

Oral presentation

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Are adjustable valves effective? Data from the UK Shunt Registry

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Background

Adjustable (often-called programmable) CSF valves have been developed by several manufacturers. These valves are more expensive, but have an advantage in that the operating pressure of the valve can be altered by the use of an external magnet as a simple procedure. The proportion of these valves used in the UK and Ireland has increased from 4.9% in 2000 to 22.4% in 2006. We have used data collected by the UK Shunt Registry to assess the effectiveness of these valves in reducing valve replacement for under and over-drainage using a case-control design.

Materials and methods

The UK Shunt Registry contains data on nearly 30,000 CSF shunt-related procedures. Our data suggests that primary factors involved in shunt revision are patient age, diagnosis and the number of revisions a patient has had.

Procedures were identified where either a Medtronic Strata Valve or Codman Hakim Programmable Valve was used. Of these 1,389 had an accurate diagnosis and age entered and we were able to determine the exact number of shunt revisions.

A database search was performed for procedures matched for patient age, diagnosis and revision status but using Medtronic or Codman fixed-pressure valves. Matches were found for 943 procedures.

Results

The one-year cumulative valve revision rate for the two adjustable valves was 4.8% as compared to 7.3% in con-

ventional, non-adjustable valves. A logrank test suggests that adjustable valves perform significantly better ($P < 0.05$) for the first 98 weeks of use. After that point, there is no significant difference in the curves for the two types of valve.

Conclusion

Our data suggest that adjustable valves may be effective in overcoming short-term problems due to incorrect pressure selection. However the long-term problems associated with valve implantation still apply. Patient selection is probably the crucial factor in the effectiveness of adjustable valves.