

Introduction

Idiopathic normal-pressure hydrocephalus (NPH) is a chronic disorder and in the treatment strategies, ventriculo-peritoneal shunt is gold standard. But the debate is; which type of shunt (programmable (PS) or nonprogrammable (NPS)) should be select.

Method

We conducted an internal review board–approved retrospective analysis of all the patients in Mustafa Kemal University and Ataturk University Neurosurgery departments shunt registry in which a shunt was inserted for the management normal pressure hydrocephalus between 2003 and 2014.

The patients were divided into two groups depending on whether they had received NPS or PS. The choice of whether to insert PS or NPS valves was entirely dependent on the surgeon’s preference.

We found that 37 patients had received either NPS or PS for normal pressure hydrocephalus.

The patients ages were between 36 and 78 of age, and the duration of their follow-up was between 4 and 68 months. In 28 of these patients NPS were inserted; 5 of these patients subsequently had their shunts revised and changed to programmable valve devices. In 9 patients PS were inserted.

There were 7 (25%) shunt revisions in the patients with NPS devices 6 of them underwent revision for over drainage and related complications (subdural effusion or chronic subdural hematoma), and 1 of them because of the infection. The 5 patients shunt were changed to PS. Addition in 8 patients developed subdural effusion in varying size (1mm - 8mm) all of them managed conservatively. The effusions were persistent, but did not increase in size.

In the PS group, no one patient underwent to shunt revision, only in one patient was developed subdural effusion and it was treated buy the valve adjustment.

The cost of the PS is \$1068 and the NPS is \$410, Shunt surgery cost is \$568 and cost of the effusion or subdural hematoma surgery is \$525. The total cost of the PS per patient is: \$1636 and for the NPS is: \$978. The difference \$658

However, 5 of 28 NPS patients encountered problems with over drainage and developed subdural effusion or hematoma, so their shunts changed with programmable shunt. The cost of shunt revision surgery, complication surgery and new shunt systems is calculated \$2160 for per patient. When these costs added to primary surgery, it will increase to \$3137 so the average cost of nonprogrammable shunt for per patients is increased to \$1388 and the difference decreased to \$248.

In our studies we find the NPS cost effective not as much as expected, and the %25 complication rate cannot be ignored.

Results

PS is obviously superior to NPS about the complications and the price difference is not as high as thought.

Conclusions

The programmable valves are considerably more expensive but reduction of valve-related surgical shunt revisions and superior patient outcome would justify the implantation of expensive programmable valves.

Learning Objectives

By the conclusion of this session, participants should be able to: 1) Know which type of the shunt is cost effective and which type of the shunt superior about complications.

References

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