

# Avitene™ Microfibrillar Collagen Hemostat

Committed partner. Full portfolio. Backed by data.

#	Author(s)	Article title	Journal	Study model	Key takeaways
<b>Background</b>					
1	Elroy R, et al.	An in vitro Evaluation of the Hemostatic Activity of Topical Agents	Journal of Biomedical Materials Research	Blood collection	<ul style="list-style-type: none"> <li>• <b>“Collagen, as the most powerful</b> hemostatic agent in comparison to absorbable gelatin sponge, with or without thrombin, and oxidized regenerated cellulose.”</li> <li>• <b>“Found to enhance the platelet activity</b> like natural collagen.”</li> </ul>
<b>ENT</b>					
2	Morgan PR, et al.	Control of Hemorrhage in Glomus Tympanicum Surgery	Ear, Nose and Throat Journal	<i>in vivo</i> , case report	<ul style="list-style-type: none"> <li>• <b>“Rapid formation of a stable clot.”</b></li> <li>• <b>“More effective than</b> standard pressure alone or oxidized cellulose cloth in achieving hemostasis even in the presence of heparin and salicylate.”</li> </ul>
<b>General</b>					
3	Rose N, et al.	Clinical Experiences with Microcrystalline Collagen Hemostatic Material	Journal of the American Osteopathic Association	<i>in vivo</i> , 44 patients	<ul style="list-style-type: none"> <li>• <b>“Reduced blood loss</b> as well as duration of the operative procedure.”</li> <li>• <b>“Has proved to be highly effective agent for topical hemostasis.”</b></li> </ul>
4	Morgenstern L, et al.	Control of Hepatic Bleeding with Microfibrillar Collagen	Archives of Surgery	<i>in vivo</i> , 36 patients	<ul style="list-style-type: none"> <li>• <b>“Superior to</b> topical hemostatic agents such as oxidized cellulose (Surgicel®) or gelatin (Gelfoam®).”</li> <li>• <b>“Adheres well to moist surfaces.”</b></li> <li>• <b>“If applied as recommended, foreign body reaction is minimal and absorption is complete 4 to 6 weeks.”</b></li> </ul>
5	Zoucas E, et al.	Comparative Evaluation of Local Hemostatic Agents in Experimental Liver Trauma: A Study in the Rat	Journal of Surgical Research	<i>in vivo</i> , animal	<ul style="list-style-type: none"> <li>• <b>“Collagen preparations proved superior to all other hemostatic agents.”</b></li> <li>• <b>“Decreased bleeding time and blood loss.”</b></li> </ul>
6	Sakon M, et al.	Use of Microcrystalline Collagen Powder and Fibrinogen Tissue Adhesive for Hemostasis and Prevention of Rebleeding in Patients with Hepatocellular Carcinoma Associated with Cirrhosis of the Liver	Surgery, Gynecology & Obstetrics	<i>in vivo</i> , human clinical trial	<ul style="list-style-type: none"> <li>• <b>“Complete hemostasis and prevention of rebleeding can be achieved.”</b></li> </ul>
7	Low R, et al.	Microfibrillar Collagen Hemostat During Laparoscopically Directed Liver Biopsy	Journal of Laparoendoscopic Surgery	<i>in vivo</i> , animal	<ul style="list-style-type: none"> <li>• <b>“Endo-Avitene® dramatically effective at securing hemostasis.</b> Easy to use.”</li> <li>• <b>“Compatible with currently available laparoscopic equipment.”</b></li> </ul>



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<b>GYN</b>					
8	Cameron WJ.	A New Topical Hemostatic Agent in Gynecologic Surgery	Obstetrics & Gynecology	<i>in vivo</i> , 21 women	<ul style="list-style-type: none"> <li>• “Proved to be an <b>effective hemostat in GYN procedures.</b>”</li> <li>• “<b>Succeeded in cases where other methods failed.</b>”</li> <li>• “<b>Satisfactory agent for achieving hemostasis.</b>”</li> </ul>
9	Borten M and EA Friedman	Translaparoscopic Hemostasis with Microfibrillar Collagen in Lieu of Laparotomy: A Report of Two Cases	Journal of Reproductive Medicine	<i>in vivo</i> , human case studies	<ul style="list-style-type: none"> <li>• “Its intense hydrophilic nature allows it to <b>adhere to moist surfaces</b>, forming a substrate for platelet aggregation and a subsequent <b>clot formation.</b>”</li> <li>• “Successful application avoided major abdominal surgery.”</li> </ul>
<b>Neurosurgery</b>					
10	Ereth MH, et al.	Comparative Safety and Efficacy of Topical Hemostatic Agents in a Rat Neurosurgical Model	Neurosurgery	<i>in vivo</i> , animal	<ul style="list-style-type: none"> <li>• “<b>Effective in controlling bleeding</b> in the majority of standardized neurosurgical lesions.”</li> <li>• “Complete <b>hemostasis within one minute.</b>”</li> </ul>
11	Rybock JD and DM Long	Use of Microfibrillar Collagen as a Topical Hemostatic Agent in Brain Tissue	Journal of Neurosurgery	<i>in vivo</i> , animal	<ul style="list-style-type: none"> <li>• “<b>Faster acting and more effective than gelatin foam.</b>”</li> <li>• “<b>Stops bleeding immediately, does not swell or leak blood.</b>”</li> <li>• “No tissue reaction.”</li> <li>• “<b>Effective in the presence of heparinization.</b>”</li> </ul>
12	Spiller M, et al.	Effect of Absorbable Topical Hemostatic Agents on the Relaxation Time of Blood: an <i>in vitro</i> Study with Implications for Postoperative Magnetic Resonance Imaging	Journal of Neurosurgery	<i>in vitro</i> , human blood	<ul style="list-style-type: none"> <li>• “<b>Collagen-based agents</b> have generally proved <b>superior to gelatin-and cellulose-based agents</b>, despite different handling characteristics.”</li> <li>• “<b>Collagen-based agents</b> exceeded Gelfoam, which in turn <b>worked more effectively than oxidized regenerated cellulose (Surgicel®).</b>”</li> <li>• “Better able to provide hemostasis than the agents in common usage.”</li> </ul>
<b>Ortho</b>					
13	Ritter MA.	A Means of Reducing Postoperative Blood Loss in Orthopaedic Surgery: A Preliminary Report	Orthopaedic Review	<i>in vivo</i> , 160 patients	<ul style="list-style-type: none"> <li>• “Statistically reduce blood and decrease the need for blood replacement.”</li> <li>• “Microfibrillar collagen hemostat (<b>MCH</b>) found to be <b>very effective in controlling post-op bleeding in total knee replacemet.</b>”</li> </ul>
14	Sherman R, et al.	Control of Bone Bleeding at the Sternum and Iliac Crest Donor Site: A Collagen-Based Composite Combined with Autologous Plasma: Results of a Randomized Controlled Trial	Orthopedics	<i>in vivo</i> , 318 patients	<ul style="list-style-type: none"> <li>• “&gt;83% of sternal sites achieved complete hemostasis.”</li> <li>• “<b>Success rate was significantly greater</b> than with <b>standard attempts of hemostasis.</b>”</li> <li>• “Various forms of <b>microfibrillar collagen</b> have been reported to offer <b>excellent hemostasis</b> in both hard- and soft-tissue surgical applications and <b>do not appear to interfere with subsequent bone regeneration.</b>”</li> </ul>
<b>Urology</b>					
15	Hanisch ME, et al.	A Comparative Evaluation of Avitene and Gelfoam for Hemostasis in Experimental Canine Prostatic Wounds	Investigative Urology	<i>in vivo</i> , animal	<ul style="list-style-type: none"> <li>• “Produced <b>hemostasis in a significantly shorter time than Gelfoam®.</b>”</li> <li>• “<b>Superior to Gelfoam®</b> as a hemostatic agent in the prostate.”</li> </ul>
16	Hait MR, et al.	Comparative Evaluation of Avitene Microcrystalline Collagen Hemostat in Experimental Animal Wounds	American Journal of Surgery	<i>in vivo</i> , animal	<ul style="list-style-type: none"> <li>• “<b>Superior to Surgicel®</b> in stopping profuse and arterialized bleeding.”</li> <li>• “<b>More effective and easier to handle</b> in irregular cavities or lacerations, such as brain tissue, skull, pancreas, and kidneys.”</li> </ul>

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<b>Vascular</b>					
17	Abbott WM and WG Austen	The Effectiveness and Mechanism of Collagen-Induced Topical Hemostasis	Journal of Surgery	<i>in vivo</i> , animal	<ul style="list-style-type: none"> <li>• <b>“Achieved hemostasis more frequently and rapidly than oxidized cellulose. Highly effective in the presence of heparin.”</b></li> <li>• “Effective in &gt;70% of trials.”</li> </ul>
18	MEDICAL NEWS	Microcrystalline Collagen Aids Vessel Anastomoses	Journal of American Medical Association	<i>in vivo</i> , animal	<ul style="list-style-type: none"> <li>• <b>“Superior hemostatic efficacy compared to manual compression and oxidized cellulose (during vascular surgery).”</b></li> </ul>
19	Hexig B, Nakaoka R, Tsuchiya T	Safety Evaluation of Surgical Materials by Cytotoxicity Testing	J Journal of Artif Organs	<i>in vitro</i>	<ul style="list-style-type: none"> <li>• <b>“Weak cytotoxicity</b> in comparison to Surgicel® whom revealed a strong cytotoxicity.”</li> </ul>

\*Bold type added for emphasis.

1. An in vitro Evaluation of the Hemostatic Activity of Topical Agents. *J Biomed Mater Res*. 1988 Feb;22(2):149-57. 2. Control of hemorrhage in glomus tympanicum surgery. *Ear Nose Throat J*. 1978 Oct;57(10):465-7. 3. Clinical Experiences with Microcrystalline Collagen Hemostatic Material. *J Am Osteopath Assoc*. 1978 Dec; 78(4):254-62. 4. Control of Hepatic Bleeding with Microfibrillar Collagen. *Arch Surg*. 1977;112(8):941-943. 5. Comparative Evaluation of Local Hemostatic Agents in Experimental Liver Trauma: A Study in the Rat. *J Surg Res*. 1984 Aug;37(2):145-50. 6. Use of Microcrystalline Collagen Powder and Fibrinogen Tissue Adhesive for Hemostasis and Prevention of Rebleeding in Patients with Hepatocellular Carcinoma Associated with Cirrhosis of the Liver. *Surg Gynecol Obstet*. 1989. May;168(5):453-4. 7. Microfibrillar collagen hemostat during laparoscopically directed liver biopsy. *J Laparoendosc Surg*. 1993 Aug;3(4):415-20. 8. A New Topical Hemostatic Agent in Gynecologic Surgery. *Obstetrics & Gynecology*. January 1978.118-122. 9. Translaparoscopic hemostasis with microfibrillar collagen in lieu of laparotomy. A report of two cases. *J Reprod Med*. 1983 Nov;28(11):804-6. 10. Comparative Safety and Efficacy of Topical Hemostatic Agents in a Rat Neurosurgical Model. *Neurosurgery*. 2008 Oct;63(4 Suppl 2):369-72. 11. Use of Microfibrillar Collagen as a Topical Hemostatic Agent in Brain Tissue. *J Neurosurg*. 1977 Apr;46(4):501-5. 12. Effect of Absorbable Topical Hemostatic Agents on the Relaxation Time of Blood: an in vitro Study with Implications for Postoperative Magnetic Resonance Imaging. *J Neurosurg*. 2001 Oct;95(4):687-93. 13. A Means of Reducing Postoperative Blood Loss in Orthopaedic Surgery: A Preliminary Report. *Orthopaedic Review*. 1978. 7(10). 14. Control of Bone Bleeding at the Sternum and Iliac Crest Donor Site: A Collagen-Based Composite Combined with Autologous Plasma: Results of a Randomized Controlled Trial. *Orthopedics*. 2001 Feb;24(2):137-41. 15. A Comparative Evaluation of Avitene and Gelfoam for Hemostasis in Experimental Canine Prostatic Wounds. *Invest Urol*. 1975 Mar; 12(5):333-6. 16. Comparative Evaluation of Avitene Microcrystalline Collagen Hemostat in Experimental Animal Wounds. *American Journal of Surgery*. 28 Feb 1973, 125(3):284-287. 17. The Effectiveness and Mechanism of Collagen-Induced Topical Hemostasis. *Surgery*. 30 Nov 1975, 78(6):723-729. 18. Microcrystalline Collagen Aids Vessel Anastomoses. *JAMA*. 1974.229(10). 19. Safety Evaluation of Surgical Materials by Cytotoxicity Testing. *J Artif Organs*. 2008;11(4):204-11.

BD, Warwick, RI, 02886, U.S.  
800.556.6275

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