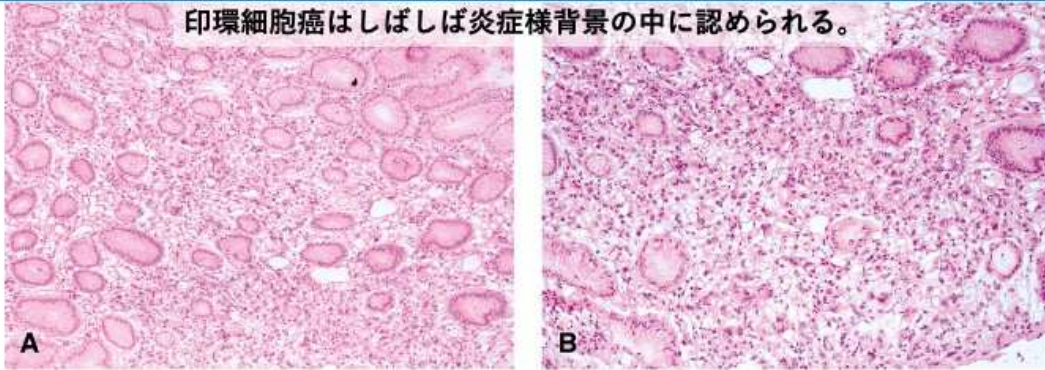


**Figure 2**



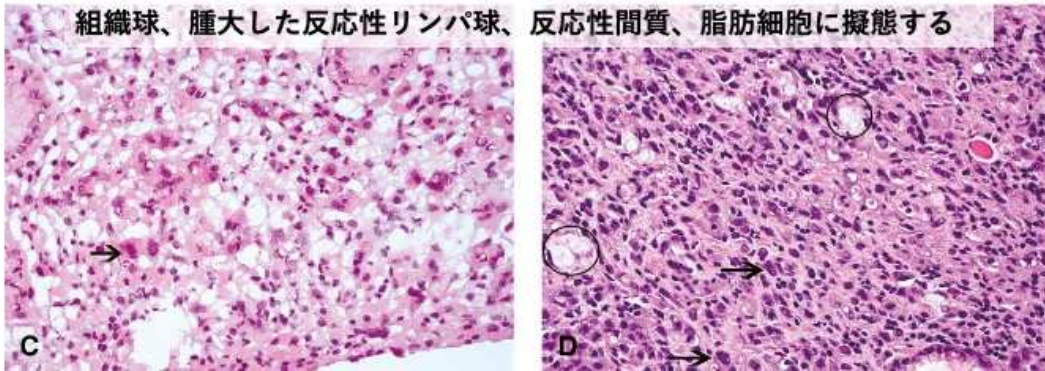
### Figure 3

印環細胞癌はしばしば炎症様背景の中に認められる。



組織球、腫大した反応性リンパ球、反応性間質、脂肪細胞に擬態する

矢印：  
S  
R  
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C



異型を有する点で鑑別する

Table 1. Clinical courses of SRCC patients with non-concordant intra-operative frozen section assessment

Case	Pt	Age	Sex	Clinical history	Location	Purpose of frozen	Frozen diagnosis	Final diagnosis	Concordance of frozen and final diagnosis	Error type	Clinical management
1	A	74	F	Gastric cancer	Falciform nodule	Metastasis assessment	Fibrosis, no tumor seen	A focus of metastatic signet ring cell adenocarcinoma is in the remaining unfrozen tissue	Discordant	Sampling	Total gastrectomy with R1 resection
2	B	63	M	Oesophageal mass, cancer, or dysplasia	Additional margin of diaphragm	Margin	Acellular pools of mucin	SRCC (fibrous tissue containing large of pools of mucin, containing rare signet ring cells)	Discordant	Sampling	Additional peritoneal mass was positive for carcinoma. Total gastrectomy was performed followed by chemotherapy
3	C	56	F	Gastroesophageal junction adenocarcinoma	Peritoneal nodule	Metastasis assessment	Negative for carcinoma	Poorly differentiated adenocarcinoma with signet ring cell features (small clusters of atypical cells with marked crush artifact and tumor shown in the deeper section)	Discordant	Technical sampling	Exploratory laparoscopy showed peritoneal carcinomatosis with malignant appearing ascites. No surgical resection was performed
4	D	76	M	Bladder SRCC	Retropitoneal nodule	Metastasis assessment	FibroadiPOSE tissue with atypia in region of inflammation, favour reactive atypia	Metastatic SRCC	Discordant	Interpretative	Cystoprostatectomy was not performed because of unresectable tumour
5	E	70	M	Colon cancer	Peritoneal implant	Metastasis assessment	Fibrous soft tissue with inflammation	Signet-ring cell carcinoma	Discordant	Interpretative	Carcinomatosis was seen. No surgical resection was performed
6	F	65	F	Colon cancer	Peritoneal implant	Metastasis assessment	Fibrosis with mild chronic inflammation, negative for malignancy	Metastatic mucinous adenocarcinoma with signet ring cell features	Discordant	Interpretative	Another biopsy showed SRCC. Patient was later on palliative radiation
7	G	51	M	Colon cancer	Abdominal wall nodule	Metastasis assessment	Negative for carcinoma	Metastatic adenocarcinoma (shown in deeper section)	Discordant	Sampling	Deep palpation of the abdomen revealed significant mass. Multidisciplinary team decided to treat the patient with chemotherapy instead of surgery
8	H	66	M	Colon cancer	Peritoneal mass	Metastasis assessment	FibroadiPOSE tissue with chronic inflammation and myxoid stromal change/ extracellular mucin	SRCC	Defer	Interpretative	Carcinomatosis with multiple small masses in the pelvis was seen. No surgical resection was performed
9	H	66	M	Colon cancer	Peritoneal nodule	Metastasis assessment	FibroadiPOSE tissue with chronic inflammation and myxoid stromal change/ extracellular mucin	SRCC	Defer	Interpretative	Carcinomatosis with multiple small masses in the pelvis was seen. No surgical resection was performed
10	I	64	F	None provided	Stomach, proximal margin	Margin	Diagnosis deferred	Signet ring cell adenocarcinoma	Defer	Interpretative	Subtotal gastrectomy with R1 resection
11	J	50	M	Small bowel stricture	Mesenteric nodule	Metastasis assessment	Fibrous tissue and small amount of adipose tissue with inflammation	Signet ring cell adenocarcinoma	Defer	Interpretative	Extended ileocelectomy
12	J	50	M	Small bowel stricture	Mesenteric nodule	Metastasis assessment	Fibrous tissue and small amount of adipose tissue with inflammation	Signet ring cell adenocarcinoma	Defer	Interpretative	Extended ileocelectomy

M, Male; F, Female; SRCC, Signet ring cell carcinoma.