

Surgical Management of Chronic Subdural Hematoma: Short Communication

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Abstract

Chronic subdural hematoma (cSDH) is a common neurosurgical pathology associated with prior traumatic brain injury (TBI) and older age that is often complicated by antiplatelet or anticoagulant therapies. cSDH often results from the liquefaction of a previous acute subdural hematoma that accompanies TBI. The incidence of cSDH will likely increase over the next 25 years, placing a burden on health care costs. As such, a simple, inexpensive treatment option is desirable. In this short communication, we describe recent data and different techniques that are available for treating cSDH.

Keywords: Chronic subdural hematoma; Hollow screw; Subdural evacuating port; Integra camino bolt; Traumatic brain injury

Introduction

Chronic subdural hematoma (cSDH) is a common neurosurgical pathology associated with prior traumatic brain injury (TBI) and older age that is often complicated by antiplatelet or anticoagulant therapies. cSDH often results from the liquefaction of a previous acute subdural hematoma that often accompanies TBI. The incidence of cSDH will likely increase over the next 25 years [1], placing a burden on health care costs.

Several treatment options are available, particularly craniotomy or burr holes for drainage, which require general anaesthesia that may not be optimal for high-risk patients. For a minimally-invasive technique, bedside twist-drill craniotomy with a blind catheter insertion is a possibility. However, this technique may cause acute subdural hematoma due to inadvertent injury to cortical vessels or brain parenchyma [2,3].

Simple, safe and inexpensive treatment options are desirable. Recently, various bedside techniques exploiting a hollow screw mechanism, which obviate the need for a blind catheter insertion, have become available [4,5].

In this short communication, we describe recent data and different techniques that are available for treating cSDH.

Discussion

Surgical management of chronic subdural hematoma

Having an estimated incidence of 58 per 100,000 and prevalence of 8.2 per 100,000 patients over the age of >65 years, cSDH is a relatively common condition encountered in a neurosurgical practice [6].

Treatments for cSDH vary from twist drill drainage to burr hole drainage to craniotomy for hematoma evacuation [1,6,7]. While craniotomy and burr hole drainage often require general anaesthesia in an operating room setting, twist drill drainage with a hollow screw

placement or blind catheter insertion can be conducted at bedside without the need for general anaesthesia [7-9]. Published data suggested that both of these drainage procedures lead to similar success with recurrence rates of 21% for burr hole drainage vs. 25% for twist drill drainage [10].

Considering the minimally-invasive hollow screw method on its own, it is safe and effective for evacuating cSDH when compared to other surgical treatment methods [8,11,12]. It has a success rate of 77.6% compared to 67.8-93.5% for other surgical treatments [2,3,8]. Beyond this, recurrence was 22% compared to 10-33% respectively [2,3,8]. In addition, the method has been associated with decreased hospital length of stay and hospital costs [13].

There are 2 commercially available products that employ the hollow screw method for drainage of cSDH: the SEPS by Medtronic Inc. and the hollow screw by Teleflex Medical. We also recently reported a basic, but novel and effective, technique to drain cSDH, which utilizes a modified Integra Camino bolt to function as a hollow screw device (manuscript is under publication). The benefits of our proposed modification are related to the lower cost and higher availability of the Integra Camino bolt compared to other commercially available systems.

Both twist drill drainage and burr hole drainage are adequate options in the treatment of cSDH with no statistical differences in result, and placement of temporary drains for post-operative drainage decreases recurrent rates by up to 60% [14]. In addition to this, the absolute amount of drainage affects the outcome of the procedure, where drainage of at least >200 ml has been shown to decrease recurrent rates [15]. To further improve outcomes, tPA may be considered. A recent study that compared the recurrence rates of cSDH treated with tissue plasminogen activator (tPA) and without tPA. It was demonstrated that patients who underwent evacuation with subsequent tPA administration had zero recurrence compared to 22.5% recurrent rates in patients who did not receive tPA [6].

Conclusion

The incidence of cSDH will likely increase over the next 25 years, placing a burden on health care costs. As such, a simple, inexpensive

treatment option is desirable. Both twist drill drainage and burr hole drainage are adequate options in the treatment of cSDH. Minimally-invasive procedures that incorporate twist drill drainage at the bedside, such as the hollow screw placement, are a good alternative for high-risk patients compared to procedures that require general anaesthesia or blind subdural catheter placement.

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