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Simultaneous VP Shunt and PEG Feeding Tube Placement in SAH Patients.

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Introduction

Ventriculoperitoneal (VP) shunt placement and percutaneous gastrostomy tube (PEG) placement for long-term nutrition are common requirements for patient presenting with subarachnoid hemorrhage (SAH). Both treatments require placement of foreign bodies into the abdominal cavity. Limited investigation of the simultaneous placement during the same surgical setting exists.

Methods

IRB approval for the review of clinical data for this study was obtained from The University of Kansas Medical Center. Records for all 132 patients that had VP shunt placed between December 2014 and March 2017 were reviewed. A total of 28 patients underwent placement of both systems in a single hospitalization. Of these patients, 19 were admitted for aneurysmal SAH and underwent simultaneous placement in 8 cases, while 11 patients had the procedures performed separately. The two groups were used to compare the length of stay, complications, and direct cost savings.

Demographics - Combined

Table 1 – Combined VPS and PEG Procedures

Pt	Age/Sex	Aneurysm Site	H&H/MFS	Aneurysm Treatment	LOS (Day)	F/U (Mon)	Complications
1	53/F	Acomm	4/3	Coiling	28	35	None
2	76/F	Lt Pcomm	4/4	Coiling	19	4	None
3	68/F	Acomm	5/3	Coiling	23	16	None
4	53/M	Lt A2	5/4	Clipping	31	10	None
5	50/F	Lt PICA	5/4	Bypass/Trap	20	11	None
6	64/F	Rt Pcomm	4/4	Coiling	22	15	None
7	65/F	Lt PICA	2/4	Bypass/Trap	38	9	Acute GI Bleed – Diverticuli
8	76/F	Lt Pcomm	1/4	Coiling	23	26	None
Avg	63				25.5	15.75	

H&H - Hunt and Hess
MFS - Modified Fischer Scale
LOS - Length of Stay

Surgical Procedure for Combined Cases

Procedures were performed under general anesthesia. All patients received perioperative abx at the time of surgery and for 3 doses following surgery. General surgery performed both the PEG tube placement and distal shunt catheter placement into the peritoneum using laparoscopic technique. The PEG tube was placed first to ensure there was no complication with gastric tube placement or any significant spillage of gastric contents into the peritoneal cavity. This was not the case in any of our patients and no planned combined cases had to be reverted to separate placement cases. The shunt catheter was then placed through separate trocar sites on the opposite side from the PEG tube placement.

Demographics - Separate

Table 2 – Separate VPS and PEG Procedures

Pt	Age/Sex	Aneurysm Site	H&H/MFS	Aneurysm Treatment	LOS (Day)	F/U (Mon)	Complications
1	83/F	Rt MCA Rt Pcomm	1/2	Coiling Coiling	39	19	None
2	48/F	Lt ICA Terminus	2/4	Coiling	49	19	None
3	63/F	Lt MCA	2/4	Clipping	29	13	None
4	57/F	Lt MCA	5/4	Clipping	24	29	None
5	55/M	Acomm	2/4	Coiling	28	0	None at D/C
6	63/M	Lt Pcomm	4/4	Coiling	43	13	SDH – No reoperation
7	74/M	Rt A2	4/4	Flow Diverter	17	1	Death at 1 month – Large SDH
8	83/F	Acomm	2/3	Coiling	25	4	None
9	72/F	Basilar Tip Rt MCA	1/4	Coiling Clipping	66	24	SDH, Shunt infection
10	58/F	Basilar Apex	3/4	Coiling	49	10	Shunt Infection
11	64/M	AICA - Perinidal	2/4	Onyx-Delayed Resection	115	3	Shunt Malfunction, Death
Avg	65				44	12.27	

SDH - Subdural Hematoma
D/C - Discharge

Results

The median Hunt and Hess scores were 4 and 2 for the simultaneous and separately placed groups, respectively. Both had a median modified Fischer score of 4. The average length of stay for the separate group was 44 days (36 days if excluding longest LOS), but only 25 days for the simultaneous group. No shunt infections or malfunctions were seen in the simultaneous group at an average follow-up of 15.75 months. The separate procedure group had 1 shunt malfunction and 2 shunt infections. The average direct OR cost savings for simultaneous placements in our patient cohort was $1246.09 per case. This does not include cost savings from the increased length of stay and repeat shunt surgery seen in the separate procedure group.

Conclusions

Placement of VP shunt and PEG tube in the same surgical setting does not appear to have an increased complication rate and may decrease the length of stay for SAH patients requiring both treatments. There is potential for significant health care cost savings with this technique.

Estimated Cost savings (Cost of Avg OR Time for VP Shunt +Cost of Avg OR Time PEG Tube) - Avg Cost of Non-Procedure Time for PEG Placement Alone

References

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Learning Objectives

By the conclusion of this session, participants should be able to 1) Identify an effective treatment of post SAH hydrocephalus and requirement from prolonged enteral nutrition 2) discuss the benefits of simultaneous placement