

Abstract

Chronic subdural hematomas are a growing epidemiological concern that confers increased morbidity and mortality and which often requires neurosurgical expertise. Here, we studied 194 cases of chronic subdural hematoma and subsequent management results within a 4 year period at a single institution.

Introduction

Chronic subdural hematoma (cSDH) is one of the most common neurosurgical dilemmas in the United States and is becoming increasingly more frequent with an aging population cohort and introduction of novel anticoagulant regimens. In patients older than 70 years, the incidence of cSDH balloons up to 7.4% per year. While there is generally an accord that surgical treatment is appropriate for symptomatic patients, the method of intervention can be controversial in terms of efficacy (i.e. recurrence rates), complications, and economic cost. The most common procedures utilized in the treatment of cSDH include burr hole drainage, craniotomy, and more recently a subdural evacuation port system that employs a hermetically sealed system to achieve subdural drainage. There are advantages and disadvantages to each approach, however the overall goal in method selection is to minimize morbidity while maximizing clinical efficacy and cost-effectiveness.

Methods

The management of chronic subdural hematomas was retrospectively examined at a single institution among from 2011 to 2014. Management either consisted of burr hole drainage, subdural evacuation port system, or craniotomy. Average length of stay, 30 day readmission, and rate of return to OR were documented.

Results

From 2011 to 2014, 133 patients were treated with burr hole drainage, 56 patients were treated with craniotomy, and 5 patients were treated with a subdural evacuating port system (SEPS). The average in-hospital length of stay for burr hole drainage was 4.3 ± 2.2 days, which was shorter than that for both craniotomy (7.5 ± 5.1 days) and SEPS (6.9 ± 5.1 days). Of patients in the burr hole drainage group, 12 (9%) returned to the OR for repeat drainage (10) or craniotomy (2). Craniotomy was related to a 5.3% risk of need for reoperation, whereas 2 of the patients in the SEPS group required additional burr hole drainage (40%).

Patient demographics

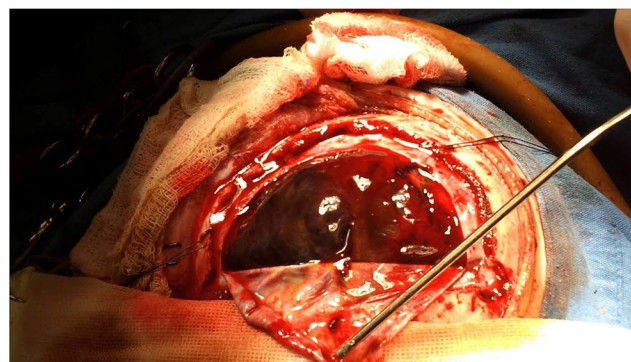
	Burr Hole	Craniotomy	SEPS
Age (average)	72	68	75
Male	81	32	3
Female	52	24	2
Anticoagulated	18/133	3/56	1/5

Average length of stay and reoperation rates by surgical procedure

	Burr Hole	Craniotomy	SEPS
Length of Stay (days)	4.3	7.5	6.9
Reoperation	12/133	3/56	2/5

Discussion and Future Direction

Overall length of stay was increased for patients with chronic subdural hematomas undergoing craniotomy and SEPS; however, need for reoperation was increased for patients undergoing burr hole drainage versus for craniotomy. This preliminary data suggests that burr hole drainage was superior to craniotomy and SEPS drainage in terms of clinical efficacy, however further analysis is recommended as some previous randomized controlled studies concluded that patient age, neurologic status, and comorbidities may have a more significant impact on patient outcome versus the choice of surgical procedure. Selection of neurosurgical procedure in this series was subjective and mainly influenced by patient characteristics and radiographic findings, which could introduce bias into this study; however these data can be used to better inform our practice in the management of subdural hematomas. It is essential to continue to investigate modalities that will minimize length of stay and need for return to OR in patients with chronic subdural hematomas, given the expanding prevalence of oral anticoagulants and the aging population. In future analysis, we intend to focus on impact of the method of surgical drainage on cost to hospitals and patients and how this relates to overall outcome. Ultimate disposition is another secondary endpoint of concern, and is likely directly correlated to length of stay. We will also aim to obtain data on preoperative and postoperative radiographic characteristics - such as presence of pseudomembranes, change in subdural hematoma size - to assess whether these details influence efficacy



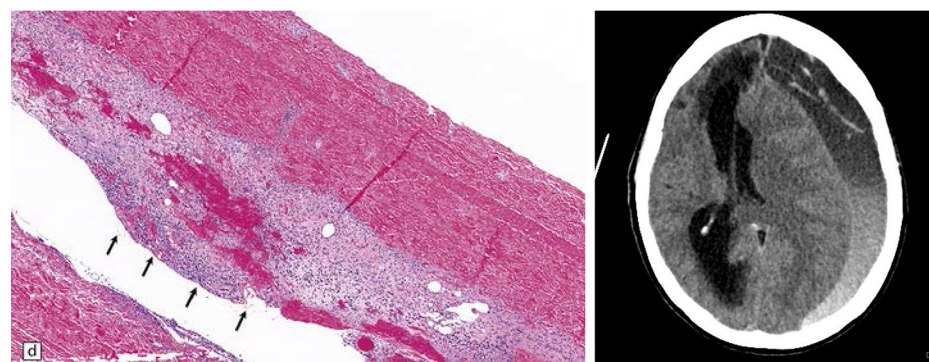
Craniotomy with acute and chronic subdural hemorrhage



Burr hole drainage of subdural hematoma



Subdural evacuation port system



Histologic and radiographic representation of pseudomembranes within a chronic subdural hematoma

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