

Symposium du Trauma Center Valaisan 2024

Mesenteric and bowel injuries after blunt trauma

Tobias Zingg, CHUV - Lausanne

Blunt Bowel and Mesenteric Injuries (BBMI):

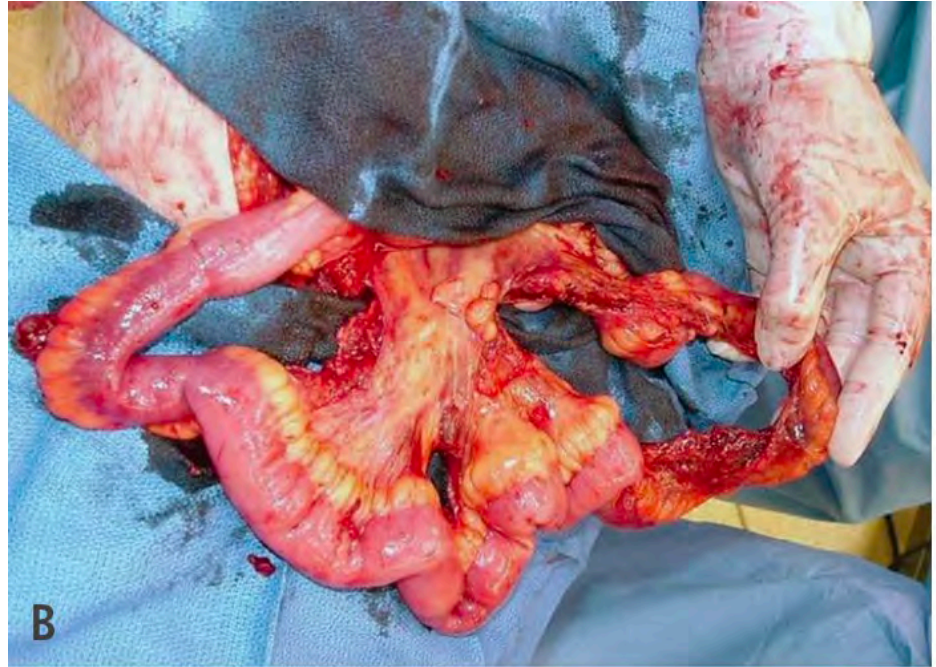
Bowel perforation

Mesenteric laceration

➔ **Bowel ischemia**

and/or

➔ **Bleeding**



Issues in BBMI:

Incidence after blunt trauma: **1-5%**

Low incidence of BBMI

Delay of > 8h has an impact on survival

➔ Importance of *early* diagnosis

Issues in BBMI:

CT-scan *false negative* in 13%

➔ CT-scan alone cannot reliably rule out BBMI

8-41% *morbidity* rate of a *non-therapeutic* laparotomy

➔ Exclude BBMI non-operatively



ELSEVIER



Full length article

Avoiding delayed diagnosis of significant blunt bowel and mesenteric injuries: Can a scoring tool make the difference? A 7-year retrospective cohort study



>700 blunt abdominal trauma patients (MVC)

3 % Bowel / Mesenteric Injury

CT *specific*: 76 % (16/21)

CT *unspecific*: 19 % (4/21)

CT *normal*: 5 % (1/21)

Delay to treatment > 24 hours: 24 % !



3:10 AM: 28 y/o male. Brought in by helicopter.

Driver, MVC (car versus car @ 80km/h)

Pain right thigh, knee and abdomen



1 peripheral IV-line, Fentanyl 100 mcg, Ketamine 50 mg, Tranexamic acid 1g, NaCl 0.9% 500 ml.

BP: 103/69, HR: 89, SaO2: 100%, GCS 15, T°37

Chest: no abnormal findings

Abdominal seatbelt mark

Tenderness abdomen

Tenderness right thigh



BP: 115/54, HR: 75, SaO2: 100%, GCS 15

T: 37.1°

WBC count: 13.2 G/l

Hemoglobine: 147 g/l

pH 7.36

SBE: - 3.6 (-2 - +2)

Lactate: 1.36 mmol/l (0.63 - 2.44)

INR: 1

The strongest predictor of abdominal injury in this case is ...

- A) White blood cell count 13.2 G/l
- B) Abdominal tenderness
- C) Seatbelt mark
- D) Base excess – 3.6



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- C) **Seatbelt mark**
- D) Base excess – 3.6



Signs and symptoms

Signe clinique ou symptôme	LR positif	LR négatif
Signe « de la ceinture »	5.6-9.9	0.53-0.55
Signes péritonéaux	3.7-6.5	0.96
Hypotension (<90) à l'arrivée	5.2	0.90
Distension abdominale	3.8	0.90
GCS <14	1.8-2	1
Douleurs abdominales spontanées	1.6	0.52
Douleurs à la palpation du rebord costal	1.5	0.74
Douleurs à la palpation abdominale (sans signes péritonéaux)	1.4	0.61

LR : likelihood ratio

THE RATIONAL

CLINICAL EXAMINATION

CLINICIAN'S CORNER

**Does This Adult Patient
Have a Blunt Intra-abdominal Injury?**

Lab I

Examen de laboratoire	LR positif	LR négatif
Déficit de base < - 6 mEq/L	18	0.12
Hématurie > 25 cellules/champ	3.7-4.1	0.44
Hématocrite < 30% [17]	3.3	0.79
Hématocrite < 36% [19]	2.2	0.76
AST > 50 U/L / ALT > 130 U/L	2.5-5.2	0.38
Leucocytose (> 10 G/L)	1.7	0.35
Lactate > 2.2 mmol/L	1.3	0.61

 THE RATIONAL
CLINICAL EXAMINATION

CLINICIAN'S CORNER

**Does This Adult Patient
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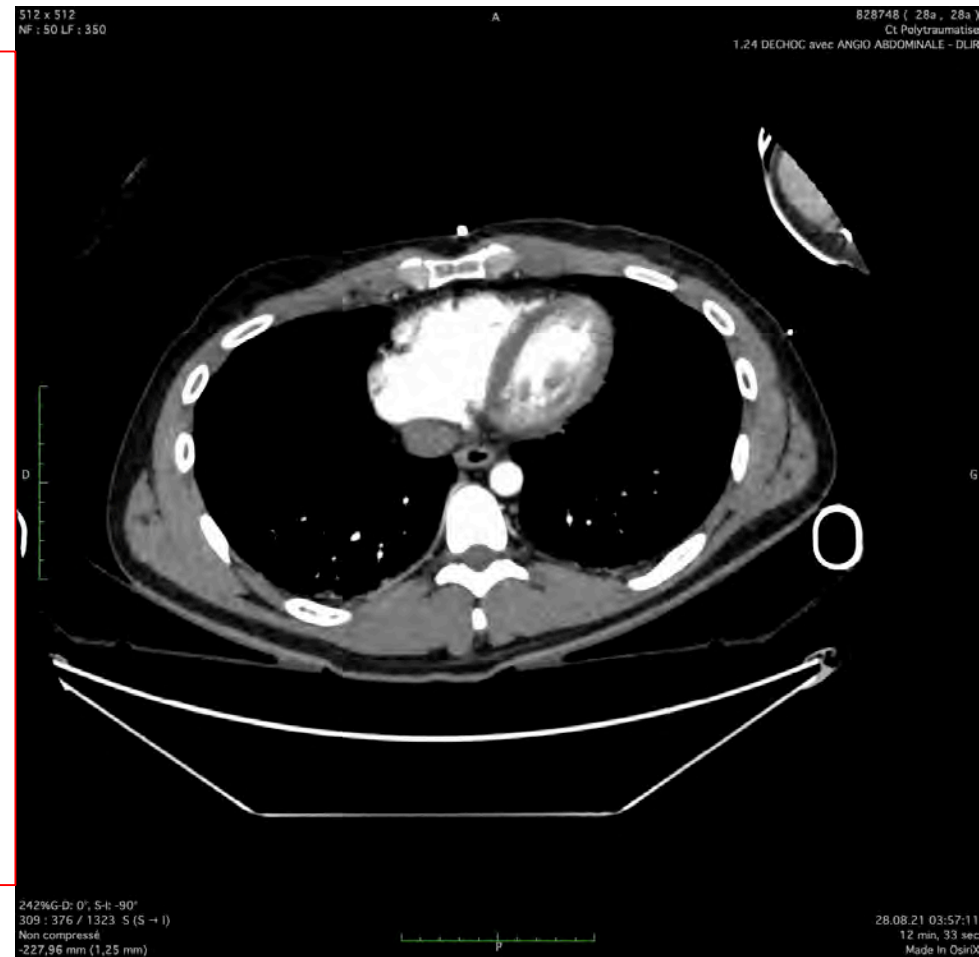
Grade I splenic injury

Free fluid:

- perihepatic
- pelvic

No pneumoperitoneum

Traumatic right flank hernia





How would you manage the abdomen?

- A) Serial physical exams
- B) Open hernia repair
- C) Laparoscopy
- D) Laparotomy
- E) Splenic angio-embolization



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What now?

- A) More trocars
- B) Convert to open
- C) Call the ortho and go to sleep

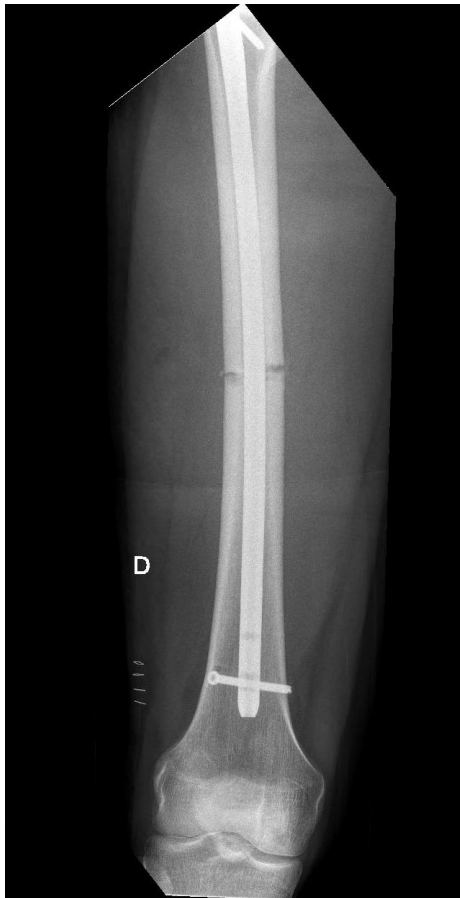


What now?

- A) More trocars
- B) Convert to open
- C) Call the ortho and go to sleep



Converted to open, damage control
Terminal ileum and sigmoid stapled off
Temporary abdominal closure (VAC)
Called ortho, went to sleep
Intramedullary femur nail



Takeback after 48 hours (patient stable)

Ileo-colic anastomosis

Colon anastomosis

Abdomen closed



Bowel injury prediction scores

Performance of three predictive scores to avoid delayed diagnosis of significant blunt bowel and mesenteric injury: A 12-year retrospective cohort study

The Journal of
Trauma and
Acute Care
Surgery®

Fabio Agri, MD, MBA, Basile Pache, MD, Mylène Bourgeat, PhD, Vincent Darioli, MD, Nicolas Demartines, MD, Sabine Schmidt, MD, and Tobias Zingg, MD, Lausanne, Switzerland

BIPS (AUC 87.6%)

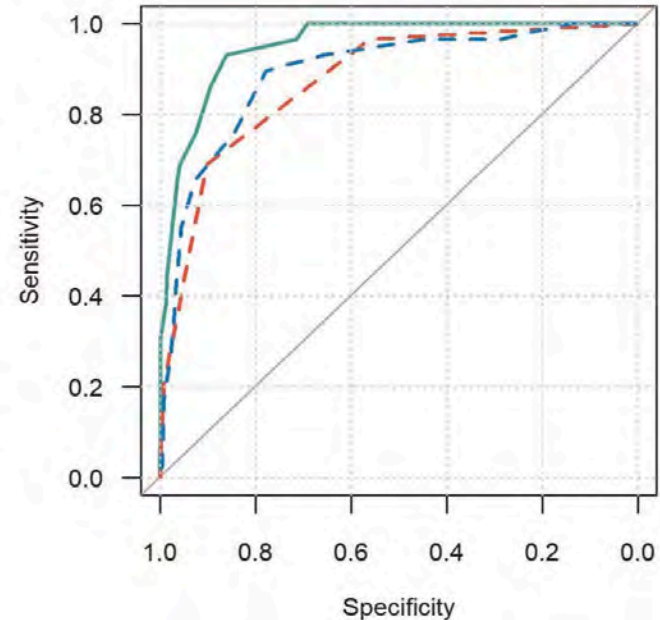
CT, clinical exam & lab

Raharimanantsoa (AUC 89.2%)

CT, mechanism, clinical exam & lab

Faget (AUC 95.3%)

CT (10 items)





Proposal of a new preliminary scoring tool for early identification of significant blunt bowel and mesenteric injuries in patients at risk after road traffic crashes

Mahery Raharimanantsoa¹ · Tobias Zingg² · Alicia Thiery³ · Cécile Brigand¹ · Jean-Baptiste Delhomme¹ · Benoît Romain¹

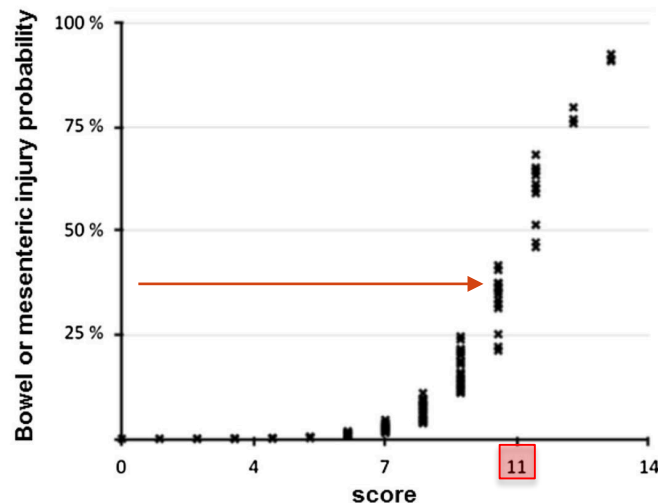


Table 2 Description of the predictive score

Criteria	Score
Mechanisms of accident	
Car	3
Motorcycle	1
Impact against a moving vehicle	2
Abdominal pain or tenderness	2
Open or closed long bone fracture	1
Lactate ≥ 1.82 mmol/L	2
Intraperitoneal free fluid on CT scan	3

Table 3 Score and association with BBMI

Score	Risk of BBMI	Probability of BBMI (%)
0–5	Very low	< 1
6–7	Low	1–5
8–9	Moderate	5–25
10–11	High	25–70
> 11	Very high	> 70

Take home messages:

Diagnostic delays increase morbidity/-tality

Clinical exam: Seat belt sign

CT is best, but not perfect for BBMI

Scores may help to decide if CT unclear

Diagnostic laparoscopy !

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Questions?

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