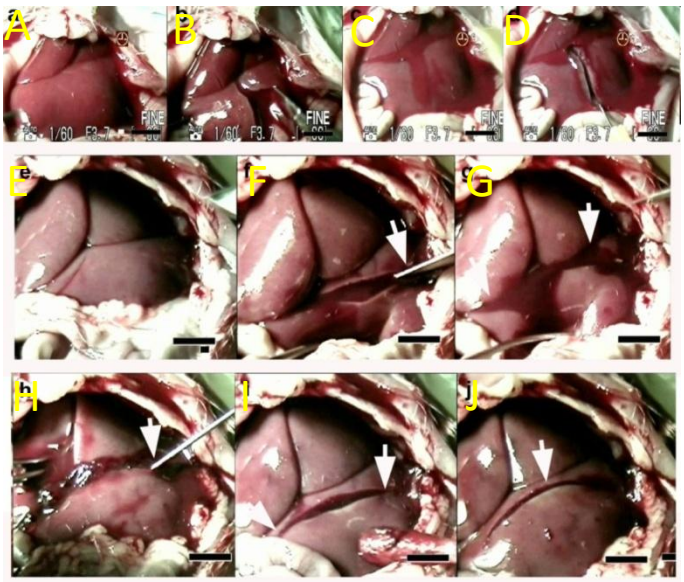
Translational Nanomedicine:

Instant Hemostasis

Liver

Liver: Nano hemostat solution stops bleeding in less than 10 seconds



"Top 10 Emerging Technology of the Year" **–** Technology Review (2007)

"...this discovery can radically reduce the quantity of blood needed during surgery..." - Nature Nanotechnology 2006 1(3): 166-167

"Bloodless" – New York Times 3/18/07

"...could represent a novel and exciting prospect for controlling surgical bleeding..." - Science (2006) Oct. 10 ScienceNOW News

Rat liver hemostasis (A-J). This series of pictures is of an adult rat where the skin covering the intra-peritoneal cavity was removed and the liver exposed. A) The left lateral lobe was sagittally cut completely transecting a portion of the liver lobe. **B**) The liver was separated with profuse bleeding. **C**) The two halves were allowed to come back together and the bleeding continued (arrow). **D**) The 1% NHS solution was applied and the extent of the incision (arrow) was visible under the transparent assembled NHS. Complete hemostasis was achieved in 8.6 seconds, statistically significant when compared to 90.0 seconds when cauterization was applied, or 301.6 seconds if irrigated with saline. **(E-J) This series of pictures shows a transverse cut to the left lateral lobe in an adult rat**. **F)** Applying a transverse cut in the lobe (arrow). **G)** Shows the profuse bleeding produced when a major branch of the portal vein is cut, (arrows) show extent of cut. **H)** Treatment with self-assembling NHS. Note the complete cessation of bleeding (in 10.3 seconds using 2% concentration; 10.0 seconds and 11.0 using 3% and 4% respectively) under the clear assembled NHS (arrow). **I)** 2 minutes after treatment and after the superficial self-assembling NHS has been removed (arrows) show extent of cut. **J)** 15 minutes after treatment. (Scale bars = 1mm)

Ellis-Behnke, R. G. *et al*. Nano hemostat solution: immediate hemostasis at the nanoscale. Nanomedicine 2: 207-15 (2006).

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