

Evaluation Of Microporous Polysaccharide Hemospheres As A Novel Hemostatic Agent In Open Partial Nephrectomy: Favorable Experimental Results In The Porcine Model

Murat FJ, Ereth MH, Dong Y, Piedra MP, Gettman MT.

Department of Urology, Mayo Clinic, 200 First Street SW, Rochester, MN 55905, USA

PURPOSE: Microporous polysaccharide hemospheres (MPH, ARISTA_{AH}, Medafor, Minneapolis, Minneapolis) are a novel hemostatic agent made from purified plant starch. MPH (ARISTA_{AH}) activates the clotting cascade and hyperconcentrates platelets and coagulation proteins, while enhancing a hemostatic plug. We evaluated the hemostatic efficacy of MPH (ARISTA_{AH}) compared with standard surgical technique in a porcine open partial nephrectomy model.

MATERIALS AND METHODS: Standardized lower pole partial nephrectomy was consecutively performed in each kidney of 12 female pigs. Each pig was randomized to two groups, namely treatment with MPH (ARISTA_{AH}) application or control with the conventional surgical technique (oxidized cellulose with bolster sutures). The right kidney was harvested one half-hour after hemostasis was

achieved and the left kidney was harvested after seven days.

RESULTS: Mean animal and resected renal tissue weight were comparable. Ischemic and hemostasis times were significantly decreased in the MPH (ARISTA_{AH}) treated group (2.67 and 4.67 minutes, respectively) vs. the control group (8.33 and 7.75 minutes, respectively) (each $p = 0.004$). Blood loss was equivocal (0.88 gm in the treatment group vs. 2.09 gm in the control group, $p = 0.07$). No hemostatic complications were noted in either group. No evidence of residual foreign material was found in the MPH (ARISTA_{AH}) group at one week.

CONCLUSIONS: MPH (ARISTA_{AH}) provided rapid, effective and durable hemostasis in the porcine open partial nephrectomy model. Additional experimental and clinical evaluation is warranted to define the role of MPH (ARISTA_{AH}) assisted partial nephrectomy in humans.