En bloc Pancreaticoduodenectomy with Colectomy for Locally Advanced Right Sided Colon Cancer

Ramesh Singh Bhandari,1  Paleswan Joshi Lakhey,1  Parsu Ram Mishra1

1Surgical Gastroenterology Units, Department of Surgery, Tribhuvan University Teaching Hospital, Kathmandu, Nepal.

ABSTRACT
A 57 year old male presented to our outpatient clinic with history of on and off melena, weight loss and decreasing appetite for 10 months duration and a noticeable mass on the right upper quadrant. Abdominal examination revealed an intra-abdominal lump in right upper quadrant which was subsequently evaluated by colonoscopy, which revealed an ulcer-proliferative growth in the hepatic flexure and the biopsy from it confirmed well-differentiated adenocarcinoma. Contrast enhanced computed tomography demonstrated hepatic flexure mass with possible invasion into adjacent duodenum without features of advanced disease. After completion of necessary preoperative assessment and investigations, patient was explored with curative intent and underwent extended right hemicolectomy with en bloc pancreaticoduodenectomy. Patient was discharged on 10th postoperative day and at 14 months follows up; he was doing well without any evidence of recurrence.

Keywords: colectomy; locally advanced; pancreaticoduodenectomy.

INTRODUCTION
Extracolonic involvement of adjacent organ is a known phenomenon for colorectal cancers. However extracolonic tumor spread by right colon cancer is not a frequently seen condition.1,2 Right colon cancer can involve duodenum and pancreas and this condition represents a dilemma for treating surgeon as the optimal procedure for this condition has not been defined very well yet.3 However, many reports of right hemicolecction with en bloc pancreaticoduodenectomy has been published and has shown good perioperative results with long term survival.3 Here, we report a similar case of right colon cancer invading into the duodenum and was managed successfully with right hemicolecction and en bloc pancreaticoduodenectomy.

CASE REPORT
A 57 year old male presented to our outpatient clinic with history of on and off melena, weight loss and decreasing appetite for 10 months duration and noticeable mass on the right upper quadrant which in fact was gradually increasing in size, on his own words. He didn’t have any major surgical or medical morbidity. On examination, he was thin built but otherwise no other abnormal finding on general physical examination was detected. Abdominal examination did reveal an intra-abdominal lump in right upper quadrant but very doubtful mobility and poorly defined margins. On this basis, patient was subjected to colonoscopy, which revealed an ulcer-proliferative growth in the hepatic flexure and the biopsy from which subsequently revealed well-differentiated adenocarcinoma. In the meantime, contrast enhanced computed tomography (CT) scan was performed on him, which confirmed a hepatic flexure mass with suspicious invasion into duodenum (Figure 1). However, no significant lymphadenopathy and any evidence of metastatic disease were noted. Following completion of necessary preoperative assessment and investigations, patient was explored with curative intent. Intraoperatively, there was a hepatic flexure mass grossly invading into adjacent duodenal wall without...
gross lymphadenopathy and metastatic disease, which
would stop us proceeding to radical surgery (Figure 2).
As the disease was locally advanced but resectable we
proceeded ahead with extended right hemicolectomy
with en bloc pancreaticoduodenectomy (Figure 3).

**DISCUSSION**

Colorectal cancer invading adjacent organs is not an
infrequent situation seen in around 5.5-16.7% of all
colorectal cancers. However, invasion of right colon
cancer into duodenum and or pancreas is not a frequent
condition and it can present as a diagnostic dilemma.
Right colon cancer invading into these adjacent
structures is considered as T4 stage disease. Locally
advanced cancers invading to adjacent organs are
frequently considered incurable. Colorectal cancers are
exceptions to this rule as locally advanced colorectal
cancers can often be completely resectable. Croner et
al showed that clinical suspicion of the local invasion by
colon cancer into adjacent organs when microscopically
examined revealed neoplastic infiltration in 53.4%
cases and inflammatory adherence in 46.6% of cases.
Berrospi et al also showed 50% of adherence of locally
advanced colon cancer as malignant infiltration.
Diagnosis of locally advanced colon tumors in the past
usually occurred intraoperatively. However, availability
of the advanced imaging techniques has helped to
detect them preoperatively except for small number of
cases when they present in emergencies with acute
problems like bleeding and obstructions. Abdominal
CT Scan can reveal local invasion as high as in 86%
cases. Role of imaging is not just diagnostic of
invasion into pancreas and or duodenum but to guide
for selection of patients in whom total cytoreduction
surgery is feasible.

Locally advanced right sided colon cancer invading
the duodenum and or pancreas requires an en bloc
pancreaticoduodenectomy and the complexity associated
with this surgery seems to have discouraged surgeons
to perform such a procedure. However PD has become
much safer nowadays. High volume centers display
mortality rates after PD of 1-6%. Similarly, in last
decades there has been large number of reports in
the form of case reports and series on PD with locally
advanced colon cancer showing a good perioperative
outcome and equally a good long-term survival.
Koe et al also suggested right hemicolecctiony with en
bloc PD for large tumors invading the duodenum or if
there is any suspicion of malignant infiltration. Curley
et al reported four of seven patients having en bloc PD
living free of recurrence at a median follow up of 42
months. Saiura et al described 12 patients of colon

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**Figure 1.** CT scan showing hepatic flexure mass with
suspicious invasion into duodenum.

**Figure 2.** Intraoperative finding: Hepatic flexure mass
invading duodenum.

**Figure 3.** Resected specimen: Colectomy with en
bloc PD.
cancer invading the pancreatic head and undergoing en bloc PD with colon resection. This finding strongly supported the concept of doing en bloc PD with colon resection for locally advanced colon cancer.

CONCLUSION

Locally advanced right colon cancer invading into duodenum and or pancreas not necessarily means incurable disease. When indicated and taken apart the comorbidities, this procedure in very high volume centers can safely be performed with excellent outcomes and giving patients a chance of long term survival. If a surgeon is not familiar with this procedure, it is recommended to close the abdominal wall and refer patient to specialized center as the surgeon with limited experience might judge tumor unresectable and perform bypass reducing the chance of cure.

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