

鈍的肝損傷の治療

Management of blunt liver injury

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肝損傷治療の変遷

～1900年代初頭 保存的治療（手が出せない）

1908 Pringle 肝損傷の手術例を発表

「肝損傷は手術しないと救命できない」

手術的治療（OM）

1972 Richie ら 最初のNOM 1例を発表

1977 Jander , Rubinら 肝損傷に対するTAEの有効性

1980年代 軽微な損傷に非手術的治療（NOM）

1983 Karp ら NOMの17例を発表

1990年代 NOMの適応の拡大（TAEの併用）

1993 Rotondo et al. Damage Control Surgeryを発表

OMでは侵襲的な手術からDCSへ

2000年代～ NOM (TAE) > DCS >> definitive surgery

Guideline



- ❖ 2003 EAST >> Practice management guideline for the nonoperative management of blunt injury to the liver and spleen (Available at <http://east.org/tpg>.)
- ❖ 2011 WTA >> Western Trauma Association / Critical Decisions in Trauma: Operative Management of Adult Blunt Hepatic Trauma (J Trauma. 2011;71: 1–5)
- ❖ 2012 EAST >> Nonoperative management of blunt hepatic injury: An Eastern Association for the Surgery of Trauma practice management guideline (J Trauma Acute Care Surg. 2012;73: S288-S293)

Recommendations

~2012 EAST Guideline

Level 1

- 1. Patients who are hemodynamically unstable or who have diffuse peritonitis after blunt abdominal trauma should be taken urgently for laparotomy.

Recommendations

~2012 EAST Guideline

Level 2

- ❧ 1. A routine laparotomy is not indicated in the hemodynamically stable patient without peritonitis presenting with an isolated blunt hepatic injury.
- ❧ 2. **In the hemodynamically stable** blunt abdominal trauma patient without peritonitis, **an abdominal CT scan with intravenous contrast should be performed** to identify and assess the severity of injury to the liver.
- ❧ 3. **Angiography with embolization may be considered as a first-line intervention** for a patient who is a **transient responder** to resuscitation as an adjunct to potential operative intervention.

- ❧ 4. The severity of hepatic injury (as suggested by CT grade or degree of hemoperitoneum), neurologic status, age of more than 55 years, and/or the presence of associated injuries are not absolute contraindications to a trial of nonoperative management in a hemodynamically stable patient.
- ❧ 5. Angiography with embolization should be considered in a hemodynamically stable patient with evidence of active extravasation (a contrast blush) on abdominal CT scan.
- ❧ 6. Nonoperative management of hepatic injuries should only be considered in an environment that provides capabilities for monitoring, serial clinical evaluations, and an operating room available for urgent laparotomy.

Recommendations

~2012 EAST Guideline

Level 3

- 1. After hepatic injury, clinical factors such as a persistent systemic inflammatory response, increasing persistent abdominal pain, jaundice, or an otherwise unexplained drop in hemoglobin should prompt reevaluation by CT scan.

- ❧ 2. Interventional modalities including endoscopic retrograde cholangiopancreatography, angiography, laparoscopy, or percutaneous drainage may be required to manage complications (bile leak, biloma, bile peritonitis, hepatic abscess, bilious ascites, and hemobilia) that arise as a result of nonoperative management of blunt hepatic injury.

- ❧ 3. Pharmacologic prophylaxis to prevent venous thromboembolism can be used for patients with isolated blunt hepatic injuries without increasing the failure rate of nonoperative management, although the optimal timing of safe initiation has not been determined.

Western Trauma Association 2011

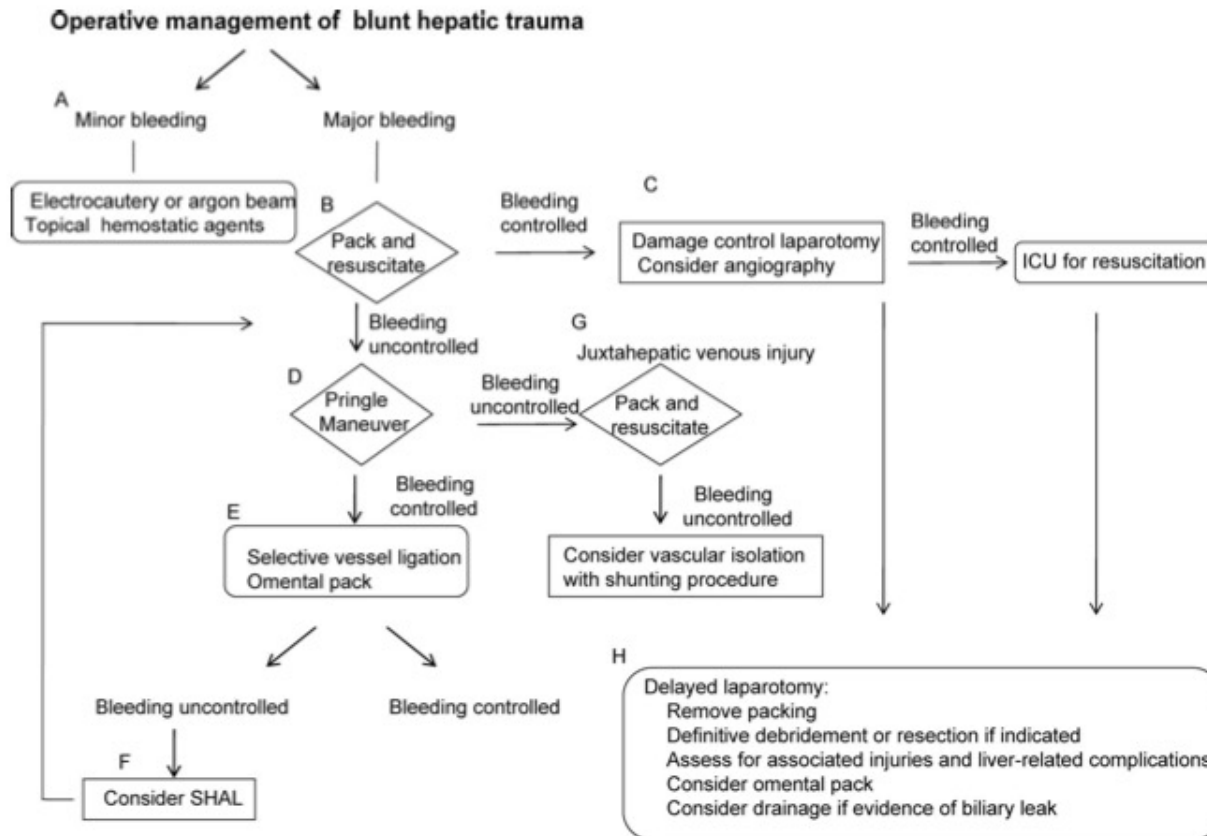


Figure 1. Algorithm for operative management of blunt liver trauma. ICU, intensive care unit; SHAL, selective hepatic artery ligation.

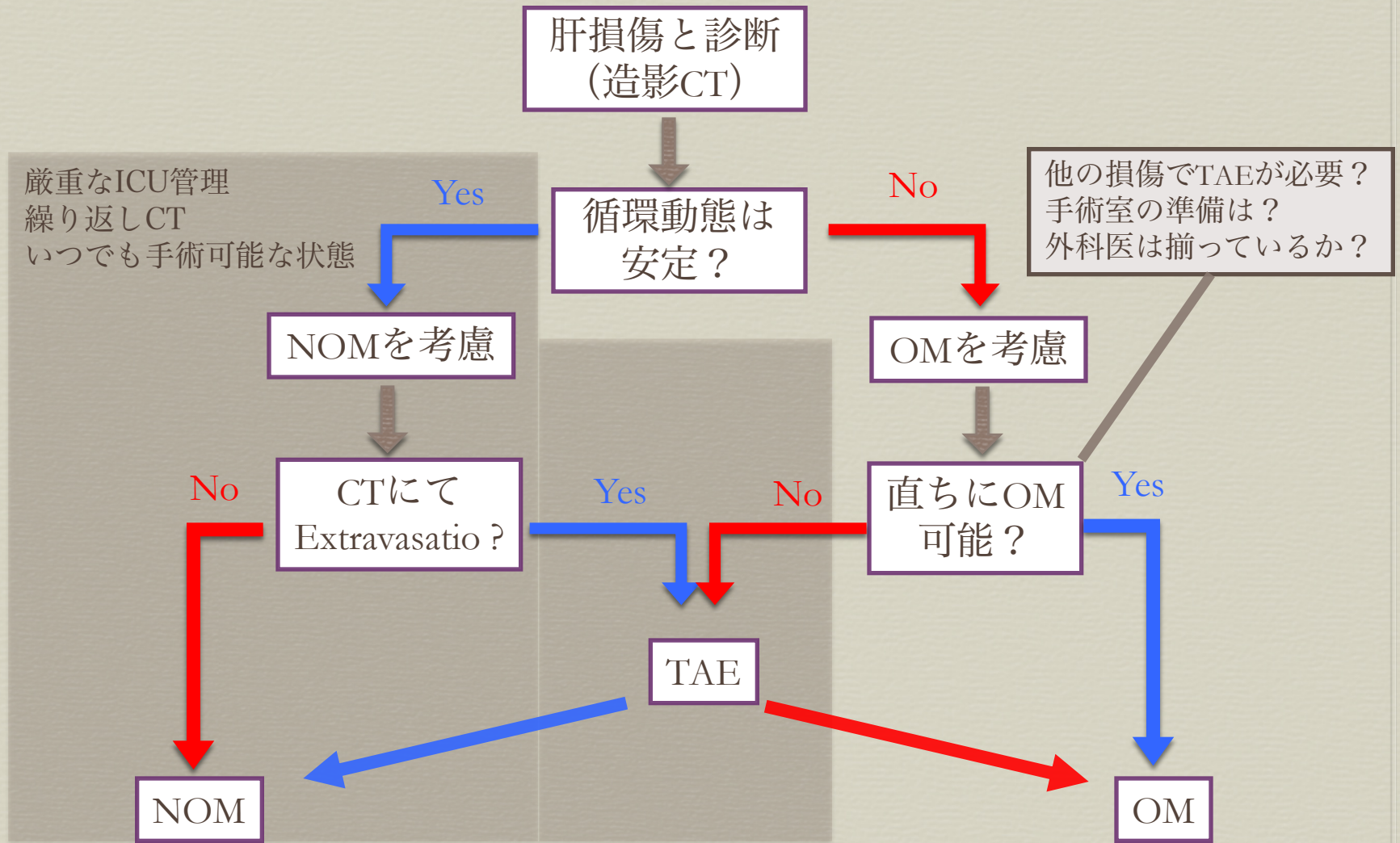
Damage Control とは

- ☞ Damage control (DC)は生理的状态が破綻した状況下で、definitive surgeryを行わずに段階的治療を行う考え方。
 - ①初回手術は出血・汚染のコントロールのみ
 - ②集中治療で生理的異常を回復させる
 - ③再手術でdefinitive surgeryを行う
- ☞ DCはしばしばDCS, gauze packing, minimum invasive surgeryなどと混同されるが、術式ではなく治療戦略
- ☞ Damage control surgery (DCS)は欧米では①の手術を指すことが多いのに対し、日本では段階的治療を指すことが多い
- ☞ 「死の三徴」がみられる前にDCを判断
 - ①アシドーシス
 - ②低体温
 - ③凝固障害

当科の鈍的肝損傷治療の変遷

- 2005年EAST guideline (2003)に準拠した手術適応
NOMが許容される症例に対してNOM
それ以外の症例は原則的に手術的治療
(TAEはオプション)
- 2008年以降縫合部のプレジレットにフェルトを使用
十分な止血が得られgauze packing症例が激減
- 2010年フェルトからvicryl meshへ変更
- 2012年EAST guideline (2012)に準拠、手術適応に大きな変化なし
- 2014年新しいdevice(LigaSure, ソフト凝固など)の導入
vicryl mashからニューニット
- 2015年 IVC損傷にVV-bypass

当院における鈍的肝損傷の治療戦略



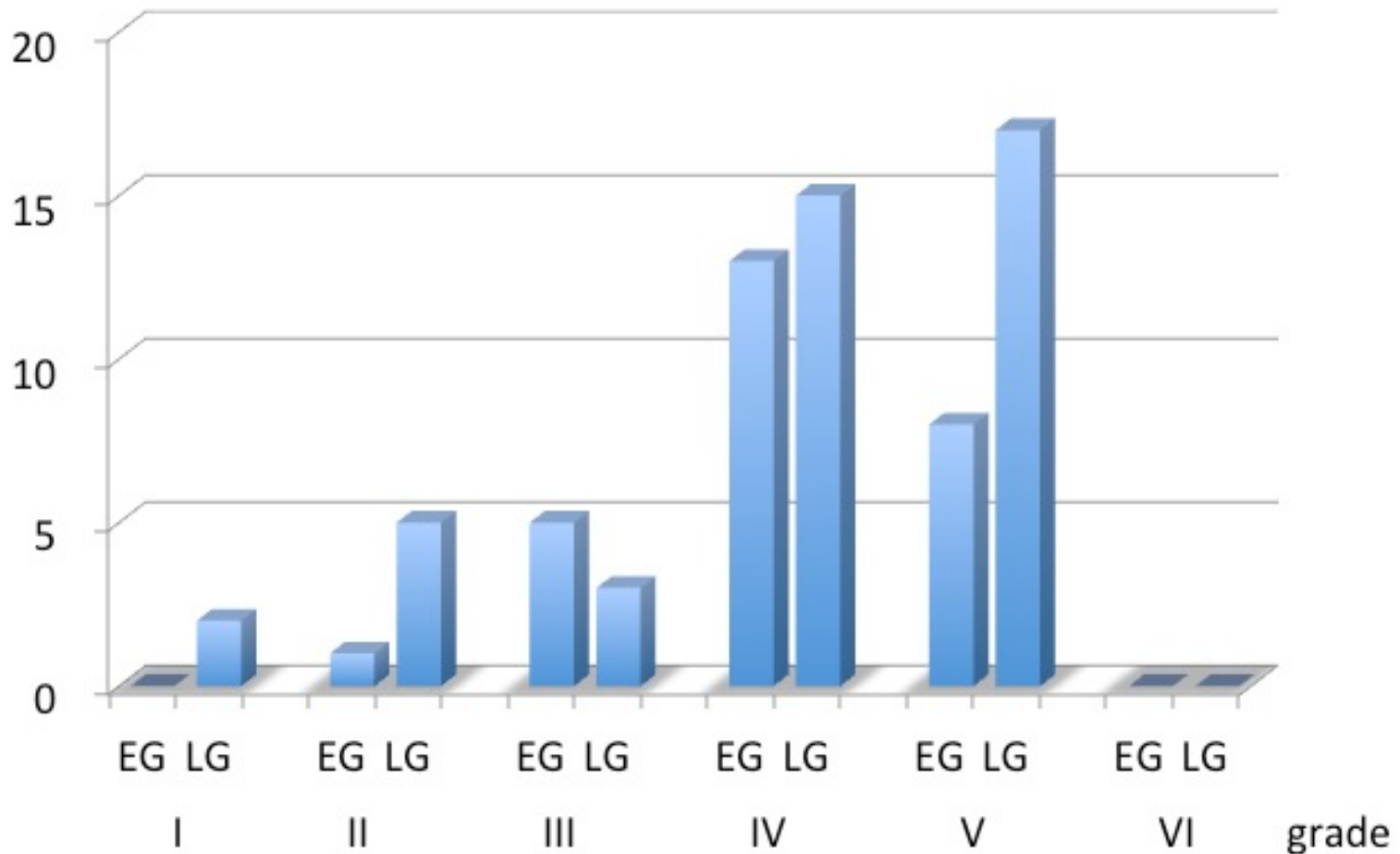
Overview of trauma patients in early group (EG) and late group (LG)

	Early group	Late group
Periods	2005 - 2009	2010 - 2014
All admissions	6120	6342
Trauma patients	1891 (30.9%)	2819 (44.4%)
Patients with blunt hepatic injury	101	126
Patients underwent operative management	27 (26.7%)	42 (33.3%)

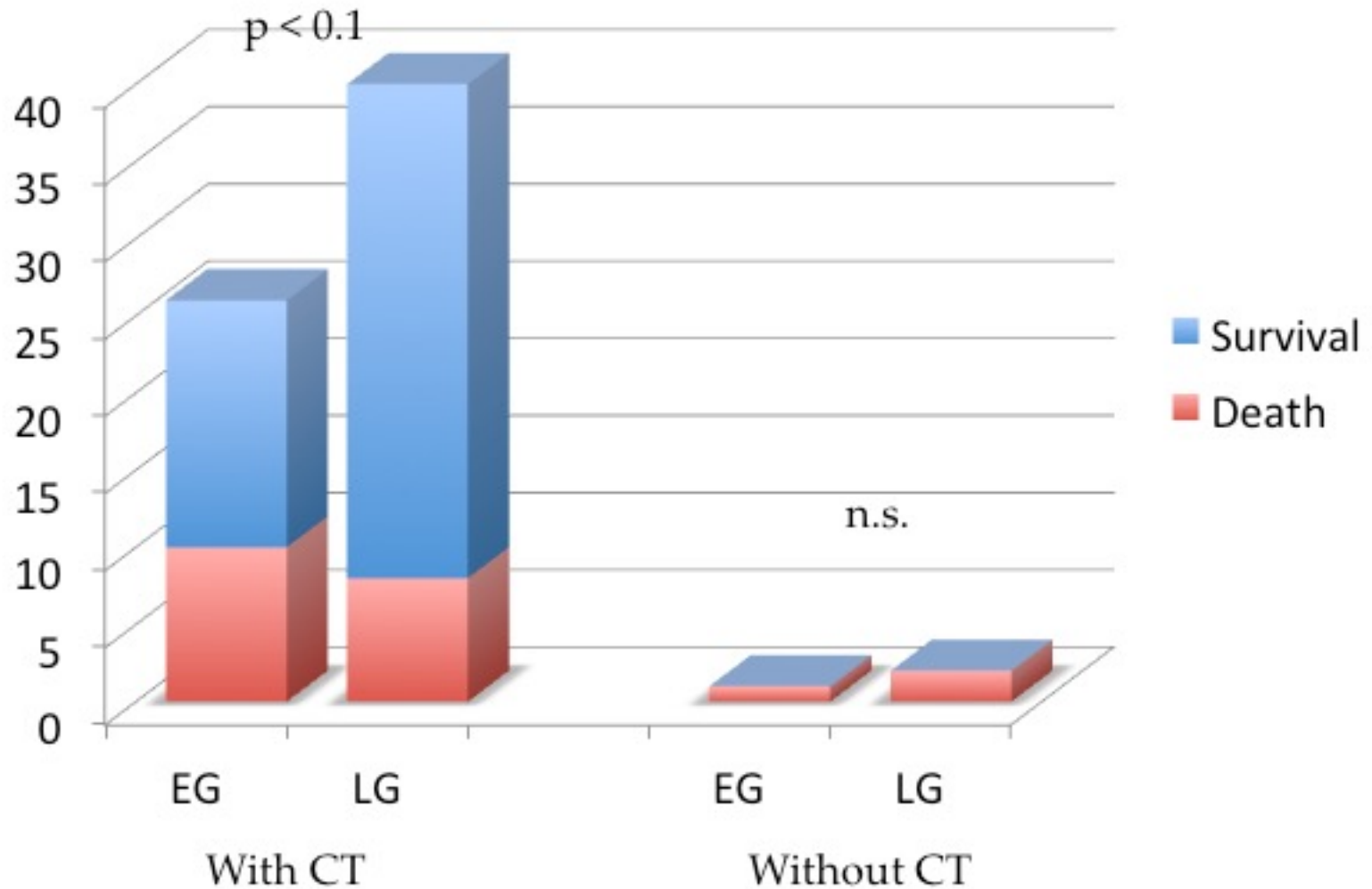
Characteristics of reviewed patients in each group

	Early group	Late group
No. of patients	27	42
Age (y.o.) median [range]	25 [1-80]	30.5 [6-87]
Sex, male / female	14 / 13	35 / 7 *
ISS, median [range]	34 [5-57]	33.5 [17-64]
Hemodynamically unstable	24 (88.9%)	37 (88.1%)
Whole body e-CT	26 (96.3%)	40 (95.2%)
Preoperative IVR	2 (7.4%)	6 (14.3%)
No. of death	11 (40.7%)	10 (23.8%)

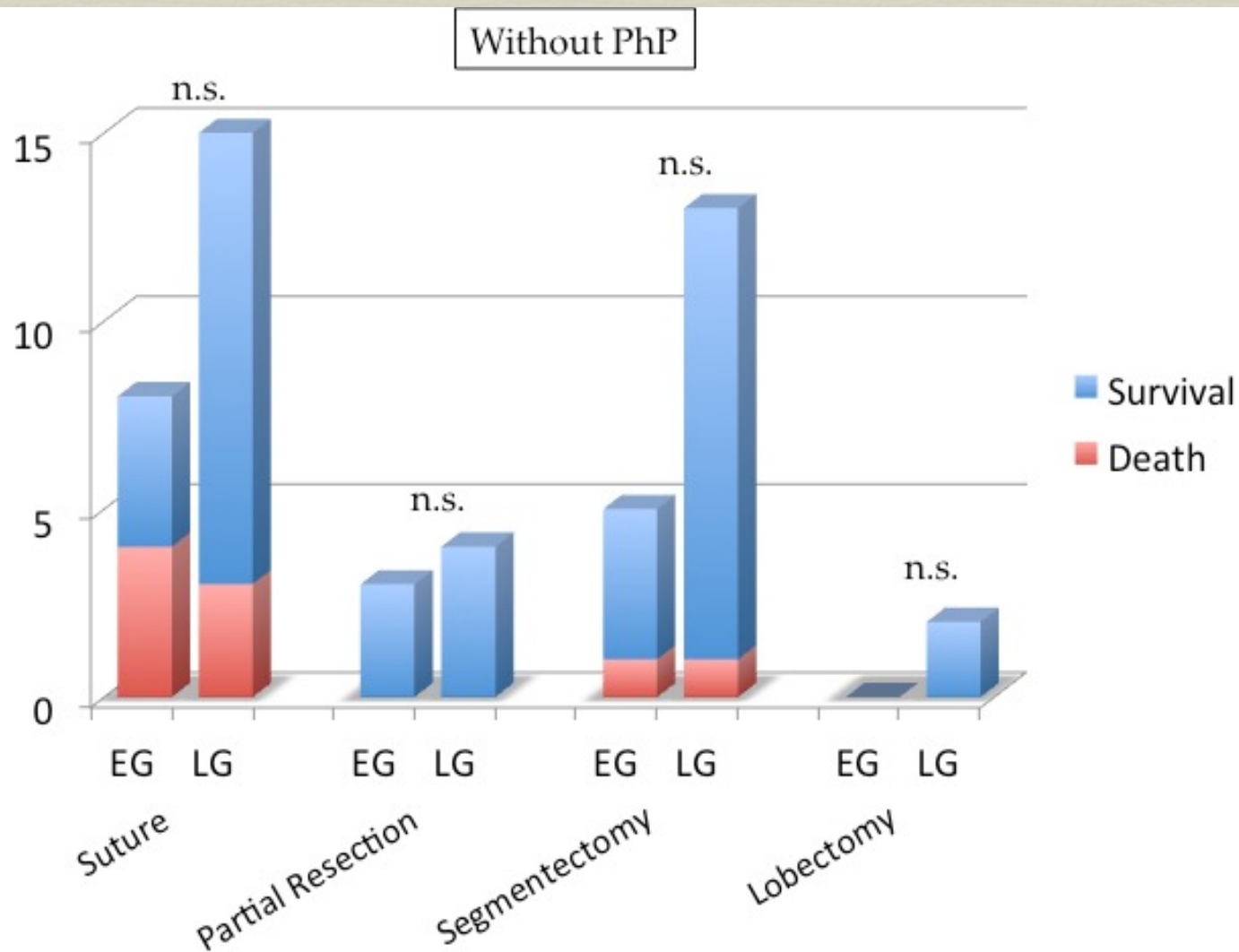
Number of patients relative to grades of hepatic injuries



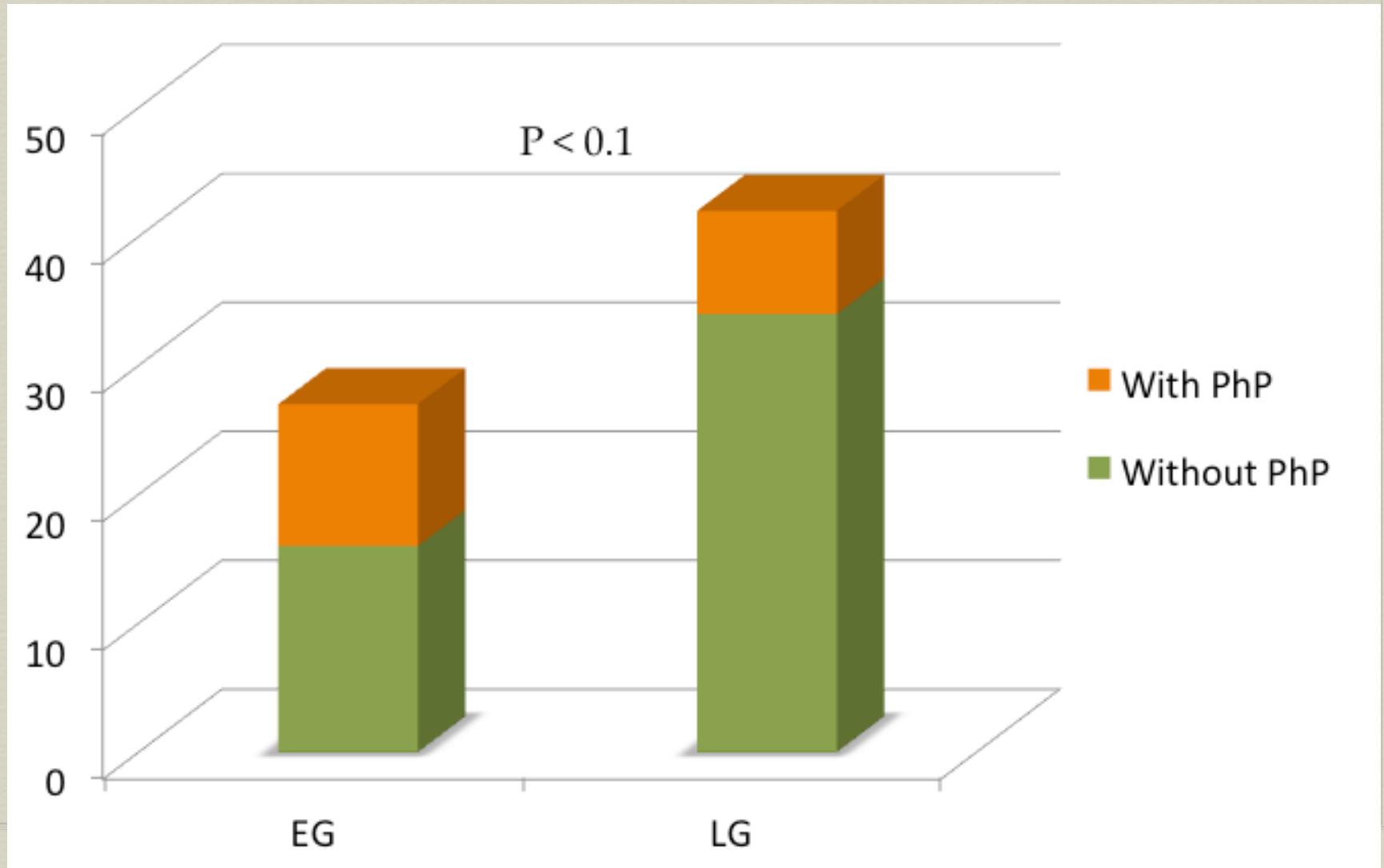
Incidences and mortalities relative to preoperative CT



Incidences and mortalities relative to surgical procedures without PhP

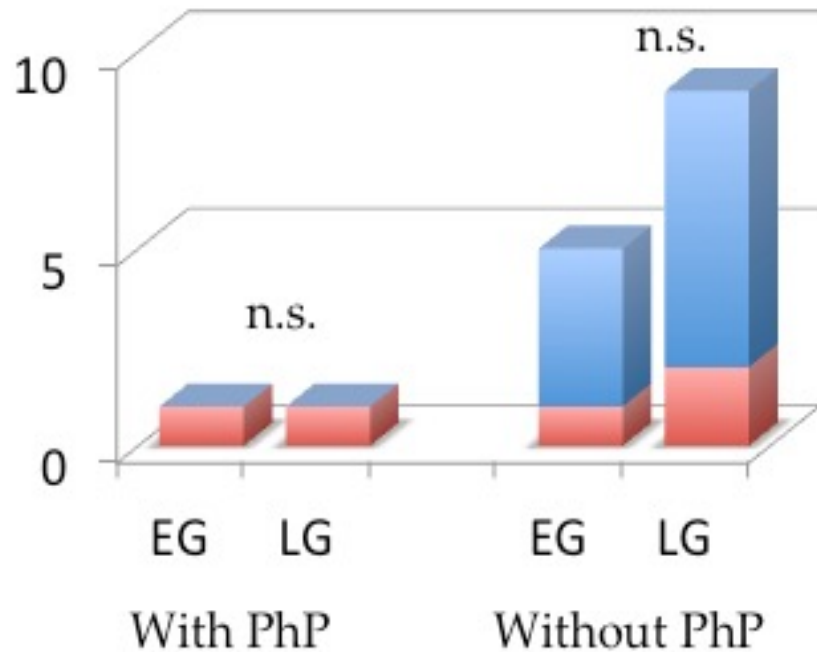


Incidences of perihepatic packing

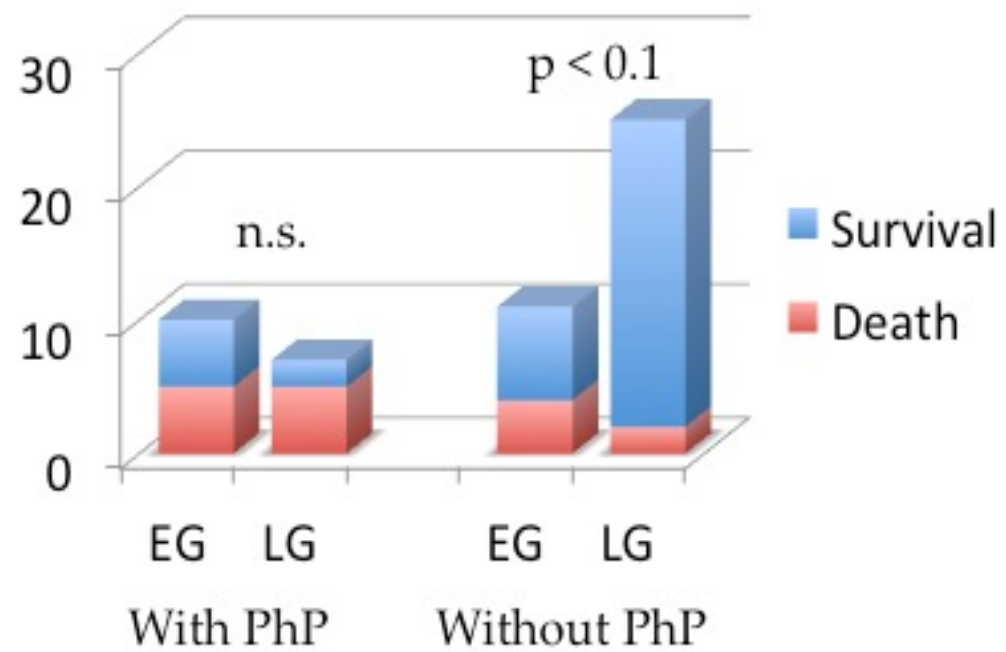


Mortalities of perihepatic packing relative to grade of hepatic injury

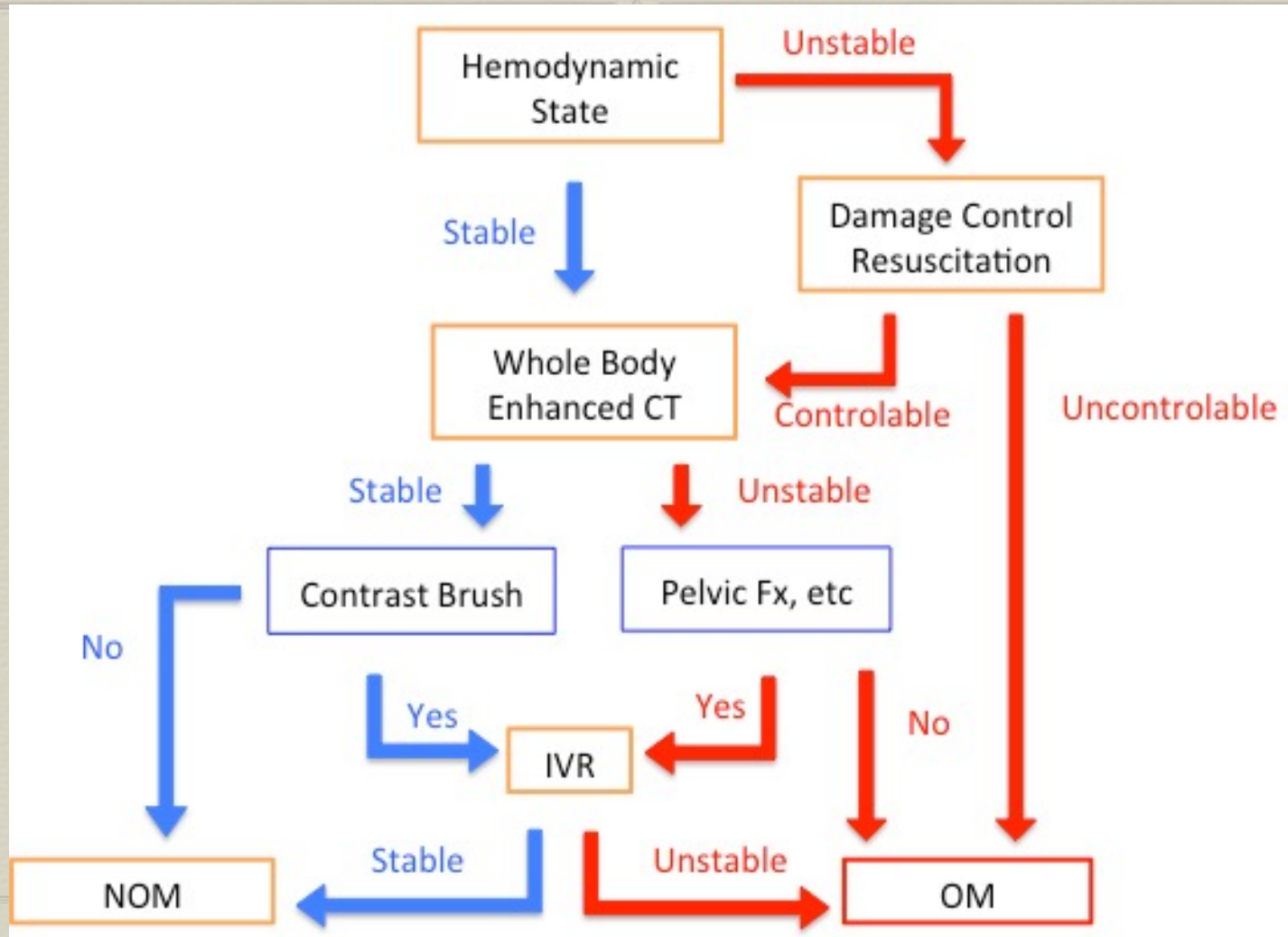
Grade I - III



Grade IV - VI



Strategy for management of blunt hepatic injury in Saitama Medical Center



今後の問題点

∞ IVC損傷の手術適応は？

∞ 循環動態不安定の中でのIVC損傷の術式は？