

## MCG story

- All shunts placed using minilaparotomy or split trochar open techniques prior to 2007
- Laproscopy reserved for the "hostile" abdomen
- Previous chairman left December 2008
- Pediatric surgery approached about laproscopically assisting with all distal catheter placement.

#### Alabama shunt study 2004-2009

- 810 consecutive VP procedures comparing laproscopic procedure to open placement of shunts
- Found no change in failure, but shorter LOS, reduced operative time, and blood loss
- Over course of study it was noted that surgeons began to prefer laproscopic assistance
- This study looked at adult shunt population

## Study description

- Obtained IRB from our institution to conduct a retrospective chart review of all ventriculoperitoneal shunts placed with laproscopic assistance at our Children's Medical Center from Jan 2007- Dec 2011
- Study to review outcomes for our method of shunt placement
- Inclusion Criteria Any operation that included placement with laproscopic assistance of complete proximal, valve and distal catheter system with a proximal terminus in ventricle and distal terminus in peritoneal cavity

#### Procedure

Cranial

- Curvilinear occipital incision on right
- Burr hole made
- Distal tunneling performed
- With possible supraclavicular exit if one pass to abdomen not possible
- Terminus of distal tunneling determined by laproscopic team over RUQ

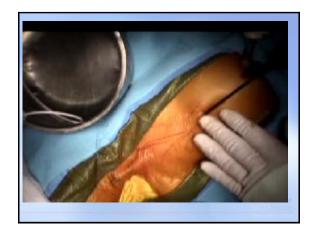
#### Procedure

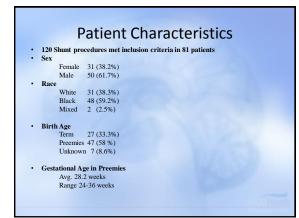
#### Distal

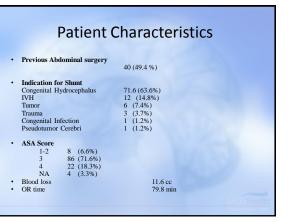
- Incision and trochar for endoscope placed at umbilicus after insufflation of abdomen
- Abdominal contents inspected, adhesions taken down with camera, if necessary
- RUQ palpation visualized to determine entry point
- Peel-away trochar placed through abdominal incision using Seldinger technique

## Procedure

- Joint
  - Distal tubing is passed to abdominal incision site and covered in antibiotic soaked sponge
  - Ventricular catheter is placed with Neuro-pen endoscope for optimal placement
  - Catheter attached to distal system, flow confirmed before placement in abdomen
  - Catheter passed into abdomen under laproscopic visualization and guided above liver where again, flow is confirmed







Ou	ır data vs	. Other l	ap VPS s	eries (ad	lult)
	Infection (%)	Prox. Mal. (%)	Dist. Mal. (%)	Total Mal. (%)	Mean Age (yrs)
MCG (n = 120)	13 (10.8%)	26 (21.7%)	3 (2.5%)	52 (43%)	5.0
Naftel et al. Lap(n= 475)	39 (8.2%)	35 (7.3%)	11 (2.3%)	85 (17.9%)	52.0
Naftel et al. Open(n= 335)	22 (6.6%)	40 (12.0%)	6 (1.8%)	68 (20.2%)	51.1

	Inf	fections	
• MSSA:	3/13 (23.08	%)	
• MRSE:	3/13 (23.08	%)	
• MRSA:	2/13 (15.38	%)	
• Entero	coccus: 2/13	(15.38%)	
• E. coli:	2/13 (15.38	%)	
• Pseudo	monas: 1/1	3 (7.69%)	

Birth Age	Infection	Proximal	Distal	Total complications	Tota Case
<30 weeks	4 (14.8%)	11 (40.7%)	2 (7.4%)	17 (63%)	27
30-36 weeks	1 (11.1%)	0	0	1 (11.1%)	9
Term	1 (5.9%)	4 (23.5%)	0	5 (29.4%)	17

Failure Cause According to Year

Year	Infection	Proximal	Distal	Disconnect	Total Case
2007	0	1 (33.3%)	1 (33.3%)	0	3
2008	3 (18.7%)	4 (25.0%)	0	1 (6.2%)	16
2009	4 (15.4%)	8 (30.8%)	1 (4%)	0	26
2010	4 (9.5%)	9 (21.4%)	1 (2.3%)	0	42
2011	2 (6.0%)	3 (9.1%)	0	0	33

Our data vs. open VPS in children

	Infection (%)	Prox. Mal. (%)	Dist. Mal. (%)	Total Mal. (%)	Mean Age (yrs)
MCG	13	26	3	52	5.0
(n = 120)	(10.8%)	(21.7%)	(2.5%)	(43%)	
Ahmed et al. (n = 50)	6 (12%)	7 (14%)	9 (18%)	22 (44%)	Range = 1 day–7 yrs
Casey et al. (n=380)	12%	*	*	53%	0-10 years
= 41% total me nalposition, frac or dist)					MCGE

## **Distal Malfunctions**

- 17 yo AAF former preemie with multiple open VP shunt placements and revisions s/p laparoscopic VP shunt placement at age of 13
- Preemie with infected G-tube that caused distal shunt obstruction. Shunt found walled in by omentum on revision
- 24 wk preemie with NEC who had been managed with subgaleal shunt and EVD until 2 kg. VP shunt attempted and later converted to VA shunt.

## Cons

- Reliance on another surgical team for every procedure
- · Agreement on procedure methods
- No significant improvement in overall shunt failures

## Pros

- Reduced take-backs for misplaced catheters
- Above liver placement protects distal catheter
- Placement of only proximal catheter by neurosurgeon
- Reduced blood loss
- Reduced operative time
- No blind intraperitoneal procedures
- Training benefit for surgery residents at academic institutions

# **Future direction**

• Attempt to compare laproscopic outcomes to open outcomes in the same study period.

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