

鈍的肝損傷の治療

Management of blunt liver injury

埼玉医科大学総合医療センター
高度救命救急センター
外科チーム

2014.6.30

肝損傷治療の変遷

Chronology

～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の拡大（TAEの普及）

1993 Rotondo et al. Damage Control Surgeryを発表

侵襲的な手術からDCSへ

2000年代～ 手術的治療とNOMの選択

肝損傷治療の現状

∞ 循環動態が安定かつ造影CTにて extravasationがないものに**NOM**

∞ それ以外について

* TAEをfirst lineにする治療

* 手術をfirst lineにする治療

- **Damage Control Surgery**

- 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>.)
- ❖ 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

~2003 EAST Guideline

Level I

- ∞ There are insufficient data to suggest nonoperative management as a Level I recommendation for the initial management of blunt injuries to the liver and/or spleen in the hemodynamically stable patient.

Recommendations

~2003 EAST Guideline

Level II

- ❧ 1. There are class II and mostly class III data to suggest that nonoperative management of blunt hepatic and/or splenic injuries in a hemodynamically stable patient is reasonable.
- ❧ 2. The severity of hepatic or splenic injury (as suggested by CT grade or degree of hemoperitoneum), neurologic status, and/or the presence of associated injuries are not contraindications to nonoperative management.
- ❧ 3. Abdominal CT is the most reliable method to identify and assess the severity of the injury to the spleen or liver.

Recommendations

~2003 EAST Guideline

Level III

- ❧ 1. The clinical status of the patient should dictate the frequency of follow-up scans.
- ❧ 2. Initial CT of the abdomen should be performed with oral and intravenous contrast to facilitate the diagnosis of hollow viscus injuries.
- ❧ 3. Medical clearance to resume normal activity status should be based on evidence of healing.
- ❧ 4. Angiographic embolization is an adjunct in the nonoperative management of the hemodynamically stable patient with hepatic and splenic injuries and evidence of ongoing bleeding.

当科の鈍的肝損傷治療の変遷

- ⇒ 2005年EAST guideline (2003)に準拠した治療を開始
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
(受傷～初療の間でショックのあった患者は手術)
TAEはオプションとしての位置づけ
- ⇒ 2008年以前は種々の術式にgauze packingを併用
- ⇒ 2008年以降縫合部のプレジエットにフェルトを使用
十分な止血が得られgauze packingと決別 (?)
フェルト感染が問題になる
- ⇒ 2010年フェルトからvicryl meshへ変更

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

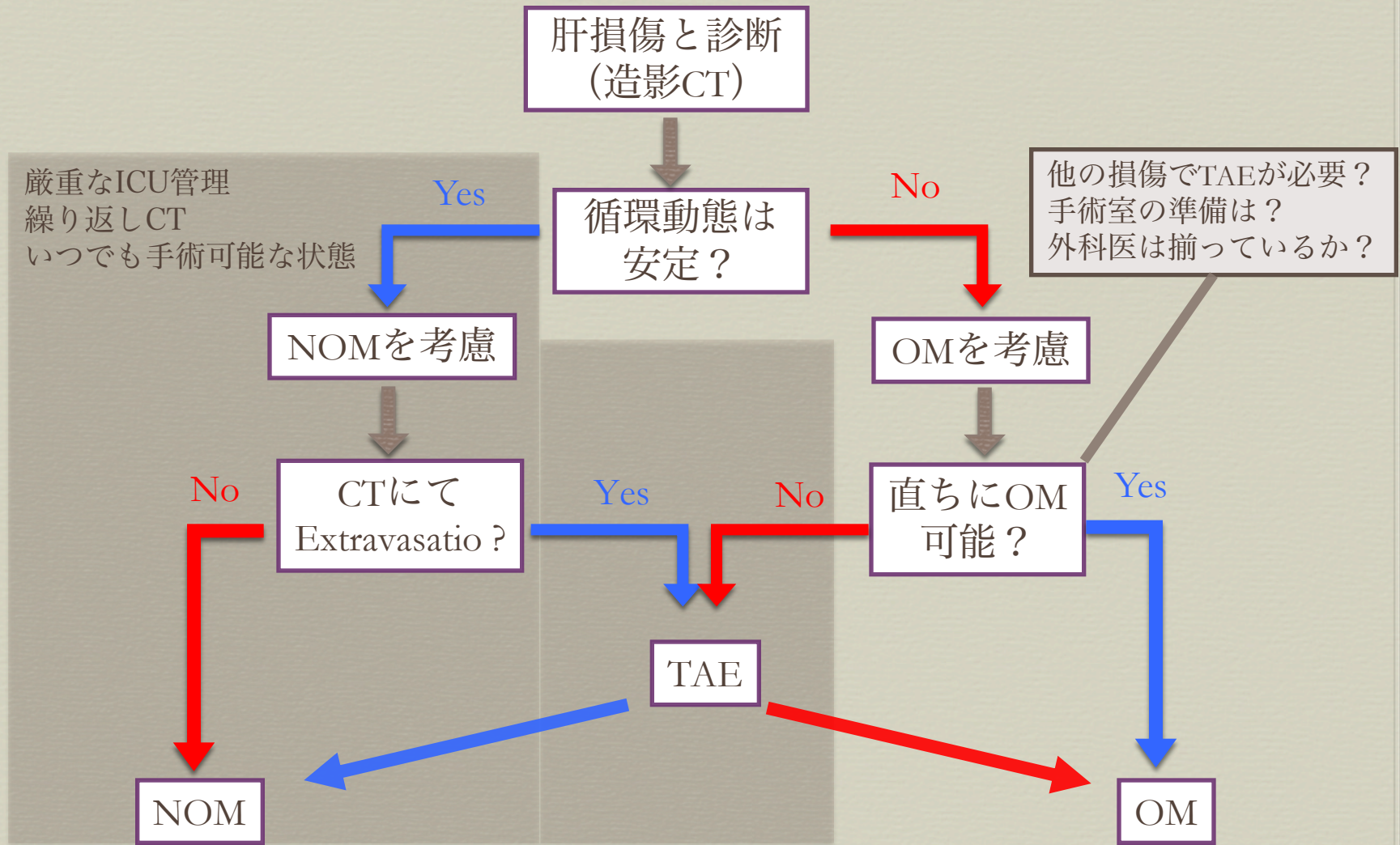
Level 3

- 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.

当院における鈍的肝損傷の治療戦略



鈍的肝損傷に対する手術

∞ 肝縫合術

∞ Resectionl debridement

∞ 解剖学的定型肝切除術

∞ Selective hepatic artery ligation
(SHAL)

∞ Atriocaval shunt

∞ Perihepatic packing

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

Western Trauma Association 2011

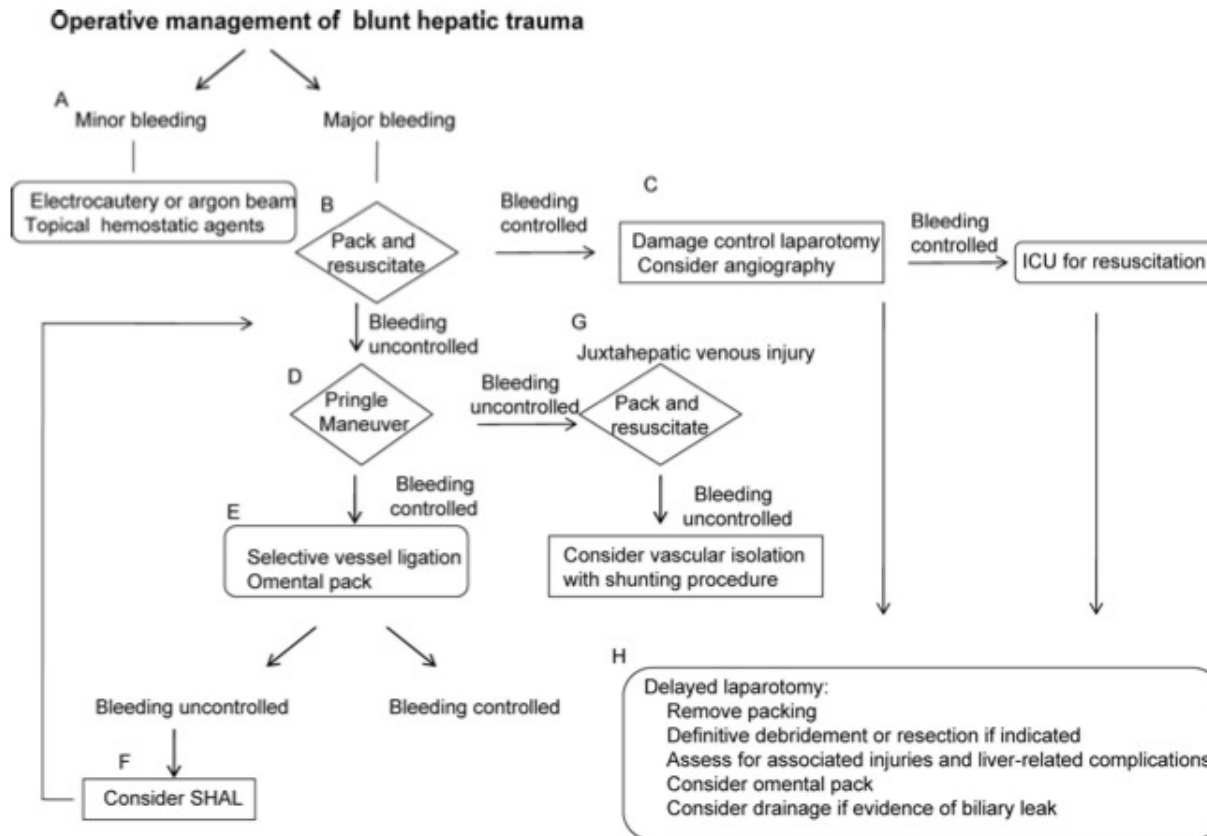


Figure 1. Algorithm for operative management of blunt liver trauma. ICU, intensive care unit; SHAL, selective hepatic artery ligation.

術式については？

- ↪ 近年、救急の世界ではDamage Control Surgery (DCS) というキーワードが流行っている
- ↪ 日本においてはDCSとガーゼパッキングを混同して、「DCS=ガーゼパッキング」と思っている人が多い
- ↪ 本来DCSは戦略的な考え方であり、ガーゼパッキングはその一連の中の一手法にすぎない
- ↪ 当院ではDCSを行いつつ、ガーゼパッキングのみで治療を終了せず、積極的に外科的止血を目指す

Questions

without conclusive answers

- ❧ 1. Frequency of hemoglobin measurements
- ❧ 2. Frequency of abdominal examinations
- ❧ 3. Intensity and duration of monitoring
- ❧ 4. Time to reinitiating oral intake
- ❧ 5. Duration and intensity of restricted activity (both in hospital and after discharge)
- ❧ 6. Optimum length of stay for both the intensive care unit (ICU) and hospital
- ❧ 7. Timing of initiating chemical deep venous thrombosis (DVT) prophylaxis after hepatic injury