



Hospitais Federais  
no Rio de Janeiro

**HOSPITAL FEDERAL DE BONSUCCESSO**

# Laparoscopic Gastrectomy for Gastric Cancer Treatment: Report of an Initial Experience

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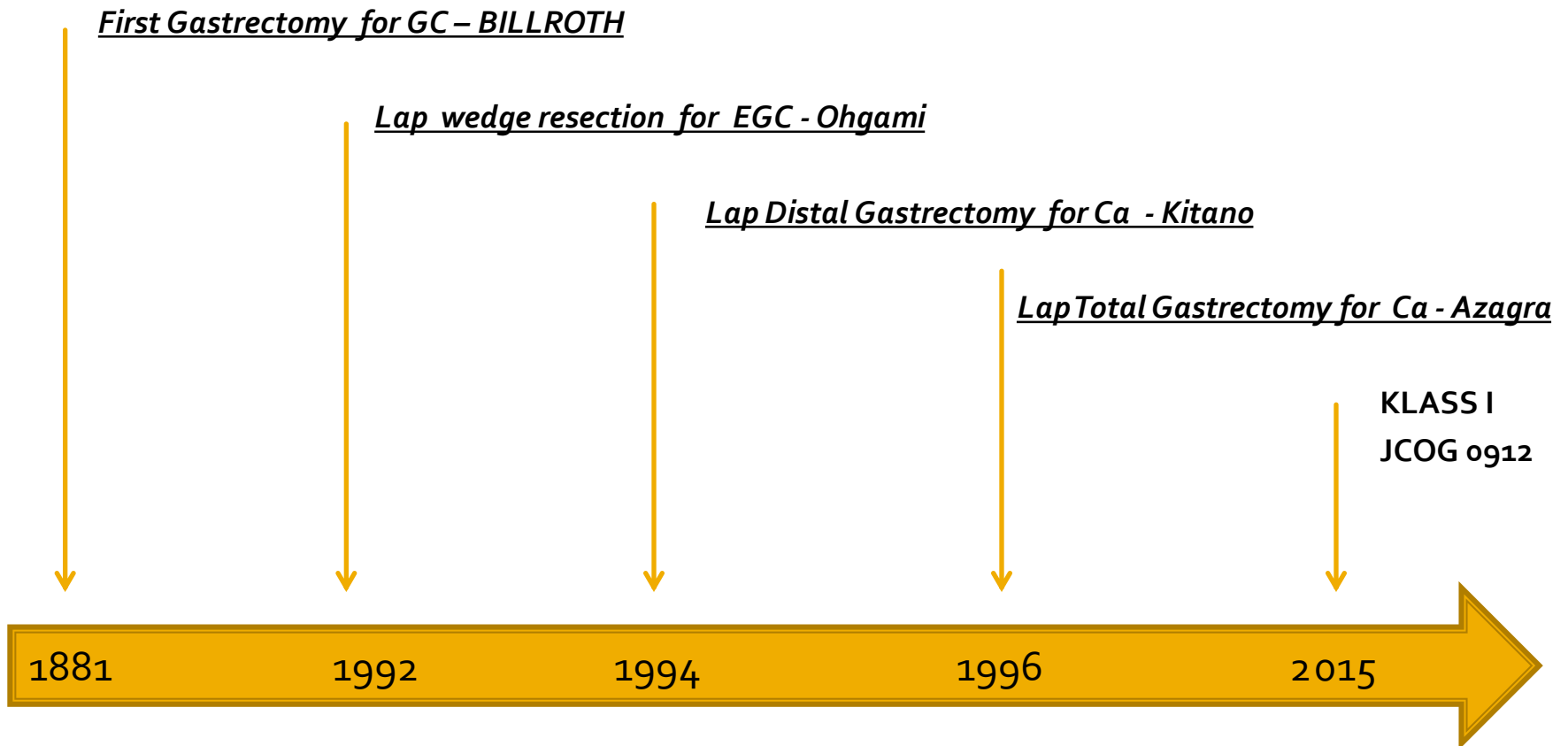


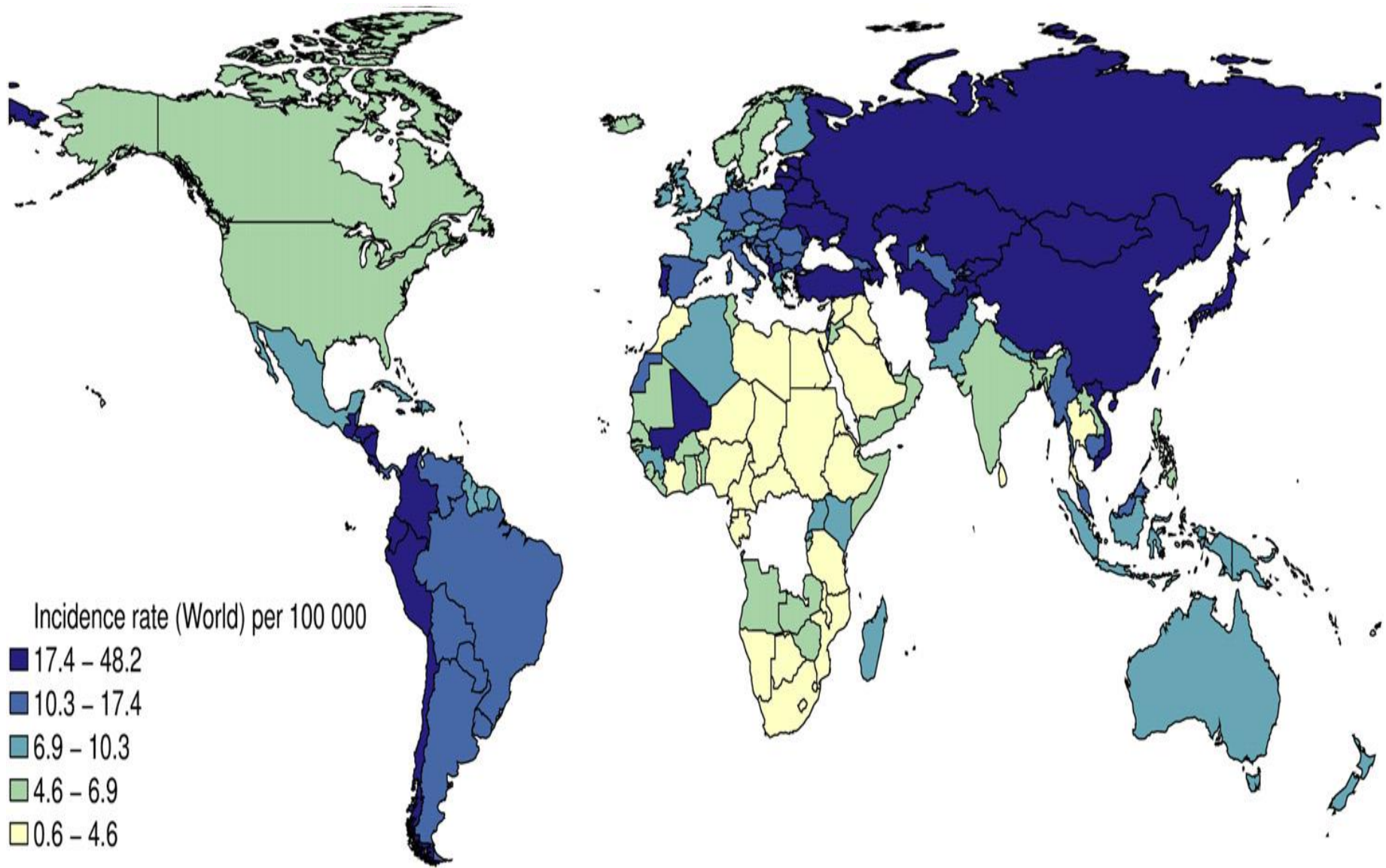
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3rd International Conference on Surgery and Anesthesia  
Chicago, Nov/2014

3<sup>rd</sup> International Conference on  
**Surgery and Anesthesia**

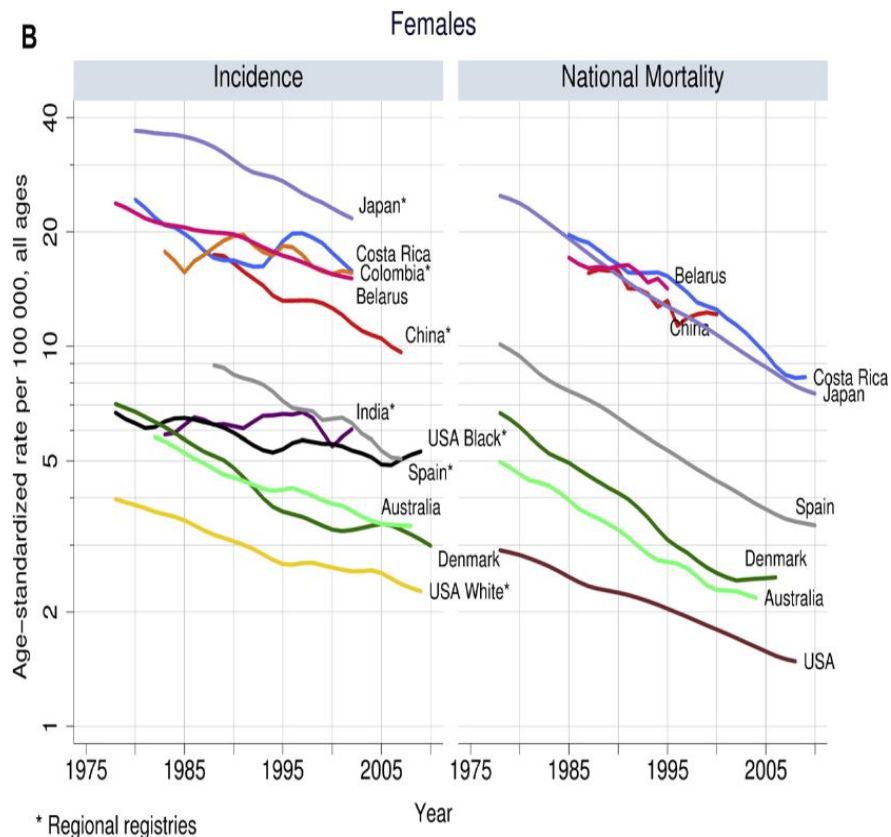
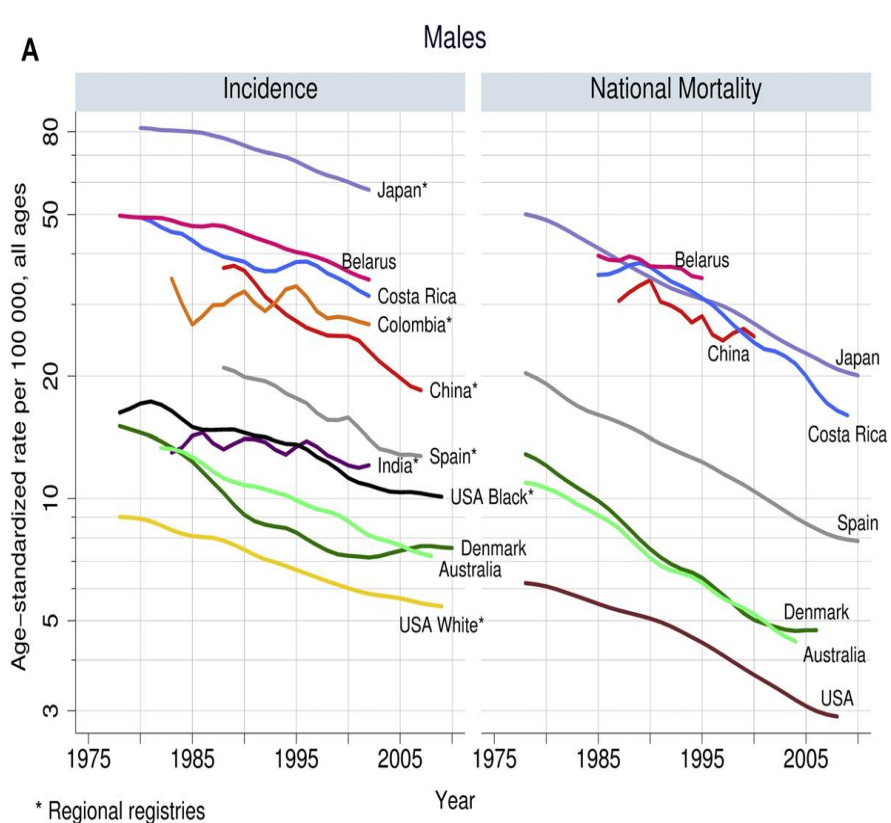
# HISTORY





World map showing estimated 2008 male age-standardized (world) incidence rates per 100,000 by country for gastric cancer. (From Ferlay J, Shin HR, Bray F, et al. GLOBOCAN 2008 v2.0, Cancer Incidence and Mortality Worldwide: IARC CancerBase No. 10 [Internet]. Lyon (France): International Agency for Research on Cancer; 2010. Available at: <http://globocan.iarc.fr>. Accessed January 7, 2013.)

# MALES X FEMALES



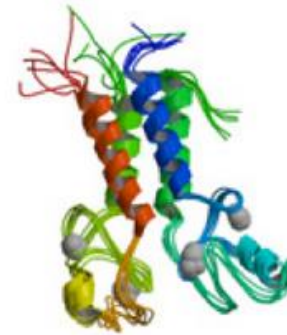
Age-standardized (World) incidence and mortality rates in selected populations, 1978–2010. (A) male; (B) female. (Data from Curado MP, Edwards B, Shin HR, et al. Cancer incidence in five continents, vol. IX. Lyon (France): IARC; 2007. IARC Scientific Publications No 160. Updated with more recent data from cancer registries where available; and the World Health Organization. WHO mortality database. Available at: <http://www.dep.iarc.fr/WHODb/WHODb.htm>. Accessed January 8, 2013.)



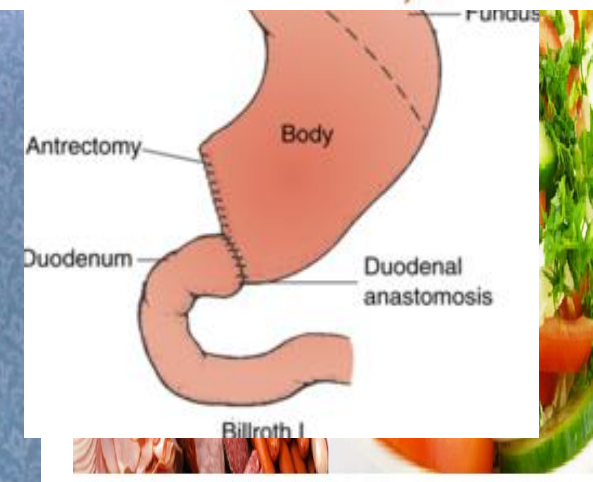
# RISK FACTORS





BRCA1



BRCA2



# BACKGROUND

- Gastric surgical resection  curative
- East  West
- Gold standard in GC staging
- Alternative to conventional OG
- Indication in AGC ?

# LG X OG

- Long-term follow-up survival
- Adequacy of lymphadenectomy
- Technical challenges
- Learning curve
- Quality of life

# ONCOLOGIC EQUIVALENCY

RANDOMIZED, CONTROLLED TRIALS

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## Laparoscopic Versus Open Subtotal Gastrectomy for Distal Gastric Cancer

*Five-Year Results of a Randomized Prospective Trial*

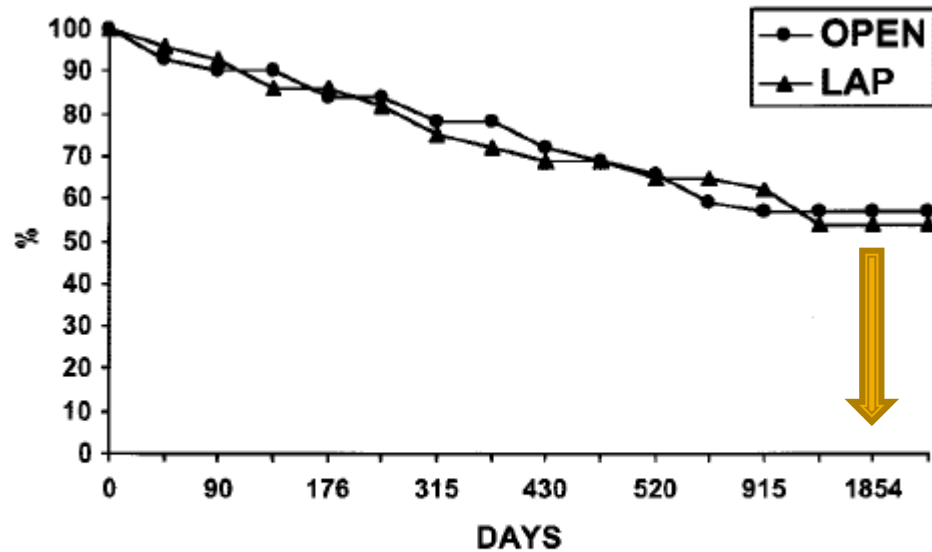
*Cristiano G.S. Huscher, MD, FACS,\* Andrea Mingoli, MD, FACS,† Giovanna Sgarzini, MD,\*  
Andrea Sansonetti, MD,\* Massimiliano Di Paola, MD,\* Achille Recher, MD,\* and Cecilia Ponzano, MD\**

- *Ann Surg* 2005;241: 232–237
- 5-year clinical outcomes of LA and OG
- total of 59 patients - 29 patients (OG), 30 patients (LG).
- The mean number of resected lymph nodes was 33.4 in the OG group and 30.0 in the LG



# ONCOLOGIC EQUIVALENCY

Disease-free survival rates of LG and OG patients.



DAYS	0	30	90	131	176	198	315	344	430	502	520	631	915	1439	1854	2300
OPEN	29	28	27	25	25	24	22	21	20	20	19	19	18	14	8	1
LAP	30	28	27	27	26	26	25	25	23	22	21	20	19	17	9	2

# ONCOLOGIC EQUIVALENCY

## Laparoscopic versus open gastrectomy for gastric cancer: Long-term oncologic results

Ju-Hee Lee, MD,<sup>a</sup> Chang Min Lee, MD,<sup>a</sup> Sang-Yong Son, MD,<sup>a</sup> Sang Hoon Ahn, MD,<sup>a</sup>  
Do Joong Park, MD, PhD,<sup>a,b</sup> and Hyung-Ho Kim, MD, PhD,<sup>a,b</sup> *Gyeonggi do, South Korea*

- Surgery 2014;155:154-64.
- Compare the long-term outcomes of LG with open gastrectomy (OG) for the treatment of gastric cancer.
- May 2003 and December 2009
- 1,874 patients, 816 were treated with OG and 1,058 with LG
- The number of harvested lymph nodes was similar between the two Groups
- No difference in the recurrence-free survival between the 2 groups

# ONCOLOGIC EQUIVALENCY

Number of retrieved lymph nodes according to tumor progression, operative procedure, and extent of lymphadenectomy

	<i>OG</i>		<i>LG</i>		<i>P</i> <i>value</i>
	<i>n</i>	<i>Mean ± SD</i>	<i>n</i>	<i>Mean ± SD</i>	
<i>EGC</i>					
Distal gastrectomy					
D1+	79	40.0 ± 15.6	551	38.0 ± 12.1	.158
D2	132	45.0 ± 15.6	223	43.0 ± 18.5	.175
Total gastrectomy					
D1+	2	45.0 ± 5.0	41	45.0 ± 16.1	NA
D2	27	55.0 ± 21.7	20	54.0 ± 17.6	.831
<i>AGC</i>					
Distal gastrectomy					
D1+	17	37.0 ± 17.7	66	38.0 ± 16.1	.95
D2	369	51.0 ± 18.4	110	49.0 ± 16.1	.326
Total gastrectomy					
D1+	3	33.0 ± 0.7	9	55.0 ± 21.7	NA
D2	187	58.0 ± 20.4	38	55.0 ± 17.8	.485

*AGC*, Advanced gastric cancer; *EGC*, early gastric cancer; *LG*, laparoscopic gastrectomy; *NA*, not applicable; *OG*, open gastrectomy.

# ONCOLOGIC EQUIVALENCY

Surg Endosc (2013) 27:2877–2885  
DOI 10.1007/s00464-013-2848-0



## **Morbidity and mortality after laparoscopic gastrectomy for advanced gastric cancer: results of a phase II clinical trial**

Ju-Hee Lee · Sang-Yong Son · Chang Min Lee · Sang Hoon Ahn · Do Joong Park · Hyung-Ho Kim

Received: 11 November 2012 / Accepted: 16 January 2013 / Published online: 13 February 2013  
© Springer Science+Business Media New York 2013

- Surg Endosc (2013) 27:2877–2885
- Feasibility of LG in AGC and evaluation of morbidity and mortality
- 157 patients, 20–80 years of age, cT<sub>2</sub>N<sub>0</sub>–cT<sub>4</sub>N<sub>2</sub>, ASA = 3 or less
- LG with D<sub>2</sub> lymphadenectomy was safe and technically feasible for the treatment of AGC, with acceptable rate of morbidity and mortality (11.5% and 0.6%, respectively);

# ONCOLOGIC EQUIVALENCY

REVIEW AND META-ANALYSIS

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## Laparoscopic Versus Open Distal Gastrectomy for Gastric Cancer

*A Meta-Analysis of Randomized Controlled Trials and High-Quality Nonrandomized Studies*

*Eduardo F. Vituella, MD,\* Mithat Gonen, PhD,† Murray F. Brennan, MD,\* Daniel G. Coit, MD,\*  
and Vivian E. Strong, MD\**

- *Ann Surg* 2012;255:446–456
- 25 studies were included in the analyses, 6 RCTs and 19 NRCTs
- 3055 patients (1658 LDG, 1397 ODG).
- LDG was associated with longer operative times, lower overall complications, medical complications, minor surgical complications, estimated blood loss, and hospital stay.
- Mortality and major complications were similar.

# LEARNING CURVE

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• *RAPID COMMUNICATION* •

## **Learning curve of laparoscopy-assisted distal gastrectomy with systemic lymphadenectomy for early gastric cancer**

Min-Chan Kim, Ghap-Joong Jung, Hyung-Ho Kim

- World J Gastroenterol 2005
- 90 consecutive patients with EGC underwent LADG
- Between April 2003 and November 2004
- 50 cases of LADG with systemic lymphadenectomy for early gastric cancer is required to achieve optimum proficiency.



# QUALITY OF LIFE

RANDOMIZED CONTROLLED TRIALS

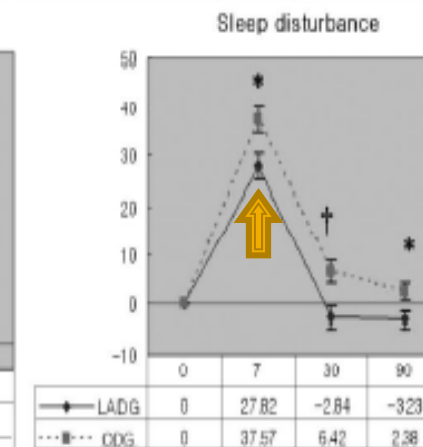
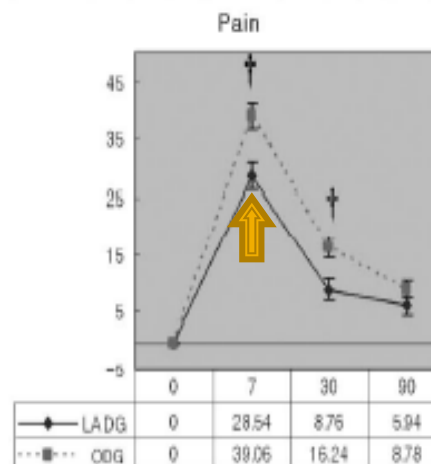
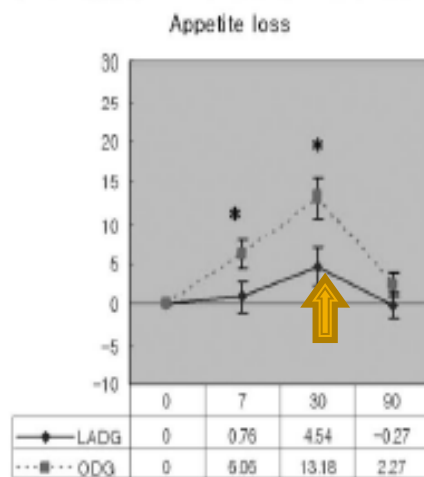
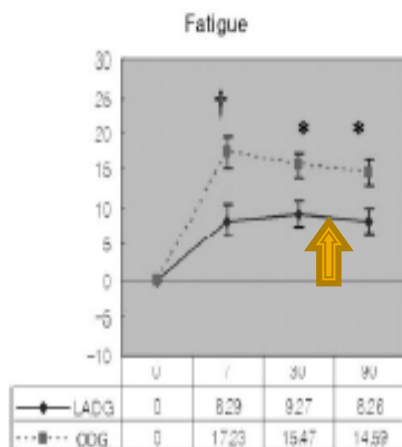
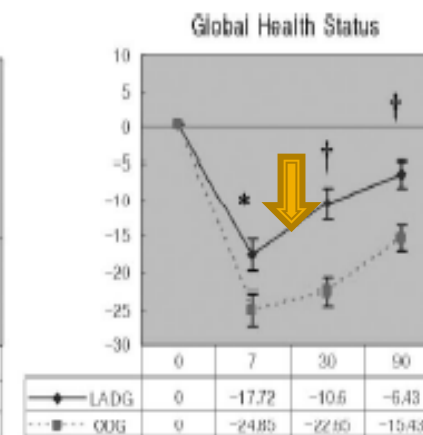
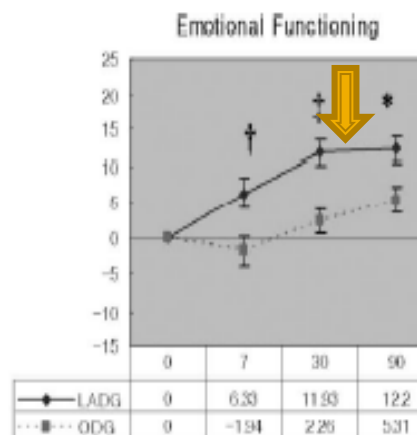
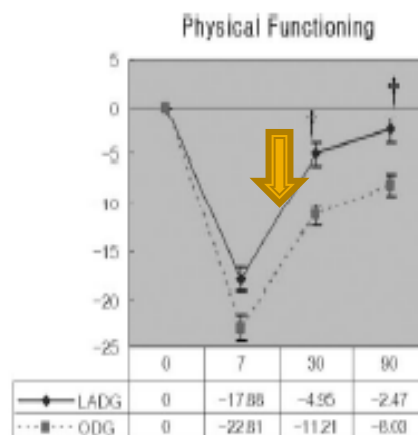
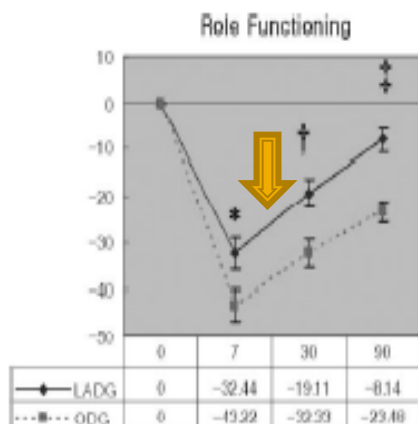
## Improved Quality of Life Outcomes After Laparoscopy-Assisted Distal Gastrectomy for Early Gastric Cancer

*Results of a Prospective Randomized Clinical Trial*

*Young-Woo Kim, MD, PhD,\*† Yong Hae Baik, MD, PhD,†\*\* Young Ho Yun, MD, PhD,‡  
Byung Ho Nam, PhD,§ Dae Hyun Kim, MD, PhD,¶ Il Ju Choi, MD, PhD,\*†  
and Jae-Moon Bae, MD, PhD\*†††*

- July of 2003 to November of 2009
- 164 patients with ECG
- Randomly assigned either to LADG or ODG
- Complete the European Organization for Research and Treatment of Cancer QLQ-C30 and QLQ-STO22 questionnaires

# QUALITY OF LIFE





# OBJECTIVE

## Laparoscopic Gastrectomy for Gastric Cancer Treatment:

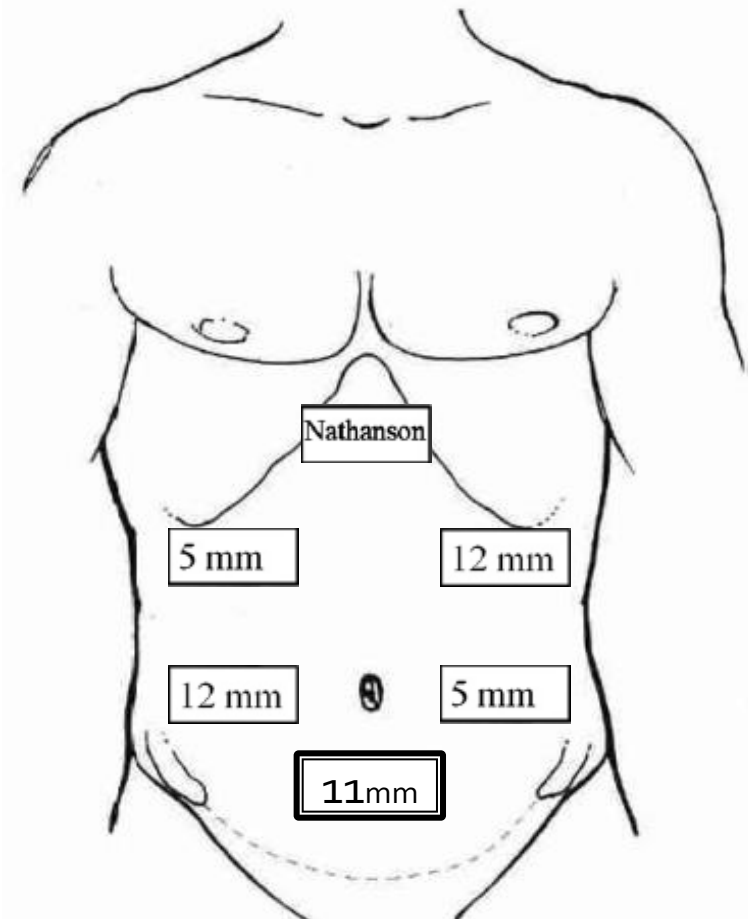
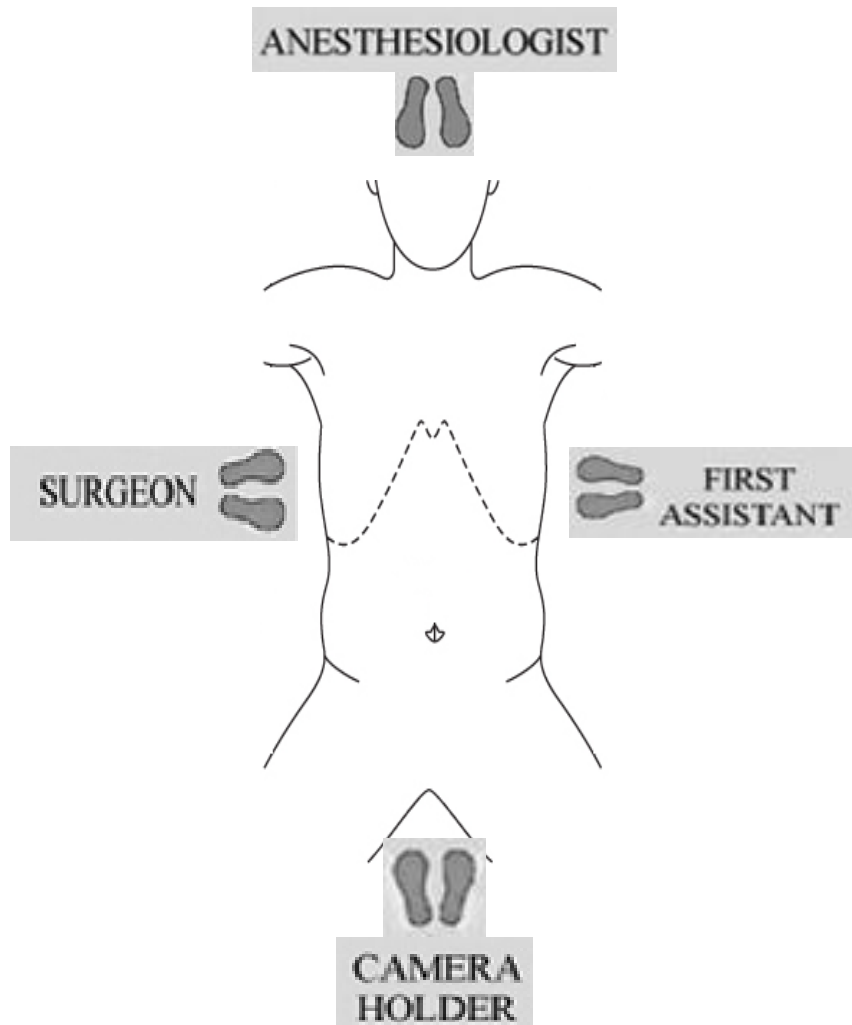
### Report of an Initial Experience

*The purpose of the present study is to validate the safety and feasibility of laparoscopic gastrectomy for gastric cancer in an initial experience, provided by acceptable short-term outcomes.*

# PATIENTS AND METHODS

- Between July 2012 and August 2014, 20 patients underwent LTG, LSG or LPG with perigastric or more advanced lymphadenectomy performed by the same surgical team.
- Preoperative workup consisted of endoscopy with biopsy proven adenocarcinoma and CT scan, EUSG was performed in two patients. We used the clinical pathologic staging according to AJCC
- The indications were tumor confined to the serosa with a N1 or lower N classification on pre-op examination
- We used LSG with D2 lymphadenectomy for tumors of the lower third of the stomach and LTG with D2 lymphadenectomy for tumors of the middle and upper third of the stomach

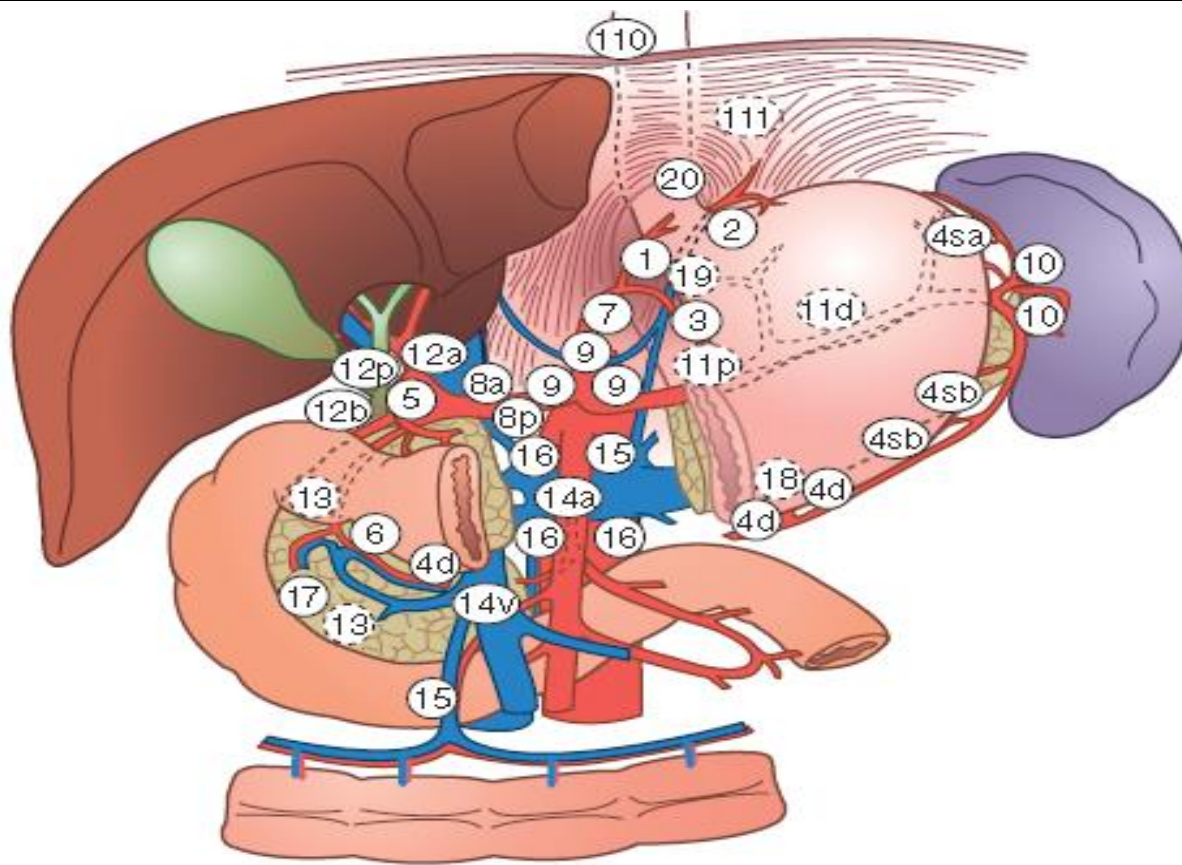
# SURGICAL PROCEDURE



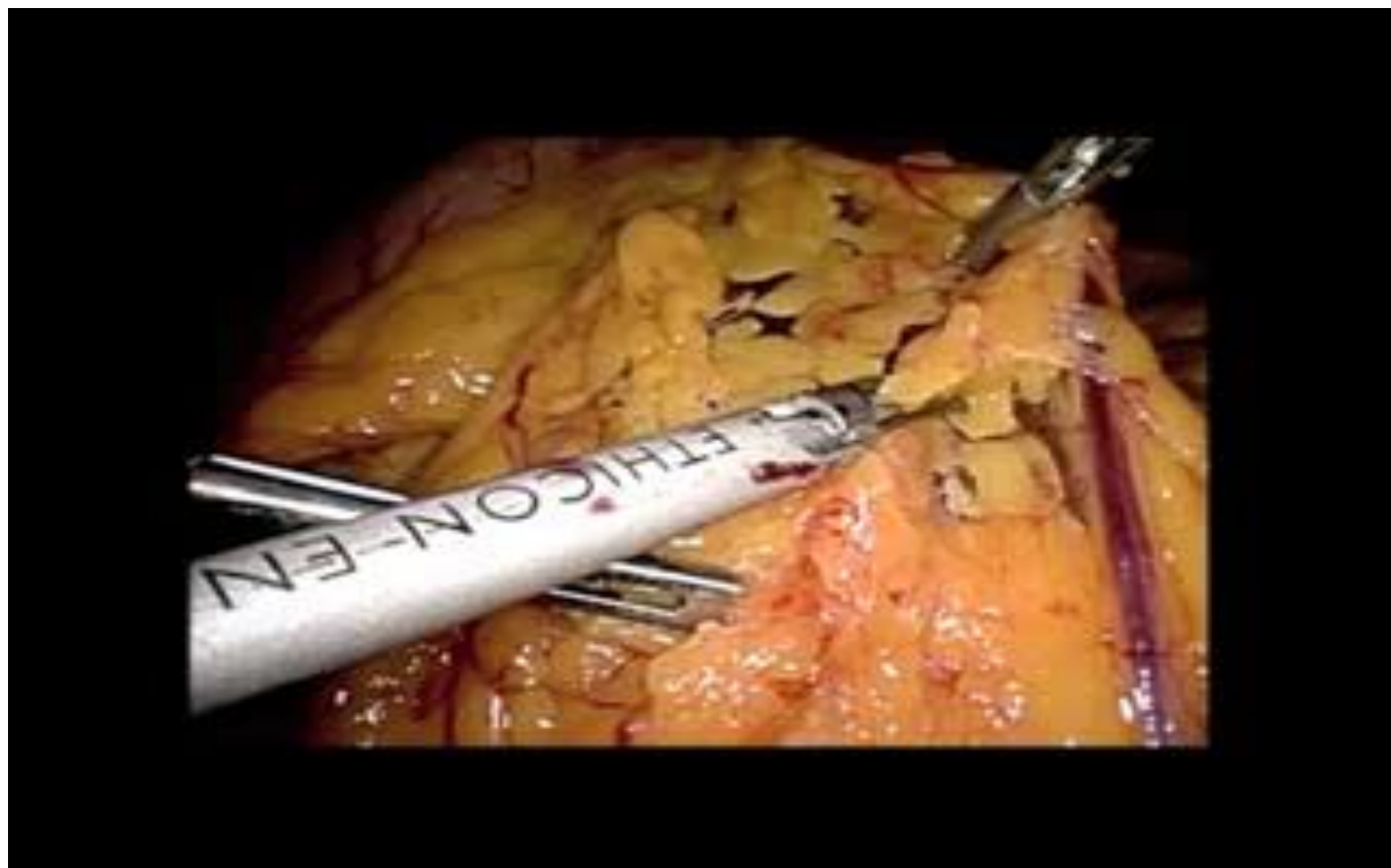
Trocar placement for laparoscopic gastric resection.

Operating room setup for laparoscopic gastric resection.

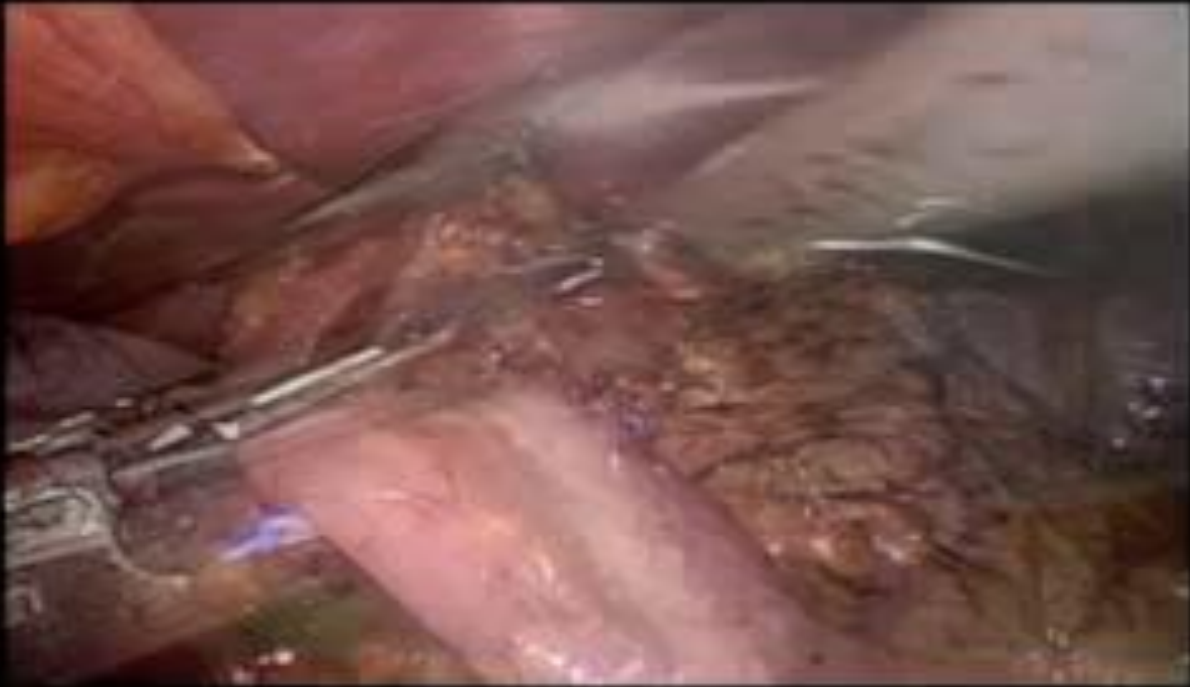




Lymph node station numbers as defined by the Japanese Gastric Cancer Association. (From Japanese Gastric Cancer Association: Japanese Classification of Gastric Carcinoma, 2nd English edition. Gastric Cancer 1:10–24, 1998.)



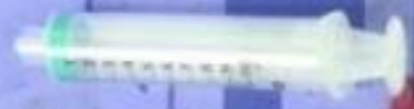






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# RESULTS

**Table 1 - Patient Characteristics**

Variables	N	%
Median age, range (yr)	58(42-75)	
Gender (male:female ratio)	12:8	
BMI (kg/m <sup>2</sup> )		
< 25	13	65
> 25	7	35
ASA score		
1	5	25
2	15	75
3-4	0	0
Tumor location		
Upper third	2	10
Middle third	12	60
Distal third	6	30
Clinical tumor depth		
cT1	1	5
cT2	3	15
cT3	2	10
cT4	14	70



# RESULTS

Table 2 – Surgical data

Variables	N	%
Surgical procedures		
Proximal Gastrectomy D1	1	5
Total Gastrectomy D2	13	65
Distal Gastrectomy D2	6	30
Operative time (median, range) (min)	362	260-480
Transfused patients	2	10
No. of retrieved lymph nodes (median, range)	30,2	12 - 64
pT stage		
T1	3	16,6
T2	2	11,1
T3	5	27,7
T4a	8	44,4
pN stage		
N0	5	27,7
N1	7	38,8
N2	3	16,6
N3	3	16,6
TNM stage		
IA	2	11,1
IB	1	5,5
IIA	4	22,2
IIB	3	16,6
IIIA	1	5,5
IIIB	3	16,6
IIIC	2	11,1
IV	2	11,1

Table 3 – Short term results

Variables	N	%
Time to diet intake (median, range) (days)		
LSTG	2,5	2-3
LTG	5,75	3-8
Postoperative hospital stay (median, range) (days)		
LSTG	6	6-8
LTG	12	8-30
Morbidity	2	10
Mortality	1	5
Conversions	2	10

LSTG- Laparoscopic SubTotal Gastrectomy

LTG- Laparoscopic Total Gastrectomy

# CONCLUSION

- LG for GC is feasible ,safe, it has acceptable short-term oncologic outcomes, operative time and surgical complications
- Evidence shows that LG is not inferior to OG for neither EGC nor for AGC regarding oncologic safety
- Invasion of adjacent organs and hard metastatic lymph nodes are limitations for the method
- Before establishing LG with D2 lymphadenectomy as a standard procedure for AGC, first multicenter RCTs are required.

# LIMITATIONS

- Small sample size
- No comparative analysis with open surgery
- No differentiated analysis between EGC and AGC patients

THANK YOU



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