



LAPAROSCOPIC GASTRECTOMY + D2 LYMPHADENECTOMY- ONCOLOGICAL ADEQUACY AND SHORT TERM SURGICAL OUTCOMES IN A SERIES OF PATIENTS IN A TERTIARY HEALTH CENTRE

General Surgery

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ABSTRACT

Aim: To assess oncological adequacy and short term surgical outcome in patients with gastric adenocarcinoma undergoing laparoscopic gastrectomy with lymph node dissection

Methodology: Observational study of 25 patients who underwent laparoscopic gastrectomy + D2 lymphadenectomy, from August 2015 to 2018, short term surgical outcome, with oncological adequacy was assessed.

Results: Mean operative time 3 hours 25 minutes. Blood loss average of 200 ml in subtotal and 180 ml in total gastrectomy group. Histo pathological examination, R0 resection in all patients. AJCC proposed a minimal number of 15 dissected nodes for the accurate prognosis of N status. Our experience showed an average lymph node sampling of 21(subtotal) & 23(total) which was adequate.

Conclusion: Laparoscopic gastrectomy with D2 lymphadenectomy enables faster recovery and discharge of patients without compromising adequate oncological resection.

KEYWORDS

gastric carcinoma, laparoscopic gastrectomy, oncological adequacy

Aim: To assess oncological adequacy and short term surgical outcome in patients with gastric adenocarcinoma undergoing laparoscopic gastrectomy with lymph node dissection

Background:

Gastric cancer is the second most common cause of cancer related deaths worldwide [1]. Gastric cancer is the fifth and seventh most common cancer among Indian men and women, respectively [2]. In the revised 2010 Japanese gastric cancer treatment guidelines, open gastrectomy is considered the first-choice procedure for patients with resectable gastric carcinoma [3]. However, this procedure is associated with considerable post-operative morbidity [4]. Minimally invasive techniques have shown to improve perioperative outcomes in other procedures such as colectomy for colonic cancer and esophagectomy for esophageal carcinoma [5,6].

In our study, we have assessed the oncological adequacy and short term surgical outcome in patients undergoing laparoscopic gastrectomy + D2 lymphadenectomy, for gastric cancer.

Review of literature:

Amongst patients presenting with gastric adenocarcinoma, the overall 5-year survival in India has been estimated to be between 4% and 15% [7]. In India, gastric cancer is relatively common and is the second most common cause of cancer-related deaths among men and women [8]. Surgery, which includes appropriate gastrectomy and lymphadenectomy, is the cornerstone of treatment [9].

With the development of minimally invasive surgery for cancer treatment, the first successful laparoscopy assisted distal gastrectomy (LADG) for early gastric cancer (EGC) was reported in 1994 by Kitano et al [10].

Recently, experienced surgeons are trying to extend the application of this laparoscopic approach to certain advanced gastric cancer (AGC) using more aggressive laparoscopic techniques [11].

The purposes of laparoscopic surgery for gastric cancer are to minimize surgical insults and to maximize patient's quality of life, while not influencing oncological outcome of the surgery. A number of reports have presented the excellent short term outcomes; less postoperative pain, improved cosmetics, less inflammatory reaction, a good preserved immune function, a rapid recovery of bowel function, shorter hospital stay, and a rapid return to normal social activity. KLASS trial, which is the first multicenter, large-scale, prospective, randomized controlled study is going on briskly, comparing LADG and open distal gastrectomy (ODG). An interim report has shown that

here was no significant difference of morbidity and mortality between LADG and ODG patients. [11]

Patients and Methods:

In this prospective observational study patients who underwent laparoscopic gastrectomy + D2 lymphadenectomy from August 2015 to August 2018 were analysed. All surgeries were performed by an experienced minimally invasive surgical gastroenterologist.

For most cases, surgery was performed for growth involving antropyloric region. Pre operatively, patients were assessed with upper GI endoscopy, biopsy and contrast enhanced CT, to plan further treatment. After adequate preoperative preparation with incentive spirometry and nutritional supplementation patients were subjected to the procedure.

Under general anaesthesia, patient placed in supine position parts painted and draped, pneumoperitoneum was created with Veress needle. Standard ports placed, as depicted in figure 1.



Figure 1 Port placement

Resectability assessed initially with diagnostic laparoscopy. Omentum mobilised from the colon completely. Right gastroepiploic vessels dissected at its origin, clipped and divided. First part of the duodenum dissected up till the origin of gastro duodenal artery. Blue stapler fired to divide the duodenum at this level. Removal of perigastric lymph nodes done. Left gastric artery dissected till its origin, lymph nodes along the splenic artery, common hepatic artery, right and left hepatic artery dissected and removed along with the specimen to complete D2 lymphadenectomy. Station 1 and station 3 lymph nodes from the gastroesophageal junction, lesser curvature of the stomach and gastrohepatic ligament dissected along with the specimen. 3 cm incision was placed in the upper abdomen.



Figure 2 Specimen delivered

Specimen was brought out and linear stapler was applied to divide the stomach 5 cm above the growth. Roux - en - y limb was created with elementary limb 40 cm long and pancreaticobiliary limb 25 cm long. Gastrojejunostomy done using blue 60 cm linear stapler and enterotomy was closed using Prolene. Abdomen was closed using loop PDS and skin with skin staples.

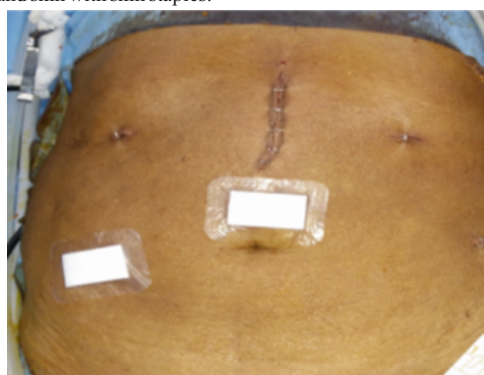


Figure 3 Post op closure

In the postoperative period, patients were started with oral feeds from post op day 1, with early ambulation, incentive spirometry and chest physiotherapy. Patients were monitored in the ICU for a minimum of 12 hours and then shifted to the ward, once stable.

RESULTS:

25 patients that were diagnosed with gastric adenocarcinoma underwent laparoscopic gastrectomy with D2 lymphadenectomy as described above. Out of these patients, 21 underwent subtotal gastrectomy for antropyloric growth, while the remaining 4 underwent total gastrectomy for growth located more proximally.

The mean age of patients who underwent the procedure was 60.35 years (26-81 years). There were 15 male and 10 female patients. 1 case of subtotal gastrectomy was converted to open. No mortality in immediate post op period.

Mean operative time was 3 hours 25 minutes.

All patients were shifted out of the post operative ward on post op day 1 or 2, with mean ICU stay being 36 hours in subtotal and 24 hours in total gastrectomy patients.

Blood loss amounting to an average of 200 ml in subtotal and 180 ml in total as calculated from the suction apparatus.

None of the patients developed any postoperative complications of hemorrhage, anastomotic leak in the immediate postoperative period. 1 Patient developed pulmonary complication in the total gastrectomy group in the post operative period.

In the post operative period, wound infection was seen in 2 patients in the subtotal group and 1 patient in the total gastrectomy group.

The total operative time on an average was 3 hours 25 minutes.

On histopathological examination, margins were negative in all

patients, confirming R0 resection. Mean lymph nodes detected were 21 in the subtotal group and 23 in the total gastrectomy group.

On an average patients were discharged from the hospital by post op day 6. Mean hospital stay being 6 days 12 hours in the subtotal group and 10 days in the total gastrectomy group. Mortality was observed in three patients on follow up, 2 due to recurrence of disease and one due to underlying medical comorbidities.

Table 1 Comparison between subtotal and total gastrectomy

	Subtotal	Total
Number	21	4
Intraop		
Mean blood loss	200 ml	180 ml
Mean operative time	3 hrs 10 mins	3 hrs 40 mins
Conversion to open	1	0
Post op		
Mean ICU stay	36 hrs	24 hrs
Mean hospital stay	6 days 12 hours	1 week 3 days
Complications		
Anastomotic leak	0	0
Pulmonary complications	0	1
Wound infection	2	1
Oncological clearance		
Lymph node clearance	21	23
R status	0	0
Mortality	0	0

DISCUSSION:

In our study, the operative time from skin incision to closure was 3 hours 25 minutes. Average blood loss was 190 ml.

On histopathology, all patients had R0 disease, with all margins clear of the tumor.

AJCC proposed a minimal number of 15 dissected nodes for the accurate prognosis of N status. Our experience showed an average lymphnode sampling of 21(subtotal) & 23(total) which was adequate.

Average ICU stay was 30 hours. Enteral feeding was started on post op day 1. Patients were ambulatory from post op day 1, comfortable. Pain assessment on the visual analogue scale on an average was recorded at 6 on post op day 1 and 4 on post op day 3, with patients being self-ambulatory from post op day 3.

In the post-operative period patients, were managed with aggressive incentive spirometry, chest and limb physiotherapy.

Patients were fit for discharge on an average by post op day 6, the earliest being post op day 5 and the latest being post op day 10.

Patients were followed up on OP basis, 1 week post discharge, skin staples were removed then. Post skin staple removal, patients were followed up every month. Adequate adjuvant chemotherapy was initiated for patients. No mortality in the immediate post op period. In our study, the patient satisfaction and recovery time post the procedure was satisfactory.

Patients tolerated early initiation of enteral feeds, were satisfied with early ambulation and early discharge from hospital.

Overall, recovery from surgery was sooner, patients were able to restart normal activities soon. Studies have shown, laparoscopic gastrectomy was associated with lower intraoperative blood loss, reduced risk of postoperative complications and shorter hospital stay. Li et al showed in their meta-analysis a mean difference of 100ml in blood loss and -0.84 in hospital stay. Xiong et al in another meta-analysis showed less blood and a significantly shorter post operative hospital in the laparoscopic group [12]. Gastrectomy for gastric cancer should respect oncological principles such as a minimal number of lymph node retrieval and negative resection margin. Review of the different studies including our study showed no difference in lymph node retrieval and margins [13].

While this study was a prospective observational study to assess the outcome and patient satisfaction with laparoscopic gastrectomy, an

extensive and comparative study with open gastrectomy has to be done to assess the advantage of a laparoscopic procedure over open gastrectomy for gastric carcinoma.

CONCLUSION:

From our study, we conclude that for gastric adenocarcinoma, laparoscopic gastrectomy with D2 lymphadenectomy when done is non inferior to open gastrectomy, with faster recovery and discharge of patients without compromising adequate oncological resection. A larger, randomized control trial has to be done to evaluate the long term outcome and benefits of laparoscopic gastrectomy as opposed to open gastrectomy.

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