A New Hemostat that Functions with Novel Mechanisms and Does Not Require Manual Pressure

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INTRODUCTION

- Truncal hemorrhage remains the most common cause of potentially preventable deaths in battlefield casualties.
- Problems with current devices used to control truncal bleeding:
  - Slow acting
  - Have variable efficacy
  - Dependent on operator skills
  - Require manual pressure to maintain placement

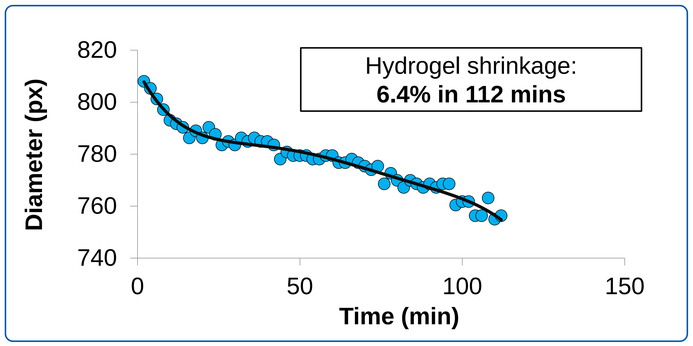
ENDOMEDIX TECHNOLOGY

- The patented hydrogel medical device forms *in situ* by the instant reaction between aqueous solutions of acrylated chitosan and oxidized dextran, via Schiff base formation
- Rapid hemostasis without manual pressure and no swelling of the device
- Unique structural features augment coagulation cascade at the application site

RESULTS

Device Shrinkage in Wet Environment

- The device shrinks in wet environments
- Measured quantitatively using a digital microscope

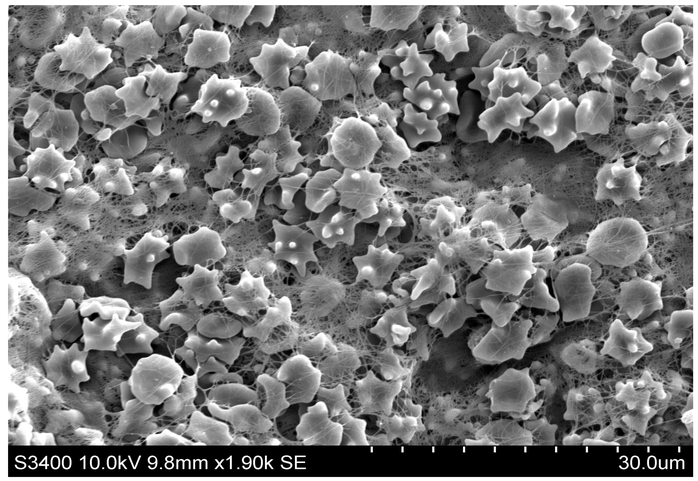


In Vivo Studies in Porcine Liver & Spleen Model

- Rapid hemostasis was achieved in aggressive bleeding wounds without manual pressure
- Stable clot formation was observed in all wound types – verified by SEM imaging

Wound type	Time to Hemostasis (sec)
Liver abrasion	20 ± 2* sec (n=23)
Liver biopsy punch	16 sec (n=2)
Liver laceration	12 sec (n=1)
Spleen laceration	82 sec (n=1)

* 95% Confidence Interval



SEM image confirming stable clot formation (i.e. presence of **activated platelets** & **RBCs** enveloped in a thick network of **fibrin strands**).

MECHANISMS OF ACTION

Rapid hemostasis and stable clot formation is achieved by **5 complementary mechanisms of action – 4 of them unique / patent applied**

TAMPONADE

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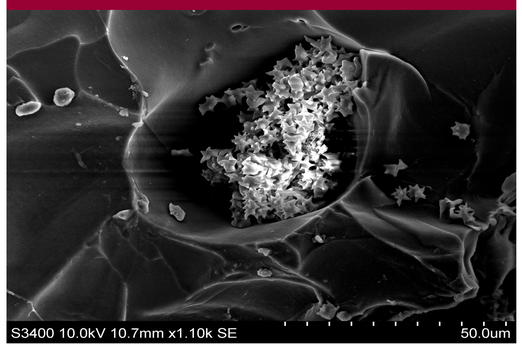
4 UNIQUE MECHANISMS

OPTIMAL PORE SIZE DISTRIBUTION



The hydrogel has a pore size distribution of **12-807µm** that functions to collect large amounts of platelets (2-3 µm) and RBCs (7.5 – 8.7µm).

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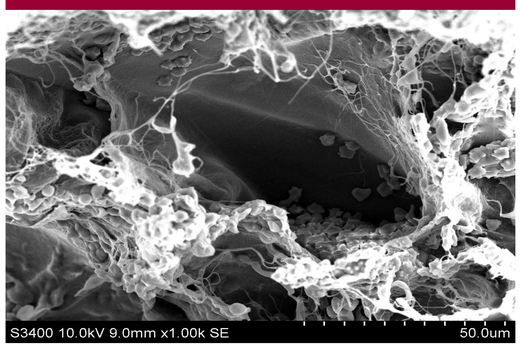
NON-INTERCONNECTED PORES



Non-interconnected pores effectively trap platelets, RBCs & blood clots

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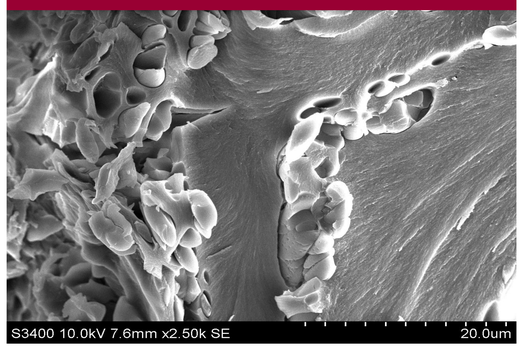
PLATELET ADHESIVE SURFACE



Internal pore surfaces are irregular, making it conducive to platelet adhesion, activation and aggregation.

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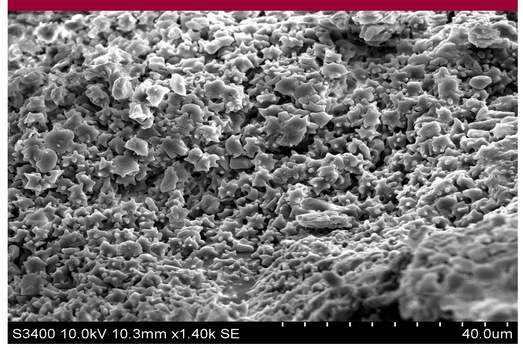
DYNAMIC SHRINKAGE



The hydrogel gently shrinks, concentrating platelets & RBCs across the wound surface.

We thank NIH for its generous support : NINDS SBIR R44 NS070331