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Use of animation video in surgical decision-making for treatment of early breast cancer in Indian women

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Abstract

Introduction: Surgical decision-making in early breast cancer is difficult for the patient and also for the treating clinician, especially when the patient is not completely aware of the available options. Adjuncts such as animation video with case scenarios can be helpful in this regard. We used an animation video to help in decision-making and evaluated the effect of such adjunct in Indian women with early breast cancer. **Materials and Methods:** An animation video of running time of 4 min and 11 s was shown to forty patients with early breast cancer, who filled in a patient satisfaction multimedia questionnaire at the end of the animation. **Results:** Seventeen (42.5%) patients underwent breast-conserving surgery (BCS) while the rest 23 (57.5%) patients underwent the mastectomy. All forty patients were satisfied with the animation video. The mean score of the utility of the video to improve understanding of the disorder, better organization of treatment, stimulated interest in the relations, and saved unnecessary discussion was 88.50, 88.50, 88.3, and 90.3, respectively. Age and literacy status did not significantly affect the scores. **Discussion:** All the patients found the video useful and most patients made the decision on the first attempt. Patients' perspective about BCS is influenced by the fear of recurrence, fear of multiple surgeries, complications, and also the counseling provided by the surgeon. **Conclusion:** In this situation, such animation videos provide an unbiased view on the operative procedure and help in decision-making.

Key words: Animation, breast-conserving surgery, early breast cancer

Introduction

Breast cancer is a dreaded disease in women and in developing world still has high morbidity and mortality. The decision of the women together with the family in deciding the treatment and in regard to a type of surgery and other treatment modalities still remains highly debatable. Most of the time, it is the treating physician or the family which decides the various options and not the woman who is affected although the educated women in India are steadily increasing.[1] When there is a scenario of two options, especially difficult options, the patient is confused with many statistics and reasons which the busy clinician used and might not understand in the first attempt. However, the caregivers might not have sufficient time to counsel again and again regarding the treatment options. One such important decision-making factor is the decision of modified radical mastectomy (MRM) versus breast-conserving surgery (BCS) in the surgical management of early breast carcinoma. We aimed to study the effect of animation video in understanding the need to decide either option.

Materials and Methods

We developed an animation video [Video 1] with the running time of 4 minutes and eleven seconds. We used the technique of storytelling to convey the events in this video.[2] The script is consistent with a lady doctor explaining the treatment options for early breast cancer in the native language and this was followed by the animation operative procedure of BCS and MRM. Then, two patient characters Mrs. Kamala and Mrs. Vimala talk about their surgical experience and their outcome, and finally, the video ends with the lady doctor requesting the patient for her decision and also thanking for watching the video. The project was approved by the ethics committee. The study was done between January 2017 and December 2017. It included forty patients of early breast cancer. The workup of early breast cancer was according to our departmental protocol and once the patients evaluated then the video was shown in a counseling room dedicated for patient counseling with audiovisual aids. One relative was permitted to be along with the patient to view this video. After viewing the video, the patient filled in a patient satisfaction multimedia questionnaire which had four questions.

Statistical analysis

Independent samples *t* test / Mann Whitney u test was used to compare between two groups as appropriate. $P < 0.05$ was considered as statistically significant. SPSS version 22.0 was used for data analysis.

Results

A total of 40 female patients with carcinoma breast were included in the study. Seventeen (42.5%) patients underwent BCS while the rest 23 (57.5%) underwent MRM. The mean and median age (years) of the patients were 47.8 and 45, respectively, with age range of 30–74. Most of the patients were literate (72.5%, $P = 0.004$), and of the literate patients, 69% at least finished 10th standard schooling. All 40 (100%) patients were satisfied and agreed that introduction of animation will improve the delivery of their health care, as well as they would like to see similar multimedia animations related to health care in future. To test the usefulness of the information through multimedia, we used a questionnaire with four questions, which were scored by the patients. The response of the patients was recorded between 0 and 100 scale, with 100 being considered excellent. When asked about the utility of the video to improve understanding of the disorder, the mean score was observed 88.50. Similarly, the mean score was observed 88.5, 88.3, and 90.3 when we asked whether this video will be useful to better organization of treatment, stimulated interest in the relatives, and saved unnecessary discussion with the surgeon [Table 1], respectively. Patients were divided into two groups (<50 years and ≥ 50 years) and

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further mean usefulness score was compared between two age groups. The result indicated that for each of the questions, the mean score was higher in the older age group as for compared to younger patients, although the mean difference was not statistically significant ($P > 0.05$) [Table 2]. Satisfaction score was compared between the literate and nonliterate patients. The result showed that distribution of the score was not significantly different in the groups ($P > 0.05$). Similarly, the mean response score between BCS and MRM patients was compared and means were not significantly different between the two groups for all the four questions ($P > 0.05$).

Discussion

Breast cancer is the most commonly seen type of cancer in women.[3] Most women with early breast cancer have a choice between mastectomy and BCS, and the decision-making is a complex process both for the patient and the surgeon. The evolution of surgery for breast cancer involves radical mastectomy, MRM, and now BCS. Within the past 20 years, there has been a rapidly increasing tendency toward minimally invasive methods in the field of breast surgery like in other surgical interventions.[4] BCS has two aspects – oncological clearance and esthetic preservation. Despite BCS shows at least equivalent results to mastectomy for treatment for early breast cancer, many women in developing countries opt for mastectomy. The factors responsible for low rates of BCS include patient preference (due to fear of recurrence, multiple admissions, and multiple surgeries), lack of radiotherapy facilities in the rural region, lack of surgical skills and experience, lack of awareness among patients, and absence of Indian guidelines.

Patient's perspective on breast cancer and BCS is influenced by many factors. The most important is the fear of recurrence of disease, fear of multiple surgeries, and fear of complications of radiotherapy. In a patriarchal society like ours, most of the decisions are taken by the head of the family (man) including the decision for treatment. This indirectly leads to under confidence in the women, which is also attributed to the low literacy rate and employment status.[5] The lack of confidence in women is the main reason that causes difficulty in direct interaction and counseling by the surgeon about the treatment options.[6]

Surgeon plays an influential role in decision-making between radical surgery and conservative surgery. The surgeon is usually the first encounter of the patient in the hospital and most of the counseling work is done by the surgeon himself/herself unlike in other countries; counselors and breast care nurses have a minor role. Busy OPD schedule and increased patient load result in very limited time spent with the patient. The average time spent by the specialist ranges from 5 ± 7 min in a developed country.[7] The patient feels apprehensive when offered any invasive intervention. Counseling by the surgeon regarding the type of surgery is usually to the patient with her husband in a patriarchal society like ours and women infrequently participate in final decision-making.

Table 1: Usefulness Score of the Study Patients as per Age

Variable's	Age (Years)	Mean±SD	Median (IQR)	Min-Max	$P^{\#}$
Age		47.8±10.5	45 (40-55)	30-74	-
Video is useful					
Improved understanding of the disorder	<50	86.2±13.9	90 (80-100)	60-100	0.156
	≥50	92.9±9.2	95 (90-100)	70-100	
	Total	88.5±12.7	90 (80-100)	60-100	
Better organization of treatment	<50	85.0±17.1	90 (70-100)	50-100	0.110
	≥50	95.0±6.7	100 (90-100)	80-100	
	Total	88.5±14.9	95 (80-100)	50-100	
Stimulated interest in the relatives	<50	84.3±17.7	90 (70-100)	50-100	0.065
	≥50	95.8±6.7	100 (90-100)	80-100	
	Total	88.3±15.7	100 (80-100)	50-100	
Reduced unnecessary discussion with the surgeon	<50	87.3±15.6	95 (78-100)	50-100	0.138
	≥50	95.8±6.7	100 (90-100)	80-100	
	Total	90.3±13.7	100 (80-100)	50-100	

SD: Standard deviation, IQR: Interquartile range. #Mann Whitney *U* test used

Table 2: Usefulness Score of the Study Patients as per Literacy

Variable's	Literacy	Mean±SD	Median (IQR)	Min-Max	$P^{\#}$
$Age	Literate	44.2±8.8	44 (39-48)	30-74	<0.001
	Illiterate	58.0±6.2	56 (52-64)	50-69	
Video is useful					
#Improved understanding of disorder	Literate	87.2±13.60	90 (80-100)	60-100	0.437
	Illiterate	91.8±9.8	90 (90-100)	70-100	
#Better organization of treatment	Literate	85.0±16.7	100 (75-100)	50-100	0.511
	Illiterate	93.6±6.7	90 (90-100)	80-100	
#Stimulated interest in the relatives	Literate	85.6±17.4	100 (70-100)	50-100	0.353
	Illiterate	94.5±6.9	100 (90-100)	80-100	
#Reduced unnecessary discussion with the surgeon	Literate	88.6±15.3	100 (80-100)	50-100	0.550
	Illiterate	94.5±6.9	100 (90-100)	80-100	

SD: Standard deviation, IQR: Interquartile range. $Independent samples *t*-test used, #Mann Whitney *U* test used

The decision-making includes an understanding that breast conservation is equivalent to MRM in terms of local control and survival[8,9] or better.[9]

We observed that most patients made the decision at the first attempt and they could understand the content of the video well. Two patients had changed their decision to MRM after interference from the husband or family member. One patient viewed the video 2 of times and opted for BCS with SLNB. All patients wanted to see such videos for different aspects of treatment in future.

We found that both literate and illiterate patients found the video useful and simple for decision-making. Most of the patients had fewer queries postoperatively and some patients have recommended this video to other breast cancer patients. In our setup, the outpatient and chemotherapy bay have opportunities for social interaction and patients can discuss different aspects of their treatment with other patients. For the surgeon and the residents as it saved time in the busy OPD with Quality content and thereby making it a boon. We would like to reiterate the fact that surgeon's history taking examination and counseling is the main factor in establishing the patient–surgeon relationships. However, certain aspects of treatment which are complex and need proper understanding can be best understood using these animation videos.

We feel that the surgeon's outlook and counseling is the most important decisive factor in the decision-making of breast conservation or mastectomy. A study from Australia on breast conservation eligible patients opting for mastectomy revealed surgeons advise as the most important factor among various factors such as body image,fear of others reaction to the body, fear of cancer recurrence, advise form other patients, advise from breast nurse and fear of further operation.[10]

We in our study observed that patients and relatives were satisfied with the animation and its content and quality. However, the animation did not address breast oncoplastic procedures which are a part of some BCS. Many women were happy to view this video and the decision-making according to them was straight forward after viewing this video.

Conclusion

We conclude that animation video can provide an unbiased view on decision-making for the surgical treatment of early breast cancer patients.

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Conflicts of interest

There are no conflicts of interest.

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