# Undershunting

## General information

The shunt malfunction rate is ≈ 17% during the first year of placement in the pediatric population.

Etiologies

May be due to one or a number of the following:

1. blockage (occlusion)

a) possible causes of occlusion:

● proximal obstruction by choroid plexus

● the buildup of proteinaceous accretions

● blood

● cells (inflammatory or tumor)

● secondary to infection

b) site of blockage

● blockage of the ventricular end (most common): usually by choroid plexus, may also be due to glial adhesions, intraventricular blood

● blockage of intermediate hardware (valves, connectors, etc.; tumor filters may become obstructed by tumor cells, antisiphon devices may close due to variable overlying subcutaneous tissue pressures)

● the blocked distal end

2. disconnection, kinking or breakage of the system at any point: with age, silicone elastomers used in catheters calcify and break down, and become more rigid and fragile and more likely to adhere to the subcutaneous tissue.

Barium impregnation may accelerate this process. Tube fractures often occur near the clavicle, presumably due to the increased motion there