The main surgical strategy for the treatment of hydrocephalus is the placement of shunts. Shunts are life-saving devices but are notorious for high failure rates and finding the most suitable pressure setting for an individual is challenging.

Every patient with hydrocephalus is **unique** and requires customized setting of the valve opening pressure.

For conventional valves, the valve opening pressure is a **compromise** between the pressure requirements in the supine and upright position.

High failure rates overshadow the effectiveness of shunts (1).

About one in four patients experiences at least one complication (3).

**MECHANICAL FAILURES (4)**

- Catheter breakage
- Catheter fracture
- Obstruction
- Catheter separation
- Damaged housing
- Valve migration

- Mechanical failure is the most common cause for shunt revisions.

**ACCIDENTAL REPROGRAMMING (5–9)**

- Mobile devices
- Headphones
- Toy magnets
- MRI

- External magnetic fields can change the pressure settings of adjustable shunt valves.

**HIGH FAILURE RATES (1)**

- Proportion of shunts failing within 2 years: 40%
- Proportion of shunts failing within 10 years: 98%

High failure rates overshadow the effectiveness of shunts (1).

**COMPLICATIONS (2)**

- Obstruction (46.9%)
- Migration (14.0%)
- Fracture (11.8%)
- Improper placement (8.1%)
- Overdrainage (6.3%)
- Miscellaneous (4.0%)
- No evidence of malfunction (8.8%)

About one in four patients experiences at least one complication (3).

**Obstruction**

- Damaged housing
- Catheter separation
- Catheter breakage
- Mobile devices
- Headphones
- Toy magnets

**Fracture**

- Valves
- Catheters
- MRI

**Improper placement**

- Catheters
- Valves
- Heads

**Overdrainage**

- Catheters
- Valves
- Heads

**Miscellaneous**

- Mobile devices
- Headphones
- Toy magnets

**No evidence of malfunction**

- Catheters
- Valves
- Heads

**REFERENCES**