The use of video before arthroscopic shoulder surgery to enhance patient recall and satisfaction: a randomized-controlled study

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Background: Historically, the preoperative consultation has consisted of a discussion between patient and surgeon. There is a growing literature describing efforts to integrate multimedia into surgical patient education. This study aimed to assess the efficacy of an educational video tutorial on early learning of information specific to patients undergoing shoulder arthroscopy when it was used as an adjunct to the standard preoperative consultation.

Methods: This study was a surgeon-blinded, randomized controlled trial involving 40 consecutive patients requiring shoulder arthroscopy. After a preoperative consultation with an orthopaedic surgeon, patients were randomized in a 1:1 ratio to either a control group or a treatment group. The treatment group viewed a 10-minute video, which covered the expected preoperative, intraoperative, and postoperative experience. Immediately afterward, both groups completed a questionnaire measuring satisfaction and recall of information received. All patients completed a second questionnaire at the first postoperative visit that assessed overall satisfaction with their experience.

Results: Thirty-four patients were available for follow-up. The video group (N = 15) answered 87% of the knowledge questions correctly, whereas the control group (N = 19) answered only 56% (P = .000). There was stronger agreement in the video group that the preoperative consultation contained an appropriate amount of information (P = .039). Postoperatively, there was agreement that the video was an effective preparation tool for all stages of the surgical experience. However, there was no difference between the groups in satisfaction with their overall surgical experience.

Conclusions: Video can enhance patients’ operative experiences and improve their retained knowledge when it is used as an adjunct to the preoperative consultation.

Level of evidence: Basic Science, Education Methodology Study, Devices to Improve Learning.

Keywords: Video; satisfaction; arthroscopy; shoulder; patient education; information recall


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Historically, explanation of surgical procedures during the preoperative consultation has consisted of a discussion between the patient and the surgeon. This discussion is an important component of the surgeon-patient relationship, not only for providing information to ensure that the patient has a proper understanding of the condition being treated, including the treatment’s inherent complications and risks, but also for obtaining the patient’s informed consent. Unfortunately, patient retention and recall of information discussed have been shown to be inadequate. Moreover, a patient’s perceived lack of information (as distinct from the actual amount of information given) appears to be correlated with patient dissatisfaction.

Various modalities have been implemented in an attempt to augment the verbal interaction between surgeon and patient, including printed materials, prompt sheets, visual aids such as 3-dimensional models and computer-based programs, tailored communication styles, and patient education groups. Another adjunct, the use of video, appears to be a promising approach that takes advantage of modern multimedia technology. Marshall McLuhan, the father of media theory, coined the phrase “the medium is the message” and referred to television (and, by extension, video) as a hot medium, meaning it has the ability to provide knowledge in a fashion to which patients can immediately relate. In addition, video may provide patients with a virtual experience of their forthcoming surgery, showing the hospital setting, including the operating room and equipment.

There is a growing literature describing efforts to integrate multimedia-based programs into surgical patient education. Some studies have shown an improvement of patient recall with the use of multimedia.

The objective of this study was to assess the efficacy of a 10-minute educational video tutorial on early learning and retention of information specific to the preoperative and postoperative shoulder arthroscopy protocol when it was used as an adjunct to the standard verbal surgeon-patient preoperative consultation. Our hypothesis is that video will improve overall satisfaction with the operative experience.

Methods

Development of the video

The script for the video was developed in an iterative manner. Two surgeons and a surgical resident met to compare and collate information they thought was important for the patient to know. Considering patients’ educational needs, a list was compiled of educational objectives as well as indications, risks, and benefits for shoulder arthroscopy. They attempted to determine deficiencies in physician-led information by considering common questions that patients would ask before surgery or information that is poorly remembered. It was agreed that the video would emphasize the do’s and don’t’s, reminding patients not to smoke, not to eat after midnight the day before surgery, and not to shave the shoulder. It was also thought that the video should follow a typical patient from the preoperative clinic visit to the day of surgery and then to the follow-up appointment and physiotherapy, including an intraoperative video of a standard shoulder arthroscopy. The video did not contain any new information that was not presented during the preoperative consultation.

A script was generated and was reviewed by a linguist to remove unnecessary medical jargon. A 10-minute video was then filmed by our institution’s multimedia department, using staff actors.

Description of methodology

A single-center randomized controlled trial was conducted involving 40 consecutive patients during March 2011 to July 2012 from the practice of 2 of the study authors (I.W. and M.D.), both fellowship trained in sports medicine and working at an academic institution. Patients who required arthroscopic repair of either a rotator cuff tear or a labral tear were identified by a research assistant and enrolled in the study before returning for their preoperative consultation. Patients were eligible for inclusion in the study if they were older than 18 years and were able to participate in and complete the consultation in English without the use of a translator. They were excluded if they had undergone previous arthroscopic surgery or if they had visual or auditory impairment that would prevent them from participating.

At the preoperative consultation, the operative procedure was discussed in detail, including risks and benefits; any questions about the surgery were addressed, and informed consent was obtained. Patients were randomized to either a control or treatment group by an independent biostatistician in a 1:1 ratio using computer-generated random numbers. Patients in the control group had a standard preoperative consultation with their surgeon. Those randomized to the treatment group also had a preoperative consultation but immediately afterward were brought by the research assistant to an adjacent examination room where they watched the video on a computer monitor without any staff present. The surgeons were blinded to the allocation of groups, and all participants received the same standard of care in their face-to-face meetings.

After this initial consultation, both groups completed a short questionnaire to measure both their satisfaction, on visual analog scales (VAS), and their recollection of the information they received, with 8 true or false statements (Table 1). A component of the survey was adapted from Beischer et al, who measured patient satisfaction with a multimedia learning tool on plantar fasciitis.

Patients then underwent shoulder arthroscopy and returned to the clinic for their first postoperative visit 2 weeks after surgery. At this time, they completed a second questionnaire that assessed satisfaction with their overall surgical experience. The treatment group also rated the corresponding perceived usefulness of the video.

Statistical analysis

Because this was a pilot study, a power analysis was not performed. Instead, a sample size of 40 was chosen on the basis of previous studies that have compared the efficacy of multimedia technology on the education of patients. Graphical...
and numerical summary measures were used to provide an exploration of the data. Correct answers on the knowledge questions were totaled, normalized to a percentage, and compared for the two groups by independent samples \( t \) tests. VAS data was also analyzed by independent samples \( t \) tests. Statistical significance was judged at the 5% level, and all procedures were two sided. IBM SPSS 20.0 (IBM Corp, Armonk, NY, USA) was used for data analyses.

**Results**

Forty patients were recruited to participate in the study, and 20 were allocated to each group. However, 1 patient in the control group and 5 in the treatment group did not attend the preoperative consultation or undergo surgery. Consequently, no data were collected for these patients.

**Preoperative questionnaire**

Table II shows the combined data for all 8 true or false questions. The video group scored significantly better than the control group \( (P = .000) \) on the knowledge questions overall, with a percentage of 87% versus 56%. Moreover, in every question, the percentage of patients who answered correctly was greater in the video group than in the control group (Fig. 1).

There were two questions for which responses were measured with a VAS scale. The first question asked whether the preoperative consultation contained an appropriate amount of information to educate the patient about surgery. There was a significant difference in responses \( (P = .039) \) between the video group (mean, 8.7) and the control group (mean, 6.8). The second question asked whether the preoperative consultation was easy to understand. There was no significant difference between groups, with a mean of 8.8 and 7.3 in the video and control groups, respectively \( (P = .104) \).

Finally, the video group was asked iterative questions about the video. All patients agreed that video was an effective way to learn, and 14 of the 15 available patients thought that a duration of 10 minutes was “just right.” With respect to whether the surgeon or the video was best at answering questions, 43% thought the surgeon was best, 14% thought the video was best, and 43% thought that the video provided the same information as the surgeon.

**Postoperative questionnaire**

Both groups were extremely satisfied with their surgical experiences. The control group scored their satisfaction with a mean VAS of 9.5, whereas the video group had a mean of 9.3, showing no significant differences in their responses \( (P = .445) \). With respect to whether their experiences were what they had anticipated, the 2 groups also showed no significant differences \( (P = .168) \), with means of 8.9 and 7.9 in the control and treatment groups, respectively. Of patients in the control group, 54% thought that they would have benefited from watching a video.

Figure 2 shows the perceived effectiveness of the video in preparing patients for the different stages of their surgical experience as measured by their questionnaire responses. These included the preoperative clinic, the night before surgery, the day of surgery, the recovery process, and the follow-up clinic. There was general agreement that the video was an effective preparation tool. Finally, for the question, “The video helped me prepare for surgery,” the average VAS score was 8.3. For the question, “I would recommend this video to other people having shoulder surgery,” the average VAS score was 9.0.

**Discussion**

We have found that the use of video as an adjunct to the standard surgeon-patient preoperative consultation improves information recall. The 2 questions on which the video group scored perfectly asked if they could eat after midnight and if smoking would affect their surgery. Misunderstanding in this case may lead to decreased bone-tendon healing and a poorer outcome of surgery, or to cancellation because of the risk of aspiration during anesthesia.\(^{10}\) There were, however, no patients from this study whose surgery was canceled for eating before surgery. These results are consistent with those reported by Beamond et al\(^{12}\) and Beischer et al.\(^{3}\) Beamond et al\(^{12}\) used a pre-post design to examine the effect of a computer-based multimedia tool on 31 patients’ knowledge of first metatarsophalangeal joint arthrodesis. The authors found that the percentage of correct responses to pre-test and post-test knowledge questionnaires increased from 62% to 87%.
(P < .001). Similarly, Beischer et al\(^3\) showed a knowledge improvement from 64% to 87% in a cohort of 41 patients who watched a multimedia video on plantar fasciitis. However, because the patients re-took the same questionnaire in both studies, it is unknown whether the observed improvement was due to familiarity with the test or the effect of the video itself.

Only a limited number of randomized trials in orthopaedic surgery have examined patient recall with the use of video. Rossi et al\(^21\) studied the effect of video on 150 patients randomized to video or control and also stratified by educational level. For both strata, the patients in the video group showed significantly higher comprehension.

In a randomized study by Cornoiu et al,\(^5\) 61 patients undergoing knee arthroscopy were allocated to 1 of 3 methods for providing preoperative informed consent: verbal, pamphlet, or multimedia. Information recall, as measured by a 10-item test, was shown to be significantly higher for the multimedia group at the time of consent, and the improvement was sustained until the day of surgery (P < .05), although there were no differences measured at 6 weeks. In both this paper and that of Rossi et al,\(^21\) the emphasis, however, was on informed consent as the primary variable of interest rather than information retention.

Regarding patient satisfaction, Johnson et al\(^13\) examined both information recall and satisfaction with the consent process in a study of 151 patients undergoing total knee arthroplasty who were randomized to 3 groups: standard of care, standard plus video, and standard plus video and nurse reinforcement. In contrast to the Cornoiu study, they found no differences in recall between the groups but did observe a significant drop in scores in all groups preoperatively to postoperatively (P = .004). However, Johnson et al used a generic video produced by the American Academy of Orthopaedic Surgeons. They may not have seen a difference in outcomes because their video was not specific to their patient population and the procedures being performed.

Whereas some studies have attempted to examine a possible link between patient satisfaction and video at the time of the preoperative consultation,\(^5,13,21\) ours is the first to study the effect of a preoperative video on overall surgical satisfaction after surgery. Our results did not show that the use of a video changed patient satisfaction. Both groups of patients were very satisfied with the surgery, and as a result it would be difficult to find any significant difference in satisfaction between the groups. The video was also effective at preparing the patients for all stages of the surgical experience.

The patients who viewed the video thought that they were provided with significantly more information than the control group. An unexpected observation was that the office staff noted a drop in telephone calls during the months in which this study was conducted. Because we did not record this information prospectively, it is unclear whether this was due to reduced calls from the video group or merely a coincidence. This is a question that would be useful to answer in a follow-up study.

Finally, we note the work of Doering et al,\(^6\) who found that video may play a role in decreasing anxiety and stress. In 100 patients undergoing total hip arthroplasty, the group that watched a videotape showing a typical patient’s hospital stay showed significantly less anxiety on the morning before surgery and on postoperative days 1 and 2 than the group that did not. They required less analgesic medication and had significantly lower cortisol excretion. So, there may be other benefits of a video that contribute to an improved overall surgical experience that cannot be measured solely by information recall or satisfaction.

The strengths of this study are that patients were randomized, the surgeons were blinded to group allocation, and the video used was specific to our patient population and arthroscopic shoulder surgery. As well, the language in the video was scripted with the assistance of a linguist to ensure ease and accuracy of understanding.

However, our study does have some limitations. The small sample size means that it is difficult to make a general statement applicable to other surgical settings or procedures. This study had a 15% dropout rate after the patients were enrolled because they chose to cancel or to postpone surgery before the preoperative consultation. The study did not
measure recall after the initial consultation, so we are unsure whether the video would have any lasting effect on knowledge retention. Also, one could argue that it was not the video itself but the repetition of information that was responsible for the improved knowledge recall. Although this may true, it does not negate the positive outcomes or the fact that no additional “face time” was required by the physician.

We believe that these results are promising enough to warrant a larger scale, multicenter study that can be expanded to include other surgical procedures. It would also be interesting to determine whether the improved recall at time of consultation would have any influence on patient behavior, such as arrival time for surgery, smoking habits, attendance at follow-up clinics, calls to the physician’s office, and compliance with the preoperative and postoperative protocols.

**Conclusion**

In addition to an informed, thorough discussion with the surgeon, the use of video can enhance patients’ operative experiences as well as increase their retained knowledge from the preoperative consultation. Video may prove useful as an adjunct to the preoperative consultation and warrants further study.

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**Supplementary data**

Supplementary data related to this article can be found online at [http://dx.doi.org/10.1016/j.jse.2013.09.008](http://dx.doi.org/10.1016/j.jse.2013.09.008).

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