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A prescription for the Epley maneuver: www.youtube.com?



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ABSTRACT

Objectives: Video-sharing Web sites are being used for information about common conditions including dizziness. The Epley maneuver (EM) is a simple and effective treatment for benign paroxysmal positional vertigo (BPPV) of the posterior canal. However, the maneuver is underused in routine care. In this study, we aimed to describe and analyze the available information about the EM on youtube.com.

Methods: A YouTube search was performed on August 31, 2011, for videos that demonstrated the entire EM. Detailed data were abstracted from each video and corresponding Web site. Videos were rated on the accuracy of the maneuver by 2 authors, with differences resolved by adjudication. Comments posted by viewers were assessed for themes regarding video use.

Results: Of the 3,319 videos identified, 33 demonstrated the EM. The total number of hits for all videos was 2,755,607. The video with the most hits (802,471) was produced by the American Academy of Neurology. Five of the videos accounted for 85% of all the hits. The maneuver demonstration was rated as accurate in 64% (21) of the videos. Themes derived from the 424 posted comments included patients self-treating with the maneuver after reviewing the videos, and providers using the videos as a prescribed treatment or for educational purposes.

Conclusion: Accurate video demonstration of the Epley maneuver is available and widely viewed on YouTube. Video-sharing media may be an important way to disseminate effective interventions such as the EM. The impact of video Web sites on outcomes and costs of care is not known and warrants future study. *Neurology*® 2012;79:376-380

GLOSSARY

BPPV = benign paroxysmal positional vertigo; **EM** = Epley maneuver.

Benign paroxysmal positional vertigo (BPPV) is caused by freely moving particles (i.e., canaliths) trapped in a semicircular canal of the inner ear.¹ The Epley maneuver (EM) (i.e., the canalith repositioning maneuver) is a highly effective treatment supported by 2 evidence-based guidelines.^{2,3} The maneuver is simple and performed at the bedside in a matter of minutes using a series of positions designed to move the particles out of the canal. However, the EM is substantially underused in routine clinical care.^{1,4,5}

Video-sharing Web sites, the most popular of which is youtube.com, are now a resource for how-to videos for common medical problems.⁶ In 2008, an EM video was published by the American Academy of Neurology's Practice Parameter on BPPV.² Soon after, the video was uploaded to YouTube by a lay person (<http://www.youtube.com/watch?v=ZqokxZRbJfw>). As a result, video instruction on the EM is now available to both providers and the general public.

In this study, we performed a systematic search for all videos available on YouTube that demonstrate the EM. From the videos identified, we aimed to 1) describe and analyze the video

Supplemental data at
www.neurology.org

Supplemental Data



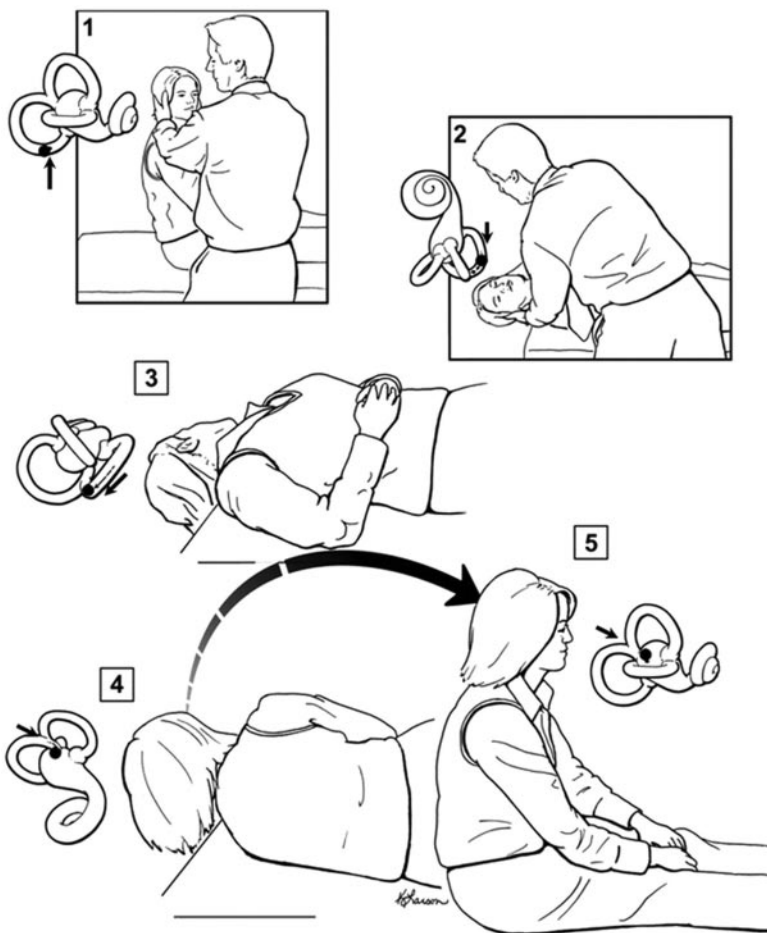
CME



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Go to Neurology.org for full disclosures. Disclosures deemed relevant by the authors, if any, are provided at the end of this article.

Figure The Epley maneuver for right-sided benign paroxysmal positional vertigo (BPPV)



The patient is placed in the upright position with the head turned 45 degrees toward the affected ear (step 1) and then laid back quickly to a position with the head extended below the shoulders (step 2). If BPPV is present, nystagmus ensues usually within seconds. The patient is held in the right head hanging position (step 2) for 20–30 seconds, and then in step 3 the head is turned 90 degrees toward the unaffected side. Step 3 is held for 20–30 seconds before the head is turned another 90 degrees (step 4) so that the head is nearly in the face-down position (usually necessitating the patient's body to also move from the supine position to the lateral decubitus position). The head should not lift up during step 3 or step 4. Step 4 is held for 20–30 seconds, and then the patient is brought to the sitting up position. The movement of the particles within the labyrinth is depicted with each step, showing how particles are moved from the semicircular canal to the vestibule. Reproduced with permission from Fife TD, Iverson DJ, Lempert T, et al. Practice parameter: therapies for benign paroxysmal positional vertigo (an evidence-based review): report of the Quality Standards Subcommittee of the American Academy of Neurology. *Neurology* 2008;70:2067-2074.²

content, 2) determine how easily the videos could be found using generic search terms, and 3) assess posted comments for themes regarding the use of the videos.

METHODS YouTube (<http://www.youtube.com>) was searched for videos that contained a demonstration of the EM. No beginning date cutoff was used, and the last date of the search was August 30, 2011. Search terms were the following: Epley, Epley maneuver, canalith repositioning maneuver, benign paroxysmal positional vertigo, benign positional vertigo, BPPV, and BPV.

From the list of results, videos relevant to BPPV were selected for viewing based on their title and the video snapshot provided in the search results list. The search was supplemented by also reviewing the list of featured videos that accompany search results. Videos were eligible if they demonstrated the entire EM. Videos were excluded if they exclusively demonstrated other variants of BPPV treatment (e.g., the Semont maneuver) or the maneuver was considered a substantial deviation from the standard EM (figure). This study was classified as not regulated research from the institutional review board of the University of Michigan.

From each video, the date posted, total number of views, duration of the video in seconds, and all comments were abstracted. The videos were categorized as demonstrating guided treatment (i.e., a person guiding the patient through the maneuver) or self-treatment and also as demonstrating an EM for right-sided BPPV, left-sided BPPV, or both. Videos were assessed for content regarding BPPV diagnostic information. Complete diagnostic information was defined as including accurate information about both the symptoms of BPPV (i.e., transient positionally triggered dizziness) and correct identification of the affected side. Videos were also assessed for the inclusion of accurate information about the amount of time each head position of the maneuver should be held (i.e., at least 20 seconds).² The individual who uploaded each video was classified as a patient, provider, vendor, or unknown based on review of their comments.

To assess how easily the eligible EM videos could be found, searches for the eligible videos were performed using each of the following generic dizziness search terms: dizzy, dizziness, vertigo, positional dizziness, positional vertigo, dizziness treatment, and vertigo treatment. The results were numbered according to the order they were listed by YouTube when using the relevance filter. From each list of results, we then identified the first eligible EM video and recorded its number in the list.

Each video included was independently rated on the accuracy of the EM demonstration by 2 neuro-otologist authors (T.D.F. and R.W.B.). The steps of the EM as described and demonstrated by the practice parameter were used as the criteria for an accurate EM (see figure for details),² allowing for minor deviations. Disagreements were resolved by adjudication.

Three authors (K.A.K., L.E.S., and B.C.C.) independently reviewed all posted comments on the YouTube Web site connected with each video and then developed themes (i.e., statements to summarize comment content) regarding the use of the videos. In an effort to reduce the bias that could occur from only neuro-otologist review of the comments, 2 of these authors (L.E.S. and B.C.C.) were selected for this role because they are not neuro-otologists. The individuals submitting the comments pertaining to each video were categorized as patients, patient acquaintances, providers (i.e., medical students, residents, midlevel providers, or physicians), or unknown. The authors then discussed and revised themes until a consensus was reached. Authors also selected examples of comments for each theme.

Data synthesis. Data were summarized using proportions, medians with interquartile range, and ranges. The number of hits per day posted was calculated for each video.

RESULTS The YouTube search terms identified 3,319 videos, inclusive of duplicates. From these, 33 videos met the eligibility criterion of demonstrating the entire EM for posterior canal BPPV.

Table 1 Summary information regarding the 33 YouTube videos that demonstrate the EM

	Value
Uploader characteristics, n (%)	
Provider	18 (55)
Patient	1 (3)
Patient acquaintance	1 (3)
Vendor	2 (6)
Other	1 (3)
Unknown	10 (30)
Hits per video, median (IQR) ^a	6,241 (805–44,739)
Video duration, s, median (IQR)	126 (82–201)
Self-treatment example, n (%)	11 (33)
Guided treatment example, n (%)	22 (69)
Right-sided EM demonstration, n (%) ^b	23 (70)
Left-sided EM demonstration, n (%) ^b	12 (36)
Time posted, d, median (IQR)	441 (273–849)

Abbreviations: EM = Epley maneuver; IQR = interquartile range.

^a Range, 58–802,471.

^b Two videos demonstrated the EM for both sides.

Using the generic dizziness search terms, we found that an eligible video (i.e., at least 1 of the 33 eligible videos) was 1 of the first 4 videos listed on the YouTube results page for nearly all search terms. The only exceptions were the most generic search terms, vertigo and dizzy. For the search term vertigo, the first eligible EM video was the 13th listed video. For the dizzy term, the first eligible EM video was the 107th listed video.

Table 1 and appendices e-1 and e-2 on the *Neurology*[®] Web site at www.neurology.org show information about the EM videos included. The total number of hits for all videos was 2,755,607. The video with the most total hits (802,471) and most hits per day was uploaded by a patient but produced by the American Academy of Neurology for a Practice Parameter.² The 5 videos with the most hits accounted for 85% of the total hits for all videos.

Of the eligible EM videos, 64% (21 of 33) were rated as accurate demonstrations of the EM. Reasons for inaccurate demonstration included a nonstandard first step (e.g., patient's head turned substantially more than 45° or the patient's head not extended back), movements that were too slow, the head lifting up during the rollover step of the maneuver, or the head not turned down after the rollover. These deviations from the standard EM could result in inadequate particle movement within the canal or

Table 2 Examples of comments from themes derived regarding the use of the Epley maneuver videos^a

Theme 1: Patients with dizziness self-treating with the Epley maneuver after reviewing the videos

"My Doctor diagnosed me with BPPV and recommended I try You Tube! I tried this and although it made the world spin like crazy and left me hanging on for dear life IT WORKED! What a relief!"

"My wife was having spinning episodes for a couple months. she was so concerned that her doctors office ordered several thousand dollars of tests to determine the cause of her dizzy spells...they suspected vertigo... I found this video on utube. She did this procedure for 2 days and was cured...she called the doctors office and canceled all the tests that had been ordered...when we shared this information with some of our friends who have similar symptoms and it worked for them. This works."

"How can you figure out which ear is the trouble? It started off turning my head to the left and now when I lean my head back (looking up) then straight again. Two Dr.s told me BPPV—but which ear?"

"I just performed this and feel more dizzy than I did before. Is this normal?"

Theme 2: Providers using videos as a prescription for patients or for educational purposes

"My balance specialist told me to look at the claymation dix hallpike maneuver video. It helps me immediately."

"Of all the Epley/particle repositioning manoeuvre videos, this is the most useful. Each position is held for only 20 seconds. In my own practice, I have settled on 30 seconds (some advocate 60 seconds) and have yet to fail to improve a patient's symptoms (approx. 8 subjects). GPs and Family Doctors: Do try this."

"I am a neurologist and I use this video a lot to teach med students and to educate my patients after performing the maneuver. Just wanted to thank you for the initiative! Great job!"

"Wow great video!!! I'm a med student and this is very helpful"

Abbreviations: BPPV = benign paroxysmal positional vertigo; GP = general practitioner.

^a Comments were copied verbatim from the Web site.

cause the particles to move back into the canal instead of out of it.

Important information about the time that should be spent in each position of the EM was provided in most videos (27 of 33 [82%]). None of the videos included complete diagnostic information about BPPV.

At least one comment was posted for 13 (39%) of the videos. There were a total of 424 comments from 349 unique identifiers. From the review of all comments, 2 main themes emerged regarding the use of the videos (table 2). The first theme was that of patients self-treating with the EM after reviewing the videos. Most patient commenters reported dizziness symptoms, and many reported that they performed the EM as a result of viewing videos. Some commenters reported that self-treatment with the EM was highly beneficial, even describing it as a "miracle." These commenters typically expressed appreciation for the videos, and at times also expressed disappointment with prior medical encounters that

had not resulted in EM treatment. Other patients with dizziness described no improvement or even worsening of symptoms after the EM. Some commenters provided symptom descriptions (e.g., auditory symptoms or prolonged or constant dizziness) that were suggestive of diagnoses other than BPPV. More details about the EM treatment were often requested by patients, particularly regarding identifying the affected side and how many times to perform the EM.

The second theme about the use of the videos was that of providers using them as a prescription for patients or for educational purposes. Information about provider use of the videos was obtained indirectly from patient comments and also directly from provider comments. Some patients reported that their provider instructed them to view the videos and then perform self-treatment. Some providers commented that the videos were useful as educational tools for themselves and for teaching others.

DISCUSSION In this study, we found that video instruction on the EM is available and widely viewed on YouTube. Most eligible videos demonstrate an accurate maneuver and would be relatively accessible with the use of generic symptom-based search terms.

The videos identified in this study varied in many respects, including the duration of the video, the side treated, and guided treatment vs self-treatment. This variability could be an advantage because it allows viewers from different backgrounds to choose videos based on their own preferences and circumstances. A potential problem with the videos, however, is that none contain complete BPPV diagnostic information, which could negatively influence the impact of these videos.

The media-sharing platform may be an effective way to disseminate the EM. However, a challenge for YouTube video dissemination research is that no method exists to collect valid information about the use and effects of the videos. Prior YouTube-based studies focused on content analysis.⁷⁻¹⁰ No prior YouTube-based intervention trials have been performed, although the concept has been proposed.^{11,12} The comments posted provide some insight into the use and potential effects of the videos. However, comments are not collected in a structured manner, and there are very few comments relative to the number of hits. These factors could lead to substantial bias if comments are used to draw inferences about the videos.

Rigorously developed and tested BPPV videos could serve many purposes. First, a subset of patients may actually be able to self-diagnose and self-treat BPPV. Some posted comments indicate that the vid-

eos are already being used in this manner. Prior research has demonstrated that patients can self-treat BPPV, although this was tested after patients were provided with illustrations and in-person instructions by an expert.¹³⁻¹⁵ Effective videos could also be used by providers either as the primary prescription for patients with BPPV or as a reference to patients experiencing a recurrence.^{13,14,16} Videos could also serve as a reminder to providers about the maneuver at the time of a patient encounter.¹⁷ This could be accomplished, for example, by including the videos in the electronic medical record. Finally, videos could also serve as educational tools for independent learning or teaching. A recent review article from the journal *American Family Physician* directs readers to the EM YouTube videos.¹⁸

This study is limited by the descriptive and observational design. The number of hits identified may be misleading because some hits could be from individuals who were actually searching for other topics (e.g., a person searching for scenes from the Alfred Hitchcock movie *Vertigo* may select an EM video intentionally or unintentionally). No prior research defines search terms that are used to find information about dizziness on the Internet, so our assessment of how easily videos could be found may not be accurate. The most popular videos probably reflect YouTube search algorithms and thus may not be an accurate method of ranking videos.

Accurate video instruction on the EM is available, widely viewed, and easily accessible on YouTube. Video-sharing media-based BPPV interventions should be tested for their effect on outcomes so that more generalizable conclusions can be made.

AUTHOR CONTRIBUTIONS

K.A.K. contributed to the study concept, drafting of the manuscript, acquisition of data, and analysis and interpretation of the data and performed statistical analysis. J.F.B. contributed to the study concept, revision of the manuscript, acquisition of the data, and interpretation of the data. L.E.S. contributed to the study concept, revision of the manuscript, acquisition of the data, and interpretation of the data. B.C.C. contributed to the study concept, revision of the manuscript, acquisition of the data, and interpretation of the data. T.D.F. contributed to the study concept, revision of the manuscript, acquisition of the data, and interpretation of the data. R.W.B. contributed to the study concept, revision of the manuscript, acquisition of the data, and interpretation of the data. A.M.F. contributed to the study concept, revision of the manuscript, acquisition of the data, and interpretation of the data.

DISCLOSURE

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