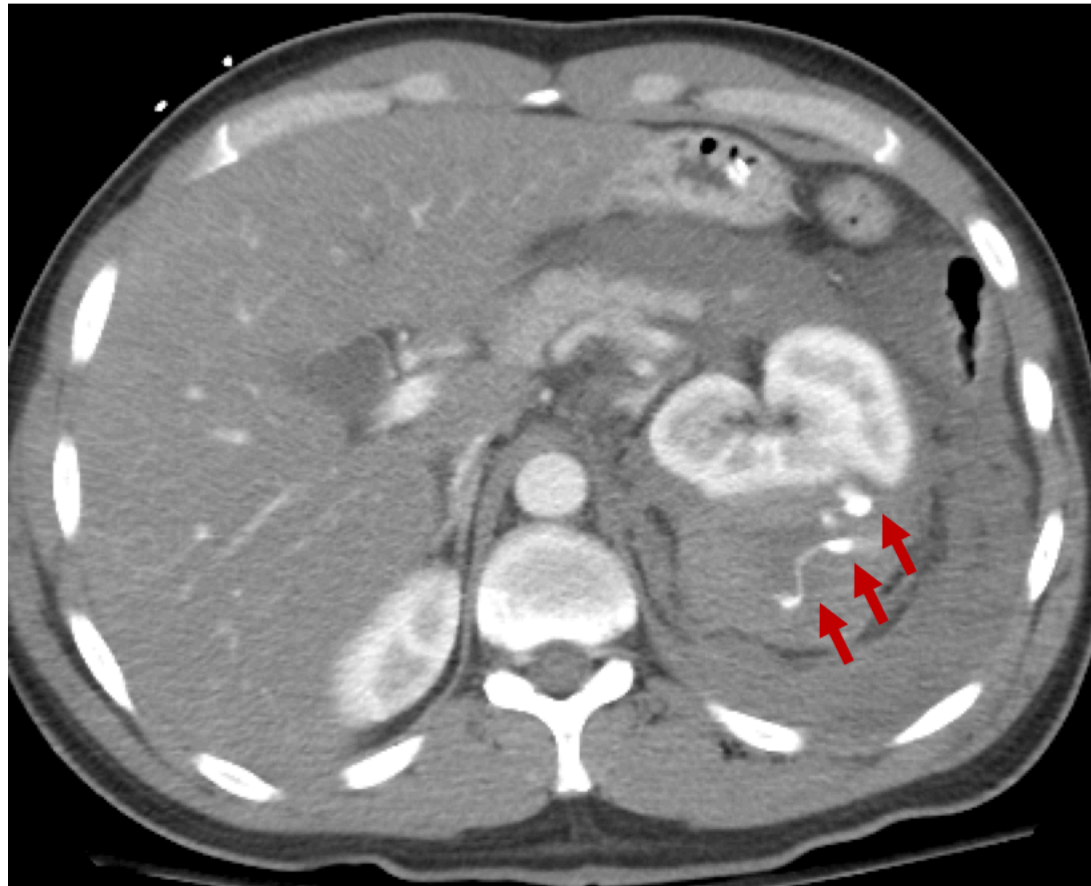
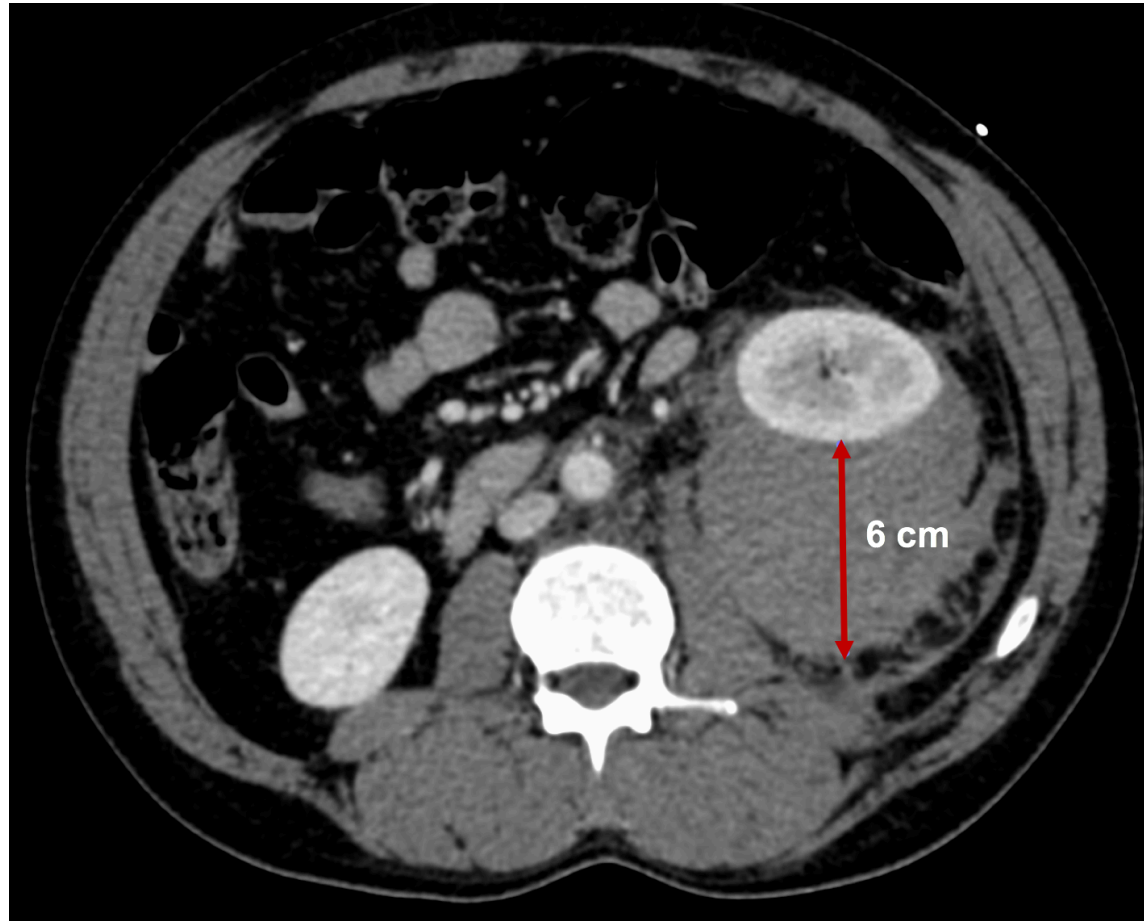


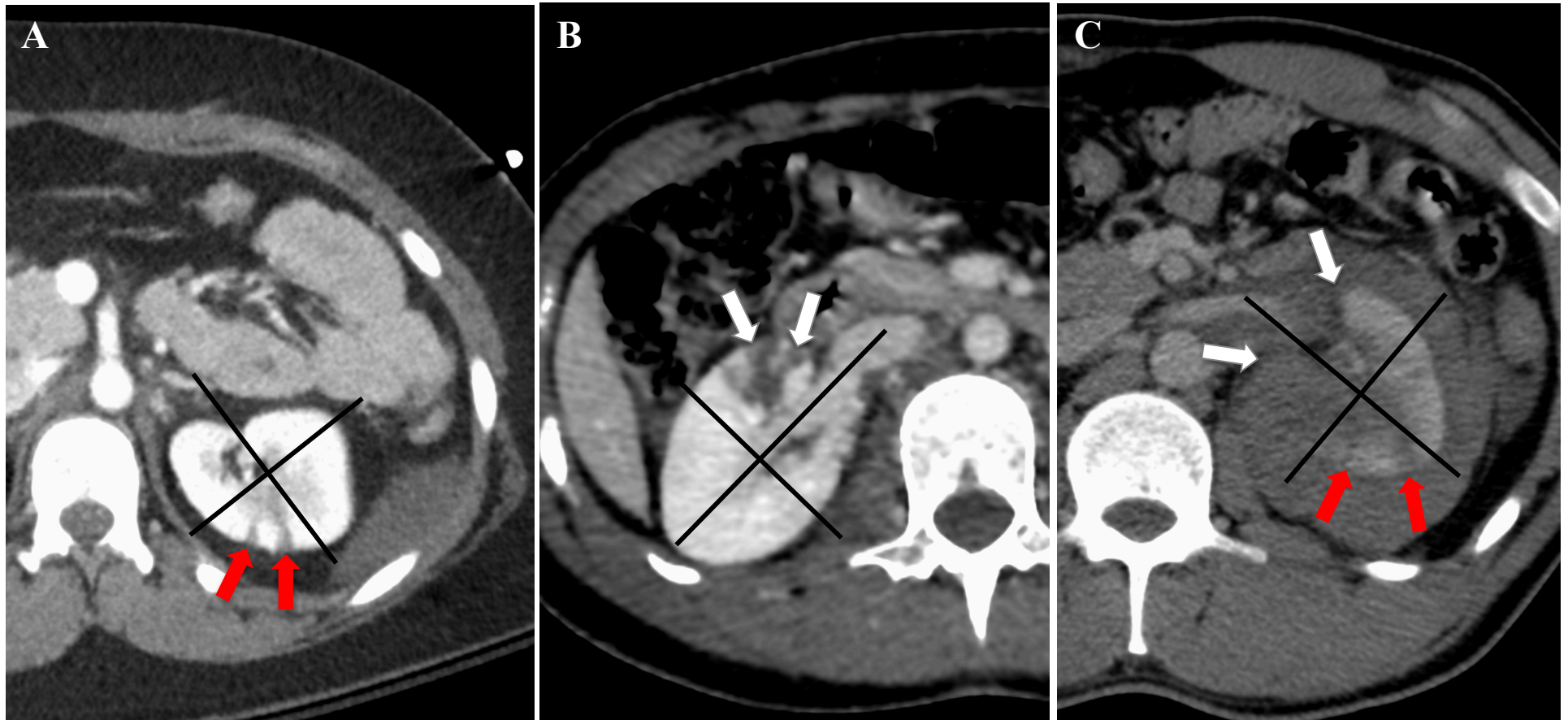
Supplemental figures:



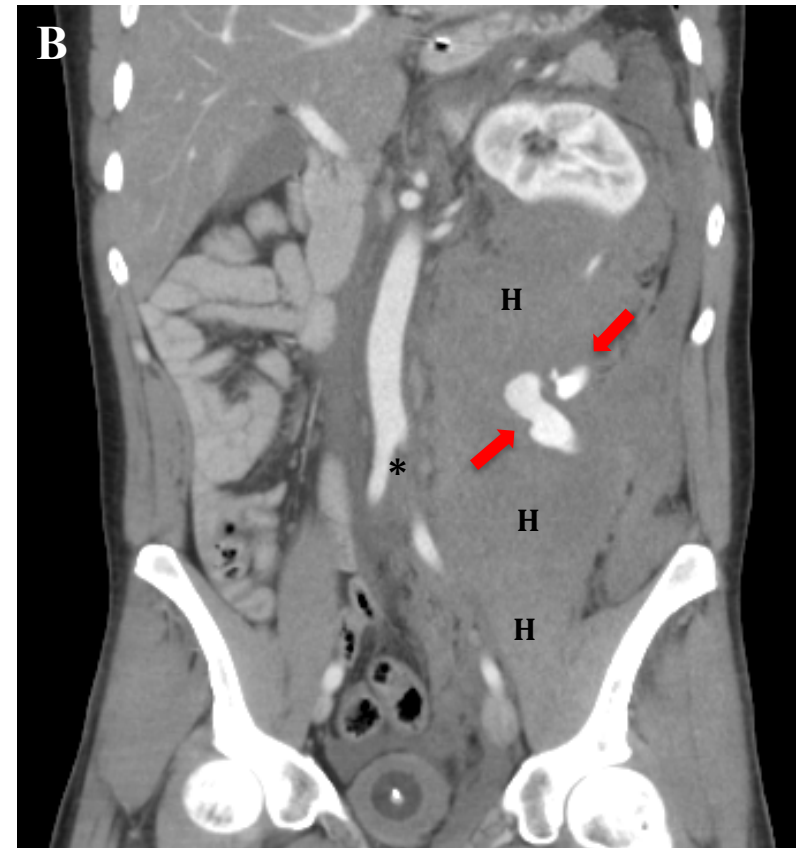
Supplemental Figure 1: Vascular contrast extravasation (VCE) from the lateral left kidney (red arrows), during the arterial phase of the CT scan, with associated peri-renal hematoma.



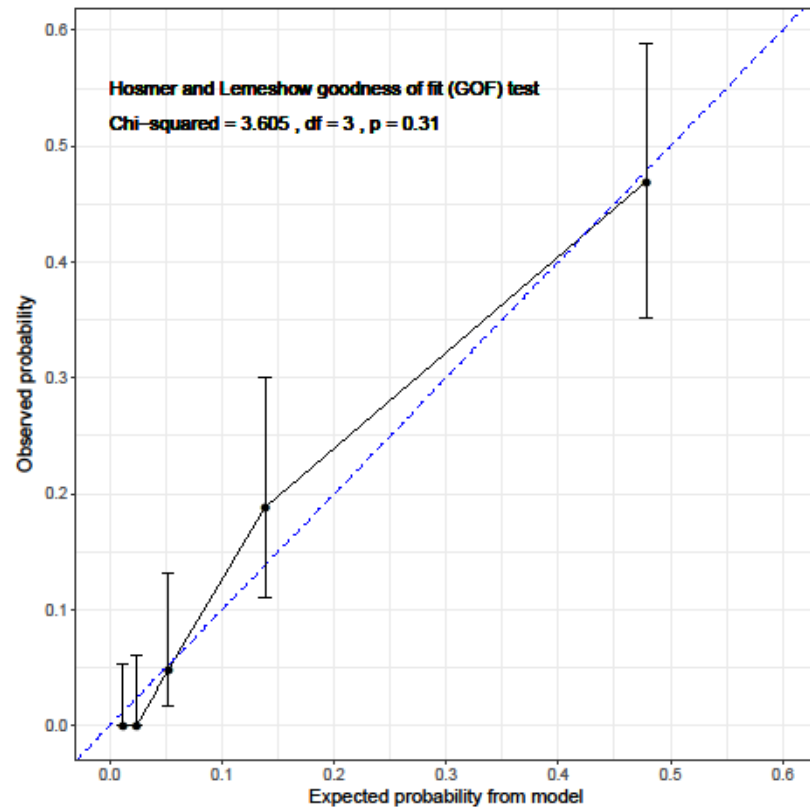
Supplemental Figure 2: Peri-renal hematoma rim distance (HRD) measuring 6 cm at the axial plane. Hematoma rim distance is measured in the axial CT images and is the maximum measurement anywhere from the lower to upper pole.



Supplemental Figure 3: Laceration location is defined using a perpendicular line to a plane through the renal hilum to define the medial and lateral halves of the kidney. A) Lateral laceration (red arrows); B) Medial laceration (white arrows); C) Complex laceration (both medial and lateral lacerations).

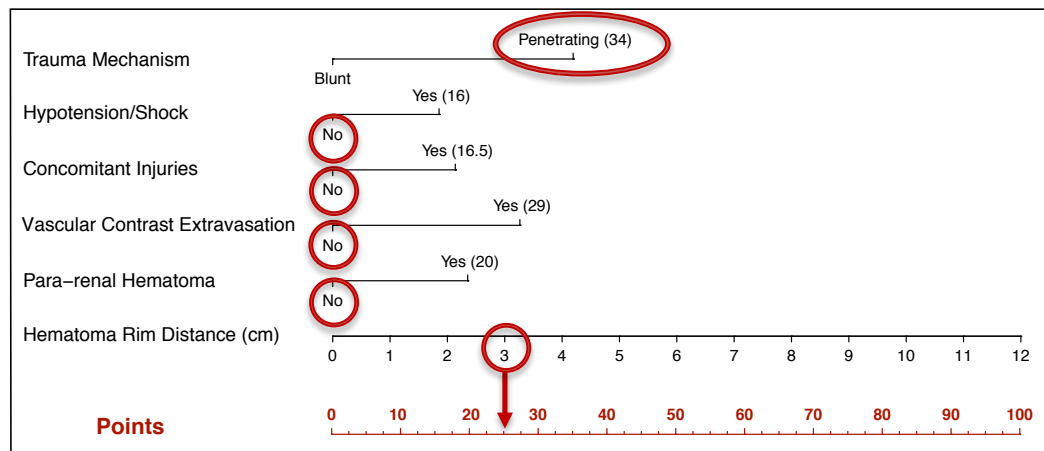


Supplemental Figure 4: A) Anterior para-renal extension of hematoma (letter H) beyond the inferior vena cava (asterisk) and adjacent to the pancreas; (B) Extension of hematoma (letter H) inferior to the aortic bifurcation (asterisk) into the pelvis associated with vascular contrast extravasation (red arrows).



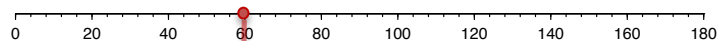
Supplemental Figure 5: Calibration plot for the nomogram: Subjects were divided into 5 groups according to their percentile of predicted bleeding intervention risk. The observed bleeding intervention percentages for each of the groups was plotted against the average predicted risk of that group. Blue dashed line indicates the perfect prediction (observed = predicted). The p-value for the Hosmer and Lemeshow goodness of fit test was $p=0.31$, indicating no evidence of poor fit.

A

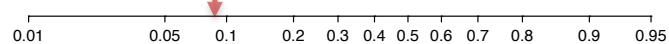


34
+
0
+
0
+
0
+
0
+
25

Total Points

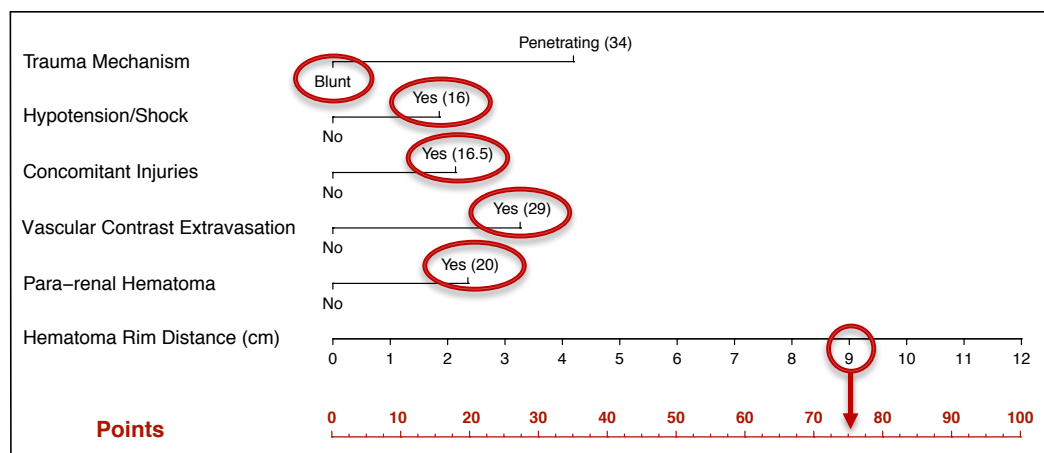


Risk of bleeding intervention



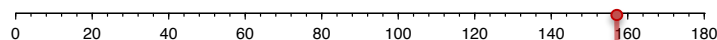
59 Total points

B

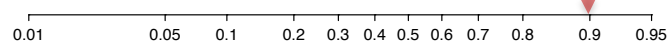


0
+
16
+
16.5
+
29
+
20
+
75

Total Points



Risk of bleeding intervention



156.5 Total points

Supplemental Figure 6: Examples for reading the nomogram using patient scenarios.

A) A patient is presented to the Emergency Department with a normal and stable blood pressure (i.e. no hypotension/shock during the first 4 hours of admission; 0 points) and with isolated high-grade renal injury (i.e. no concomitant injuries; 0 points) after a knife injury (penetrating injury; 34 points) to the left kidney; in the initial trauma CT scan there is a 3 cm (HRD=3 cm; 25 points) hematoma confined to the peri-renal space (no para-renal; 0 points) without active vascular contrast extravasation (no VCE, 0 points). Total points are 59 (0+0+34+25+0+0) corresponding to an intervention probability of <10%.

Using regression formula: $-5.109 + 1.586 * 1(\text{penetrating trauma mechanism}) + 0.749 * 0(\text{hypotension/shock=no}) + 0.768 * 0(\text{concomitant injuries=no}) + 1.355 * 0(\text{vascular contrast extravasation=no}) + 0.927 * 0(\text{para-renal hematoma=no}) + 0.389 * 3(\text{hematoma rim distance in cm}=3) = -2.356$. $\exp(-2.356)/(1+\exp(-2.356)) = \mathbf{8.66\%}$.

B) A patient is transferred to the Emergency Department in shock (16 points) after high-speed motor vehicle accident (blunt injury: 0 points). After initial fluid resuscitation and hemodynamic stabilization, the patient undergoes trauma CT scan which shows liver and splenic lacerations without active bleeding (concomitant injuries; 16.5 points) and multiple deep lacerations in the right kidney with vascular contrast extravasation from renal vessels (VCE; 29 points) and a 9 cm hematoma (HRD=9 cm; 75 points) extending inferiorly into the pelvis (para-renal extension: 20 points). Total points are 156.5 (16+0+16.5+29+75+20) corresponding to an intervention probability of

~90% suggesting that it is highly likely that the patient would need early angiography with angioembolization or an open intervention.

Using regression formula: $-5.109 + 1.586 * 0(\text{blunt trauma mechanism}) + 0.749 * 1(\text{hypotension/shock=yes}) + 0.768 * 1(\text{concomitant injuries=yes}) + 1.355 * 1(\text{vascular contrast extravasation=yes}) + 0.927 * 1(\text{para-renal hematoma=yes}) + 0.389 * 9(\text{hematoma rim distance in cm}=9) = 2.191$. $\exp(2.191)/(1+\exp(2.191)) = \mathbf{89.94\%}$.