



Introduction

Ventriculoperitoneal shunting remains the most widely used neurosurgical procedure for the management of hydrocephalus but there remains no consensus on whether post-operative imaging should be obtained. In recent years there has been several investigations looking into intraoperative tools to assist with catheter placement. There is a paucity of literature on the impact of post operative imaging. The objective of this study was to evaluate whether obtaining post operative CT scan would affect rates of revision.

Conclusions

Evaluation of this data suggests that although there may be some benefit of CT scans immediately post operatively to evaluate for malpositioning so revision may be completed immediately if there is concern. However to fully evaluate this question a larger number of patients must be reviewed.

Results

A total of six revisions were done in the first thirty days after initial shunt placement. 16% of the revisions were within the first two post operative days due to post operative imaging findings. Out of the total revisions required in the period from post operative day 3 to post operative day 30 from the initial shunt placement 40% had post operative head CT and 60% did not. The odds ratio for revision within thirty days without a CT scan when compared to those with CT scan is 1.43 (95% confidence interval, 0.22-9.42).

Discussion

It has been reported in the past that the most common cause for ventriculoperitoneal shunt failure is proximal catheter occlusion. The catheter can be obstructed by choroid plexus or ependyma. For this reason many surgeons believe a well-positioned ventricular catheter is the best way to ward off future shunt failures. There are many types of tools used in the operating room to assist us in placing the proximal catheter however even with these measures post operative imaging is used commonly to evaluate placement. Although it is a surgeon dependent evaluation post operative imaging can lead one to revise a shunt based on imaging prior to symptom development in patients. This may be a positive if it picking up soon to be symptomatic shunt failures or negative if it causes one to revise shunts which may be functioning well. We understand that our evaluation of total revisions within thirty days take into account distal surgeries when the only imaging being evaluated is head CT. This study is limited in that it is only looking at the incidence of all surgeries performed on newly shunted patients disregarding whether it is proximal failure, distal failure, or due to infection. We hope that with additional data which is currently in review we may be able to draw more concrete conclusions on how post operative head CT can impact revision rates within the first thirty days.

References

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Learning Objectives

By the conclusion of this session participants should be able to understand the effect of post operative CT scan and its effect on rates of immediate revision versus delayed revision.

Summary of Patients Requiring Surgery within 30 days

Age	sex	Reason for shunt	post operative CT	Type of failure
48 Y	F	hydrocephalus	yes	proximal
41 Y	M	CSF leak	no	proximal
9 month	F	hydrocephalus	no	infection
72 Y	F	NPH	no	distal
25 Y	F	subdottumor cere	yes	distal
10 day	M	hydrocephalus	yes	proximal

Methods

A total of 49 adult and pediatric patients undergoing ventriculoperitoneal shunt placement in 2007 were included in the study. IRB approval was obtained from our institution for chart review. Medical charts, operative reports, imaging studies, and clinical follow up evaluations were reviewed and analyzed retrospectively. There were four different surgeons involved in shunt placement and they used varying intraoperative tools including CT image guidance, ultrasound, xray or endoscope.