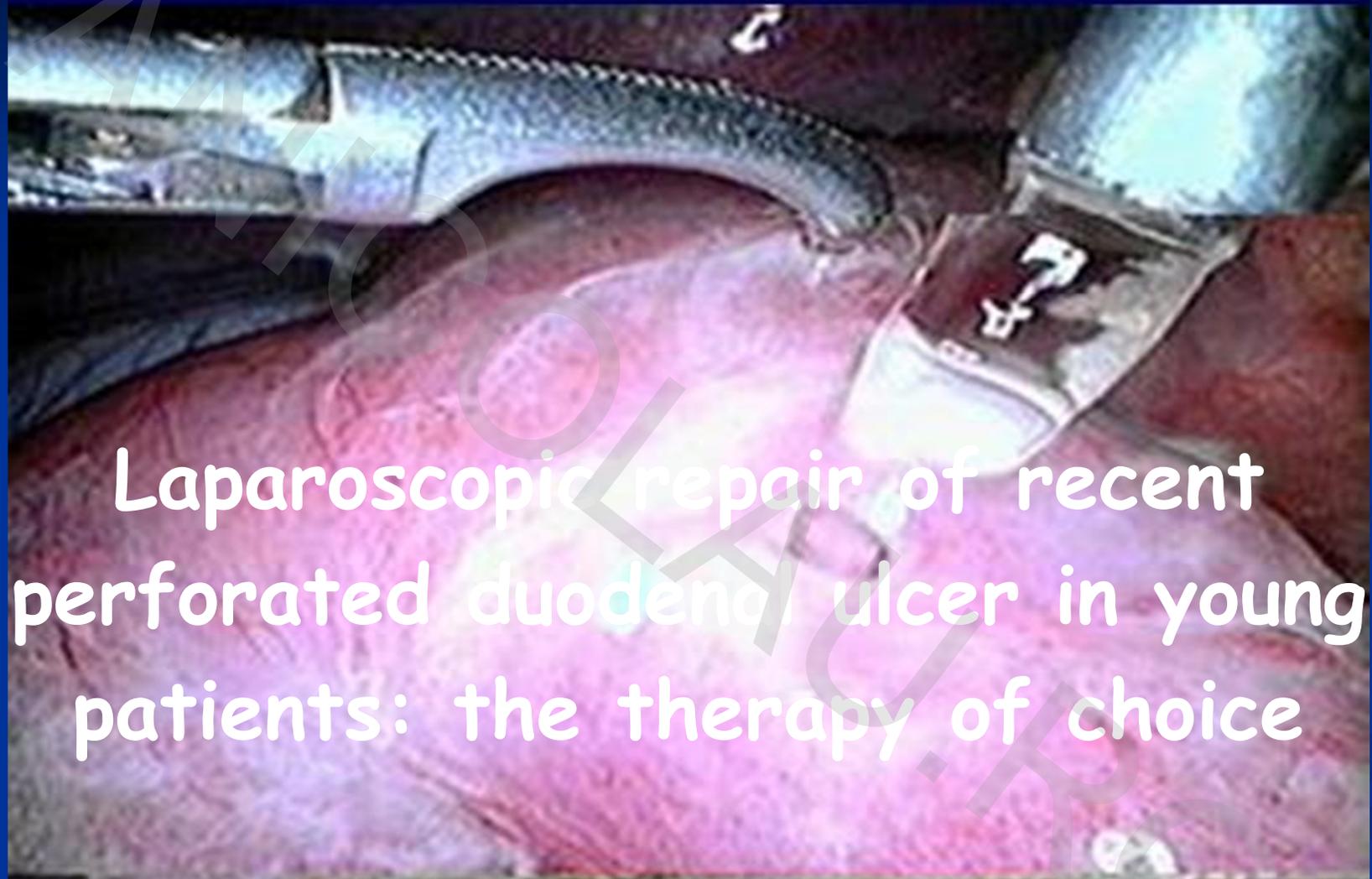


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- 1992 - in perforated duodenal ulcer (PDU) there were five therapeutic decisions:
  - 1) Whether an operation is to be performed
  - 2) Whether a plication - omental patch or definitive operation is necessary
  - 3) Whether the patient is stable enough to undergo a definitive operation
  - 4) Which definitive operation is indicated
  - 5) Whether the availability of new antacid agents should influence the choice of operation

*[Feliciano DV, 1992, Surg Clin N Am]*

# Complete antiulcer therapy = definitive operation

- 20 years ago, suture of PDU  $\Rightarrow$  "law of thirds"
  - 1/3 cured permanently
  - 1/3 require long-term medical anti-ulcer therapy
  - 1/3 require definitive ulcer surgery
- **Closure + omentopexy + modern antiulcer therapy = standard therapy**
- Follow-up 12-43 months 0-6.6% recurrent ulcer

*[Ng KW et al, Ann Surg, 2000; Metzger J et al, Swiss Med Wkly, 2001; Rodriguez-Sanjuan JC et al, 2005, World J Surg]*

- Recurrence after TV + pyloroplasty = closure + medical anti-ulcer therapy

*[Gutierrez De La Pena C et al, 2000, Dig Surg]*

# "Does the patient benefit when I choose the laparoscopic approach?"

*[Pappas N, Lagoo SA, 2002, Ann Surg]*

## ■ Unselected cases:

- advantages: less analgesic use

*[Druart ML et al, 1997, Surg Endosc; Lau WY, 1996, Ann Surg]*

## ■ 2004 - metanalysis:

- ⊕ less analgesic use and less wound infections
- ⊖ operating time, intraabdominal collections, reoperations

*[Lau H, 2004, Surg Endosc]*

- Only 2 randomized studies:
  - Lau WY (Ann Surg, 1996), Liu WT (Ann Surg, 2002)
- 2005 metanalysis
  - ⊕ less analgesic use, wound infections, hospital stay, morbidity
  - ⊖ operating time, suture leaks, intraabdominal abscesses, reoperations
  - Laparoscopic suture-closure seems better for low-risk patients.

*[Lunevicius R, Morkevicius M, 2005, World J Surg]*

- *Data about analgesic needs, oral food intake and hospital stay (3 vs 13 days) were non-homogenous*

## Risk factors are associated with increased morbidity, mortality and conversion rates

- Main risk factors:
  - Boey risk factors:
    - Shock on admission
    - Delayed presentation (> 24 h)
    - ASA III/IV
  - Older age  $\geq$  70 years
  - APACHE II > 5
  - Perforation > 6 mm (1 cm)
  - Laparoscopic expertise
- Secondary: anemia, malnutrition, abdominal distension, corticotherapy, cocaine use, etc.

## ■ Problems

### ■ Peritonitis

- Septic shock ⇒ absolute contraindication
- Experimental studies: capnoperitoneum increases risk of infections in case of prolonged peritonitis (>12 h), evidence-based clinical data are lacking

*[Navez B, 2006, EAES Congress]*

- Cardio-pulmonary comorbidities: relative contraindication
- Postoperative adhesions
- Concomitant ulcer stenosis/bleeding/perforation ⇒ definitive surgery
- Inadequate ulcer localization
- Posterior associated ulcer

## ■ Laparoscopic closure-suture?

- When?
- How?

## ■ When?

- Patients with PDU and no or low risk factors
- Laparoscopic expertise team
- Technical equipment

*[The EAES clinical practice guidelines on laparoscopy for abdominal emergencies, 2006]*

- 1989 - Jordan PH Jr: in the absence of risk factors the definitive operation is recommended; in the presence of risk factors simple closure is recommended

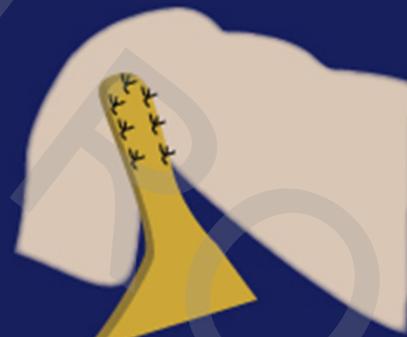
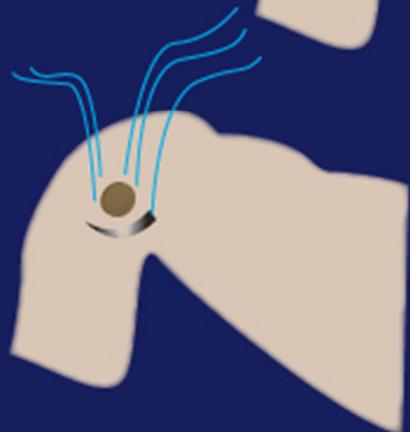
## ■ How?

- Simple suture (1-3 stitches)
- Suture + omentopexy
  - Graham/Graham-like
  - Modified Graham-like
  - Omental patch
- Fibrin glue repair

Graham patch

Modified  
Graham patch

Omentopexy



Graham patch

Omentopexy

## When is conversion indicated?

1. Purulent peritonitis (delayed presentation)
2. Hemodynamic instability
3. Abdominal distention
4. Fragility and infiltration of ulcer edges
5. Perforation  $\geq$  6-10 mm
6. Posterior perforated ulcer

*[Nicolau AE, Chirurgie laparoscopică de urgență, CNI Coresi, 2004; Lunevicius R, Morkevicius M, Surg Endosc, 2005]*

- 1995, Georgescu Ş
- 1998, 2002, Nicolau AE
- Palade R, Târcoveanu E, Pantea S, etc

## EAES consensus statement

Surg Endosc (2006) 20: 14–29  
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and Other Interventional Techniques

## Laparoscopy for abdominal emergencies

### Evidence-based guidelines of the European Association for Endoscopic Surgery

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**Table 2.** Randomized and nonrandomized controlled trials comparing laparoscopic and open repair for perforated gastroduodenal ulcers<sup>a</sup>

Study, year	LoE	No. of patients	Leakage rates (%)	Total complication rates (%)	Difference in hospital stay (d)
Lau et al., 1996 [153]	1b	48/45	2/2	23/22	±0 n.s. <sup>b</sup>
Siu et al., 2002 [246]	1b	63/58	2/2	25/50	-1 sign. <sup>c</sup>
Johansson et al., 1996 [119]	2b	10/17	10/7	30/20	-1 n.s. <sup>b</sup>
Sø et al., 1996 [250]	2b	15/38	0/0	7/24	-2 n.s. <sup>b</sup>
Miserez et al., 1996 [74, 185]	2b	18/16	NA	50/9	-1 n.s. <sup>b</sup>
Chung et al., 1998 [57]	2b	3/3	NA	NA	-4 sign. <sup>c</sup>
Kok et al., 1999 [135]	2b	13/20	NA	8/15	-1 n.s. <sup>b</sup>
Næsgaard et al., 1999 [191]	2b	25/49	4/0	28/14	±0 n.s. <sup>b</sup>
Bergamaschi et al., 1999 [21]	2b	17/62	0/0	29/34	-2 n.s. <sup>b</sup>
Mehendale et al., 2002 [180]	2b	34/33	0/0	3/6	-5 sign. <sup>c</sup>
Lee et al., 2001 [155]	3b <sup>d</sup>	155/219	13/2	NA	-1 n.s. <sup>b</sup>
Nicolau et al., 2002 [202]	3b <sup>d</sup>	51/105	0/0	6/7	-2 sign. <sup>c</sup>
Seelig et al., 2003 [240]	3b <sup>d</sup>	24/31	4/3	13/26	-2 n.s. <sup>b</sup>
Tsumura et al., 2004 [272]	3b <sup>d</sup>	58/13	NA	5/23	-12 sign. <sup>c</sup>
Lam et al., 2005 [148]	3b <sup>d</sup>	523/1737	NA	3/13	-3 sign. <sup>c</sup>

## ■ Selection criteria

- Age < 50 years
- Onset-operation interval < 12 hours
- No comorbidities (ASA I/II)
- Without previous abdominal surgery

*[Nicolau, AE. et al ,1998, Chirurgia]*

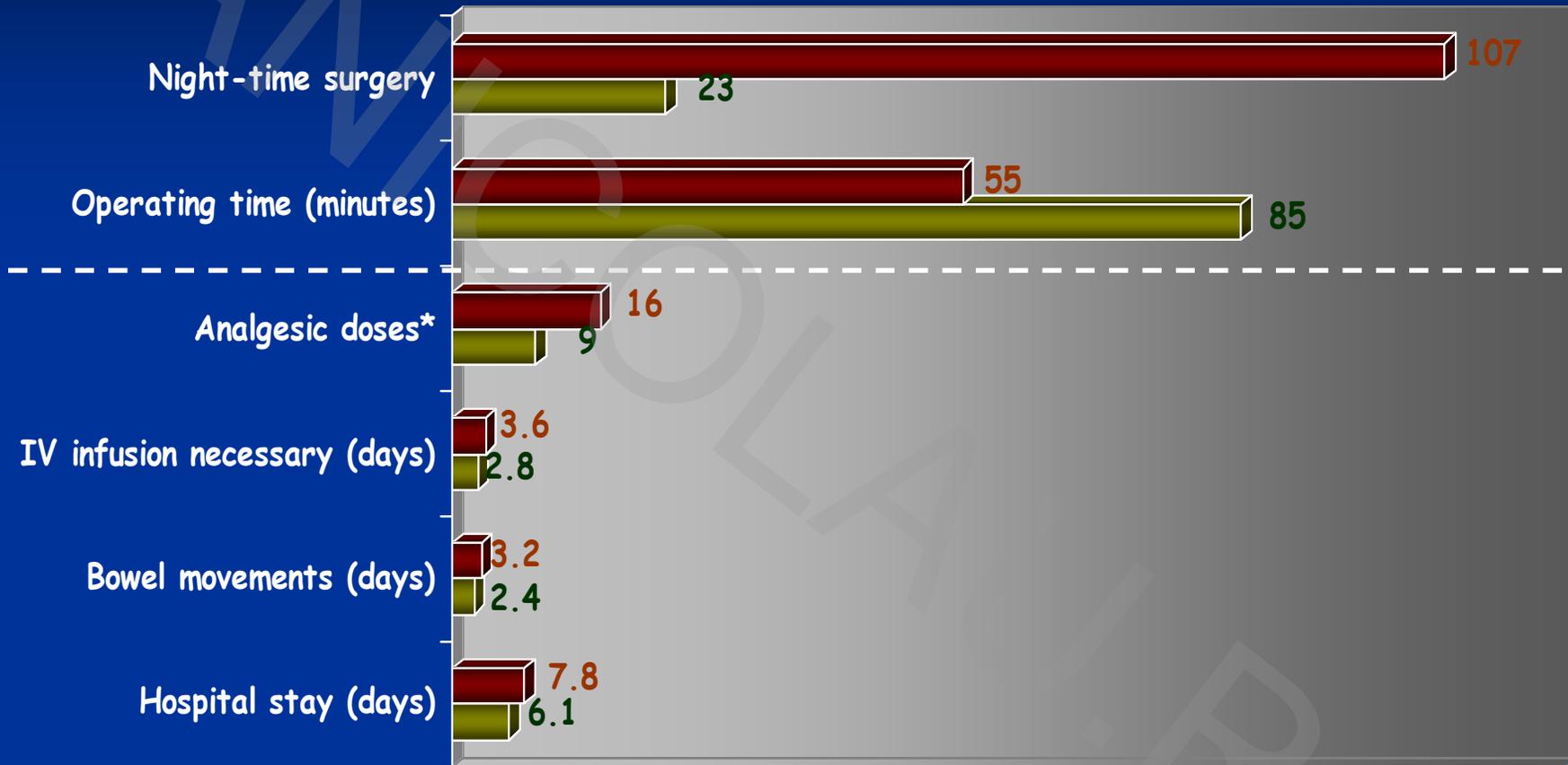
- 1995 February - 2005 March; prospective, nonrandomized study
- LSG (laparoscopically sutured group) = 78
- OSG (open sutured group) = 174
- Conversions: 5 (fragility of duodenal edges in 3 cases, accidental enterotomy, suture leak)
- Modified initial diagnosis (OSG): 5 (appendicitis)
- Suture:
  - Simple
  - omentopexy

## Results I

	GLS = 78	GSD = 174
Mean age (years)	30,3	30,9
Sex F/M (%)	4/74 (5,1/94,9)	23/151 (13,2/86,8)
Leukocytes/mm <sup>3</sup>	13342	14796
Ulcer history (%)	10(12,8)	26(14,9)
Time onset-surgery (hours)	9,5	10,5
ASA I-II (%)	75 (96,2)	163 (93,7)
ASA III (%)	3 (3,8)	11 (6,3)
Perforation > 5 mm (%)	6(7,6)	19(10,9)
Pneumoperitoneum (%)	63 (80,7)	135 (77,5)
Air-fluid levels (%)	-	6 (3,4)

p>0,05

# Results II



\*as requested, maximum 5 doses/24 hours

p<0,05

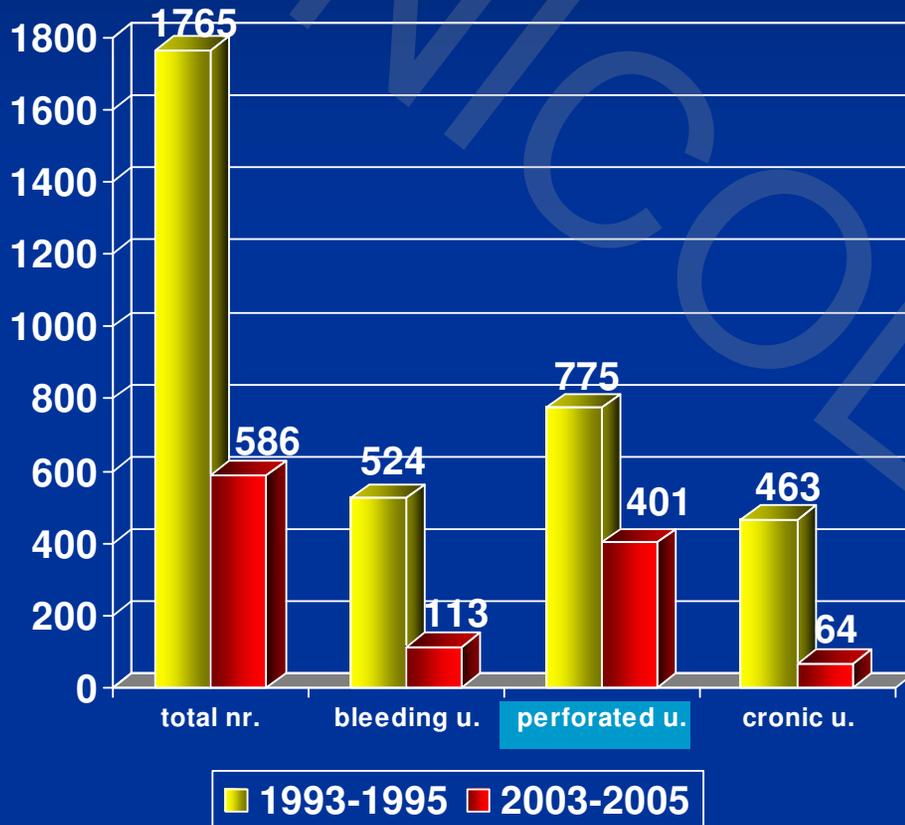
■ GSL ■ GSD

## Results III

	GSL = 78	GSD = 174
<b>Nr. complicații (%)</b>	<b>5 (6,4)</b>	<b>15 (8,6)</b>
Prolonged fever	2	4
Prolonged ileus	1	4
Wound infections	0	6
Suture leaks + right subphrenic abscess*	2	0
Postoperative occlusion	0	1
<b>Reoperations (%)</b>	<b>2 (2,5)</b>	<b>1 (0,5)</b>

\* simple suture

# Interventions for UGD



## No. of cases variation

- total nr. -66,79%
- cronic u. -86,17%
- bleeding u. -78,43%
- perforated u. -48,25%

	medium nr. of op/year	
	1993-1995	2003-2005
total nr.	588	195
cronic u.	174	38
perforated u.	258	134
bleeding u.	154	21

- Sept. 2006, Bergamaschi R (EAES Congress):
  - Laparoscopic suture + H. pylori eradication are safe in UDP therapy
  - Insufficient data on surgical technique to make recommendations
  - Analgesic requirements, resumption of oral intake, length of stay are surrogate outcome measures
  - Clinical endpoints: leak, evisceration, death
  - Laparoscopic approach is advantageous in the hands of an experienced surgeon

AMNICOLOLAU.RO

Ulcer perforat

## Conclusions

- Diagnostic tool in patients with equivocal clinical and imagistic data
- For young people without risk factors, laparoscopic suture with omentopexy is the intervention of choice
- Medical anti-ulcer therapy and *H. pylori* eradication are mandatory

In the era of *Helicobacter pylori*, doing a gastrectomy for peptic ulcer is like doing a lobectomy for pneumonia

Asher Hirshberg

THANK YOU