Peritoneal Nerve Supply The parietal peritoneum, tike the parietal pleur, is sensitive to pain, temperature, touch, and pressure. The parietal peritoneum lining the anterior abdominal wall is supplied by the lower six thoracic and first lumbar nerves (i.e., the same nerves that innervate the overlying muscles and skin). Visceral affer-ent nerves that supply the viscera or are traveling in the mesenteries . supply it. Overdistension of a viscus leads to the sensation of pain