Laparoscopic Radical Distal Gastrectomy for Ca Stomach

Sadhana V. Deo · Shailesh P. Puntambekar

Received: 28 November 2010 / Accepted: 4 June 2012 / Published online: 28 July 2012
© Association of Surgeons of India 2012

Abstract Gastric cancer remains an important cause of cancer-related deaths and a complete margin-negative (R0) resection remains the only potentially curative treatment for gastric adenocarcinoma. We report a case of carcinoma of distal stomach in a 48-year-old male patient who was diagnosed on UGI endoscopy and CT scan. He had symptoms suggestive of gastric outlet obstruction due to stenosing lesion. He was successfully treated with laparoscopic distal gastrectomy with D2 lymphadenectomy. Laparoscopic distal gastrectomy is justified by its feasibility, early recovery, oncological safety, and improved quality of life in cancer stomach.

Keywords Carcinoma stomach · Adenocarcinoma · Laparoscopic distal gastrectomy · D2 lymphadenectomy · Intracorporeal gastrojejunal anastomoses

Support source acknowledgement- No financial support but case study was from GALAXY CARE HOSPITAL, PUNE

S. V. Deo (✉)
Galaxy Care Hospital, B.J. Medical College, Pune,
43/67 Nav sahyadri Society, Akshay,
Karvenagar, Pune 411052, India
e-mail: dr.sadhana_deo@yahoo.com

S. P. Puntambekar
Institute of Work, Galaxy Care Hospital,
25-A Karve Road,
Pune 411004, India

S. V. Deo
General Surgery, B.J. Medical College,
Pune, India

Introduction

Of all the treatment modalities, surgical resection is the only one with curative potential for cases of resectable cancer stomach [1]. With advent of newer imaging technology, such as CT scan with contrast and UGI endoscopy, diagnosis of early gastric cancer is possible.

In recent years, there has been a paradigm shift toward minimally invasive surgery in all types of patients including malignancy [2, 3].

Peptic ulcers, gastric carcinoids, gastrointestinal stromal tumors, and even cancer stomach can be now tackled with laparoscopic techniques [1, 4].

Initially several Japanese investigators have demonstrated the technical feasibility of laparoscopic distal gastrectomy for early gastric cancers [1, 2, 5].

The randomized trials between laparoscopic distal gastrectomy and open radical gastrectomy revealed that long-term survival, overall survival and cure rate without recurrence were same in both procedures [5]. In Japan, duration of surgery was 3 to 5 hours, 8 % conversion rate, and 16 % complication rate such as bleeding, leak, fistula, and stenosis [2, 6, 7].

Thus, laparoscopic distal gastrectomy is technically feasible, oncologically safe, and duplicable as dissection is under magnified vision and more précised [2, 8, 9].

Case Report

A 48-year-old male patient was admitted with chief complaints of anorexia, weight loss, epigastric pain, and heart burn for 5 months and bilious nonprojectile vomiting (five to six times a day) for 5 days. Thus, history was suggestive of gastric outlet obstruction.

He was admitted under our care and investigated by UGI endoscopy and biopsy, ultrasonography of the abdomen, and CT scan with contrast, X-ray chest, and routine blood investigations, which revealed adenocarcinoma of the distal stomach involving prepyloric region. The rest of investigations including liver function tests and renal function tests were within normal limits except anemia (Hb 9 gm%) and hypoproteinemia.

Histopathological examination revealed adenocarcinoma of the stomach.

On CT scan, cancer stomach of prepyloric region was discovered. Perigastric lymph nodes were 2 cm×1 cm in size. Celiac and portahepatic lymphadenopathy was present. No liver secondaries and no ascites were found. X-ray chest revealed no metastasis in lungs. The rest of the abdomen was normal.

The patient underwent laparoscopic distal gastrectomy, D2 lymphadenectomy, omentectomy, and intracorporeal gastrojejunostomy under general anesthesia. Duration of surgery was 3 h. Postoperative period was uneventful.

Steps of Surgery

Ports position—the patient was placed in Lloyd Davies position (Figs. 1 and 2). In this position the operating surgeon stands in between the legs of the patient, camera person on the right side, and the assistant surgeon on the left side of the patient [4, 6, 7, 9].

- 10 mm camera port was placed at the umbilicus after creating pneumoperitoneum.
- Two working ports—the right-hand working port (10 mm) in the left midclavicular line pararectally and the left-hand working port (5 mm) in the right midclavicular line—were placed making a triangulation.

Fig. 1 Ports Position for laparoscopic distal gastrectomy

Fig. 2 Position of surgeons

- Two 5 mm ports were placed subsequently, one in the epigastrium just below xiphoid process for liver retraction and another at the level of umbilicus in the left anterior axillary line for holding stomach.

The following are the steps of surgery:

1. *Greater curvature mobilization:* The greater omentum is dissected off the transverse colon with harmonic ace (Fig. 3). With the greater omentum reflected superiorly, dissection commences on the left side of the body of the stomach where the left gastroepiploic vessels are identified, clipped, and divided. Gastrocolic omentum was opened with harmonic ace (ultracision scalpel) to enter the lesser sac.
2. Infrapyloric mobilization with ligation of the right gastroepiploic artery and vein as it enters the gastro

Fig. 3 Omentectomy from transverse colon

colic omentum and subpyloric lymphadenectomy (station 6) (Fig. 4).

3. Lifting the stomach up and dividing congenital adhesions between the stomach and the anterior surface of pancreas (Fig. 5).
4. Duodenum is kocherized (Fig. 6). Suprapyloric mobilization with ligation of the right gastric artery is done by dividing gastrohepatic omentum. Then suprapyloric lymph nodes (station 5) are dissected upward toward the stomach.
5. The first part of duodenum is transected with Echelon 60 stapler just distal to the pylorus (Ethicon Endosurgery, CN, USA).
6. D2 lymphadenectomy with dissection of the lymph nodes at porta hepatis, common hepatic artery, left gastric artery, celiac axis, and splenic artery (Mercedes Benz sign to identify splenic, hepatic, and left gastric vessels) and ligation of the left gastric artery (Figs. 7, 8 and 9) [3].
7. Proximal gastric transection at the midbody level with Echelon 60 stapler (Fig. 10) [4, 7].
8. Reconstruction done with retrocolic loop gastrojejunostomy (or Roux-en-Y hand anastomoses), intracorporeal or extracorporeal anastomoses in four layers, with silk 30.

Specimen was retrieved by putting it with omentum and lymph nodes in the endobag to prevent port-site metastasis. The endobag was removed through a small 4 cm midline vertical incision achieved by extending 10 mm umbilical camera port site. Abdominal drain (Fr 32) was kept. Port sites were sutured with vicryl 2 zero.

Fig. 5 Opening of Lesser sac

On histopathological examination, tumor was found to be well-differentiated adenocarcinoma of the stomach involving muscularis propria.

Gross Examination of the specimen revealed - Carcinoma arising from distal stomach, 5×3cm in size, 20 lymph nodes were removed.

After histopathological examination 8 lymph nodes were positive[pN2]. And tumor invaded muscularis propria. Staging was [Stage III –A] -T2N2MO.

Patient was given six cycles of cisplatin, taxol, and 5-fluorouracil.

The patient was fine for 2 years after surgery without any recurrence or anastomotic stenosis. Follow-up was done

Fig. 4 Dissection behind duodenum

Fig. 6 Kocherised duodenum

Fig. 7 Dissection of right & left gastric, hepatic vessels

with clinical ongoing assessment monthly, USG and UGI endoscopy 6 monthly.

Discussion

Despite technical innovations in minimally invasive surgery and the widespread use of laparoscopic techniques, laparoscopic radical distal gastrectomy being advanced surgery, its use is restricted in India. Due to improvements in laparoscopic surgical techniques, the use of staplers and advanced operation theater setup has made laparoscopic gastrectomy feasible at our centre. But the surgeon requires oncologic as well as laparoscopic training which has a long learning curve.

Fig. 8 Clipping of right gastric artery

Fig. 9 Completed D2 lymphadenectomy

Thus, laparoscopic radical distal gastrectomy is safe and duplicable, hence accepted in countries such as Japan and Korea [7, 9]. Nodal clearance is done better with laparoscopy than with open technique due to magnified vision [5, 8].

We believe that by performing a sutured gastrojejunostomy instead of a stapled one, we can make this surgery much more affordable to poor patients. Intracorporeal anastomoses required more time (30–45 min) than extracorporeal suturing [8, 9].

Thus, laparoscopic distal gastrectomy is feasible, with less pain and with all added advantages of laparoscopy such as faster functional recovery. Results are comparable to open distal gastrectomy with lymphadenectomy in overall survival and disease-free survival [5, 8, 9].

Fig. 10 Proximal stapler on stomach

Now, no firm conclusions can be drawn regarding the long-term oncological efficacy of curative laparoscopic resection for gastric cancer, but continued efforts for increasing skills of laparoscopic surgery are important.

Conflict of Interest The author does not have any disclosable interest.

References

1. Farley DR, Donohue JH (1992) Early gastric cancer. *Surg Clin North Am* 72(2):401–421
2. Kitano S, Shiraishi N, Fujii K et al (2002) A randomized controlled trial comparing open vs. laparoscopy-assisted distal gastrectomy for the treatment of early gastric cancer: an interim report. *Surgery* 131: S306
3. Behrns KE, Dalton R, van Heerden J et al (1992) Extended lymph node dissection for gastric cancer. *Surg Clin North Am* 72(2):433–443
4. Clarke EC, Karpeh MS, Conlon KC et al (1997) Laparoscopy in the management of gastric adenocarcinoma. *Ann Surg* 225:262
5. Yakoub D, Athanasiou T, Tekkis P, Hanna GB (2009) Laparoscopic assisted distal gastrectomy for early gastric cancer: is it an alternative to the open approach? *Surg Oncol* 18(4):322–333
6. Shimizu S, Noshiro H, Nagai E et al (2003) Laparoscopic gastric surgery in a Japanese institution: analysis of the initial 100 procedures. *J Am Coll Surg* 197:372
7. Brennan MF (1989) Radical surgery for gastric cancer: a review of the Japanese experience (editorial). *Cancer* 64:2063
8. Kim MC, Kim KH, Kim HH, Jung GJ (2005) Comparison of laparoscopy-assisted by conventional open distal gastrectomy and extraperigastric lymph node dissection in early gastric cancer. *J Surg Oncol* 91(1):90–94
9. Lee SI, Choi YS, Park DJ, Kim HH, Yang HK, Kim MC (2006) Comparative study of laparoscopy-assisted distal gastrectomy and open distal gastrectomy. *J Am Coll Surg* 202(6):874–880