

# Immunohistochemical Assessment of Collagen in an Explanted GORE Bioabsorbable Hernia Plug at 3 Months

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## Clinical History

- ▶ The patient is a 62-year old female with a history of chronic COPD and recurrent umbilical hernia failing several open herniorrhaphies, who presented with acute cholecystitis. During laparoscopic cholecystectomy, the umbilical hernia was reduced and a trocar placed through the defect. In light of the acute inflammation present in the abdomen it was decided to perform a staged repair of the umbilical hernia/trocar site, using a GORE Bioabsorbable Hernia Plug.
- ▶ Three months after placement of the GORE Bioabsorbable Hernia Plug, the umbilical site was further reinforced with GORE DUALMESH® Biomaterial implanted laparoscopically. A biopsy of the implant region was taken and submitted for histopathology, including immunohistochemical assessment of collagen.

## Histological Findings

- ▶ A section of the tissue sample prepared with Milligan's trichrome stain demonstrates the presence of fibrous tissue between the components of the bioabsorbable prosthesis (Figure 1).
- ▶ Immunohistochemical staining with anticollagen type I (Figure 2) and anticollagen type III (Figure 3) demonstrate the significant presence of type I collagen with minimal type III collagen surrounding the bioabsorbable material.

## Comments

- ▶ At three months post-operative, the biopsy shows a roughly equal proportion of collagen to prosthetic material. This finding is consistent with results previously presented on the GORE Bioabsorbable Hernia Plug as implanted in a porcine model. The confirmation of type I collagen at this early stage of the bioabsorption process is a significant finding, and demonstrates that the GORE Bioabsorbable Hernia Plug serves as a scaffold for guided tissue regeneration.

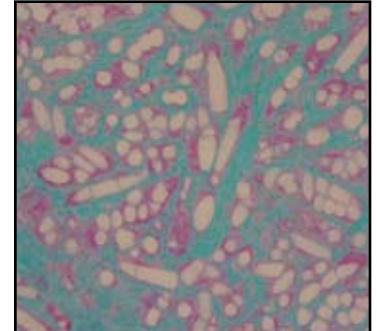


Figure 1. 10X, Milligan's trichrome. Fibrous tissue (green) surrounds pale remnants of bioabsorbable material.

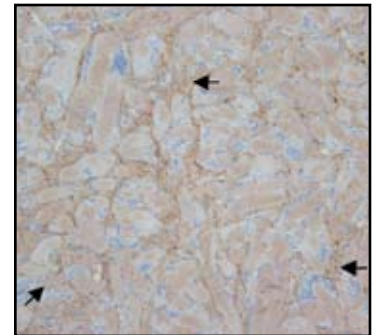


Figure 2. 10X, anticollagen type I. Arrows illustrate regions of dense extracellular type I collagen (deep brown color left by the immunohistochemical stain).

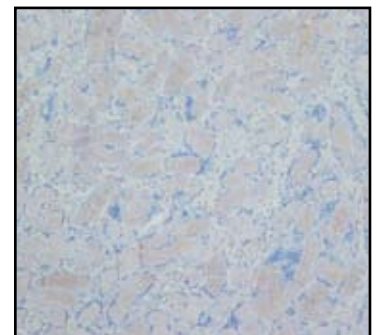


Figure 3. 10X, anticollagen type III. Very little type III collagen is seen in this slide as demonstrated by a paucity of brown color between regions of bioabsorbable prosthesis.



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