The Quality of YouTube Videos on ETV and ETV+CPC Procedures Available to Pediatric Hydrocephalus Families

Nicholas Sader MD;¹ Abhaya Kulkarni MD, MSc, PhD;² Salim Ahmed MSc;¹ Jay Riva-Cambrin MD, MSc¹

¹ Division of Neurosurgery, University of Calgary
² Division of Neurosurgery, University of Toronto
Disclosures

- No relevant disclosures
YouTube allows users around the world to upload, view, and interact through comments and ratings

In a study that looked at the preferences among caregivers of children with hydrocephalus, 60% used social media for hydrocephalus-related purposes, with Facebook and YouTube being used most frequently\(^1\)

Endoscopic Third Ventriculotomy (ETV) and ETV with Choroid Plexus Cauterization (CPC) is done with an endoscope and projected on a monitor — This is ideally suited for YouTube to display what the neurosurgeon is viewing

However, the subjective quality of these videos has never been delineated from a professional or parental lens

Specific Aims

1. To determine the inter-rater reliability between reviewers using weighted kappa values

2. To determine whether the informative quality of these videos is associated with metrics of popularity:
   -Views
   -Likes
   -Dislikes
   -Comments

3. To determine if video quality is associated with video category
Methods

- **Cross-sectional study**

- **Sample:** YouTube Videos
  - First 3 pages on YouTube (20 videos/page) on June 22, 2017

- **Reviewers:**
  - 2 Pediatric neurosurgeons and 1 neurosurgery resident
  - 2 Patients families
    - Both caregivers of children with hydrocephalus

- **Inclusion Criteria:**
  - Videos related to ETV and ETV + CPC procedures

- **Exclusion Criteria:**
  - Non-English, non-relevant, animal studies
Methods

Primary Outcome

- Global Quality Scale (GQS):
  - 5 point scale
  - Used in multiple medical studies

1. Poor quality, poor flow of the video, most information missing, not at all useful for patients
2. Generally poor quality and poor flow, some information listed but many important topics missing, of very limited use to patients
3. Moderate quality, suboptimal flow, some important information is adequately discussed but others poorly discussed, somewhat useful for patients
4. Good quality and generally good flow. Most of the relevant information is listed, but some topics are not covered, useful for patients
5. Excellent quality and flow, very useful for patients


FIGURE 1. Flow Diagram

- "Endoscopic Third Ventrivulostomy + Choroid Plexus Cauterization" n = 60
  - Non-relevant = 7
  - Non-English = 1

- "ETV + CPC" n = 60
  - Non-relevant = 42
  - Non-English = 1
  - Duplicate = 1

- "ETV + CPC" n = 52
  - 6 ETV + CPC
  - 46 ETV

- Duplicate = 10
  - 3 ETV + CPC
  - 7 ETV

Final YouTube Video Search n = 58
- 11 ETV + CPC
- 47 ETV

FIGURE 2. Categorical Breakdown of Videos n = 58

- Technical: 62%
- Lecture: 24%
- Testimonial: 10%
- Other: 4%
Results

Inter-rater Reliability of Video Quality (GQS)

Between Surgeons:
- Kappa 0.68 [0.55, 0.80]
  - Substantial agreement

Between Surgeons and Neurosurgical Resident:
- Kappa 0.77 [0.66, 0.88], 0.89 [0.82, 0.97]
  - Excellent agreement

Between Professionals and Patient Families:
- Kappa 0.27-0.55
  - Fair to moderate agreement
Results

- **Relationship Between Video Quality and Video Popularity**
  - Significant association between better video quality and:
    - ↑ **Likes** \(p<0.001\), ↓ **Dislikes** \(p=0.002\), ↑ **Comments** \(p<0.001\) and ↑ **Views** \(p=0.003\)

- **Video Category and Video Quality**:
  - Academic lectures videos were more likely rated good or excellent \(86\% \text{ vs. } 0\%, p<0.001\) versus surgical procedure and testimonial video types
    - Technical Videos \(0/36\) and Patient Testimonials \(0/2\) were rated good or excellent
Conclusion

- Medical professionals are in **substantial to excellent agreement** in terms of rating video quality
- Families are in **fair to moderate agreement** with medical professionals, and clearly have different ideas of what constitutes a useful video of ETV+CPC

- The higher the video quality, the higher the metrics of video popularity, both with medical professionals as well as patient families
- Academic lecture type videos were more highly rated by both surgeons and patient families
- Patients consistently gave **lower ratings** to surgical videos of the procedure itself

**Thus, if you are going to make or recommend a YouTube video for your patients, do it as a lecture format versus procedure focused**