

Experience with Alternative Anchoring
Technique in Pediatric Patients with the
Chabra Ventricular Peritoneal
Shunt System Model 202

Professor Tony Magana

Neurosurgery Unit, Department of Surgery
College of Health Sciences, Mekelle University



Chhabra Shunt Compared with Codman Hakim System 2005

B. Warf did prospective study on 195 children at Cure Hospital in
Uganda with one year f/u

J Neurosurg (Pediatrics 4) 102:358–362, 2005

9.7% infection

6.7% migration/disconnection

5.7% wound complication

3.4% valve malfunction

2.8 % ventricular catheter malfunction

All Chhabra complications occurred in first
3 months post-op



Proximal Shunt Migration of Chhabra Shunt

Malhotra et al review proximal migration in India
with the Chhabra shunt

Int Surg J. 2015 Nov;2(4):706-709

Malnourishment

Large burr hole

Irritability

Poor anchorage

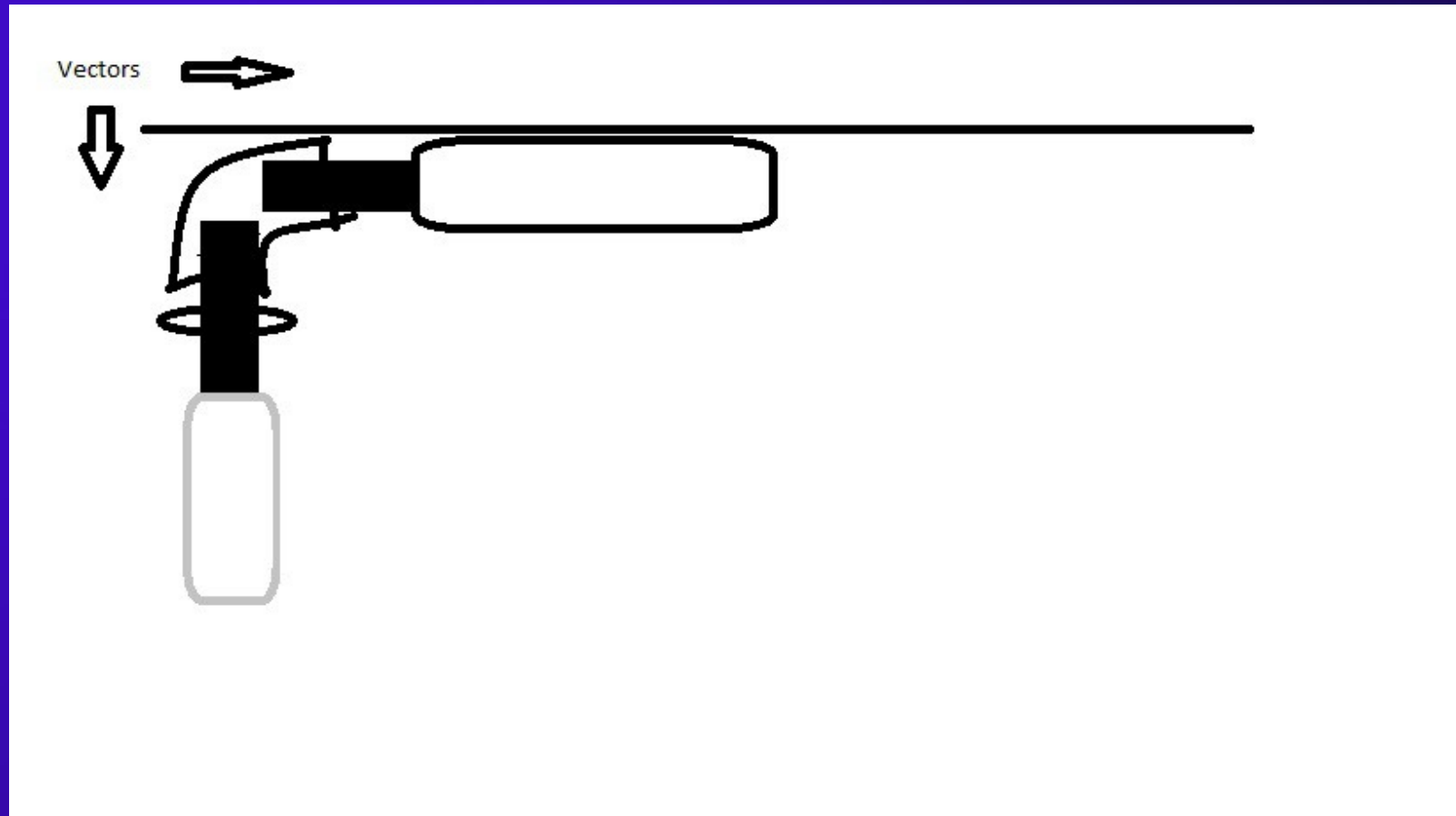


Early Personal Observations

Elastic modulus of Chhabra shunt very stiff
Saw several children with shunt protruding
through abdomen or neck due to stiffness
Saw 2 children with distal migration due to
anchor failure



Limiting degrees of freedom to trap the shunt at the burr hole





Shunting technique

- Open the shunt package just before insertion
- Minimal skin contact with shunt
- Modified Japanese fisherman knots for shunt connection
- Place shunt subperiosteal and subfacial in abdomen
- Minimum hospitalization of 5 days to monitor wound
- Vertical mattress scalp skin closure
- No IV or blood drawing right scalp
- 15 blade scalpel burr hole



Retrospective Analysis

10/7/2014 to 9/21/2016 in 76 patients. Follow-up ranged from 26 months to 3 months through December 2016.

Most the patients were 6 months of age or less (49) while (16) were between 6 to 12 months and (11) were greater than 1 year of age.



Diagnosis

- <1% Tumor
- 48% Myelomeningocele or Encephalocele
- 34% Communicating Hydrocephalus
- 1% Aqueductal Stenosis



Retrospective Analysis

The ventricular catheter was connected to a straight connector which was connected to silicone tube which bent at the entry into the brain. The silicon tube proximal end was connected via connector the shunt valve. All connections were secured with 2-0 silk.

Otherwise the procedure is as described by B.C. Warf in J Neurosurg (Pediatrics 4) 102:358–362, 2005.



Retrospective Analysis

Complications were 7% shunt revision , 4% minor wound revision, and 5% shunt infection.

Longer follow-up is needed



Retrospective Analysis Complications

- 2 fatal shunt infections
- 1 intusseception fatality
- 2 wound revised
- 5% respiratory infection in the MMC group post-operatively

