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Nerve fibers and endings in cranial sutures

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The cranial sutures of the squirrel monkey resemble the joint structure of a symphysis in that multiaxial movement can occur. The outer periosteal covering consists of membranous connective tissue extending from one bone to the other, allowing some stretch. The inner covering is reflected around the ends of the bone. The enclosed space between the outer and inner covering contains a loose matrix of vascularized connective tissue. In addition there are both myelinated and nonmyelinated nerve fibers evident in the cranial suture matrix. Some of the myelinated fibers terminate as branched free-endings along the inner periosteal covering of the free ends of the bones. This type of ending (Ruffini) is considered to be sensitive to pressure change and may produce pain sensations if forces are excessive. Efferent nonmyelinated fibers course along with the arterial vessels and may innervate the capillary pericytes. Nonmyelinated afferents appear to arise as branched free-endings in relation to the venous vessels. Some of the collagenous fiber bundles also appear to be innervated by beaded branched fibers which could sense minor distortions in the sutural matrix. All of the sensory-type receptors in the suture may provide for poorly localized pain perception if the stimulus is excessive.

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