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WHICH IS BETTER MANAGEMENT OF GASTRIC CANCER (GC): DOUBLE TRACT (DT) RECONSTRUCTION VERSUS ROUX-EN-Y (R-Y) RECONSTRUCTION

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Abstract:

Objective: *The comparison of functional outcomes was made prospectively between Double-tract reconstruction and standard Roux-en-Y following D-2 lymphadenectomy and total gastrectomy.*

Methods: *Our research included 100 gastric cancer patients and made groups (Group I & II) on reconstruction type grounds. Gender, age, stage of AJCC stage, T - stage, operation prolongation, BMI (kg/m2), postoperative esophagojejunostomy (EJS) leakage, time to soft diet, EJS stricture, QOL (quality of life) and meal intake were documented.*

Results: *R-Y group had a mean age as (61.57 years) with SD value as (9.53); whereas, mean age in DT group was (60.17 years) with value of SD as 9.92. Decrease of BMI in "R – Y" group and SD were respectively (4.09 and 1.11); whereas, in DT group (2.85 and 1.27). There was a significant variation in both the groups in BMI decline rate with P-value as (< 0.001). No significant variation was observed regarding life quality in both groups (P-value above 0.05).*

Conclusions: *Double Tract (DT) reconstruction is considered as simple process and decline in BMI rate is much less than "Roux-en-Y" group.*

Keywords: *BMI, Double Tract (DT), Roux-en-Y and Gastric cancer.*

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INTRODUCTION:

All over the globe about 1 million newly included cases of gastric cancer (GC) were identified (2012) & 723,100 died [1]. Higher rates have been reported in Asian, European and American countries including many other [2]. Every year (140,000) patients with (107,000) deaths are reported in European countries [3]. The GC resection extent is determined by pre-operative condition. Indication of radical gastrectomy is made for GC stage (IB–III). For reliable staging a minimum of fifteen lymph nodes excision is suggested [4]. Randomized and observational conducted in Asia demonstrate that D2 dissection brings better results than D1 resection [5]. Our patients had T-II, T-III and T-Iva tumors. We were obligated for standard gastrectomy performance with D-II lymphadenectomy.

Two successful total gastrectomy were performed by Charles and George Schlatter [6]. Numerous ways have been introduced since then but an optimum method is still required which should gain a universal acceptance. Orr applied Roux-en-Y anastomosis for the first time as it reduces esophageal reflux and simple procedure [8]. Sato and Kajitani utilized double tract reconstruction (DT). An esophagojejunostomy (EJS) can be performed through this method with "R-Y" technique and duodenojejunostomy (20cm) distal is added from EJS [9]. Number of surgeons use standard R-Y reconstruction as a preferred method with the help of circular stapler which is utilized for EJS; whereas, reconstruction of DT is also used in abundance in surgical practice.

The comparison of functional outcomes was made prospectively between Double-tract reconstruction and standard Roux-en-Y following D-2 lymphadenectomy and total gastrectomy.

METHODS:

Our research included 100 gastric cancer patients and made groups (Group I & II) on reconstruction type grounds. Gender, age, stage of AJCC, T – stage, operation prolongation, BMI (kg/m2), postoperative esophagojejunostomy (EJS) leakage, time to soft diet, EJS stricture, QOL (quality of life) and meal intake were documented (Services Hospital, Lahore; November, 2016 to December, 2017). We included 110 patients who were diagnosed of stomach adenocarcinoma in the age bracket of (35 – 74) years. We did not include all the patients who had distant metastasis or malignant peritoneal dissemination including poor and non-cooperating patients. Evaluation of meal intake was made at the interval of three, six and twelve months. Postoperative EJS leakage was determined through gastrographic contrast, while after twelve months EJS stricture was outlined which was managed with balloon dilatation. QLQ-C30 questionnaire was used for the assessment of QOL (very poor to excellent).

The comparison of functional outcomes was made prospectively between Double-tract reconstruction and standard

Roux-en-Y following D-2 lymphadenectomy and total gastrectomy. R-Y reconstruction characterization is made by distal esophagus EJS to mostly 2nd jejunal loop, which was not included in the normal passage of intestinal. Creation of EJS was made through end to-side anastomosis, retro colic with circular stapler. Later, a 2nd double-layered manual anastomosis in first jejunal loop and ascended jejunal limb which holds bilio-pancreatic juice was also created. Edible items are carried through esophagus to jejunal loop which is mixed with pancreatic and bile juice (40 centimeter). Distance between EJS and enteroenterostomy (40 cm) reduces pancreatic juice and biliary content reflux to esophagus.

Thirty segment jejunums between duodenum and esophagus was interposed in double-tract procedure. Performance of 2nd enteroenterostomy was made under (20 – 25 cm). Therefore, because of duo deno-intestinal anastomosis which is nutritional content that passes to duodenum and mixed with pancreatic juice and biliary content. The absorption and digestive duodenum functions are also maintained.
SPSS was used for statistical analysis; Chi-square and T-test was also applied for the comparison of quantitative variables with significant (P-value < 0.05); whereas, higher significant P-value was (< 0.001).

RESULTS:

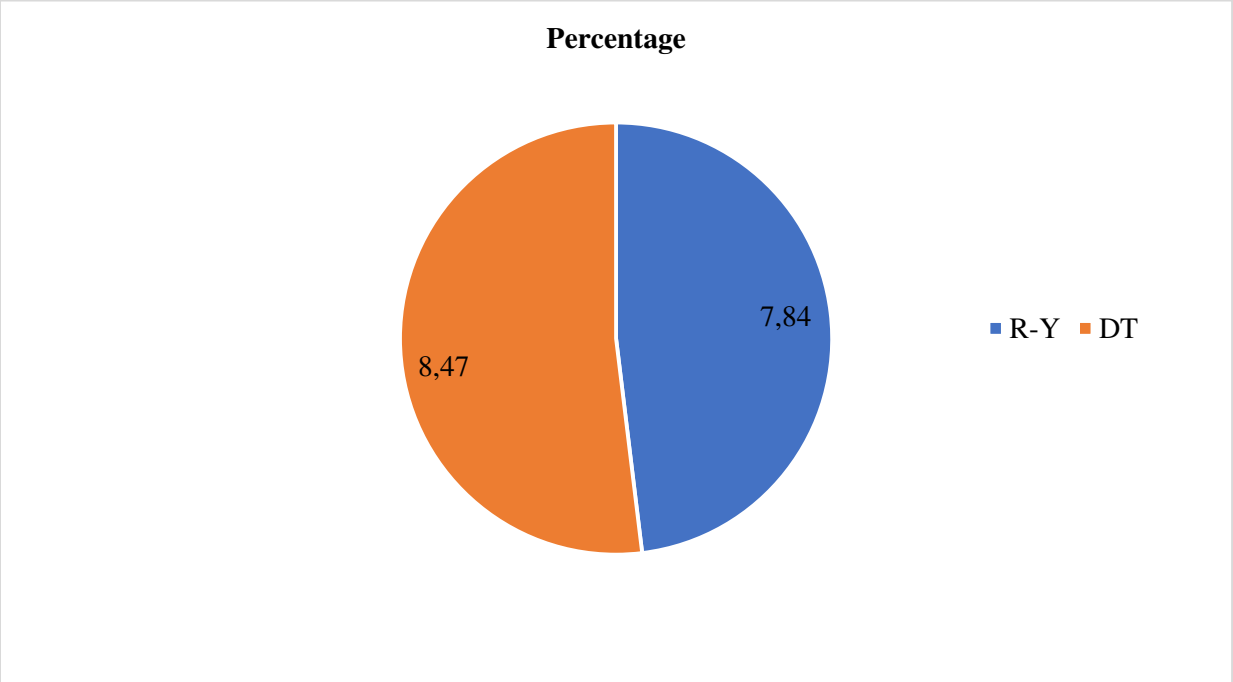
R-Y group had a mean age as (61.57 years) with SD value as (9.53); whereas, mean age in DT group was (60.17 years) with value of SD as (9.92). BMI decrease in "R – Y" group and SD were respectively (4.09 and 1.11); whereas, in DT group (2.85 and 1.27). There was a significant variation in both the groups in BMI decline rate with P-value as (< 0.001). No significant variation was observed regarding life quality in both groups (P-value > 0.05).
Detailed outcomes have been analyzed in the tabular data.

Table – I: Baseline characteristics of a total number of 110 patients divided into two groups

Variable Roux-en-group group (n=51)		Double tract group (59)	Statistical significance
Age	61.57+/-9.53	60.17+/-9.92	NS
Sex (M/F)	40/11	30/29	NS
Stage AJCC (IIa)	5	15	P<0.05
Stage AJCC (IIb/IIIa/IIIb)	18/17/11	17/20/7	NS
Operation time (minutes)	193.41+/-13.87	216.01+/-12.89	P<0.001
Time to soft diet	6.82+/-2.33	5.73+/-2.13	P<0.05
Preop BMI (kg/m2)	25.24+/-1.65	25.39+/-1.36	NS
BMI decline (12 months after surgery)	4.09+/-1.11	2.85+/-1.27	P<0.001
EJS leakage (%)	5.9	5.1	NS
EJS stricture after 12 months (%)	7.84	8.47	NS

Table – II: R-Y and DT Group Patients comparison

Group	Percentage
R – Y	7.84
DT	8.47



Both the groups were observed with no statistical difference with P-values as (0.90, > 0.05).

DISCUSSION:

Almost hundred years ago gastric cancer was one of the repeated cancer in the USA but not at present. It is still 2nd leading reason of cancer in the world [10]. Annually death rate is counted as 750,000; which, makes it in the second cause of cancer [11, 12]. Highest burden of cancer is also caused by gastric cancer [13]. Various incidence rates have been reported about gastric cancer in various countries [14]. In the under developed countries, Serbian gastric cancer is outlined by symptoms like dysphagia, weight loss, vomiting, dyspepsia, iron deficiency anemia and early satiety. No routine screening was observed as problem for the gastric cancer presence.

Surgical operation can be curative at an early stage after diagnosis. Radical gastrectomy is indicated for gastric cancer stage "IB–III". For reliable staging a minimum of 15 lymph nodes excision is suggested. Randomized and observational conducted in Asia demonstrate that D2 dissection brings better results than D1 resection. Our patients had T-II, T-III and T-Iva tumors. We were obligated for standard gastrectomy performance with D-II lymphadenectomy.

Western countries have consensus that medically sound cases should experience D-2 dissection carried out in highly expertise environment [15 – 17]. As our population had stage 2A, 2B, 3A and 3B; all patients experienced radical gastrectomy with D-II "lymph adenectomy".

Over the years treatment of GC has been improved markedly which focuses on life quality and reconstruction type. Post-operative life quality is as better as the procedure is simple [18]. Complications may arise because of surgical procedure abnormalities. Reconstruction of "DT" is simple like "R – Y" reconstruction, which is carried out after experiencing "total gastrectomy" with "extended lymphadenectomy" [19]. Absorption and digestion of numerous substances including proteins, fat soluble vitamins, fats, water-soluble vitamins (except Vit-B12) and few nominated microelements (potassium, iron) initially takes duodenum place and initial jejunum part. So, partial duodenal passage maintenance should theoretically recover absorption, even in the bowel sections [20 – 22].

We evaluated time duration of operation, soft diet initiation time, BMI decline after twelve months, meal intake, EJS leakage occurrence and EJS stricture after twelve months. Mean operative time and SD was respectively (193.41 & 13.87 minutes) in Roux group; whereas, (216.01 & 12.89 minutes) in DT group. Both groups were observed with high statistical difference (P-value < 0.001). In the outcomes comparisons Iwahashi et al. observed (66.59 minutes) to carry out R-Y procedure and DT procedure was carried out in (7.99 minutes) with no statistical difference in DT and R-Y reconstruction [18].

Mean soft diet initiation time in R-Y group was in days and SD as (6.82 days and 2.33); whereas, (5.73 days and 2.13) in DT group. Statistical significant variation was observed in both groups as P-value (<0.05). Mean soft diet time by Hur was observed in R-y and DT groups respectively 5.6 and 5.5 [23]. Our outcomes regarding life quality and meal intake are also comparable with other research studies held on the same topic about gastric cancer. Among 110 cases six EJS leakage cases were reported without any statistical variation. Bandurski et al. outcomes were analyzed our EJS leak proportion was higher than their outcomes (5.08% Vs 2.6%), no enteroenterostomy and duodenojejunostomy leakage case was reported [24].

Namikawa observed no leakage case in his population of seventy-one cases [25]. EJS stricture cases were nine in number at the interval of twelve months follow-up without any significant difference in both groups. We compared our outcomes (8.18% EJS stricture) with the research conducted by Fukuhara and observed slightly higher EJS stricture proportions (7.0%) [26]. Future clinical trials can be helpful in the better opinion development.

CONCLUSIONS:

Double Tract (DT) reconstruction is considered as simple process and decline in BMI rate is much less than "Roux-en-Y" group.

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