

Article Navigation

Usefulness of Sealants for Dural Closure: Evaluation in an In Vitro Model

Tristan van Doormaal, MD, PhD  , Ahmet Kinaci, MD, Sander van Thoor, BSc, Saskia Redegeld, BSc, Wilhelmina Bergmann, DVM, Dplm, ECVP, Albert van der Zwan, MD, PhD

Operative Neurosurgery, opx260, <https://doi.org/10.1093/ons/opx260>

Published: 21 December 2017 **Article history** ▼

Cite Permissions Share ▼

Abstract

BACKGROUND

Cerebrospinal fluid (CSF) leakage occurs in 4% to 32% of cranial surgeries and is associated with significant patient burden and expense. The use of sealant as an adjunct to primary dural closure is assumed to help prevent CSF leakage.

OBJECTIVE

To examine the utility of different sealants for dural closure using an in Vitro model.

METHODS

We evaluated 9 commonly used dural sealants, including Tachosil (Takeda Inc, Osaka, Japan), Adherus (Hyperbranch Inc, Durham, North Carolina), Duraform (Codman, Raynham, Massachusetts), Tissudura (Baxter, Deerfield, Illinois), Hemopatch (Baxter), TissuePatchDural (Tissuemed, Leeds, United Kingdom), Tisseel (Baxter), Duragen Secure (Integra, Plainsboro, New Jersey), and Duraseal (Integra). Sealants were tested in 2 novel in Vitro setups using fresh porcine dura: the first tested the



Article Navigation

Usefulness of Sealants for Dural Closure: Evaluation in an In Vitro Model

Tristan van Doormaal, MD, PhD  , Ahmet Kinaci, MD, Sander van Thoor, BSc, Saskia Redegeld, BSc, Wilhelmina Bergmann, DVM, Dplm, ECVP, Albert van der Zwan, MD, PhD

Operative Neurosurgery, opx260, <https://doi.org/10.1093/ons/opx260>

Published: 21 December 2017 [Article history](#) ▼

RESULTS

Adherus showed the highest mean burst pressure (87 ± 47 mmHg) followed by Tachosil (71 ± 16 mmHg) and Duraseal (51 ± 42 mmHg); these were the only 3 sealants showing burst pressures above normal physiological intracranial pressure. In the 72-h setup, only Adherus and Duraseal maintained appropriate sealing for the duration of the experiment. Tachosil released from the dura after 1.4 h (95% confidence interval, -1.8-4.7).

Raynham, Massachusetts), TissuGura (Baxter, Deerfield, Illinois), Memopatch (Baxter), TissuePatchDural (Tissuemed, Leeds, United Kingdom), Tisseel (Baxter), Duragen Secure (Integra, Plainsboro, New Jersey), and Duraseal, (Integra). Sealants were tested in 2 novel in Vitro setups using fresh porcine dura: the first tested the

