SURGICAL MANAGEMENT OF ACUTE PANCREATITIS

INTRODUCTION

- A very common disease with increasing incidence over past 20 years.
- All age groups and both genders vulnerable.
- Multiple causes.
- Highly variable disease course.
- High mortality rates even in the centers of excellence .
- Difficult to standardize the treatment options.

SURGICAL INTERVENTION–INDICATIONS

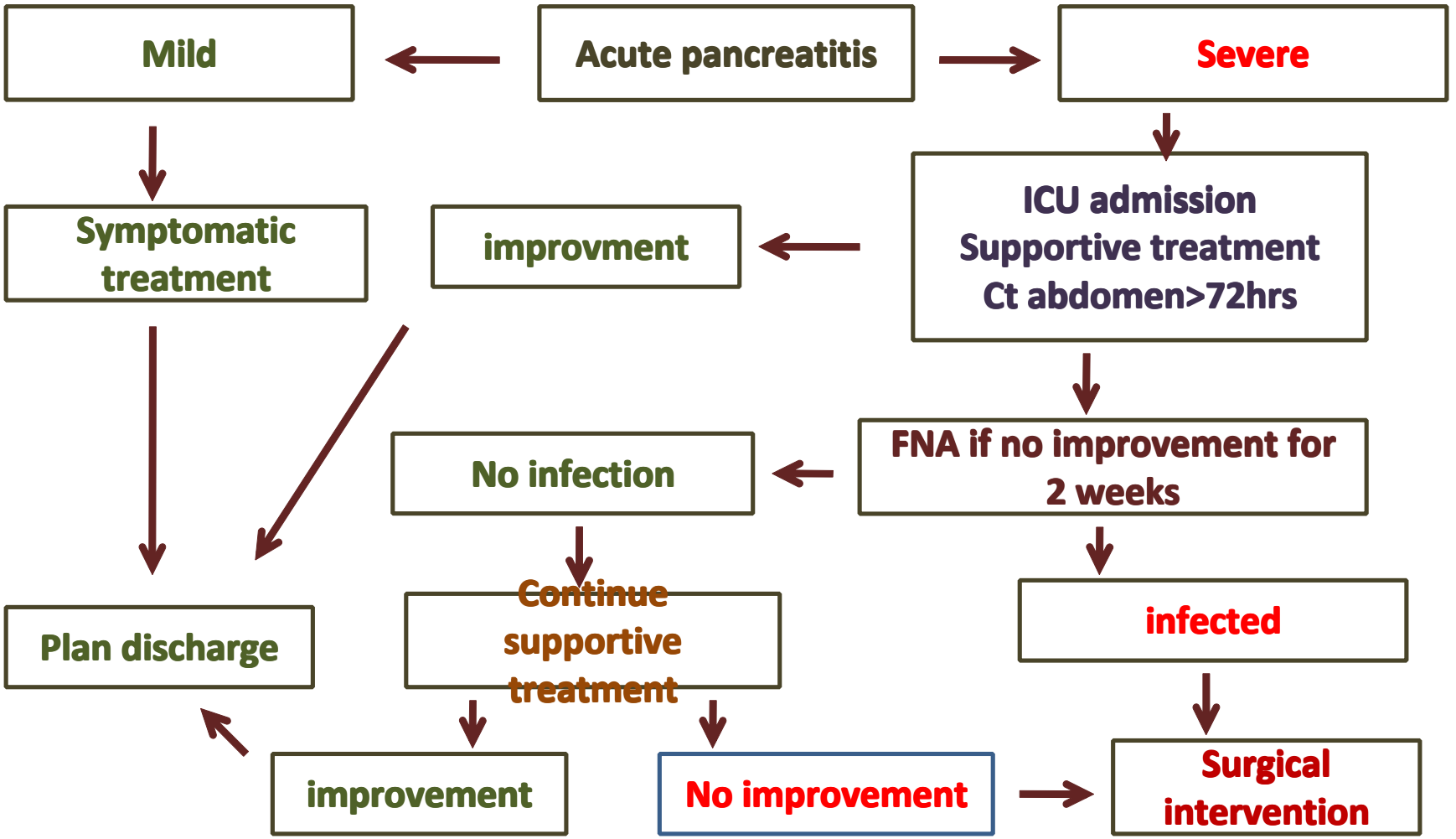
ABSLOUTE INDICATION → **INFECTED PANCREATIC NECROSIS**

OBLIGATORY INDICATION → **PERFORATED VISCUS** **HAEMORRHAGE**

DEBATED INDICATION → **SEVERE STERILE NECROSIS**
SYMPTOMATIC ORGANIZED NECROSIS

OBSELETE INDICATION → **DIAGNOSTIC UNCERTAINITY**

Management – Overview



Surgical interventions

PANCREATIC RESECTIONS - HISTORICAL

PANCREATIC NECROSECTOMY –
- ✓DEBRIDEMENT OF NECROTIC PANCREATIC TISSUE
- ✓CURRENT STANDARD OF PRACTICE

MINIMAL INVASIVE INTERVENTIONS –
- ✓CURRENT INTEREST OF RESEARCH
- ✓RAPIDLY BEING ACCEPTED IN PRACTICE

Necrosectomy – Principles

GOOD QUALITY PREOPERATIVE CONTRAST ENHANCED CT ABDOMEN IS ESSENTIAL FOR IDENTIFICATION OF –

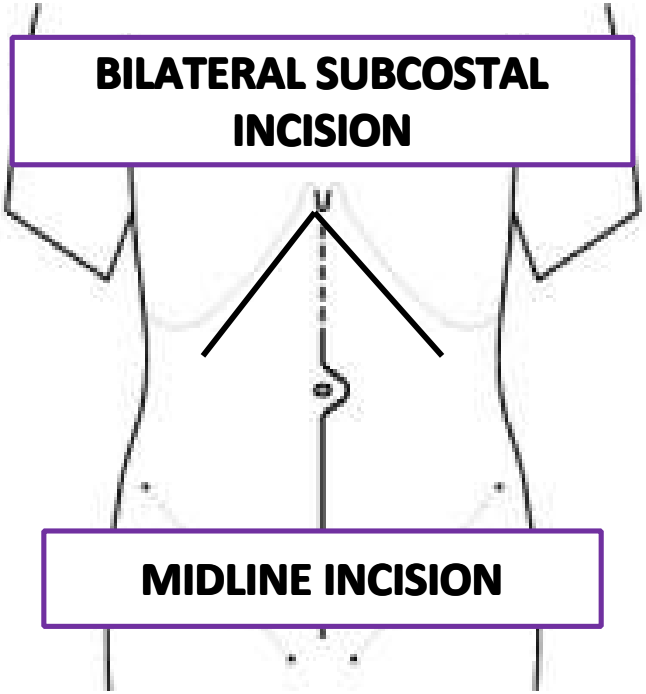
- ✓**ALL AREAS OF NECROSIS**
- ✓**LOCALIZED COLLECTIONS**

WIDE REMOVAL OF ALL DEVITALIZED AND NECROTIC TISSUE

UNROOFING OF ALL COLLECTIONS

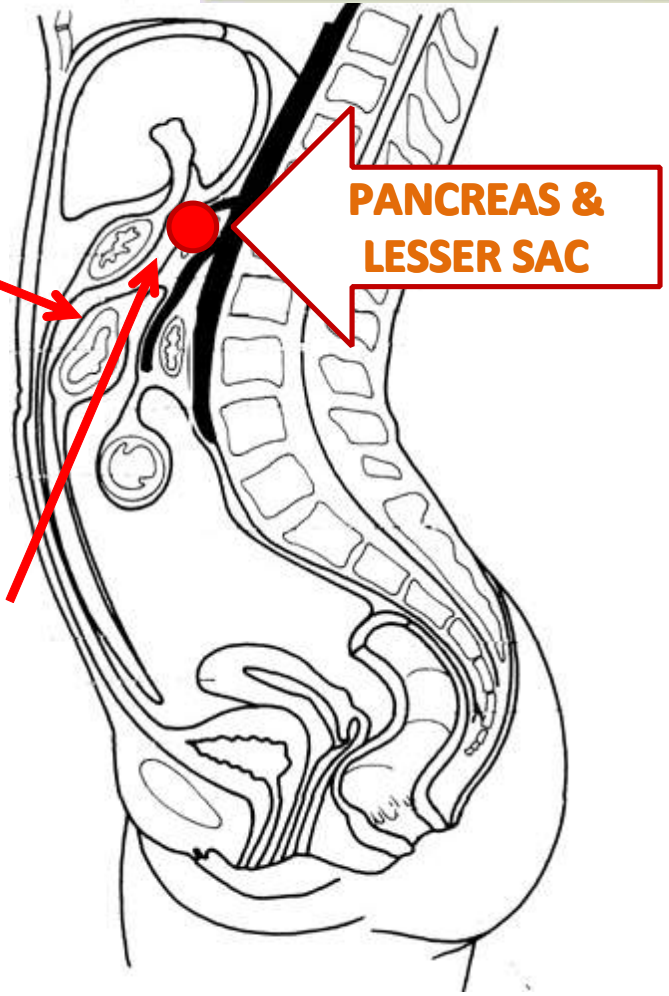
STRATSZIZE TO REMOVE THE PRODUCTS OF ONGOING INFLAMMATION AND INFECTION THAT PERSISTS AFTER THE INITIAL NECROSECTOMY

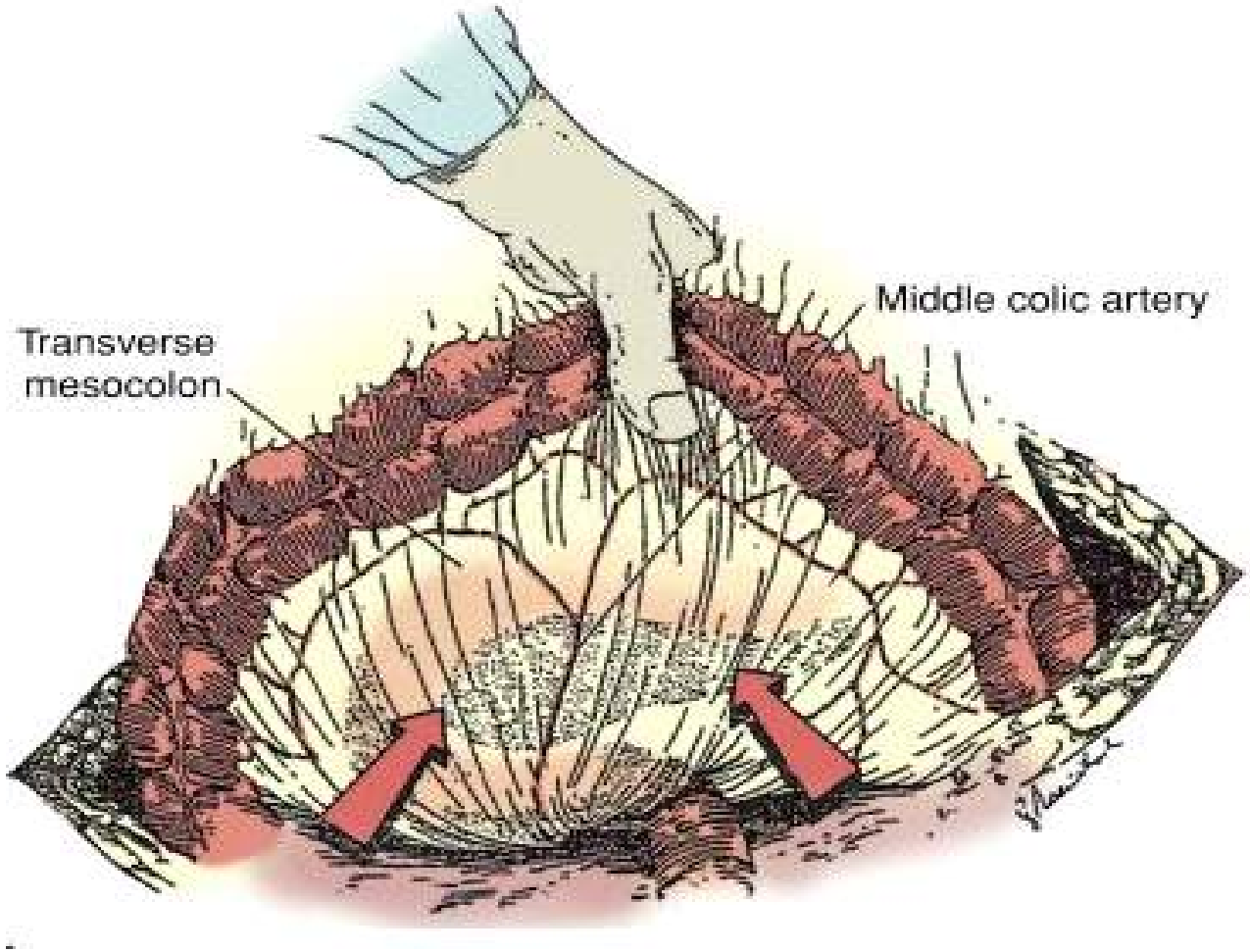
Necrosectomy –Approach



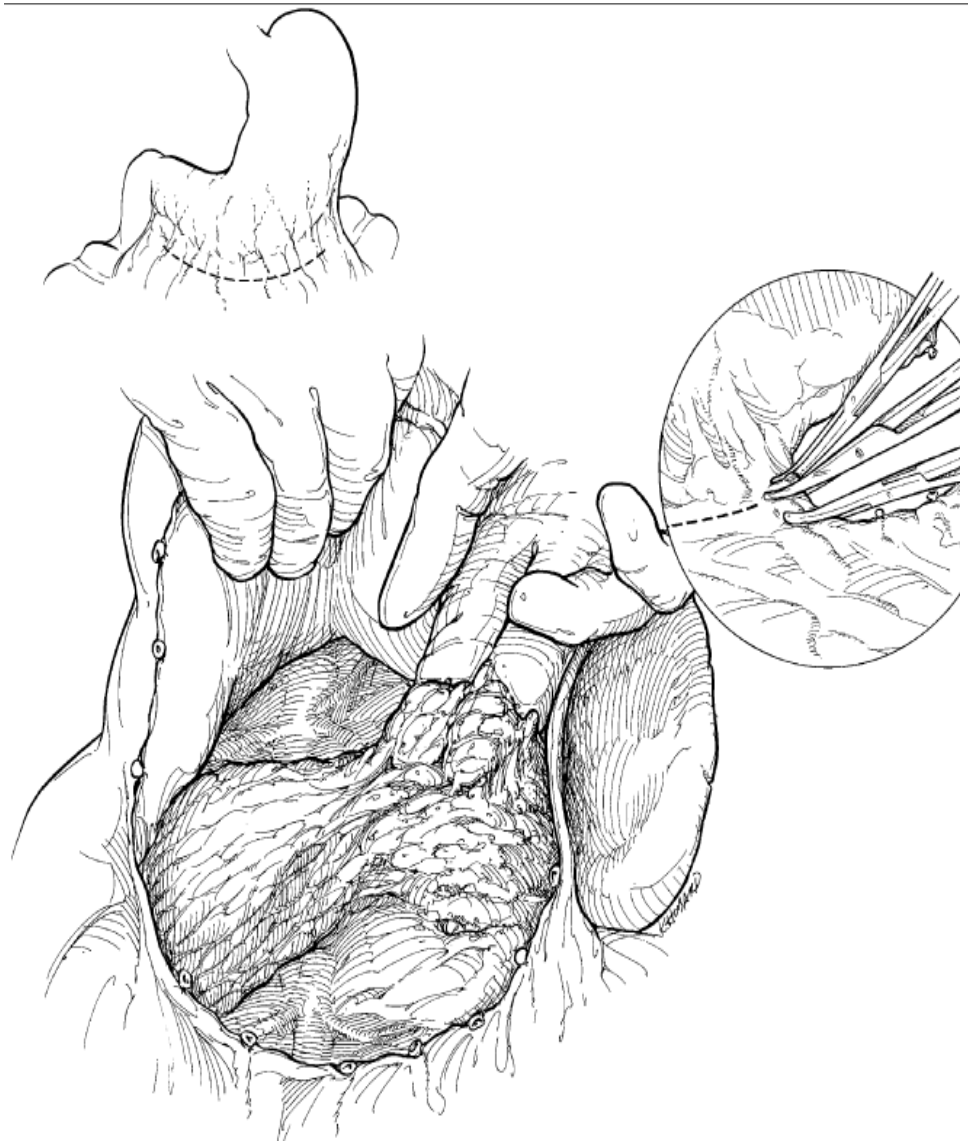
THROUGH GASTROCOLIC LIGAMENT

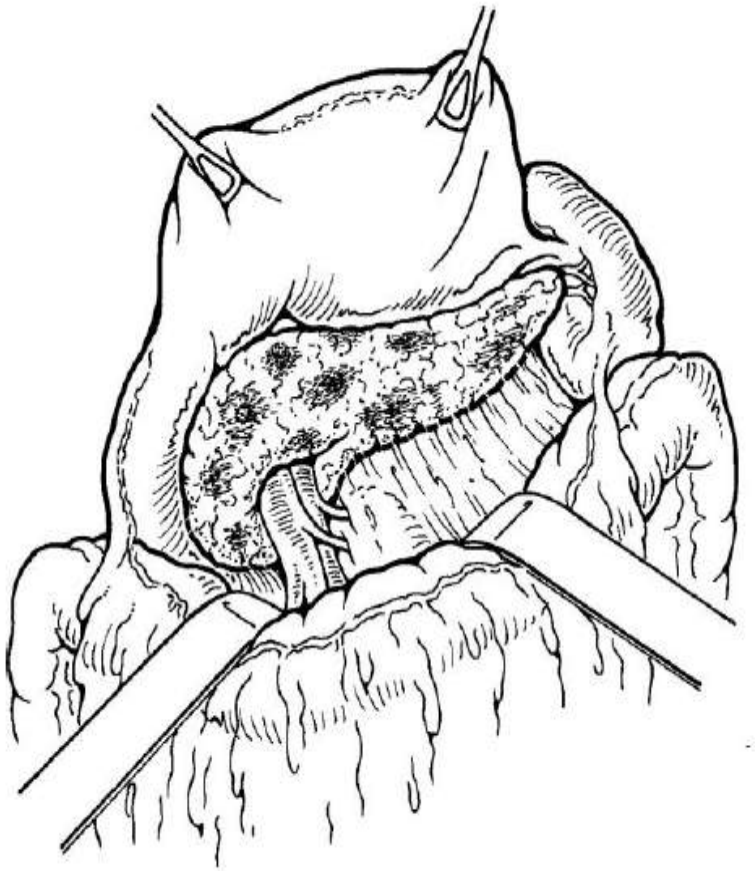
THROUGH TRANSVERSE - MESOCOLON





The lesser sac can be approached through the base of the mesocolon; attention should be paid to avoid injury to the middle colic artery.

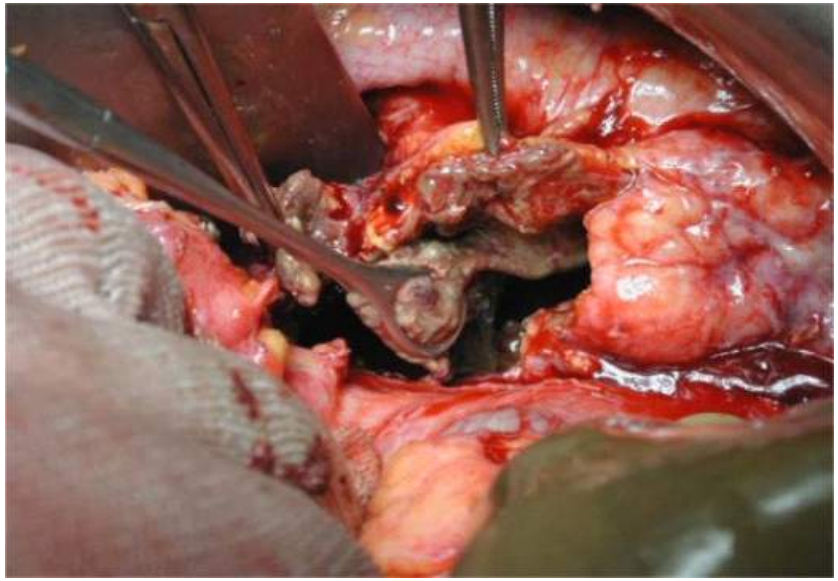




Approach to lesser sac via gastrocolic ligament.

Necrosectomy– technique

- IDENTIFICATON OF VIABLE AND NECROTIC PANCREATIC TISSUE
- BLUNT FINGER DISSECTION OF THE NECROTIC TISSUE
- AVOID OVERZELOUS HANDLING OF INFLAMED & DOUBTFUL VIABLE TISSUE
- CONTROL OF BLEEDING
- ADDITIONAL EXPOSURE



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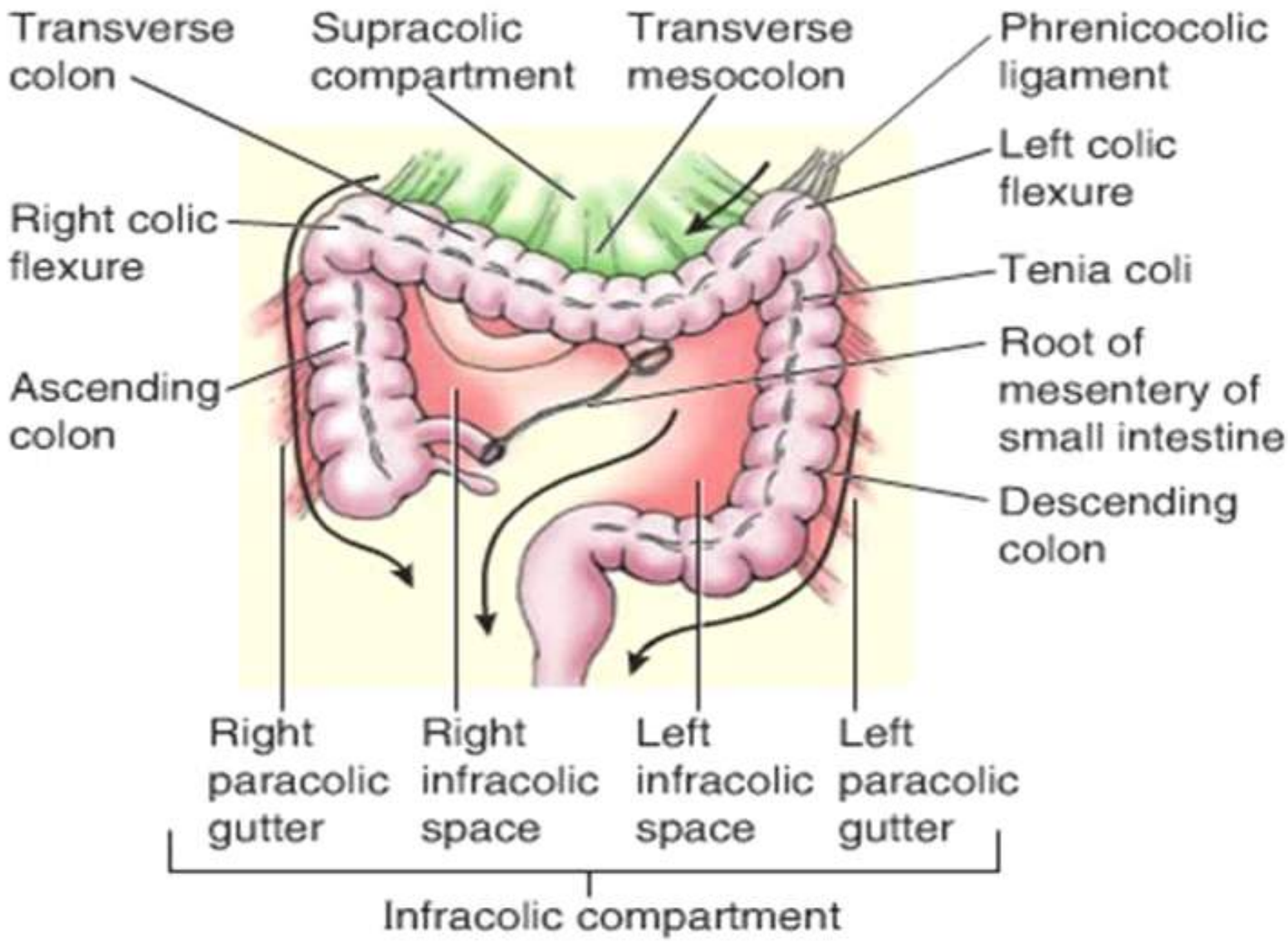
✓ **RELEASE OF SPLENIC/HEPATIC FLEXURES**
✓ **EXTENSIVE KOCHERIZATION**
✓ **OPENENING OF PARACOLIC GUTTERS, PARARENAL SPACES AND GASTROHEPATIC LIGAMENT**

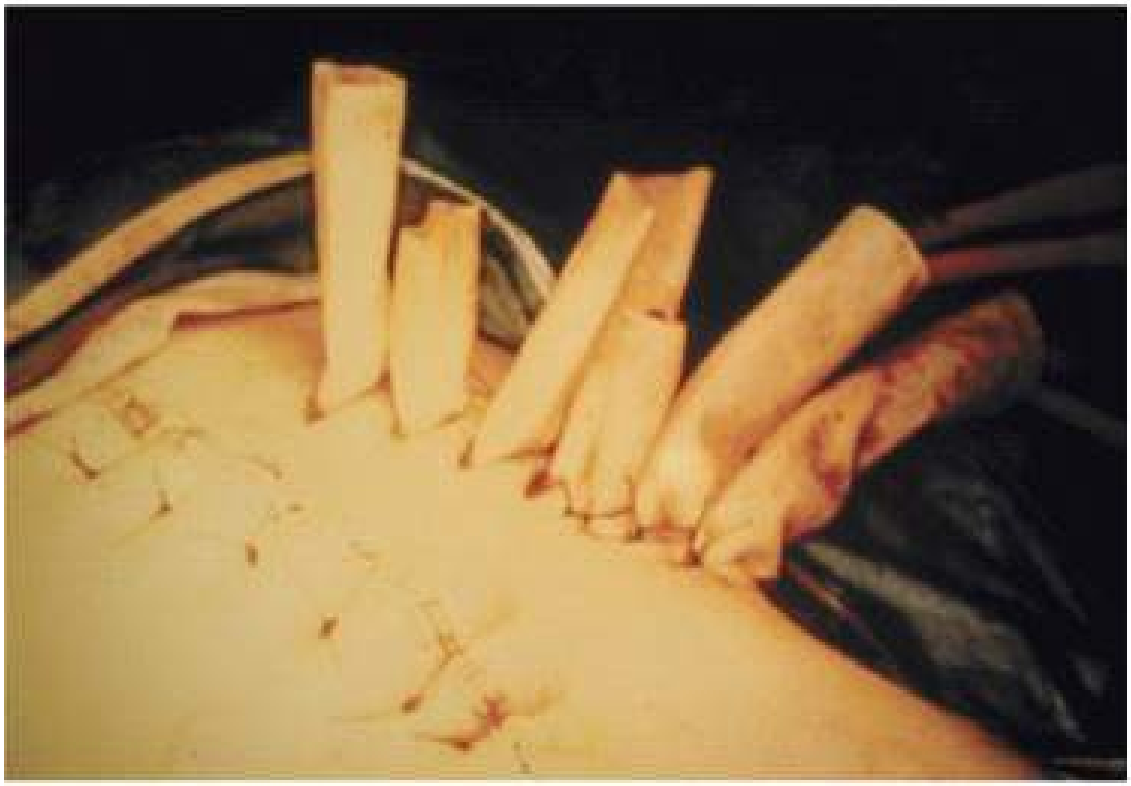


(B) Anterior view

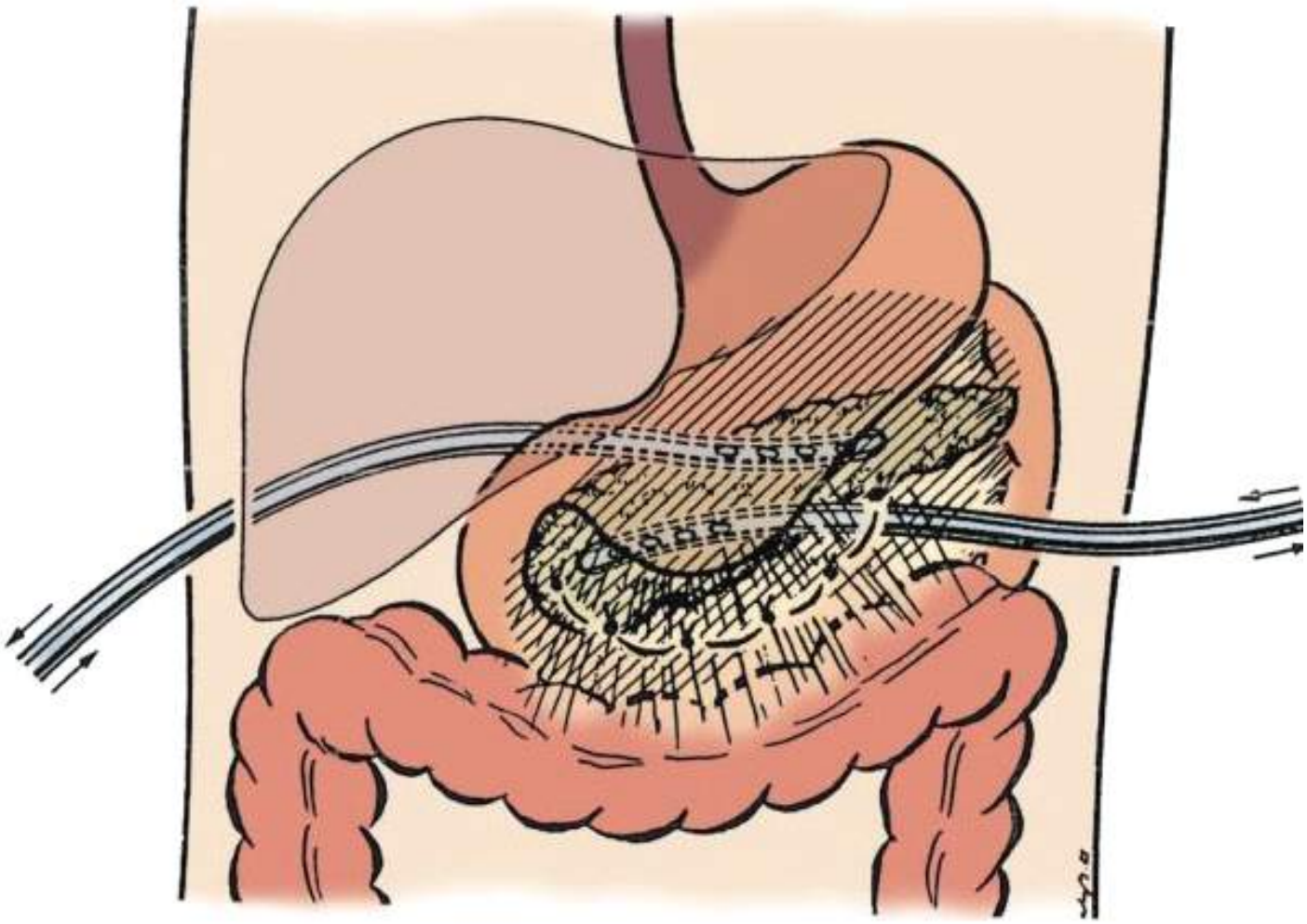
Post-Necrosectomy management

OPTIONS

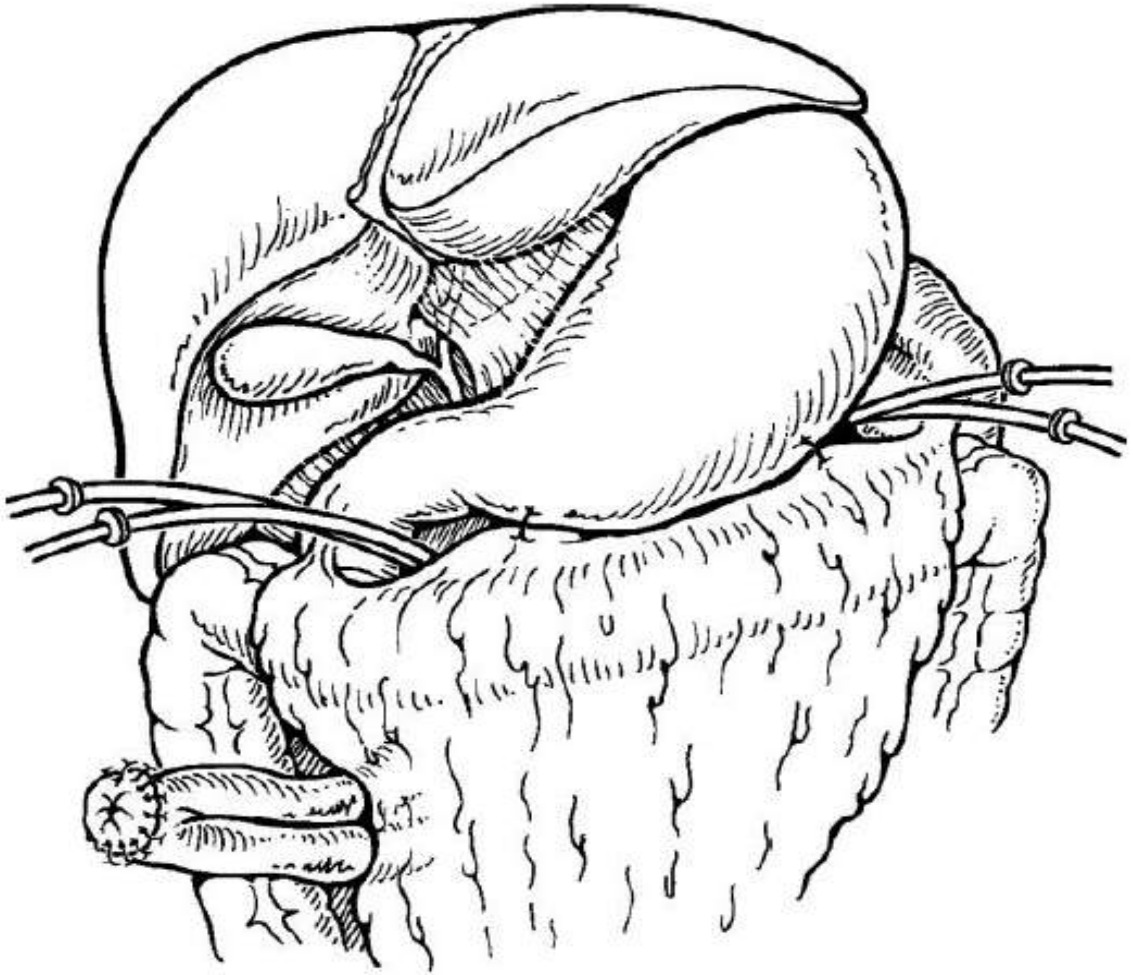
- **CLOSED DRAINAGE**
  - MULTIPLE DRAINS IN THE LESSER SAC
  - RETAINED TILL OUTPUT IS INSIGNIFICANT
- **PLANNED REXPLORATIONS**
  - LAPAROSTOMY/ TEMPORARY ABDOMINAL CLOSURE
  - RE-EXPLORATION ONCE IN 2-3 DAYS TILL ALL NECROTIC MATERIAL CLEARS
- **CLOSED LAVAGE**
  - DRAINS PLACED IN LESSER SAC
  - CONTINOUS POSTOPERATIVE LAVAGE TILL EFLUENT IS CLEAR



Necrosectomy and closed packing with stuffed Penrose drains.



closed lavage of the lesser sac.



The lesser sac is closed by suturing the greater omentum to the transverse colon for closed postoperative lavage.

Comparison of options

STUDIES BETWEEN 1980-1998	NO. OF PATIENTS n	MORALITY	RE-EXPLORATION	GI FISTULA	BLEEDING
CLOSED DRAINAGE	**236**	**6-30%**	**16-40%**	**3-26%**	**1-30%**
PLANNED RE-EXPLORATION	**297**	**14-27%**	**100%**	**5-40%**	**5-29%**
CLOSED LAVAGE	**405**	**8-36%**	**9-64%**	**7-43%**	**5-13%**

Maingot's Abdominal operations -11th edition

Recommendations

LACK OF STANDARD DEFINITIONS OF THE CONDITIONS FOR WHICH EACH OF THESE OPTIONS WERE UTILIZED

OPTIONS INDVIDUALIZED TO THE PATIENT

EARLY NECROSECTOMY - PLANNED RE-EXPLORATION/ CLOSED LAVAGE

THE OPTIONS HAVE NOT BEEN COMPARED ADEQUATELY BY RANDOMIZED PROSPECTIVE STUDIES

DELAYED NECROSECTOMY – CLOSED DRAINAGE

Minimal Access Interventions

WHY MINIMAL ACCESS ?

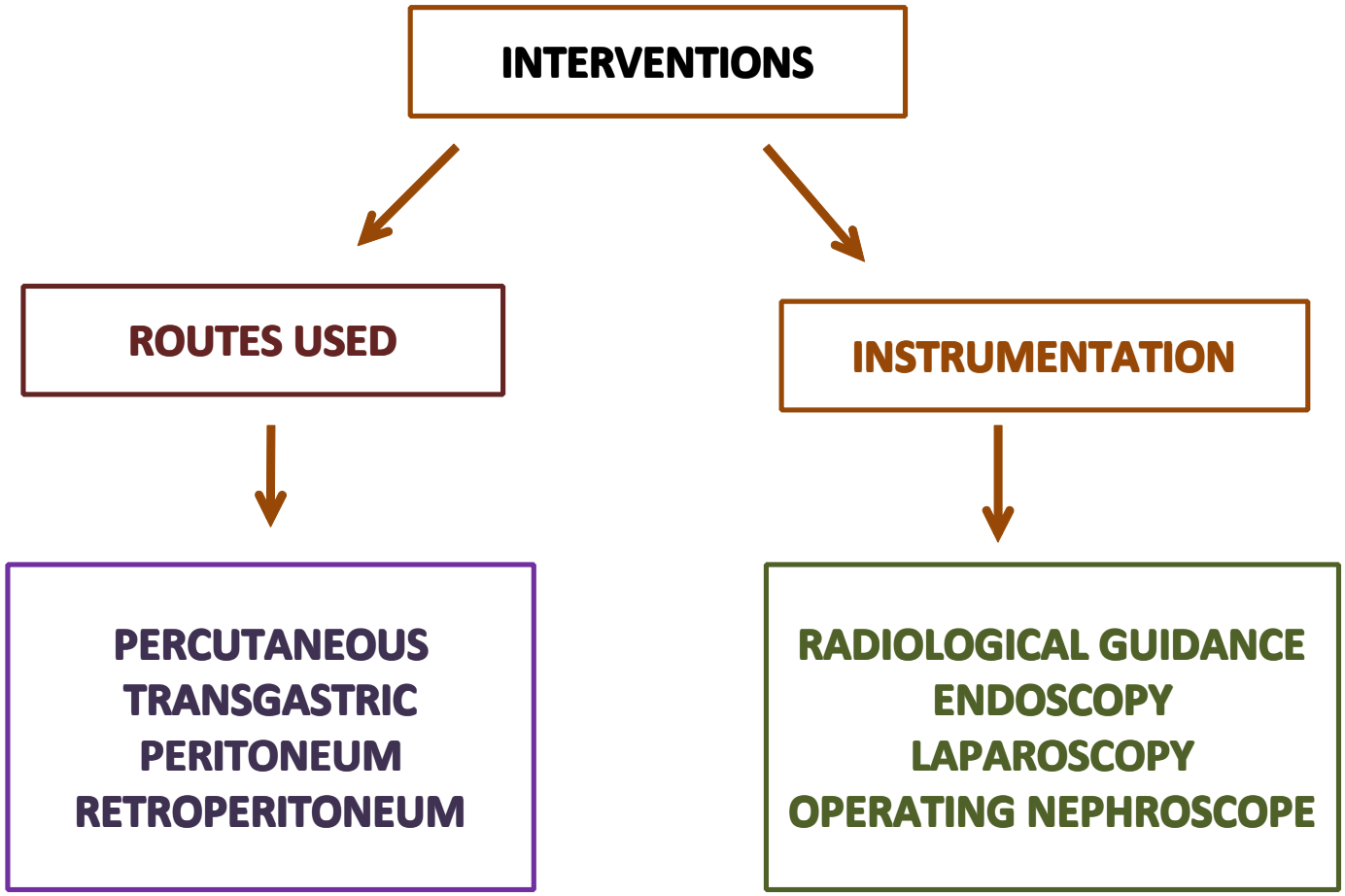
TO REDUCE THE ACCESS TRAUMA AND ASSOCIATED PROINFLAMMATORY RESPONSE WITH OPEN NECROSECTOMY

TO DELAY NECROSECTOMY AS MUCH AS POSSIBLE

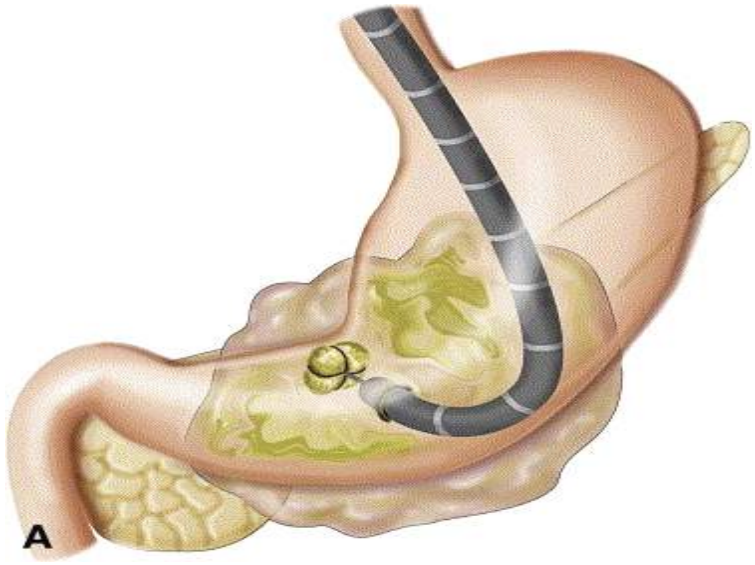
TIMING OF SURGERY	MORTALITY
<14 DAYS	**75%**
15-29DAYS	**45%**
>30DAYS	**8%**

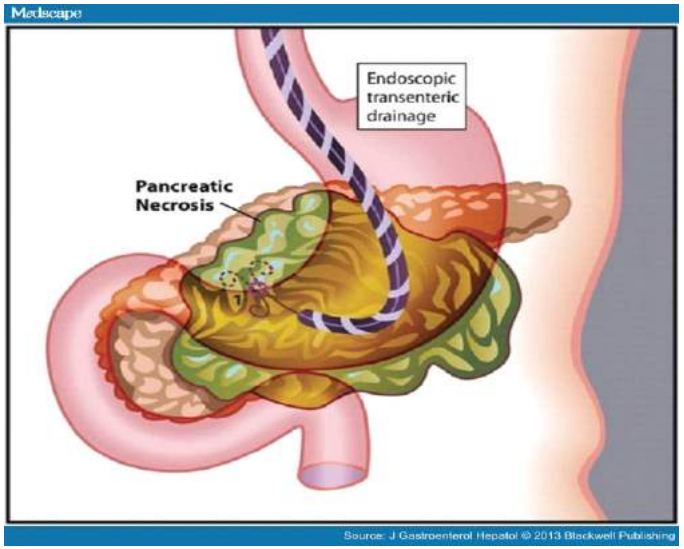
Arch Surg 142: 1194-1201,2007

Minimal Access Interventions

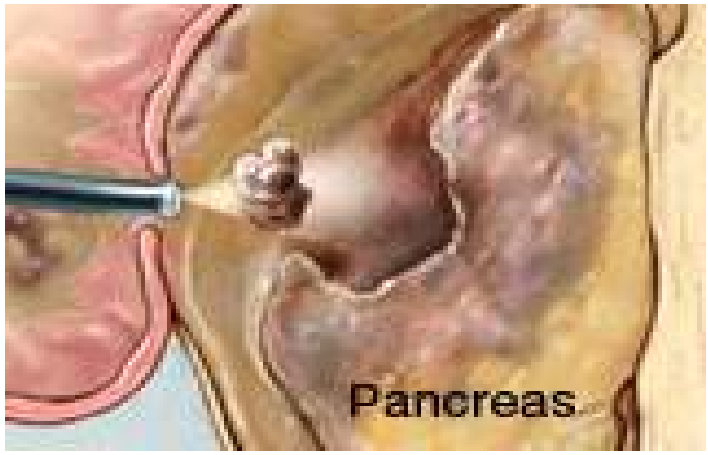


Minimal Access Interventions

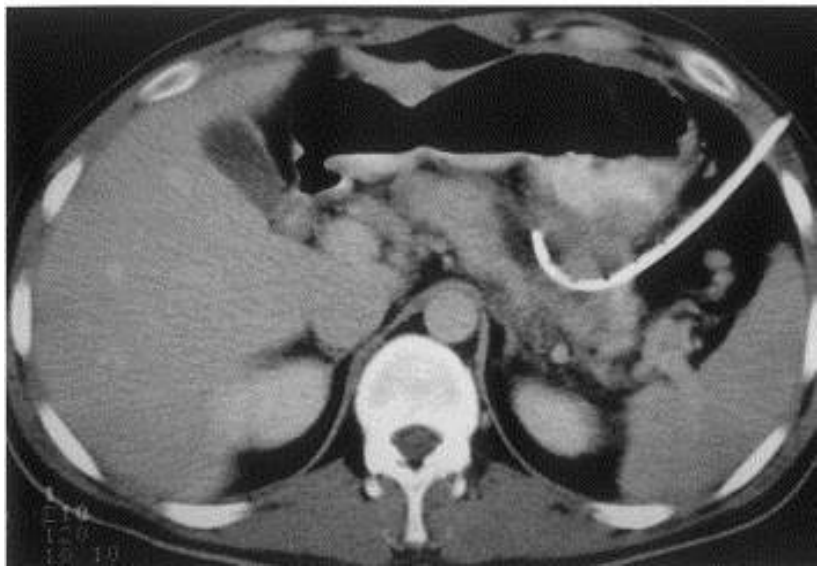




ENDOSCOPIC TRANSGASTRIC NECROSECTOMY

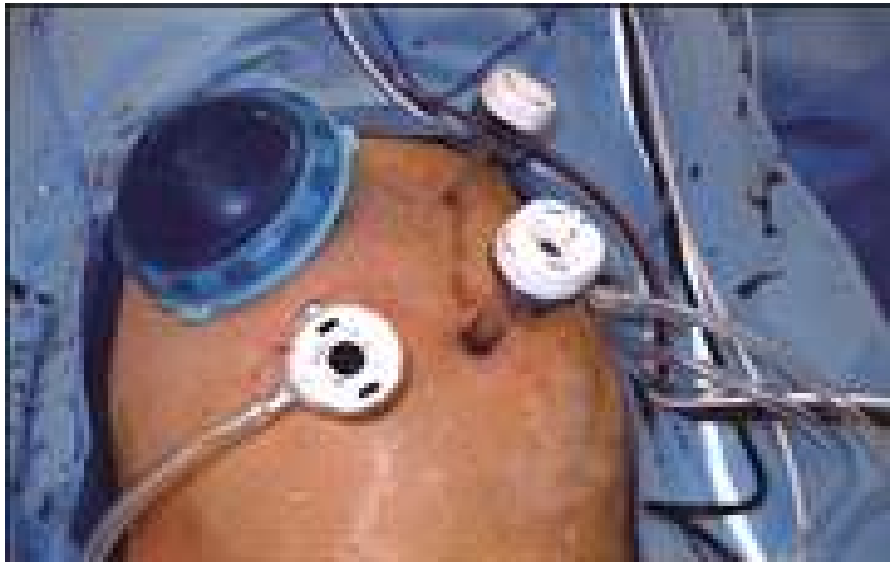


Minimal Access Interventions



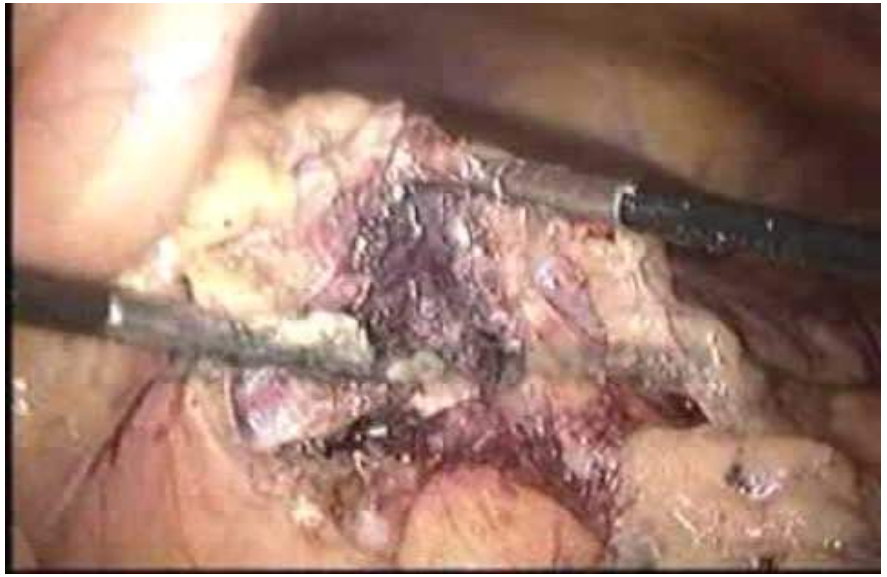
PERCUTANEOUS DRAINAGE

Minimal Access Interventions



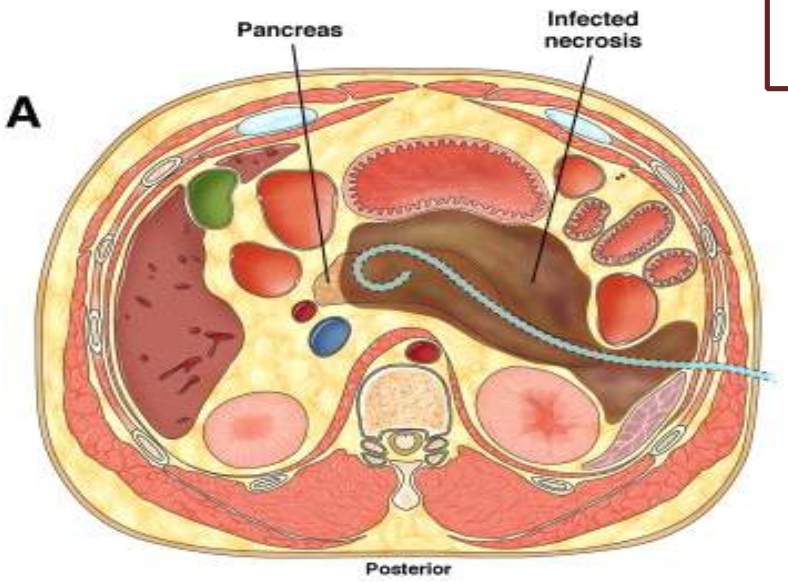
HAND ASSISTED LAPAROSCOPIC NECROSECTOMY PORT POSITIONING

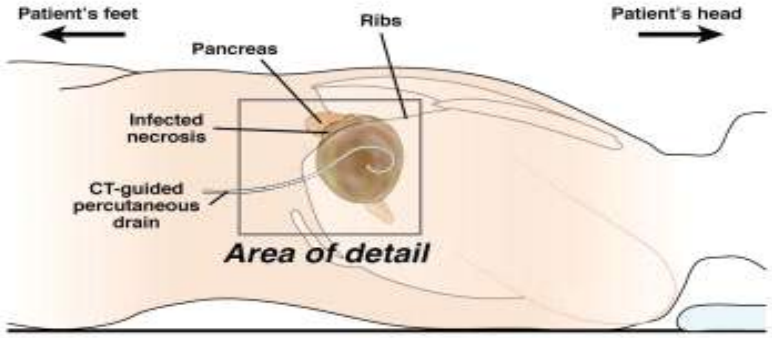
LAPAROSCOPIC NECROSECTOMY

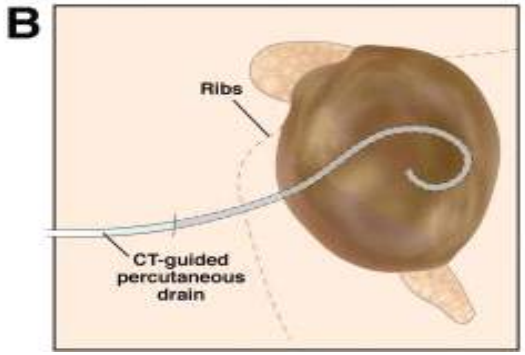


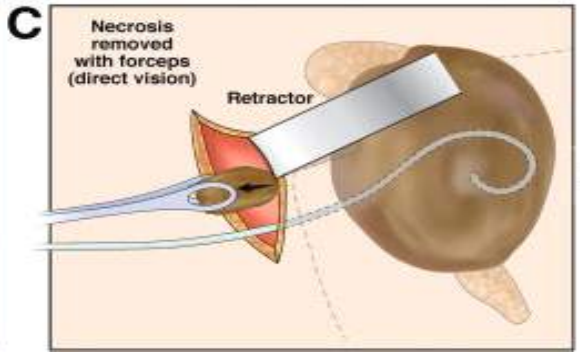
Minimal Access Interventions

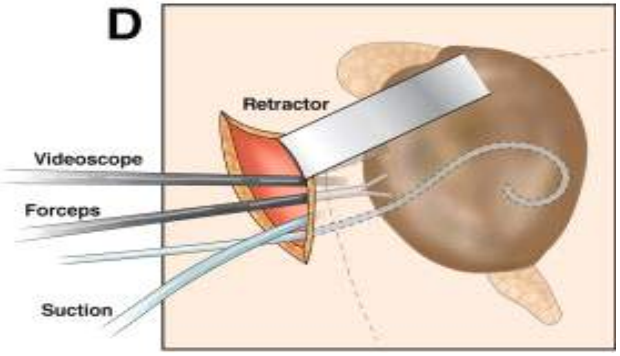
RETROPERITONEAL NECROSECTOMY





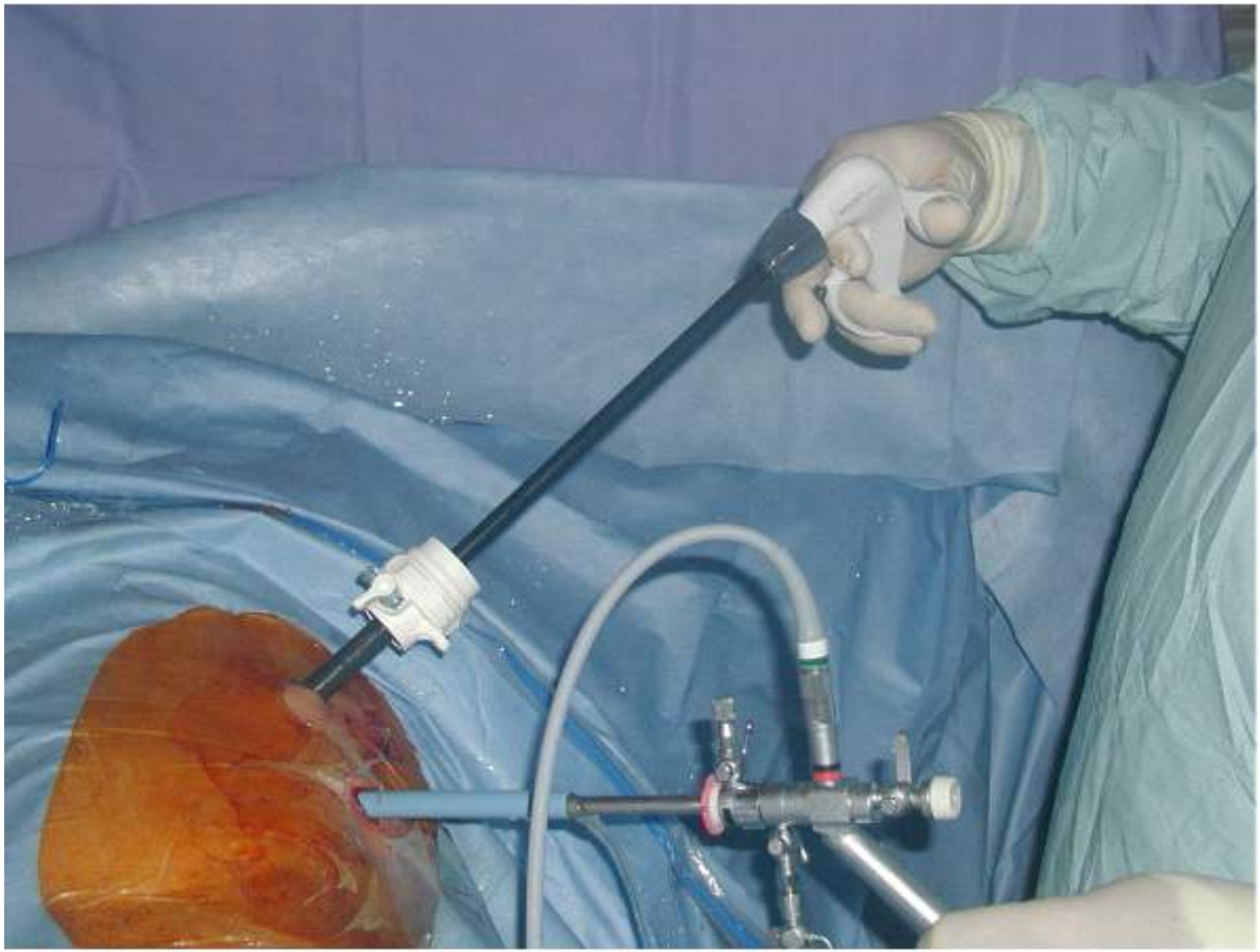






OPEN TECHNIQUE

VIDEO-ASSISTED TECHNIQUE



Percutaneous necrosectomy using operating nephroscope and supplemental laparoscopic port.

Evidence in favour of minimal invasive approach

A multicenter RCT including 88 patients with confirmed or suspected infected pancreatic necrosis

45 underwent open necrosectomy

43 underwent step-up approach (initial percutaneous drainage followed by VARD)

A minimally invasive step-up approach, as compared with open necrosectomy, reduced the rate of the composite end point of major complications or death among patients with necrotizing pancreatitis and infected necrotic tissue

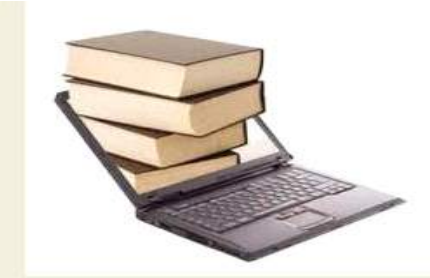
Out-come	Open - necrosectomy	Step-up approach	P - value
New onset MODS	**42%**	**12%**	**0.001**
Death	**16%**	**19%**	**0.7**
Hospital stay	**60 days**	**50 days**	**0.53**
New –onset DM	**38%**	**16%**	**0.02**
Pancreatic insufficiency	**33%**	**7%**	**0.002**
Incisional hernia	**24%**	**7%**	**0.03**

Hjalmar C. van Santvoort etal "A Step-up Approach or Open Necrosectomy for Necrotizing Pancreatitis" N Engl J Med 2010;362:1491-502

To conclude……

- Necrotizing pancreatitis though less common is responsible for the most of the deaths of acute pancreatitis patients.
- Unresolved issues in the management of this condition.
- Open necrosectomy is still the standard of care but is associated with high mortality and morbidity.
- Minimal access interventions give some hope.

References –



- Sabiston text book of surgery-19th edition
- Maingot's abdominal surgeries -11th edition
- Hjalmar C. van Santvoort et al "Step-up Approach or Open Necrosectomy for Necrotizing Pancreatitis." N Engl J Med 2010;362:1491-502.
- www.google.com-images


THANK
YOU