

# Percutaneous 3-mm twist-drill trephination

**Percutaneous 3-mm twist-drill trephination** (TDT) under local anesthesia as a bedside operative technique is an alternative to the conventional open surgical trephination in the operating theatre. This study aimed to verify the efficacy and safety of this minimally invasive procedure.

**Methods:** This retrospective study comprises 1000 patients who were treated with TDT under local anesthesia at bedside due to chronic subdural hematoma (cSDH), intracerebral hemorrhage (ICH), and hydrocephalus (HYD) as a result of subarachnoid hemorrhage or non-hemorrhagic causes, increased intracranial pressure (IIP) in traumatic brain injury or non-traumatic brain edema, and other pathologies (OP) requiring drainage. Medical records, clinical outcome, and results of pre- and postoperative computed tomography (CT) and/or magnetic resonance tomography (MRT) were analyzed.

**Results:** Indications for TDT were cSDH (n = 275; 27.5%), ICH (n = 291; 29.1%), HYD (n = 316; 31.6%), IIP (n = 112; 11.2%), and OP (n = 6; 0.6%). Overall, primary catheter placement was sufficient in 93.8% of trephinations. Complication rate was 14.1% and mainly related to primary catheter malposition (6.2%), infections (5.2%), and secondary hemorrhage (2.7%); the majority of which were clinically inapparent puncture channel bleedings not requiring surgical intervention. The revision rate was 13%.

**Conclusions:** Bedside TDT under local anesthesia has proven to be an effective and safe alternative to the conventional burr-hole operative technique as usually performed under general anesthesia in the operation theatre, and may be particularly useful in emergency cases as well as in elderly and multimorbid patients <sup>1)</sup>.

<sup>1)</sup>

Puhahn-Schmeiser B, Wegent H, Won SY, Zentner J, Freiman TM. Efficacy and safety of bedside percutaneous three-millimeter twist-drill trephination under local anesthesia-a retrospective study of 1000 patients. *Acta Neurochir (Wien)*. 2024 Feb 17;166(1):87. doi: 10.1007/s00701-024-05958-7. PMID: 38366108.

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