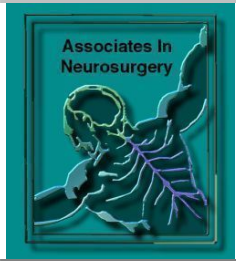




# Flow-regulated vs Pressure-regulated shunts: A Prospective Analysis in Patients with Idiopathic Normal Pressure Hydrocephalus

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## Introduction

Guidelines for treatment of Idiopathic Normal Pressure (INPH) indicate ventriculoperitoneal shunt placement as an effective intervention. Current literature comparing Differential Pressure (DP) versus Flow Regulated (FR) Valves for is lacking. This prospective study evaluates one year outcome data of 43 patients randomized to either a DP or FR valve.

## Methods

All patients completed pre-operative and post-operative evaluations to assess hallmark indicators of INPH such as magnetic gait (BERG Balance Scale), cognitive dysfunction (Neuropsychological Assessment Battery [NAB]), and ventriculomegaly (MRI/CT). Patients who consented were then randomized to a DP or FR valve.

## Results

Baseline testing of the DP Group (N=22) was NAB: 78.16 and BERG 34.2. Significant improvement was demonstrated at 6 and 12 months post-operatively with NAB: 86.5 and 87.75, and BERG 43.06,44.17 scores.

Baseline testing for the FR Group (N=21) was NAB: 77.4 and BERG: 39. Improvement was noted at 6 and 12 months post operatively with NAB: 86.25 and 89.17. There was a slight decrease in the 6 and 12 month BERG: 47.2 and 46.11 scores. There were no shunt infections. There was one subdural hematoma in the FR Group requiring surgical intervention in the immediate post-operative period, and 3 subdural hematomas in the DP Group requiring 1 surgical intervention. The number of follow up appointments was slightly increased in the DP Group, which was primarily related to patients who required shunt reprogramming.

## Conclusions

Both shunt systems appear to be effective in treatment of INPH. Improvement was noted in both NAB and BERG at 6 and 12 months post-operatively when compared to baseline. There was a distinct trend of more striking improvement at 6 months in the FR Group. A

## Learning Objectives

Patients with Flow Regulated Valves demonstrated a more striking improvement at 6 months. Patients with Differential Pressure Valves experienced a larger incidence of subdural hematomas, however most of which were managed by shunt reprogramming. Both groups demonstrated overall improvement when compared to baseline

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