“Bio-Absorbable Clip for Watertight Closure of Human Tissues”

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During spine surgery, surgeons often encounter the dura, which is a tough rubbery sack that contains the brain, spinal cord and spinal fluid. On occasion, this membrane may be opened, either intentionally or otherwise. This is called a durotomy and it must be closed in a water-tight fashion in order to prevent leakage of the spinal fluid that if untreated can lead to problems of wound breakdown, infections, meningitis, severe headaches or other potentially fatal consequences. Closure of a durotomy involves suturing the opening with very fine suture and working down very narrow deep corridors using an operative microscope or surgical loupes. As the corridors we work in become narrower, it is more difficult to expeditiously close the dura in a watertight fashion. Often, subpar closures can result, leading to spinal fluid leaks and potentially a host of other complications. Therefore, we have proposed a tissue stapler that utilizes a bioabsorbable polymer to close the dura or other tissues in a watertight fashion. The benefit of this over other existing methods is that it is absorbable, leaving no trace after a period of time, does not obscure future imaging with metal artifact (as other tissue clips do), can be deployed in a minimally invasive setting in seconds, and everts tissue edges of the dura to prevent scarring to the spinal cord.