TRANSHIATAL ESOPHAGEAL REPLACEMENT (GASTRIC "PULL-UP" PROCEDURE)

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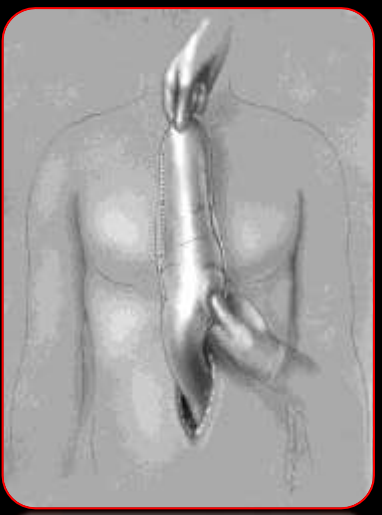
CHAIRMAN, GENERAL SURGERY

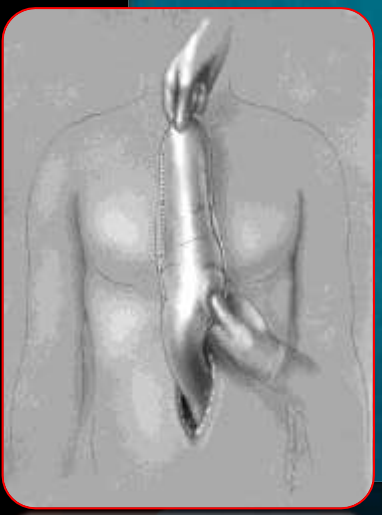

STOP

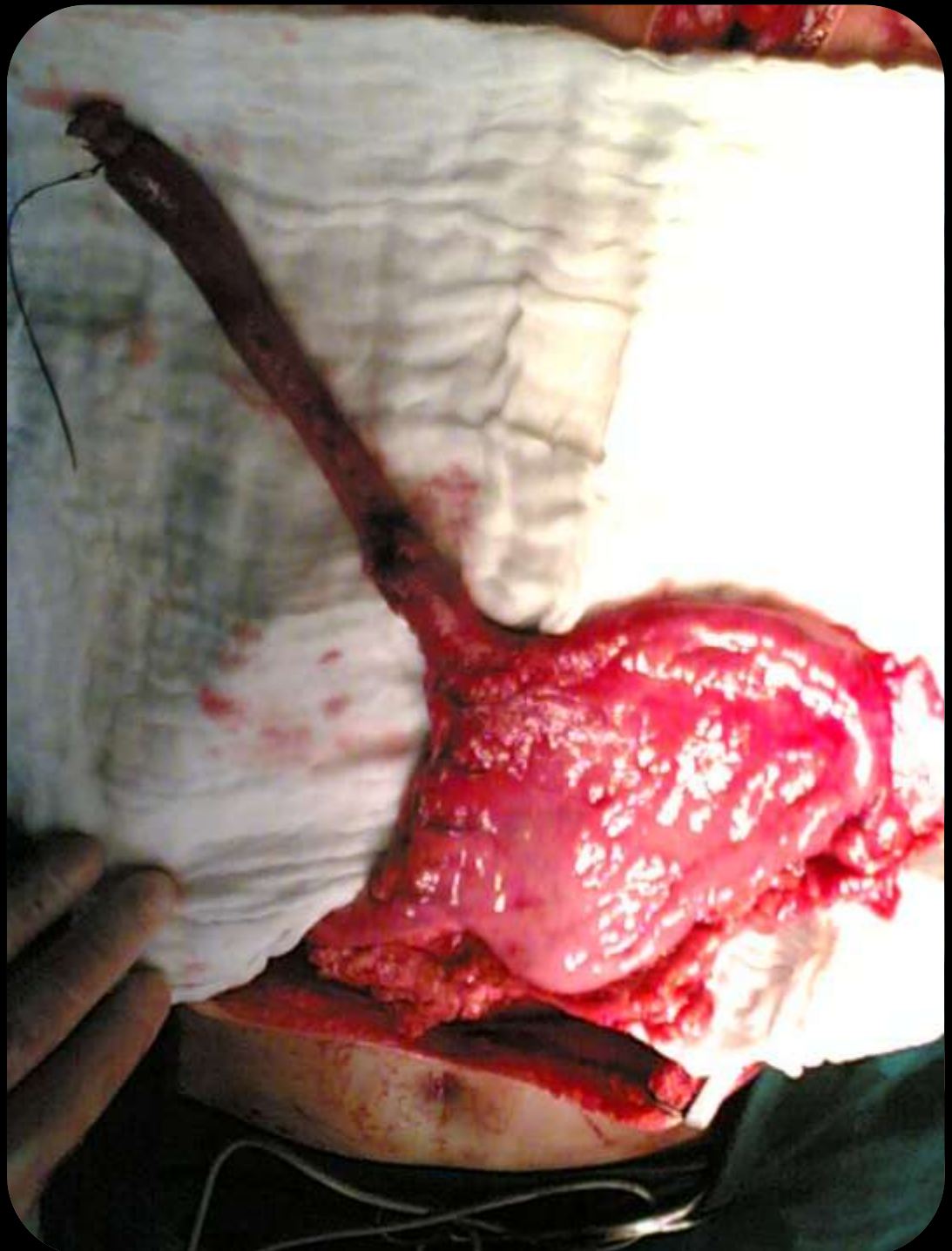
ESOPHAGEAL REPLACEMENT INDICATIONS

- **Corrosive esophagitis = Caustic burns.**
- **Achalasia, Dolicho-Megaesophagus.**
- **Carcinomas of Esophagus.**

GOOD SURGERY = GOOD INDICATION







1997-2017 91 PATIENTS

- 6 Pts Achalasia stage 3&4

- 2 Pts S Bowels Replacement
- 34 & 37 yrs

- 51 Pts Corrosive Strictures 3 _ 24 Yrs

- 32 Pts Tumers 51 _ 73 Yrs

.

- **All patients underwent “Gastric Pull-Up” procedure**
- **through anterior (primarily) and posterior**

(Later) mediastinum

- **with one layer 2,0 polygly-colic acid coated absorbable suture cervical esophagogastrostomy.**

- 1 patient had previous esophageal replacement by colon interposition 1 year ago.

- 2 Patients had previous small bowel esophageal replacement for Corrosive Strictures (16-20 Ys)

COMPLICATIONS

- Cervical Anastomotic Stricture: (12 /91) 13%

- Corrosive Strictures 9 pts.

(Treated primarily by balloon dilators and 8 pts needed surgical anastomoplasty)

COMPLICATIONS

- **Pneumothorax: 34 /91 37% pts**
- **Anastomotic Leakage (11/91) 12%**

COMPLICATIONS

- **Temporary paralysis of BilateraL recurrent laryngeal nerves 1/91**

with immediate post-op. re-intubation and tracheostomy; Spontaneous recovery after 10 days

.

The esophagus has been left in place in 18 Corrosive injury then all injured esophagus removed

MORTALITY:

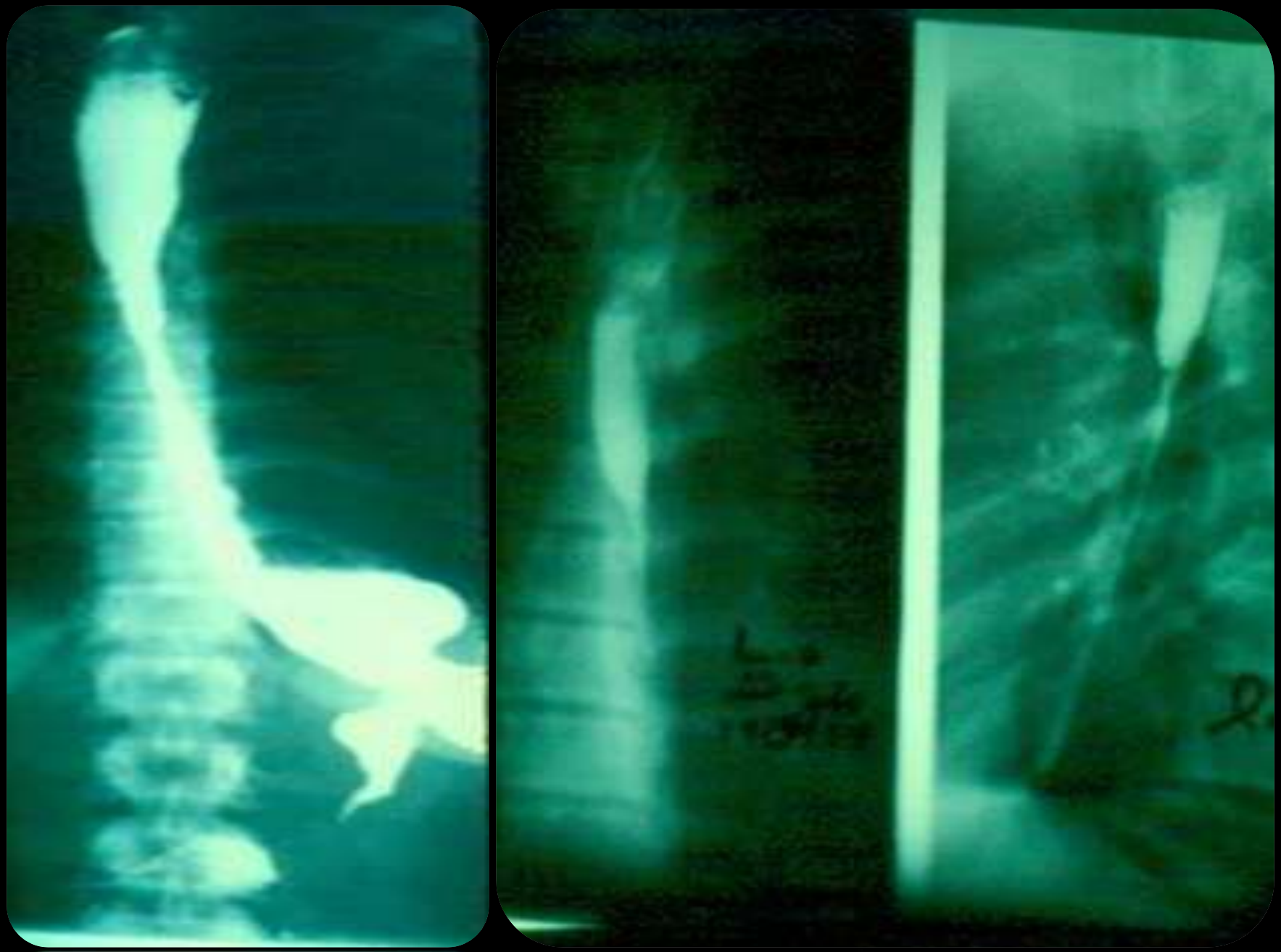
1/ 91 TUMOR pt with Bilateral -Bronchial Fistula and ARDS.

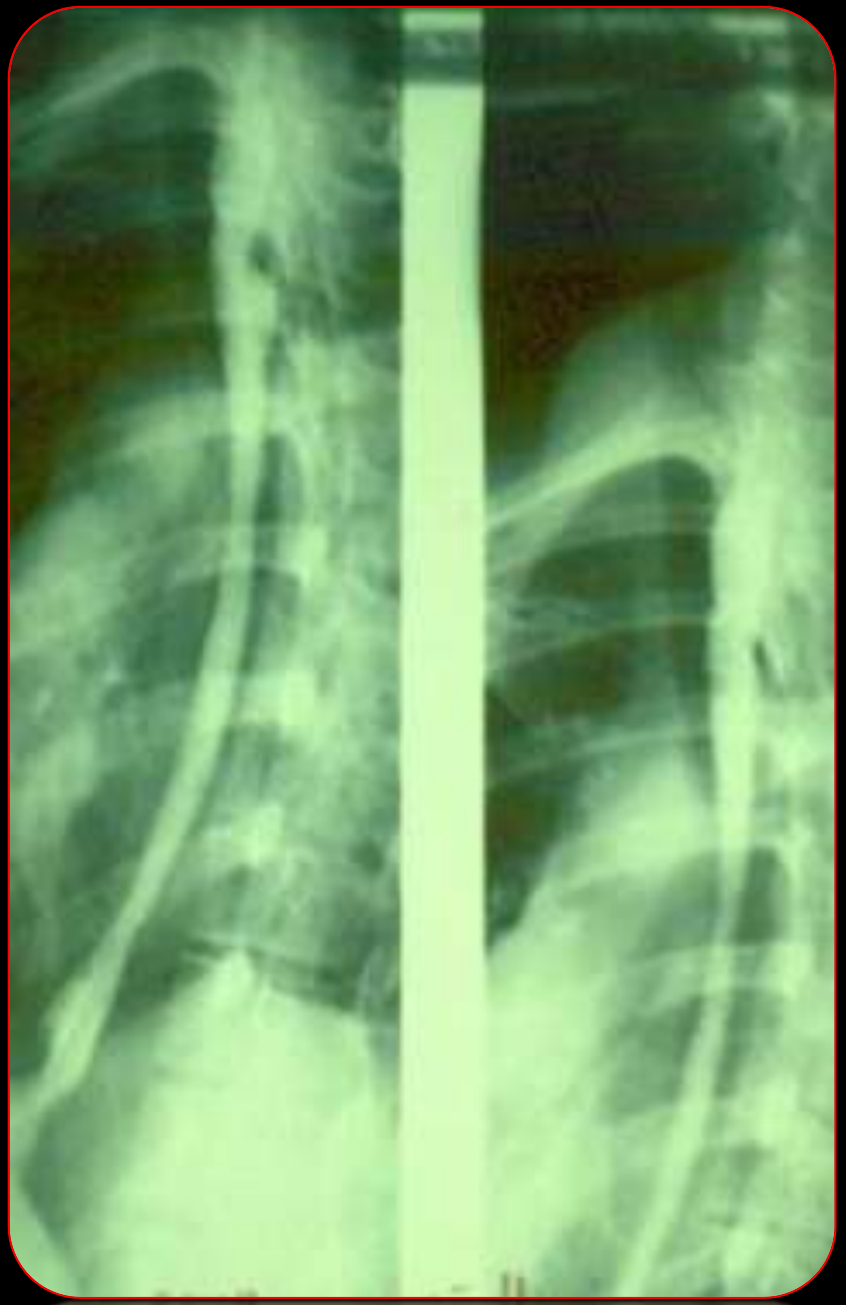
Corrosive esophagitis

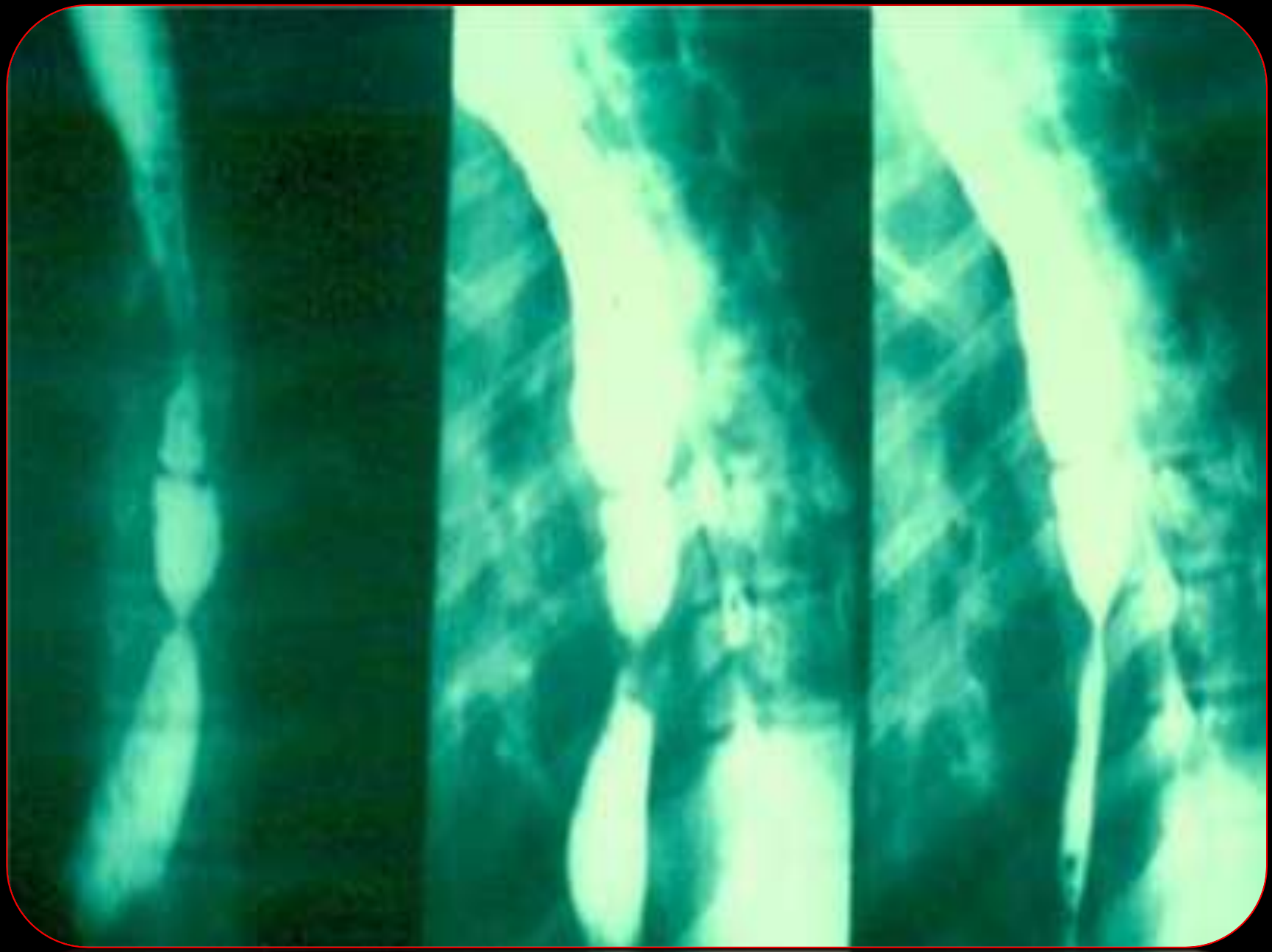
(Caustic Burn Injuries)

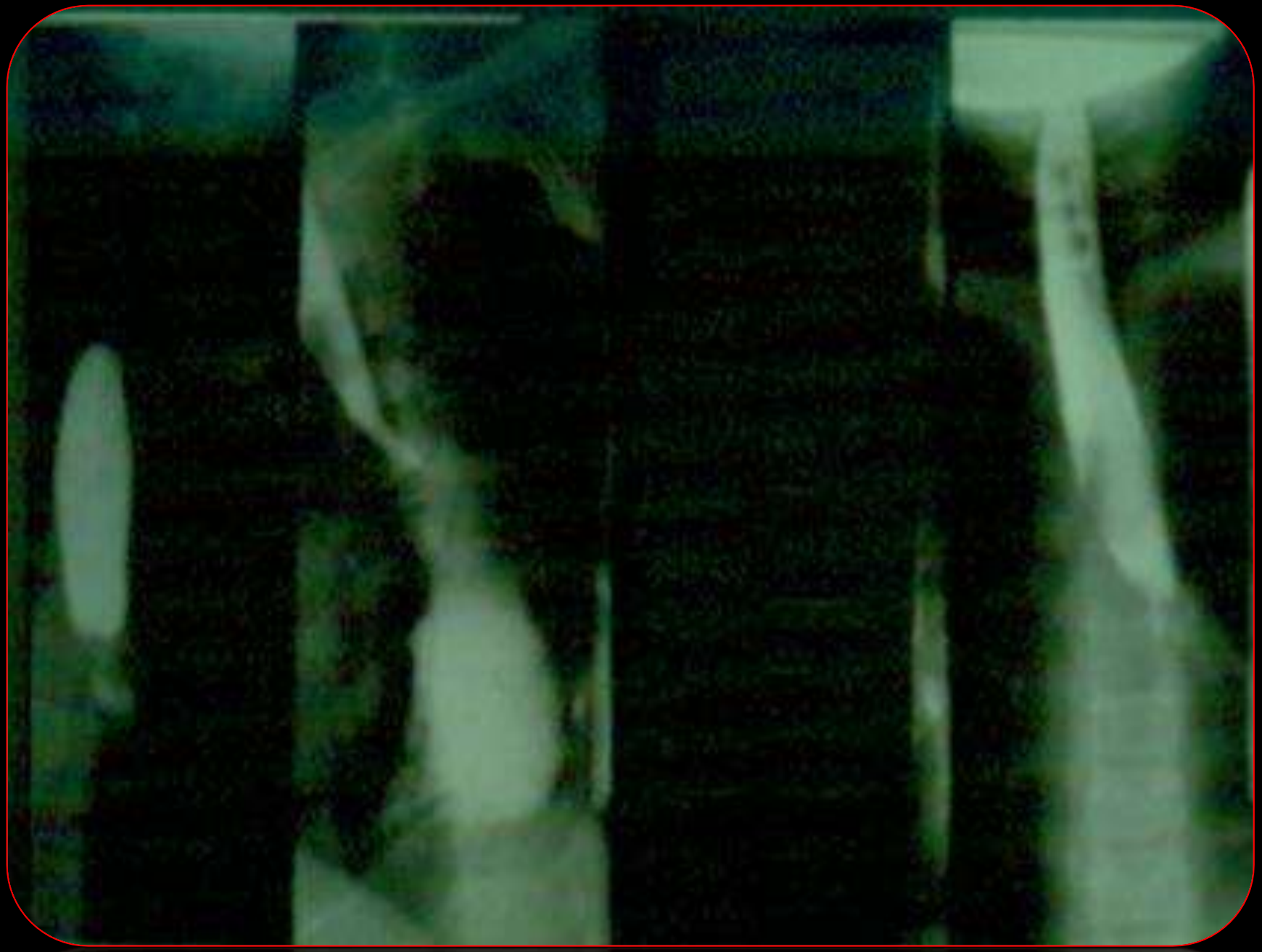
Indications of Surgery

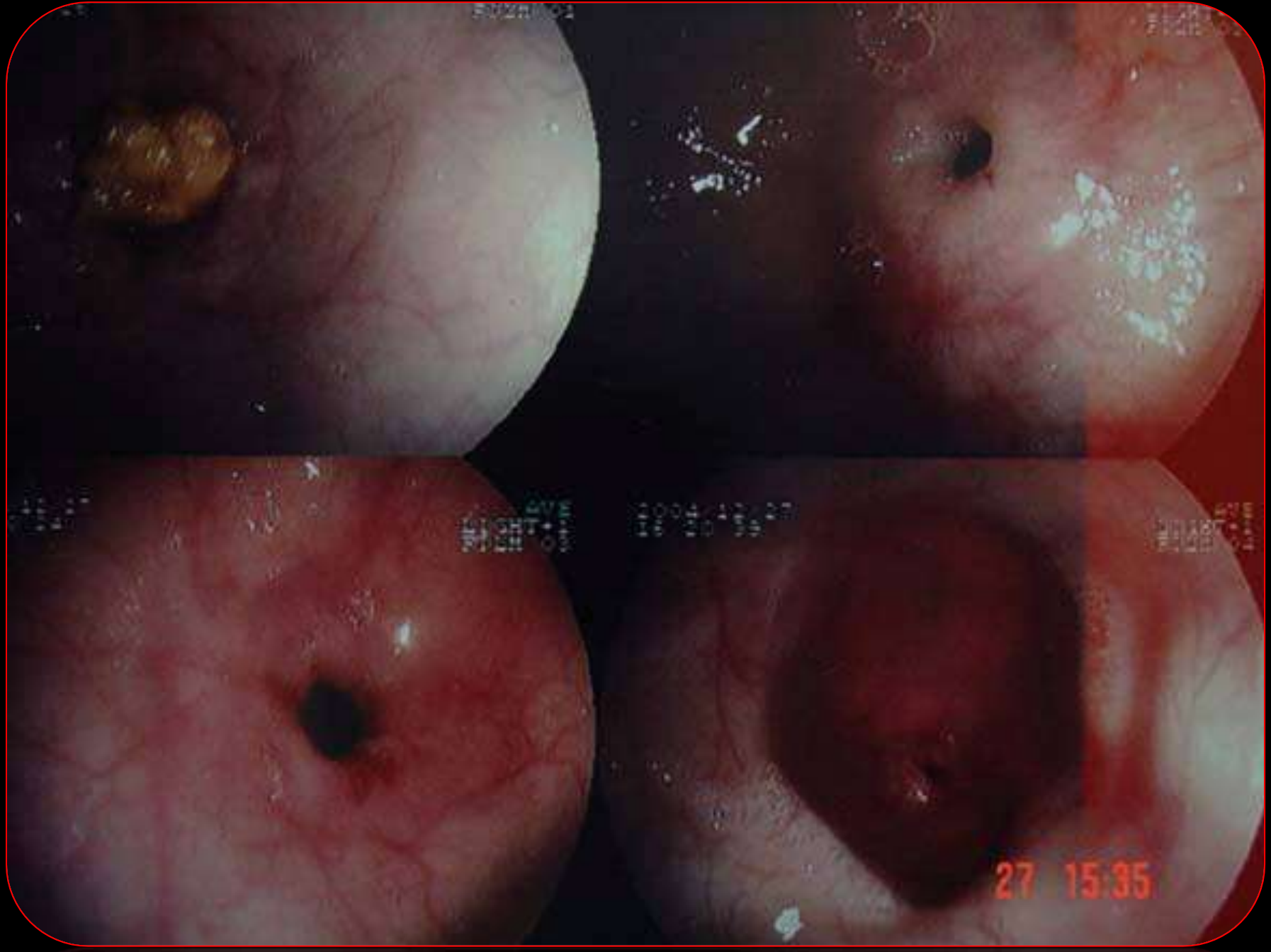
- **-Recurrent Stenosis**
- **-Uncontrolled stenosis**
- **-Multiple stenosis**
- **-Fistula to the bronchus**
- **-Ca with stenosis**
- **-esophageal perforation**
- **-General (pulmonary) Complication**







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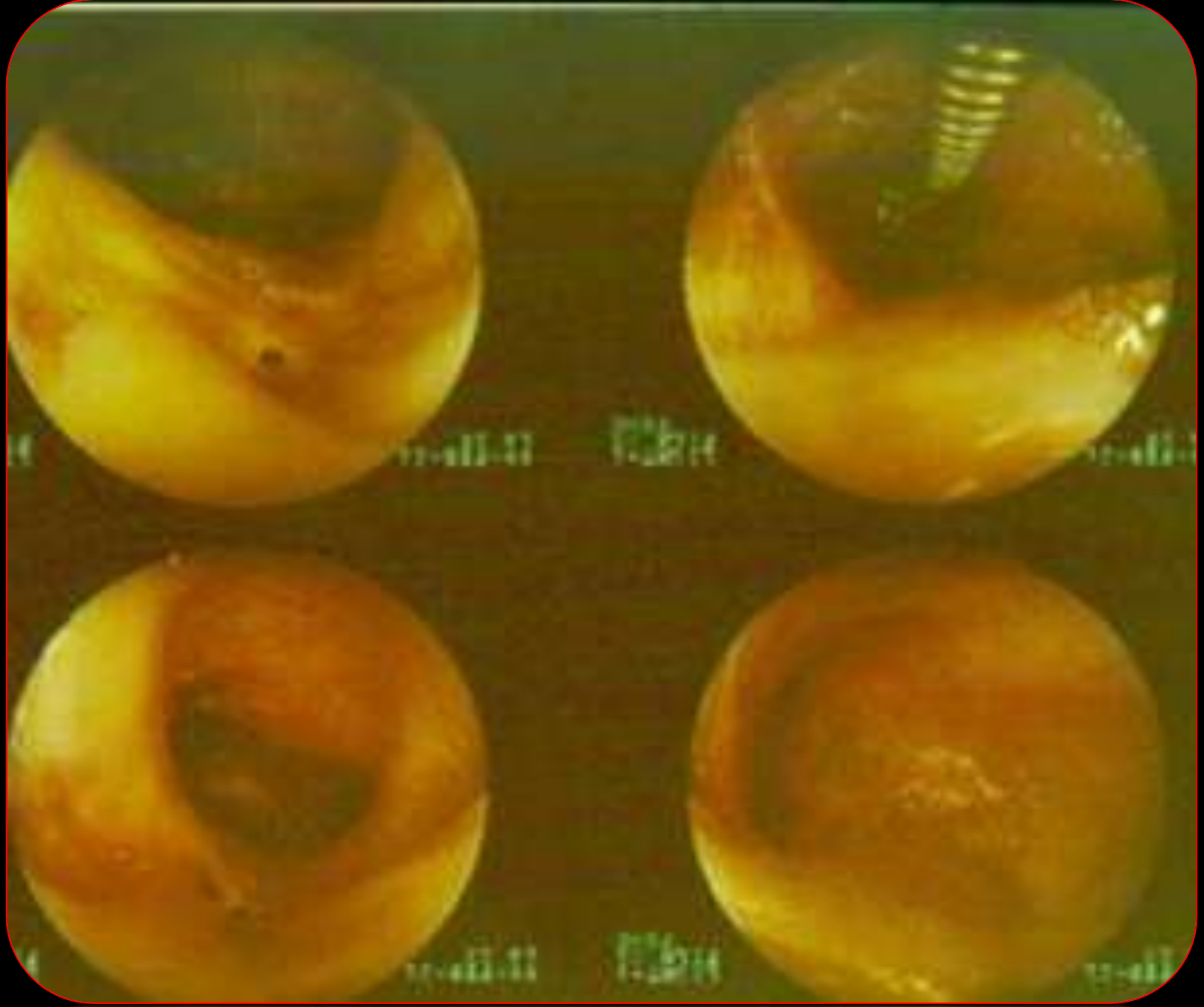

Eur J Pediatr Surg. 1996 Aug;6(4):204-7.

Motor function of the esophagus after caustic burn.

Bautista A ‹Varela R ‹Villanueva A ‹Estevez E ‹Tojo R ‹Cadranel S.

Departamento de Pediatria, Hospital General de Galicia, Clinico Universitario, Universidad de Santiago, Santiago de Compostela, La Coruna, Spain.

During the subacute and chronic phases of esophagitis due to ingestion of a caustic substance, the patient commonly displays stricture, esophageal rigidity and dysphagia. We used esophageal manometry, radiology, pH monitoring and 99mTc scintigraphy to investigate esophageal motor function in 25 children (mean age 24 +/- 7 months) with chronic esophagitis after second- and/or third-degree caustic burns. Over this period, the mean percentage of time with pH below 4 was 19 +/- 10%, the mean number of reflux episodes was 48 +/- 52, the mean number of reflux episodes lasting longer than 5 min was 10 +/- 5, and the mean duration of the longest reflux episode was 51 +/- 21 min. Manometry indicated that, in the lesioned group, an average of 77 +/- 18% of peristaltic waves were nonpropulsive, while the mean Esophageal Work Index (number of propulsive waves per hour x mean maximum pressure developed during propulsive waves) was 227 +/- 192 units. All of the above means were significantly different ($p < 0.01$) from the corresponding control-group means. Esophageal strictures were observed in 60% (15) of the children. In 2 cases it was minimal, 2 cases moderate and 11 cases had severe strictures. 99mTc scintigraphy indicated that esophageal transit was slightly delayed in four, moderately delayed in five and severely delayed in 16 of the lesioned-group subjects. There was close correspondence between the results of manometry and scintigraphy as regards severity of esophageal dysfunction. These results indicate that motility disturbances and GER are very frequent sequelae of caustic burns of the esophagus, and should be taken into account when evaluating symptoms and deciding on the therapeutic strategy (including diet) to be followed.

PMID: 8877350 [PubMed - indexed for MEDLINE

ACHALASIA

Indications of Surgery

- **-esophageal diameter 6-8 cm**
- **-weak esophageal peristalsis**
- **-Barrett or Metaplasia**

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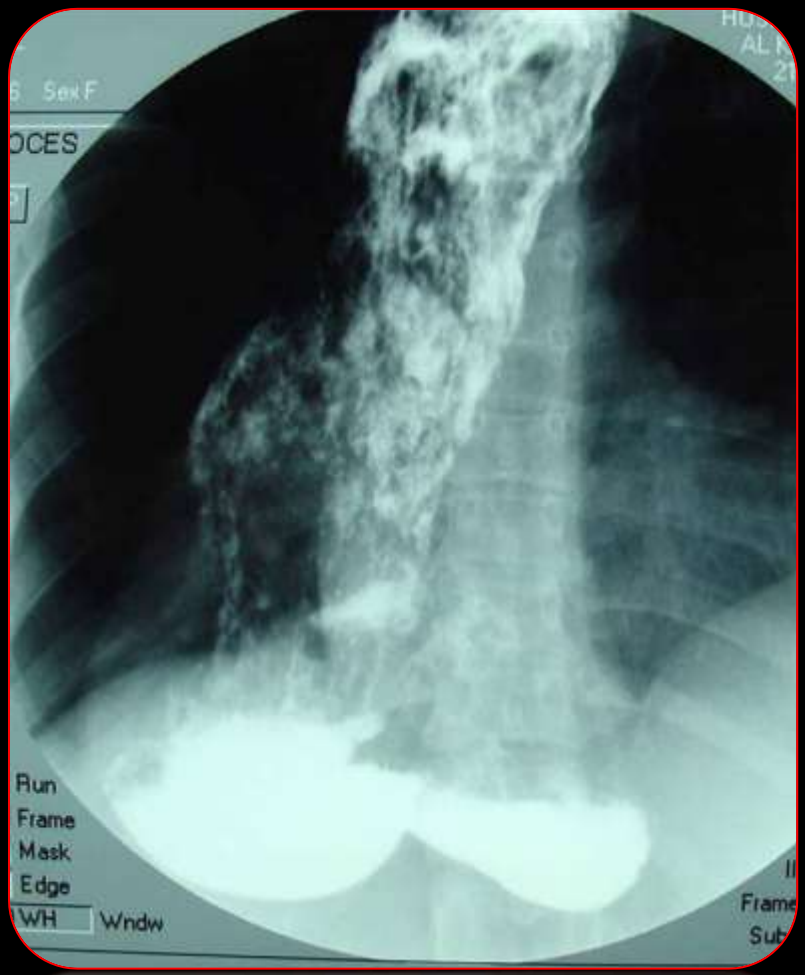
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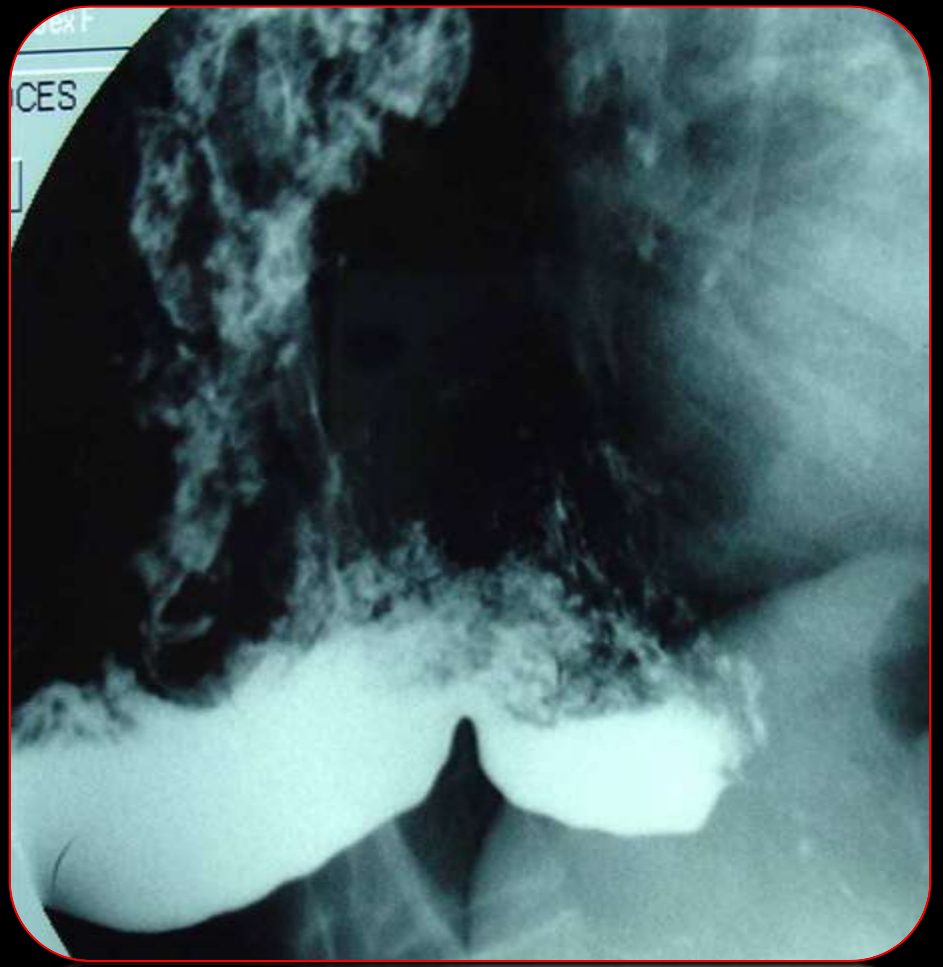

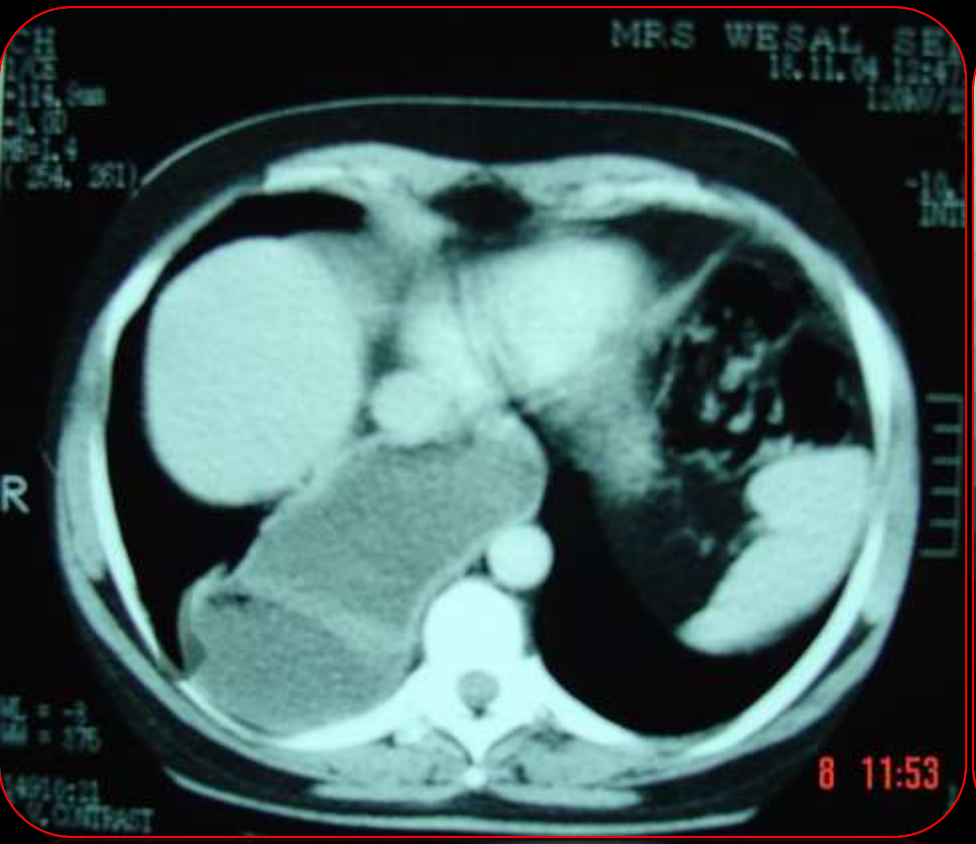
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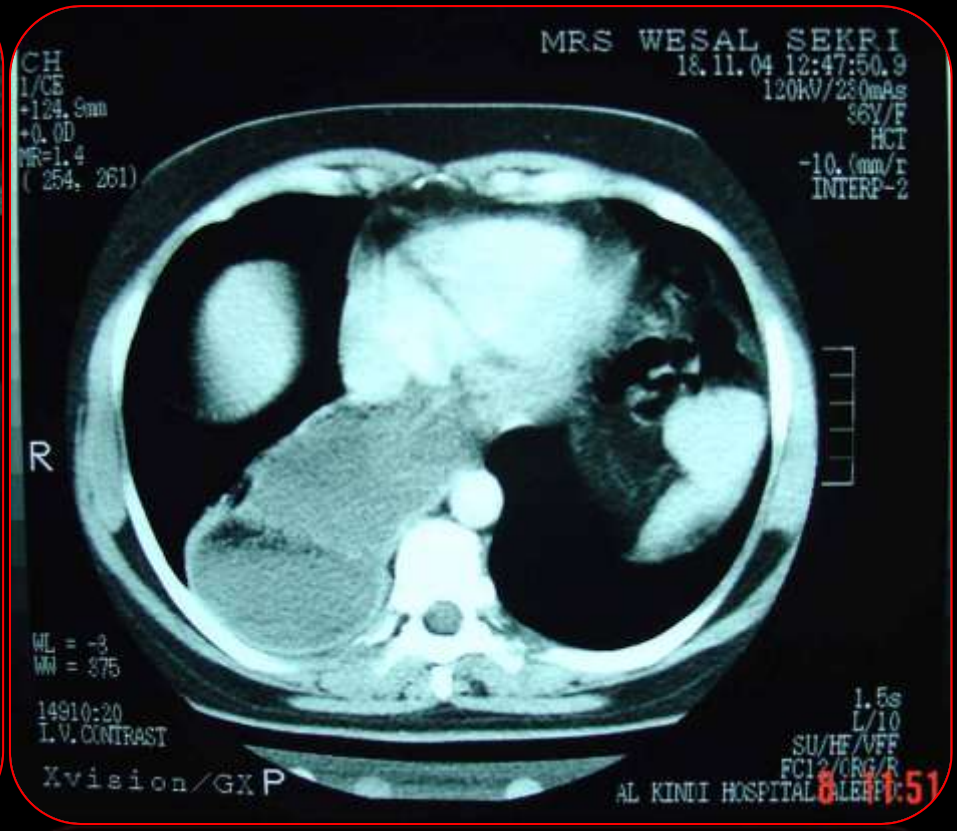
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AL KINDI HOSPITAL

Chagas Disease (American Trypanosomiasis)

Last Updated: February27, 2003

MEGAESOPHAGUS TREATMENT

Author Information Introduction Clinical Differentials Workup Treatment Medication Follow-up Miscellaneous Pictures Bibliography

- In those with chagasic megaesophagus stages II and III, the typical surgical treatment of achalasia (esocardiomyotomy, Heller operation, or Thal procedure, with different improvements in order to limit the gastroesophageal reflux) may be used with some success.

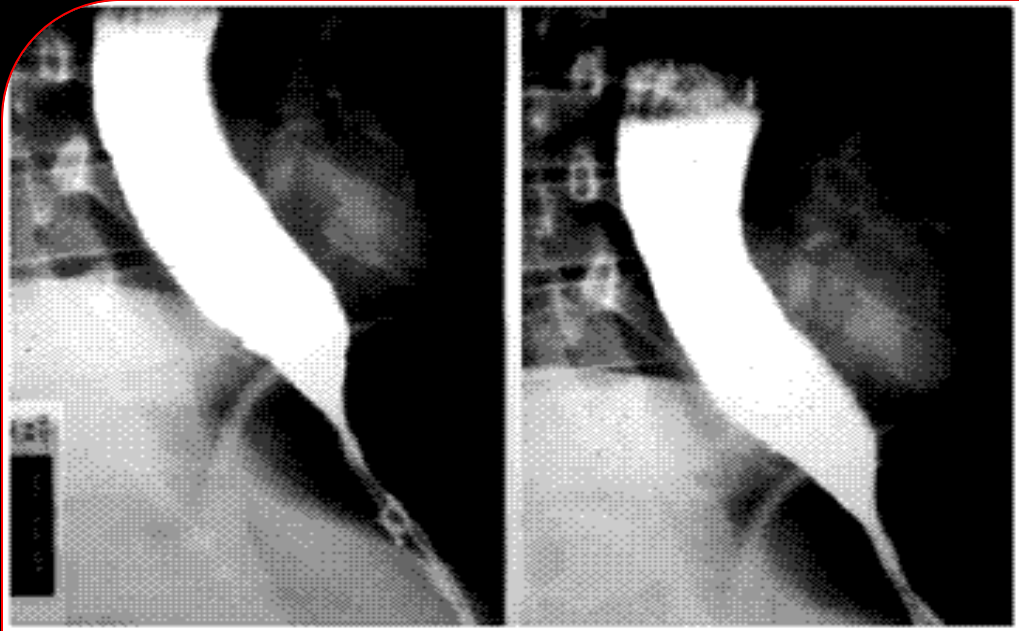
An *esophageal resection with Gastric Pull-Up* or intestinal/ bowel interposition is indicated in stages III and IV of megaesophagus

WORK-UP

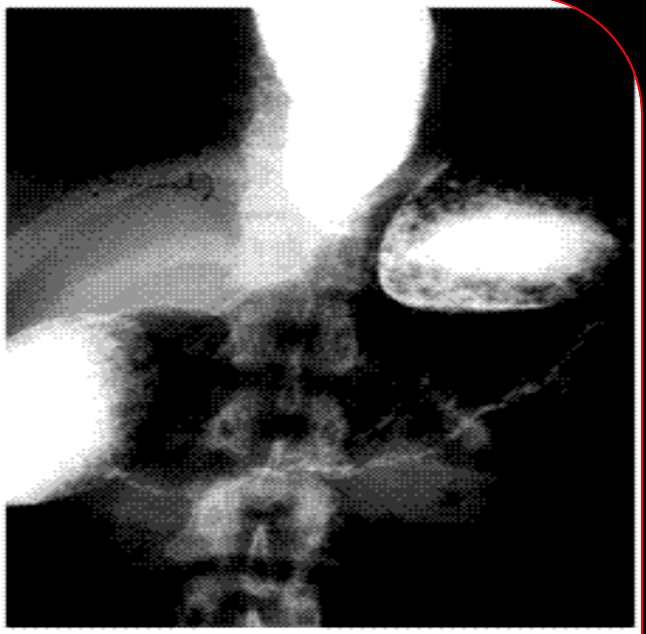
Radiographic contrast study of esophagus:

Serial radiographs at different times after contrast ingestion allow classification into 4 evolutive stages of esophagopathy.

- **Stage I**, the diameter of the esophagus is normal; emptying is delayed. The organ is sometimes hyperkinetic.
- **Stage II**, the organ is dilated (**Megaesophagus**) and displays irregular motile activity. The gastroesophageal sphincter is hypertonic.
- **Stage III**, dilatation and retention are important, and the motile activity is clearly reduced.
- **Stage IV**, the esophagus is clearly ***dilated and elongated*** (**DolichoMegaEsophagus**) and ***atonic***.

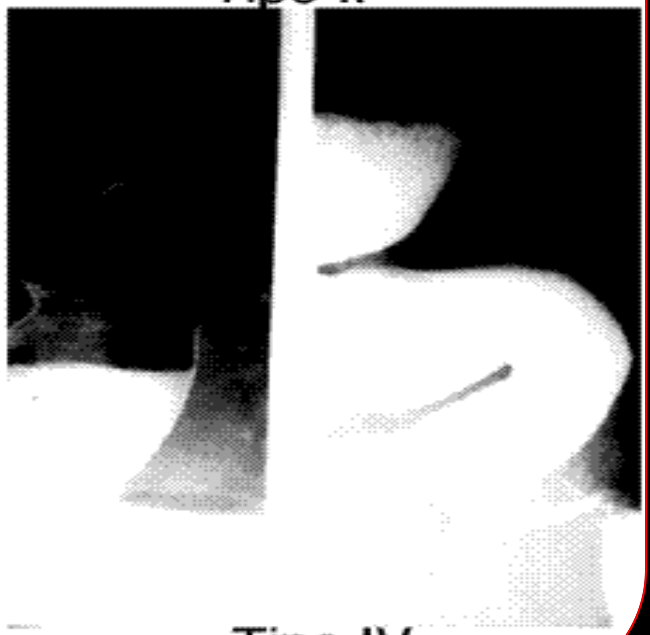


Tipo I



Tipo II

Tipo III



Tipo IV

Manometric and radiologic aspects of Chagas' megaesophagus: importance to its surgical treatment

Article in Portuguese

Crema E, Cruvinel LA, Werneck AM, de Oliveira RM, Silva AA.
Disciplina de Cirurgia do Aparelho Digestivo da Faculdade de Medicina do Triangulo Mineiro, R. Getulio Guarita s/n, 38025-450 Uberaba, MG. cirurgiafmtm@bol.com.br

This study analyzed the radiologic and manometric findings of 43 patients suffering from chagasic megaesophagus with positive tests for Chagas' disease. There was a significant reduction in the high pressure levels of the body of the esophagus related to the stage of the disease: stage I/II--42.9 mmHg; stage III--23.6 mmHg; stage IV--15.6 mmHg. It was observed that 5 (35.7%) stage III patients had high pressure levels below 20 mmHg and presented advanced megaesophagus and these underwent a subtotal esophagectomy following esophagogastroplasty instead of cardiomyotomy with anti-reflux valve. The manometric study in stage III patients with chagasic megaesophagus was considered helpful to indicate esophagectomy with gastric pull-up procedure

PMID: 15049104 [PubMed - indexed for MEDLINE

J Thorac Cardiovasc Surg. 2000 Jan;119(1):194-

Esophagectomy with gastric reconstruction for achalasia.

Banbury, Rice, Goldblum, Clark, Baker, Richter, Rybicki, Blackstone.

Center for Swallowing and Esophageal Disorders and the Departments of Thoracic and Cardiovascular Surgery, The Cleveland Clinic Foundation, Ohio, USA.

PURPOSE: Achalasia is a degenerative esophageal disorder that may result in esophageal failure necessitating resection for restoration of gastrointestinal function. This study evaluates a protocol of esophageal resection and gastric reconstruction for end-stage achalasia. METHODS: Hospital records, radiographic studies, and resection specimens of patients undergoing esophagectomy and gastric reconstruction were reviewed. Patient outcome was defined by an evaluation of symptoms (early satiety, dysphagia, regurgitation, and reflux), dietary restrictions, and ability to maintain or gain weight. Preoperative, operative, and postoperative variables and pathologic features in the resection specimens were analyzed to determine predictors of outcome. RESULTS: In a 10-year period, 32 patients underwent esophagectomy with gastric reconstruction for achalasia; 30 (94%) underwent elective surgery and 2 (6%), emergency surgery. No postoperative deaths occurred. Of 29 patients completing telephone interviews, 24 (83%) had no or mild dysphagia; 21 (72%), no or mild regurgitation; 20 (69%), no or mild reflux; and 19 (66%), no or mild early satiety. Twenty-four (83%) patients had no or minimal dietary restrictions; 26 (90%) had no or minimal social dietary restrictions. Postoperative weight was not different from preoperative weight. Of 30 patients, 26 (87%) felt better after esophagectomy and 25 (83%) would have the operation again. There were few predictors of outcome. Younger patients were more likely to have dysphagia (P =.03). CONCLUSIONS: Esophagectomy with gastric reconstruction relieves preoperative dysphasia and regurgitation in the majority of patients. Dietary function and weight maintenance are excellent, attesting to the durability of the procedure [illegible]age achalasia.

PMID: 10343255 [PubMed - indexed for MEDLINE

Dtsch Med Wochenschr. 2004 Apr 2;129(14):735-8

Dolichomegaesophagus in achalasia.

Therapy by esophogectomy in an aged patient

Article in German

Gockel I ‘Eckardt VF ‘Roth W ‘Junginger T.

Klinik fur Allgemein- und Abdominalchirurgie, Johannes Gutenberg-Universitat, Mainz.

gockel@ach.klinik.uni-mainz.de

HISTORY AND CLINICAL FINDINGS: A 78-year-old woman suffered from achalasia since 63 years with a progressive decompensation over the last year. 53 years ago, treatment with the Stark Dilator and 24 years ago, pneumatic dilation had been carried out. Currently, the patient presented with dysphagia for liquid and solid food, with permanent retrosternal pain and regurgitation for every meal, leading to a weight loss of 10 kg. INVESTIGATIONS: The barium esophagogram showed a marked dilation of the esophagus with retinated secretions and food. The cardia had a maximum width of 15 mm. On endoscopy, reflux esophagitis and an insufficient lower esophageal sphincter were evident. TREATMENT AND COURSE: Transhiatal esophageal resection with gastric pull-up and cervical esophagogastrostomy was performed. The postoperative course was without complications and normal alimentation could be restored with a marked improvement of preoperative symptoms. CONCLUSION: Esophageal resection and gastric pull up is the more favourable treatment option in elderly patients with decompensated achalasia and dolichomegaesophagus compared to a gastric tube for alimentation--adjusted to the individual surgical risk

Original Paper

Digestive Diseases

Dig Dis 2004;22:396–401
DOI: 10.1159/000083605

Subtotal Esophageal Resection in Motility Disorders of the Esophagus

Ines Gockel[a] Werner Kneist[a] Volker F. Eckardt[c] Katja Oberholzer[b]
Theodor Junginger[a]

Departments of [a] General and Abdominal Surgery, and [b] Radiology, Johannes Gutenberg University, Mainz, and [c] Department of Gastroenterology, German Diagnostic Clinic, Wiesbaden, Germany

Conclusion

The choice of the operative approach and the type of interposition may be determined by the presence or absence of scarring due to previous surgery. If the latter is absent, we believe that transhiatal esophagectomy with gastric pull-up and cervical esophagogastrostomy should be the preferred procedure and can be performed with low morbidity.

Esophageal tumor

CANCERS

adenocarcinoma

adenosquamous

squamous cell

basaloid squamous cel

carcinoid

large cell neuroendocrine

lymphoepithelioma

melanoma

metastases

mucoepidermoid

Paget's disease

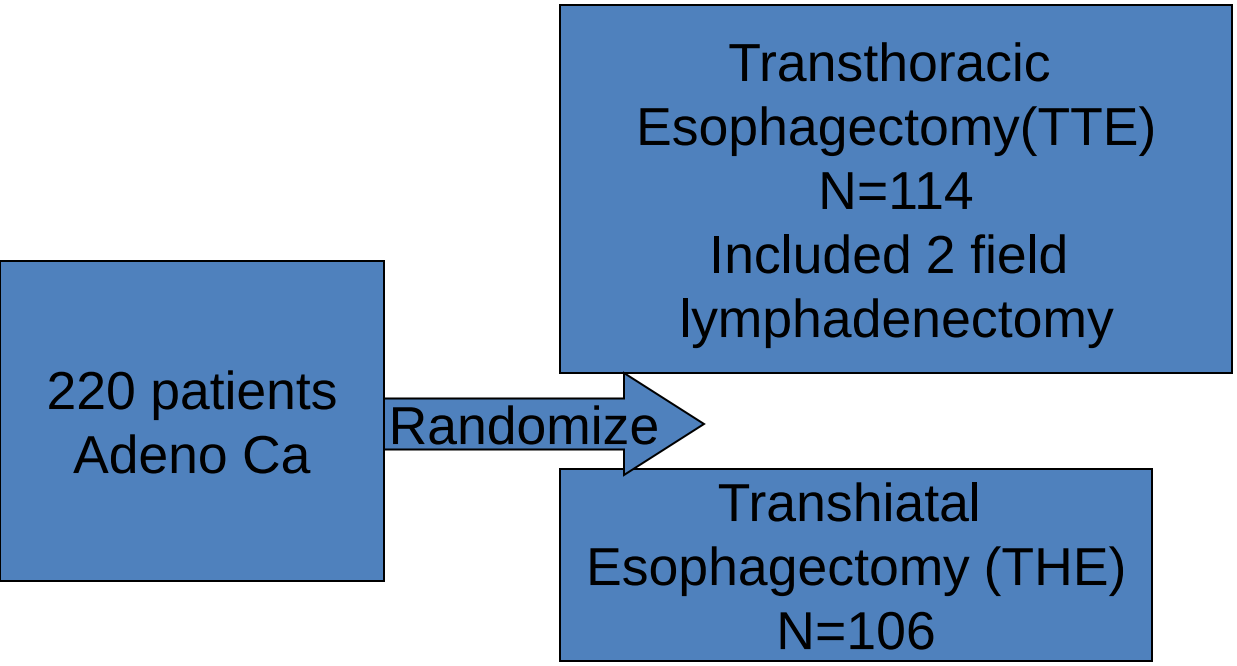
pleomorphic giant cell

sarcomatoid

small cell

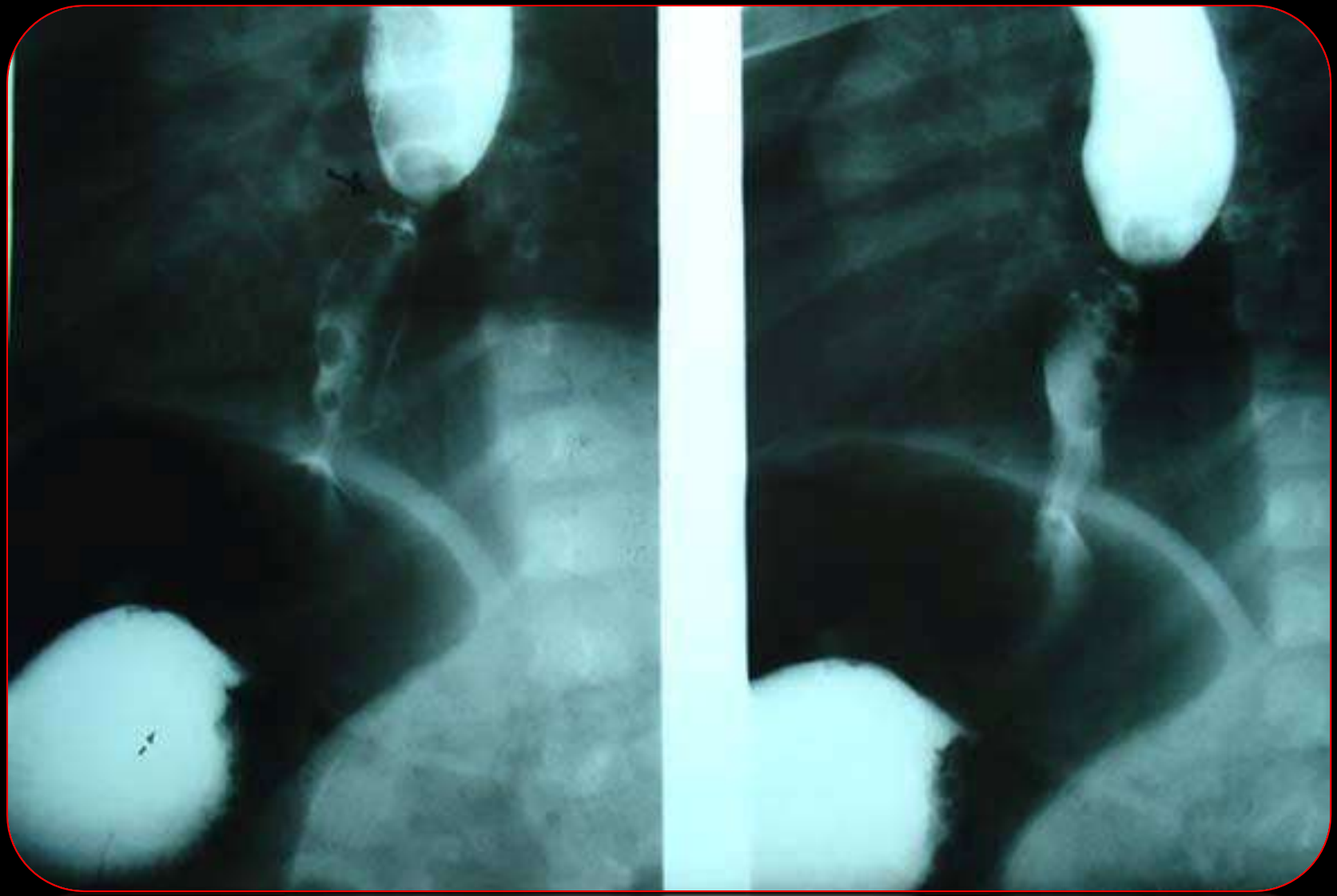
verrucosu

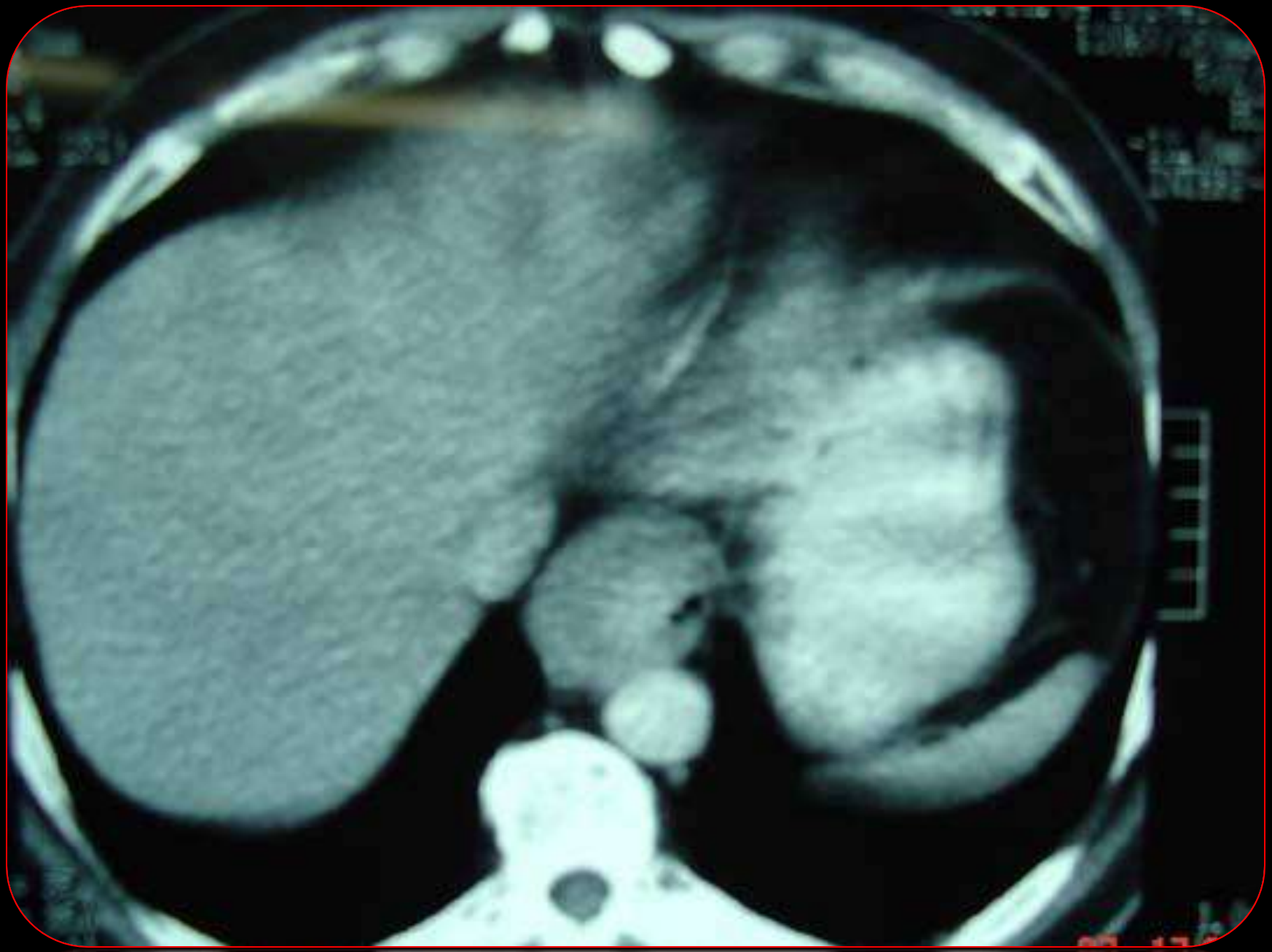
Hulscher et al

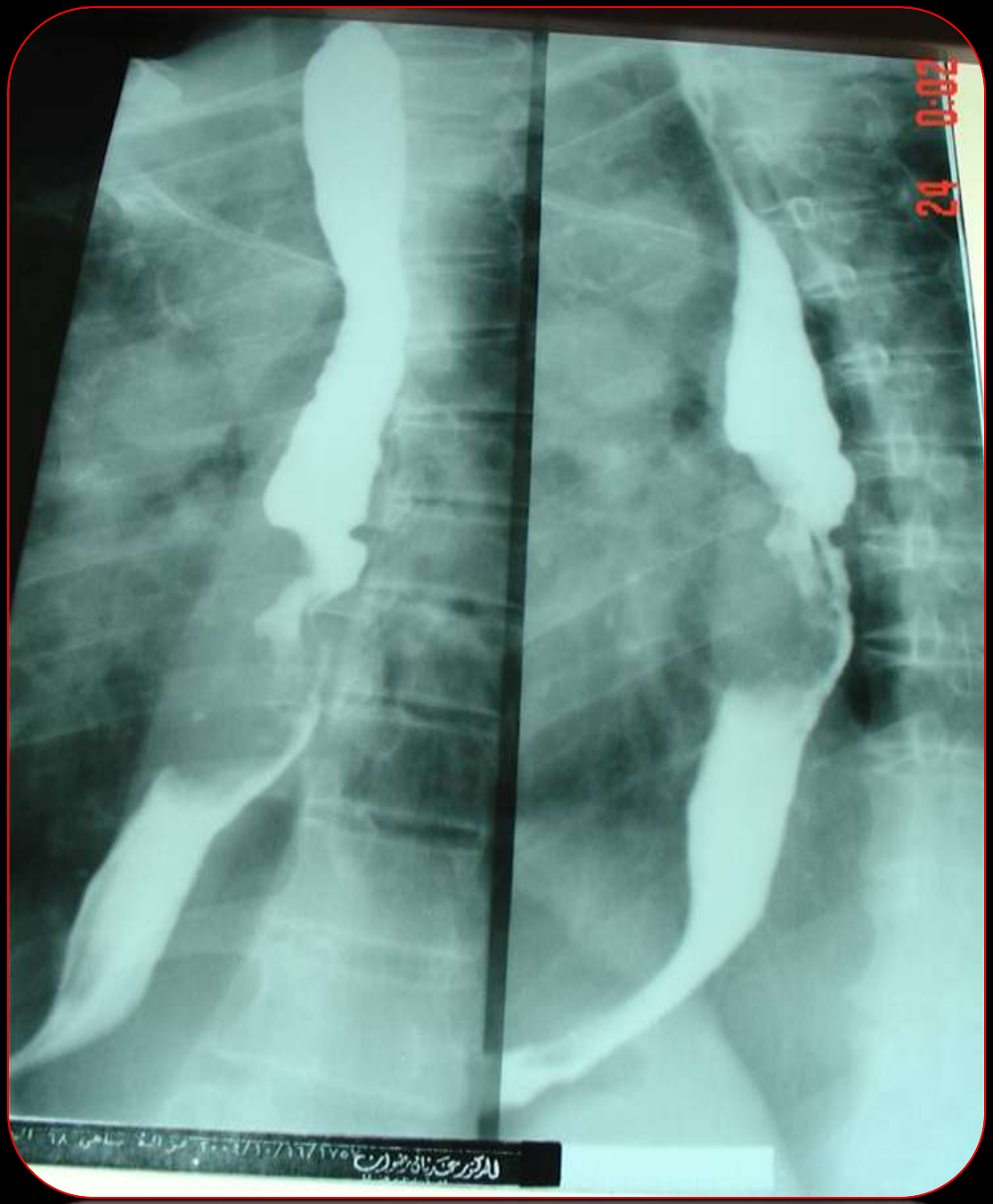


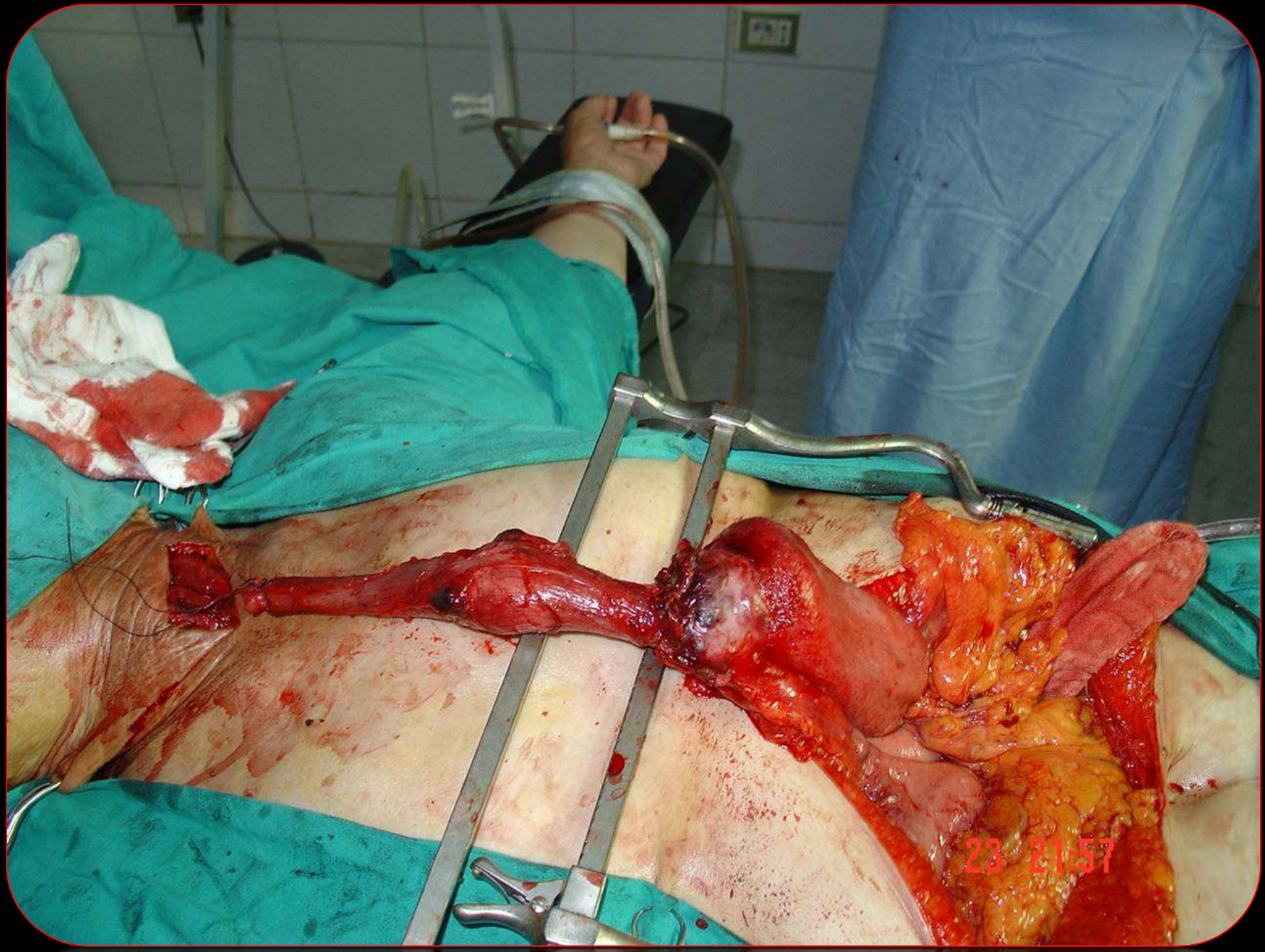
- Perioperative morbidity was higher after TTE
- No significant difference in in-hospital mortality (P=0.45)
- After a median follow-up of 4.7 years:
- 70 % of patients died post THE and 60% after TTE (P=0.12)
- Median overall and disease-free survival did not differ statistically between the groups.
- However there was a trend towards improved long-term survival at 5 years with the TTE.

NEJM 2003





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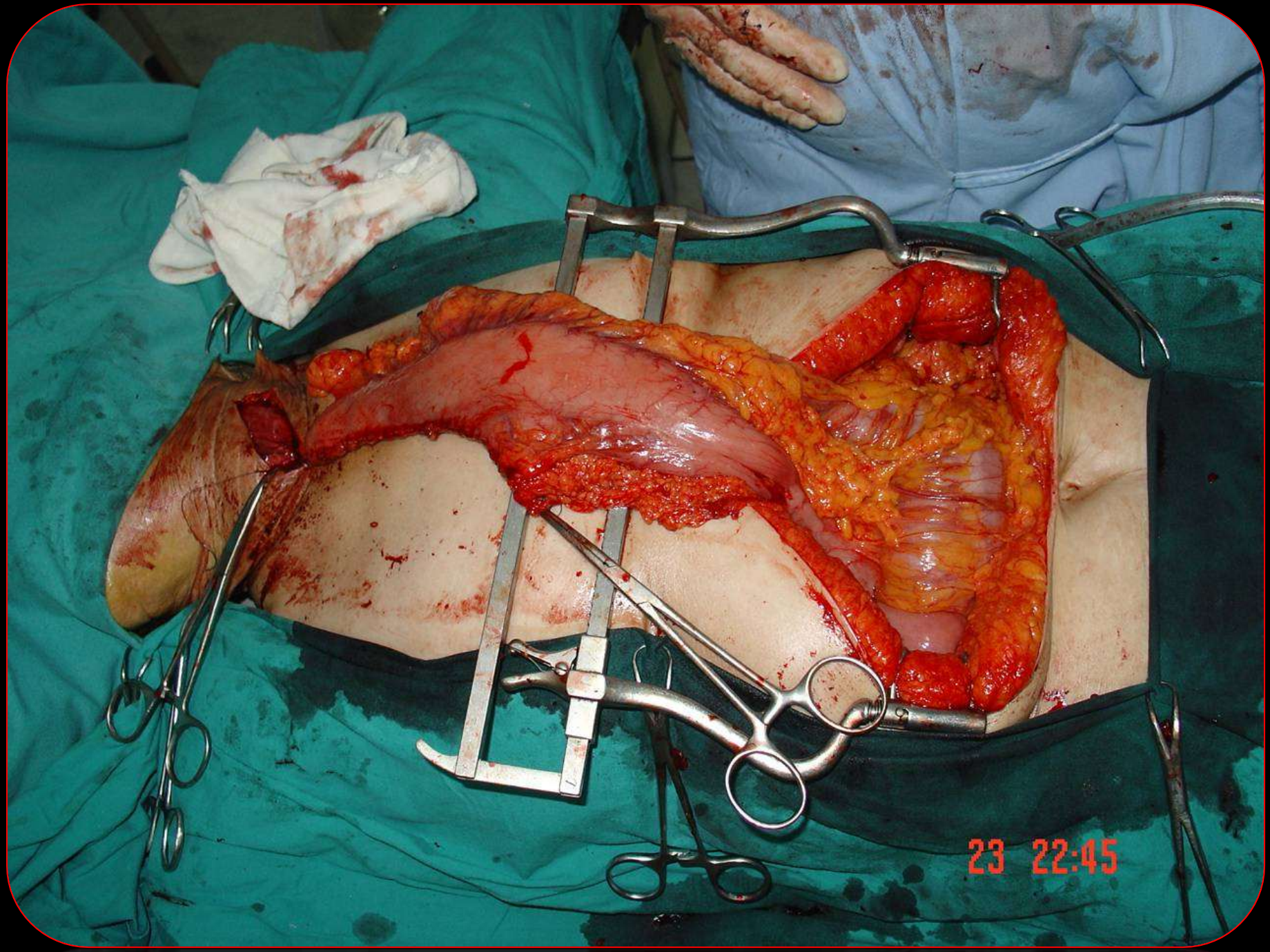
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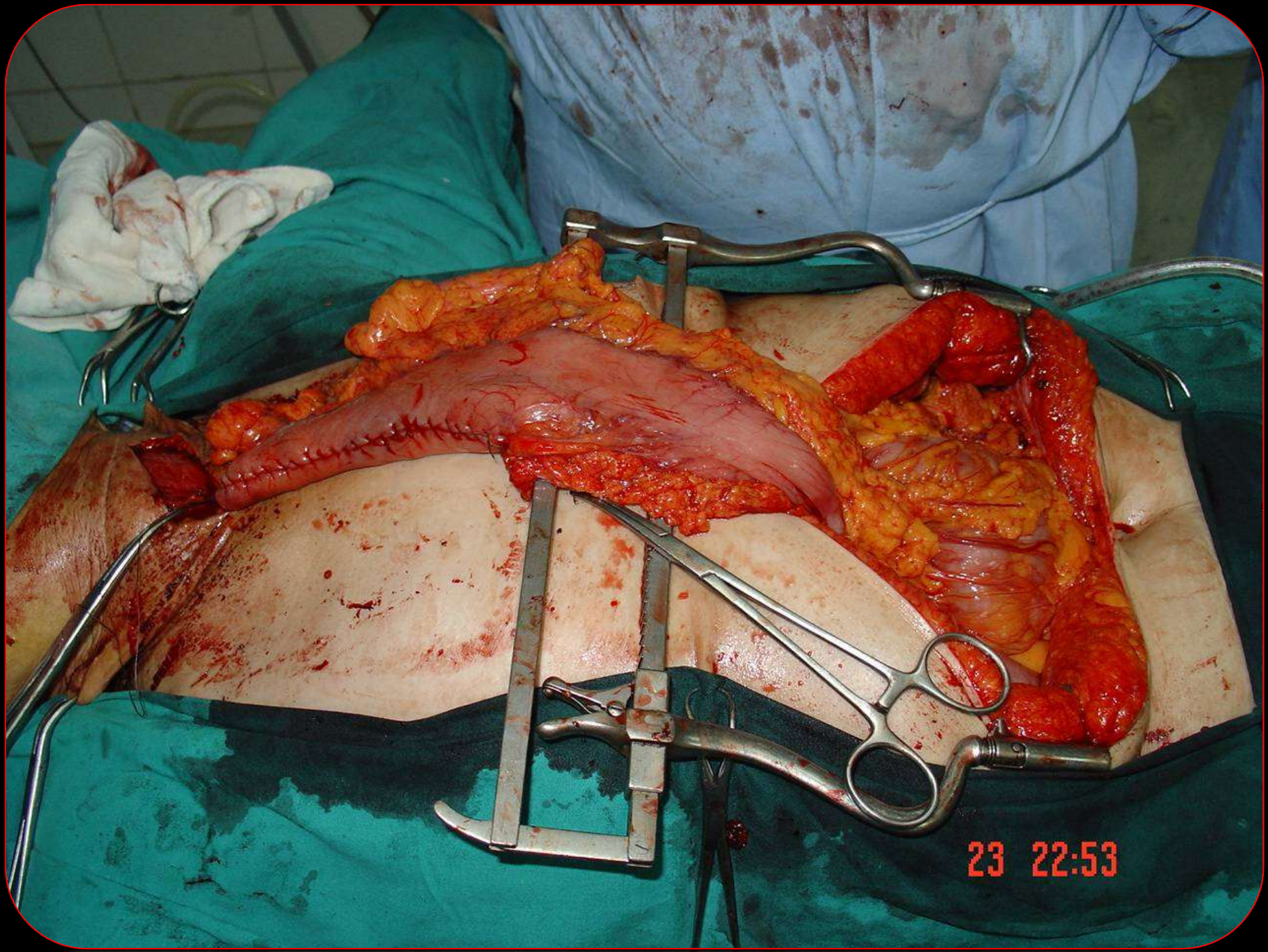
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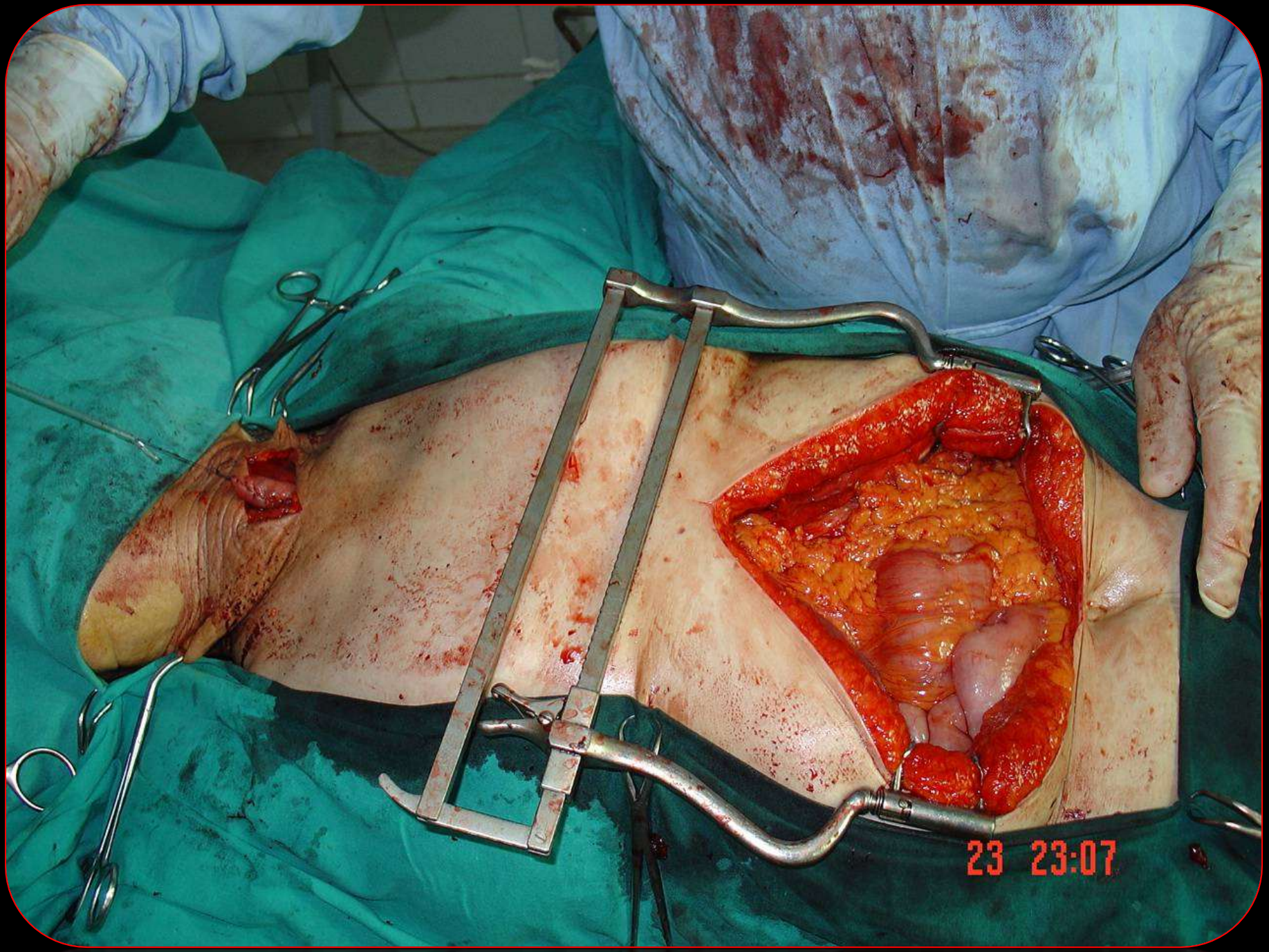
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Techniques and results of esophageal cancer surgery in Germany.

Huttl TP · Wichmann MW · Geiger TK · Schildberg FW · Furst H.
Department of Surgery, Klinikum Grosshadern, University of Munich, 81366 Munich, Germany. thomas.huettl@gch.med.uni-muenchen.de

Langenbecks Arch Surg. 2002 Jul;387(3-4):125-9. Epub 2002 Apr 30

AIMS: This study evaluated the techniques and short-term results of surgical treatment for esophageal cancer in Germany by a nationwide representative survey. METHODS: In 2000 a questionnaire including 63 structured items concerning indication, technique, number of procedures, complications, and hospital mortality was sent to 308 randomly selected general, gastrointestinal, and thoracic surgeons and all university hospitals in Germany (20% of all surgeons). The response rate was 76% (n=234). RESULTS: In 1999 the 56 participating hospitals performed approximately 370,000 procedures, including 1,677 operations for esophageal diseases, including 891 esophagectomies, 706 for esophageal cancer, 285 for cancer of the cardia. Gastric interposition was the most common technique to restore alimentary tract continuity (86%). Interposition of the colon (ascending colon 64%) is a common procedure only in 22 centers, indicating that experience with this means of esophageal reconstruction is limited. There were no significant differences in complication and mortality rates between gastric transposition and colon interposition. The overall complication rate was 61%, with 36% after gastric interposition and 42% after colon interposition. Anastomotic leakages occurred in 12% and 15%, respectively, and the rate of graft necrosis was 3% in both groups. Hospital mortality was 8% with gastric transposition and 11% with colon interposition. Mean postoperative hospital stay was 24 days. CONCLUSIONS: This study indicates that gastric transposition is frequently used for reconstruction after esophageal resection for malignant disease. It appears that the colon is not as accepted as the stomach for reconstruction, although the reported complication rates compare well with those reported after gastric transposition. This study allows a realistic evaluation of the overall risk of these surgical techniques

The Annals of Thoracic Surgery
Volume 72, Issue 1 , July 2001, Pages 306-313

Transthoracic versus transhiatal resection for carcinoma of the esophagus: a meta-analysis

Hulscher, Tijssen, Obertop and Van Lanschot
Department of Surgery, Academic Medical Center, University of Amsterdam, Amsterdam, The Netherlands

Available online 21 June 2001 .

Abstract

There is much controversy about the surgical approach to esophageal carcinoma: should an extensive resection be done to optimize long-term survival or should the extent of the operation be limited to obtain lower perioperative morbidity and mortality rates? We systematically reviewed the English-language literature published during the past decade, with emphasis on the differences between transthoracic and transhiatal resections regarding early morbidity, in-hospital mortality rates, and 3- and 5-year survival. *Although transthoracic resections had significantly higher early (pulmonary) morbidity and mortality rates, 5-year survival was approximately 20% after both transthoracic and transhiatal resections.*

Synchronous electrogastrographic and manometric study Of the stomach as an esophageal substitute.

Izbeki F · Wittmann T · Odor S · Botos B · Altorjay A

Department of Surgery, Saint George University Teaching Hospital, Szekesfehervar, H-8000, Hungary.

AIM: To investigate the electric and contractile mechanisms involved in the deranged function of the transposed stomach in relation to the course of the symptoms and the changes in contractile and electrical parameters over time. METHODS: Twenty-one patients after subtotal esophagectomy and 18 healthy volunteers were studied. Complaints were compiled by using a questionnaire, and a symptom score was formed. Synchronous electrogastrography and gastric manometry were performed in the fasting state and postprandially. RESULTS: Eight of the operated patients were symptom-free and 13 had symptoms. The durations of the postoperative periods for the symptomatic (9.1+/-6.5 mo) and the asymptomatic (28.3+/-8.8 mo) patients were significantly different. The symptom score correlated negatively with the time that had elapsed since the operation. The percentages of the dominant frequency in the normogastric, bradygastric and tachygastric ranges differed significantly between the controls and the patients. A significant difference was detected between the power ratio of the controls and that of the patients. The occurrence of tachygastria in the symptomatic and the symptom-free patients correlated negatively both with the time that had elapsed and with the symptom score. There was a significant increase in motility index after feeding in the controls, but not in the patients. The contractile activity of the stomach increased both in the controls and in the symptom-free patients. In contrast, in the group of symptomatic patients, the contractile activity decreased postprandially as compared with the fasting state. CONCLUSION: The patients' post-operative complaints and symptoms change during the post-operative period and correlate with the parameters of the myoelectric and contractile activities of the stomach. Tachygastria seems to be the major pathogenetic factor involved in the contractile dysfunction.

World J Gastroenterol. 2005 Feb 28;11(8):1172-8.

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ELSEVIER

World J Gastroenterol 2005;11(8):1172-1178
World Journal of Gastroenterology ISSN 1007-9327

• *CLINICAL RESEARCH* •

Synchronous electrogastrographic and manometric study of the stomach as an esophageal substitute

Ferenc Izbéki, Tibor Wittmann, Sándor Ódor, Balázs Botos, Áron Altorjay

For reconstruction of the alimentary tract, gastric interposition is the most common procedure in patients with esophageal cancer[1]. Preparation of the stomach, as an esophageal substitute, is associated with substantial alterations: vagotomy is inevitable and the blood supply is reduced. Both truncal

Our present data are consistent with reports on the denervated stomach as an esophageal replacement that has been shown to act as a contractile organ, this contractile activity being recovered postoperatively over time[13].

The major new findings of our present study are the time dependency of the post-operative complaints and symptoms of the patients, and their correlation with the parameters of the myoelectric and contractile activities of the stomach, obtained by simultaneous electrogastrographic and manometric investigations. The processes of electromechanical adaptation in the transposed stomach result in decreases in time of the postoperative symptoms in patients after esophagectomy. Tachygastria seems to be the major pathogenetic factor involved in the contractile dysfunction.

Operative Techniques in Thoracic and Cardiovascular Surgery

General Thoracic Surgery

Transhiatal Esophagectomy without Thoracotomy

Mark B. Orringer, MD

THE and a CEGA is an effective means of managing the patient with both benign and malignant esophageal disease requiring resection. The advantages of THE over transthoracic esophagectomy have been demonstrated in a recent meta-analysis of 7,527 patients.[8] A successful THE requires rather rigid adherence to a series of technical steps outlined in this article. Our patients typically have epidural catheters for

1522-2942/05/$-see front matter
doi:10.1053/j.optechstcvs.2005.03.001

Operative Techniques in Thoracic and Cardiovascular Surgery

General Thoracic Surgery

Transhiatal Esophagectomy without Thoracotomy

Mark B. Orringer, MD

Summary

Since 1976, my associates and I have performed approximately 1,950 transhiatal esophagectomies without thoracotomy at the University of Michigan, nearly 80% for carcinoma and 20% for benign disease.[4] The patients have ranged in age from 14 to 92 years (average 62 years), one quarter of the patients being 71 years of age or older. The stomach was used as the esophageal substitute in 97% of these patients. Colon was required to replace the esophagus only in those with a history of a prior gastric resection for peptic ulcer disease or a caustic gastric injury resulting in scarring and a contracted stomach. Categorically, the properly mobilized stomach will virtually always reach to the neck for a cervical esophagogastric anastomosis.

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Morbidity and mortality after esophagectomy for esophageal carcinoma: A risk analysis

Ines Gockel*, Christoph Exner and Theodor Junginger

The transhiatal procedure is associated with a significantly lower morbidity and mortality rate and thus represents – as long term survival does not favor the transthoracic approach – the surgical technique of choice for adenocarcinoma of the esophagus. In contrast, our previ-

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THANK YOU FOR YOUR ATTENTION

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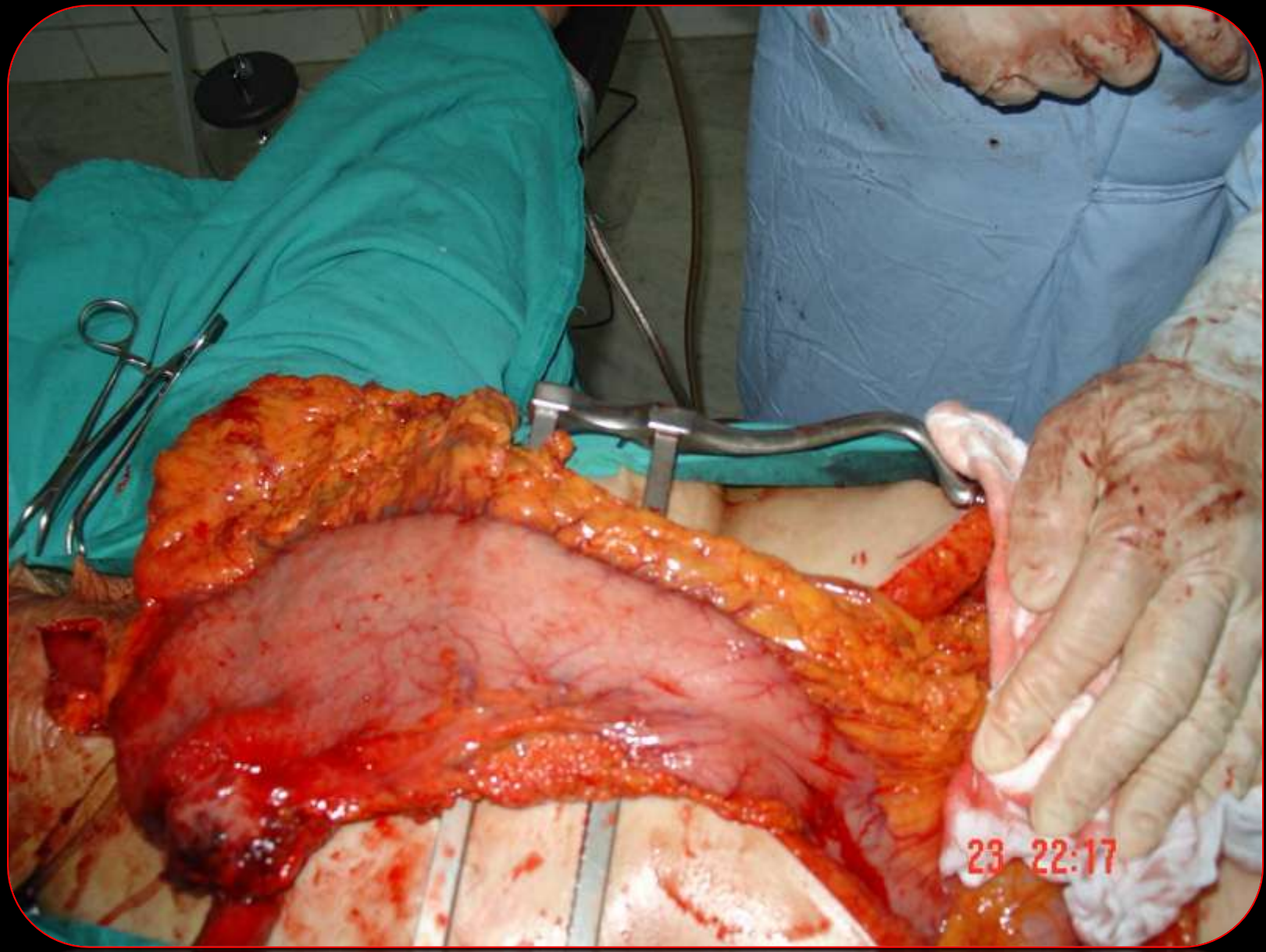
Gastric Emptying Procedures after Esophagectomy

Jeffrey A. Hagen and Christian G. Peyre

search from 1950 to 2005 for English language articles that address the subject of gastric drainage following esophagectomy

- Symptoms of Gastric Stasis
- Respiratory Complications
- Impact on Diet
- Impact of a Gastric Drainage
- Procedure on Gastric Emptying
- Dumping Symptoms
- Bile Refluxand Diarrhea

The sum of the evidence favors the routine addition of a pyloroplasty or pyloromyotomy when performing a reconstruction following esophagostomy (level of evidence 1a to 1b; recommendation
grade B).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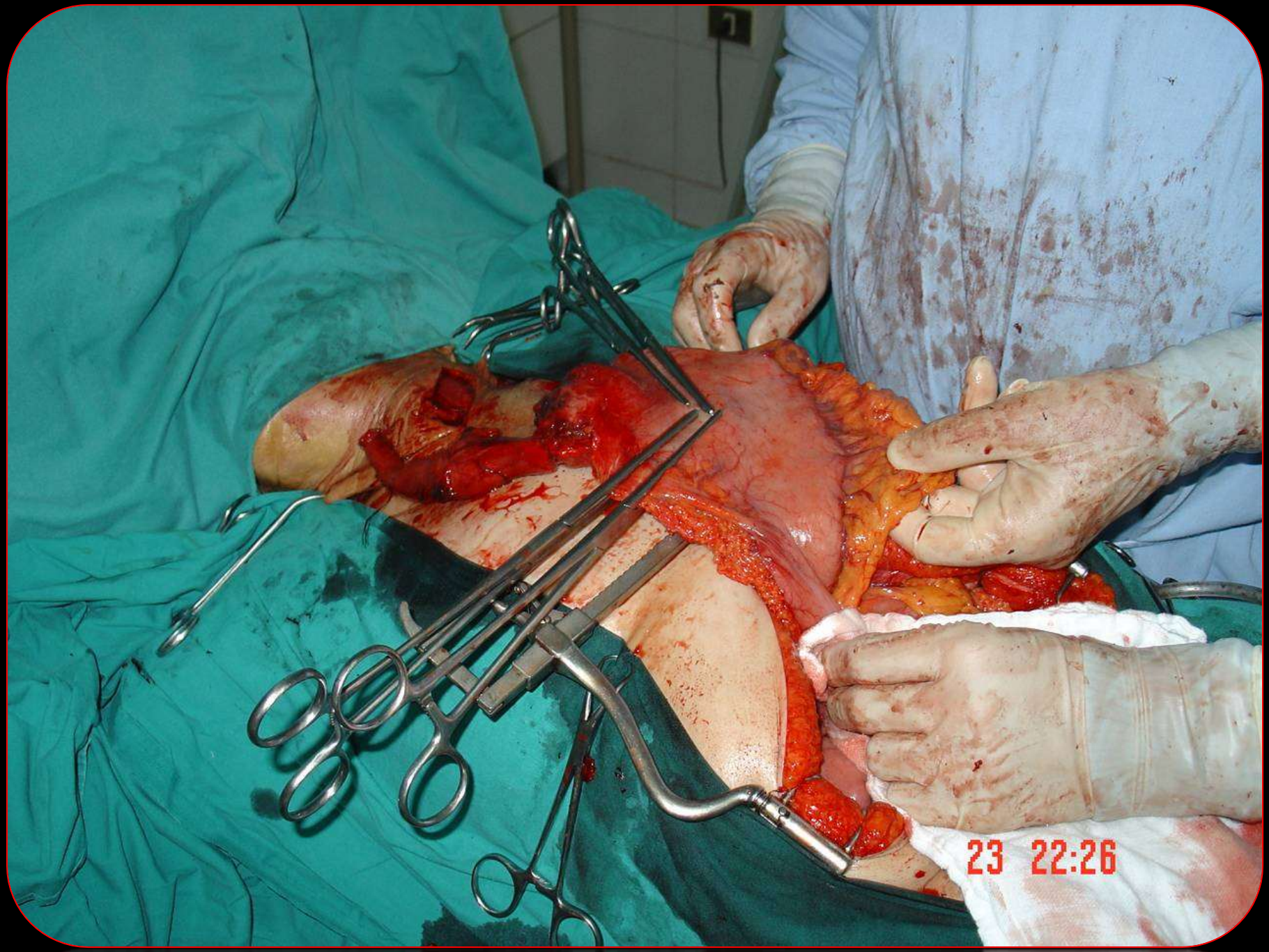
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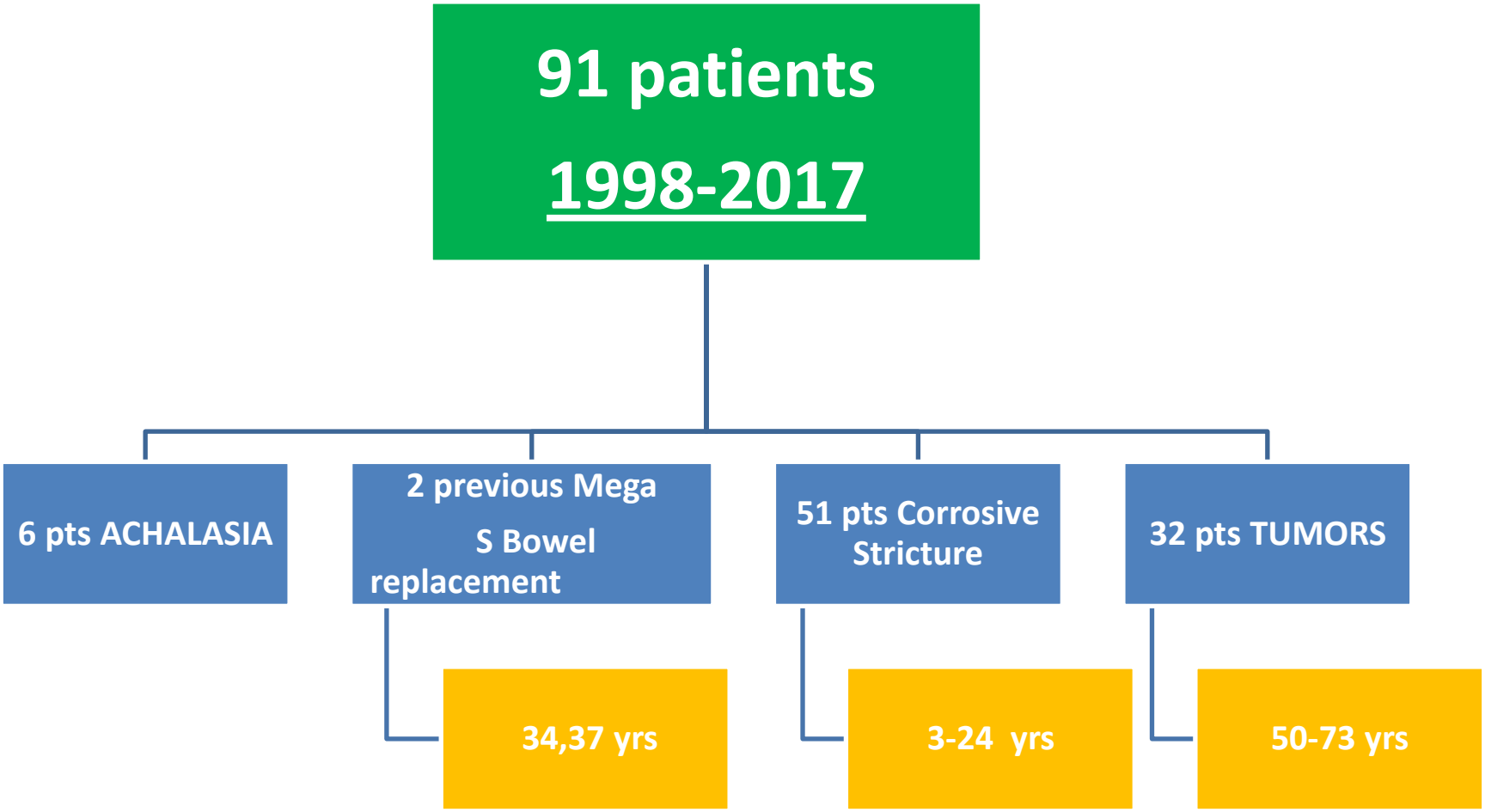
91 patients
1998-2017
6 pts ACHALASIA
2 previous Mega S Bowel replacement
51 pts Corrosive Stricture
32 pts TUMORS
34,37 yrs
3-24 yrs
50-73 yrs