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Comparative study of video demonstration versus traditional demonstration of skills in postgraduate students of otorhinolaryngology at tertiary level rural hospital

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Abstract
Introduction: Ever expanding patient expectations, increasing expense of operating room time, trainee work-hour restrictions and the application of less invasive techniques have all contributed to lessening opportunities for teaching surgical skills. Just as operating room experience is becoming more precious for residents, medical students typically receive much less teaching and evaluation of their surgical skills during their clinical rotations. Computer-assisted instruction is being used more and more to deliver educational material, particularly in medical schools. Potential reasons for adopting this technology include increased efficiency, portability, consistency, and effectiveness. **Material and methods:**An Interventional and Comparative study was undertaken in the Department of ENT & HNS at the tertiary level rural hospital. Total duration of the study was 24 weeks. Overall 4 procedural skills were selected. Total sample size of study was 28. Crossover was done among the groups. Both the Groups A and B were assessed by Senior Staff (Postgraduate Teacher) on the prestructured rating form of Direct Observation of Procedural Skills (DOPS.). The result among the two groups were analysed by applying unpaired t-test.Results : In DNE, 50% students were found in both satisfactory and good grading following video demonstration. In VDL, 66.70% students were found in good grading and 33.30% students were found in satisfactory grading. In EUM, 75% students were found in good grading and 25% students were found in satisfactory grading. In Mastoid Bandage, 100% students were found in good grading. Out of the total 14 students who were exposed to video demonstration showed 28.6% students having satisfactory grade and 71.40% students having good grade and no student in poor grading.**Conclusion :** Video Demonstration of Otorhinolaryngological Skills is a effective method of teaching and it improves attitude and professionalism in the students and enhances surgical acumen among them.

Keywords: Video Demonstration, Traditional Demonstration, DOPS, Skills.

Introduction

Ever expanding patient expectations, increasing expense of operating room time, trainee work-hour restrictions and the application of less invasive techniques have all contributed to lessening opportunities for teaching surgical skills. Based on these concerns, a pressing question is how best to use academic resources to teach and provide feedback to the trainees attempting to acquire surgical competence. Surgical simulation training offers trainees the opportunity to improve their skills by practicing outside the operating room. However, economic realities and time constraints limit the availability of expert instruction in surgical simulation laboratories. In the absence of supervision by a qualified expert, instructional methods have incorporated the use of simulation trainers with video instruction and independent practice. Just as operating room experience is becoming more precious for residents, medical students typically receive much less teaching and evaluation of their surgical skills during their clinical rotations. While completing their clinical clerkships, surgical task they may perform is closing skin incisions using a subcuticular technique. Residing on the steepest segment of the learning curve, medical students represent an apt population for evaluating methods of teaching the most basic surgical skills [1]. Computer-assisted

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instruction is being used more and more to deliver educational material, particularly in medical schools. Potential reasons for adopting this technology include increased efficiency, portability, consistency, and effectiveness[1]. In addition, computer-assisted learning (CAL) offers the advantage of integrated use of text, graphics, animations, video, and spoken commentary. These can help explain complex concepts, especially in clinical problems. CAL has been proposed as a solution to teaching overload in courses, changes in teaching hospital case load and a shift toward self-directed learning. Comparison of the outcomes between traditional education (text, lectures) and the same content provided in a computerized learning environment have been performed in other health professions. CAL was found to be more effective in teaching glomerulo-nephritis to medical students, based on improved student performance, than the traditional teaching method. It has been shown to be an effective and acceptable method of teaching[2].Attempt was being made to evaluate the impact of traditional teaching and video demonstrated teaching in acquiring otorhino-laryngology skills.

Material and methods

An Interventional and Comparative study was undertaken in the Department of ENT & HNS at the tertiary level rural hospital. Total duration of the study was 24 weeks. All the postgraduate students(i.e 7 in numbers) of the Department of ENT & HNS were included in the study. Sensitization of all postgraduates and staff of department regarding study was done. Overall 4 procedural skills were selected unamiously by the faculties of the department which involved both simple and advanced skills for the postgraduates as per Medical Council Of India (MCI) Curriculum. 1. Diagnostic Nasal Endoscopy, 2. Video directed laryngoscopy, 3. Examination under microscope, 4. Mastoid bandage dressing). Total sample size of study was 28 (i.e Total no. of postgraduate students X Total no. of procedural skills). Verified, Informed and Written consent was taken from the patients undergoing the procedures. All postgraduate students willing consented for the study. Institutional Ethical Committee (IEC) clearance was obtained before beginning the study.7 postgraduate students were divided into two groups i.e Group "A" and Group "B". Group "A" comprises of 3 postgraduate students whereas Group "B" had 4 postgraduate students. Group A postgraduate students were given clinical demonstration of one procedural skill whereas Group B postgraduate students were exposed to video demonstration of same procedural skills and then crossover was done for another procedural skills. So all procedural skills were equally done in both groups with equal number of participants i. e 28. Both the Groups A and B were assessed by Senior Staff (Postgraduate Teacher) on the prestructured rating form of Direct Observation of Procedural Skills (DOPS.) [3].

Structured rating scale form for Direct Observation of Procedural Skills (DOPS)
Date and time:
Trainee's name:
Trainer's name:
Patient's name:
E.N.T. procedure:
Clinical environment: OPD/IPD/Minor OT/Major OT/ICU/ Emergency/Other (specify)
Time taken for assessment and feedback:
Areas of assessment
1. **Pertinent anatomy: Poor/Satisfactory/Good/Not applicable**
2. **Indications: Poor/Satisfactory/Good/Not applicable**
3. **Informed consent: Poor/Satisfactory/Good/Not applicable**
4. **Pre-procedural preparation: Poor/Satisfactory/Good/Not applicable**
5. **Analgesia or safe sedation: Poor/Satisfactory/Good/Not applicable**
6. **Aseptic technique: Poor/Satisfactory/Good/Not applicable**
7. **Technique of procedure: Poor/Satisfactory/Good/Not applicable**
8. **Awareness of Complications: Poor/Satisfactory/Good/Not applicable**
9. **Post-procedural management: Poor/Satisfactory/Good/Not applicable**
10. **Communication skills/professionalism: Poor/Satisfactory/Good/ Not applicable**
11. **Overall performance: Poor/Satisfactory/Good Whether the verbal feedback to the trainee given? Yes/No**
Trainer's remarks if any:
Trainer's signature

The use of DOPS as an assessment tool in various clinical setting and in otolaryngology is well established and documented[4-6].This prompted us to use it as our assessment tool in the study.

Statistical Analysis :- The data was compiled in Microsoft excel sheet and was analysed by SPSS 16 version software. The descriptive statistics in form of frequencies and percentage were calculated. The result among the two groups were analysed by applying unpaired t-test. For statistical significance p-value less than 0.05 was considered.

Results

Scores of Direct Observation of Procedural Skills (DOPS) of both group students of all 4 procedural skills were analysed with the help of statistician and overall performance results were taken out.

Diagnostic Nasal Endoscopy
Overall Performance

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Table 1: Diagnostic Nasal Endoscopy

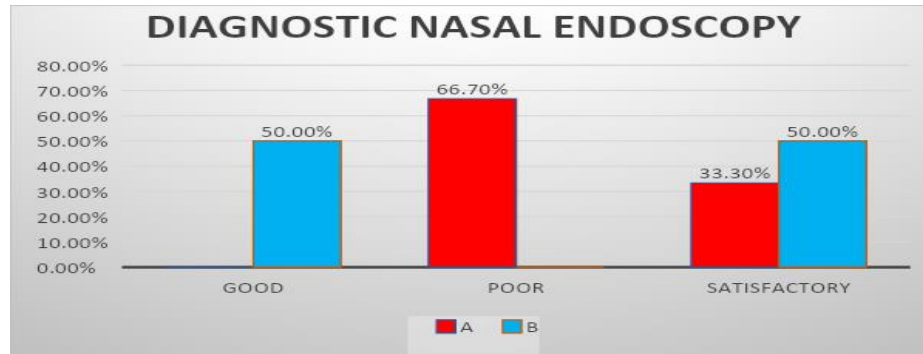|	Poor	Satisfactory	Good	Total	
Traditional Demonstration (Group A)	2 66.7%	1 33.3%	0 0%	3 100%	T = 2.646 P<0.046
Video Demostration (Group B)	0 0%	2 50%	2 50%	4 100%	

Fig 1:Diagnostic nasal endoscopy

Table no. 1 and Fig 1 shows overall performance of students of both the groups A and B who performed Diagnostic Nasal Endoscopy skill. In Group A students, 66.7% of students were found in poor grading while 33.3% of students were having satisfactory grading whereas in Group B students, 50% students were found in both satisfactory and good grading. The statistical association between both the groups was found to be significant.(p<0.046)

Video Directed Laryngoscopy

Overall performance

Table 2:Video Directed Laryngoscopy

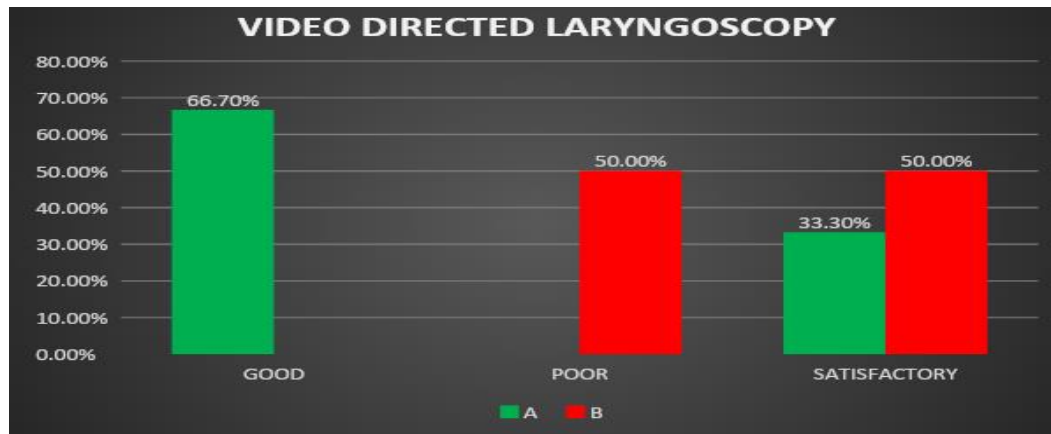|	Poor	Satisfactory	Good	Total	
Traditional Demonstration (Group B)	2 50%	2 50%	0 0%	4 100%	T = 2.646 P<0.046
Video Demonstration (Group A)	0 100%	1 33.3%	2 66.70%	3 100%	

Fig 2: Video Directed Laryngoscopy

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Table no. 2 and Fig 2 shows overall performance of students of both the groups A and B who performed Video Directed Laryngoscopy skill. In Group B students following Traditional demonstration of skill, 50% of students were found in poor grading while 50% of students were having

Examination under microscope
Overall performance

satisfactory grading whereas in Group A students following Video demonstration, 66.70% students were found in good grading and 33.30% students were found in satisfactory grading. The statistical association between both the groups was found to be significant.(p<0.046)

Table 3:Examination under microscope

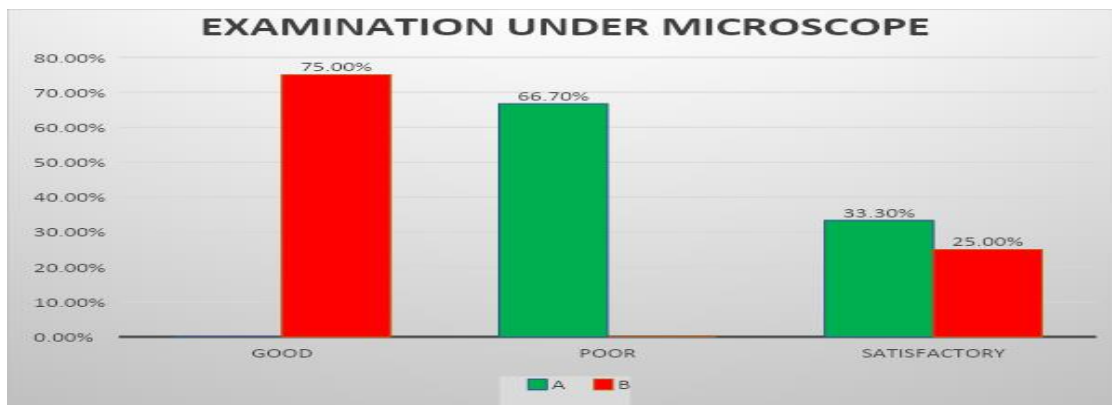|	Poor	Satisfactory	Good	Total	
Traditional Demonstration (Group A)	2 66.70%	1 33.30%	0 0%	3 100%	T = 3.485 P<0.018
Video Demonstration (Group B)	0 0%	1 25%	3 75%	4 100%	

Fig 3:Examination under microscope

Table no. 3 and Fig 3 shows overall performance of students of both the groups A and B who performed Examination Under Microscope skill. In Group A students, 66.7% of students were found in poor grading while 33.3% of students were having satisfactory grading whereas in Group B students, 75% students were found in good grading and 25% students were found in satisfactory grading. The statistical association between both the groups was found to be significant.(p<0.018)

Mastoid Bandage
Overall Perforamance

Table 4:Mastoid bandage

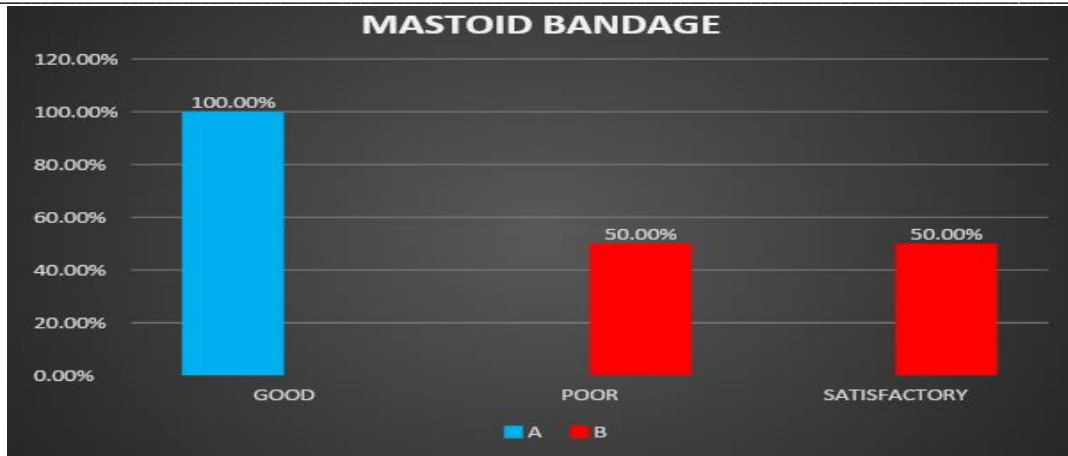|	Poor	Satisfactory	Good	Total	
Traditional Demonstration (Group B)	2 50%	2 50%	0 0%	4 100%	T = 4.392 P<0.007
Video Demonstration (Group A)	0 0%	0 0%	3 100%	3 100%	

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Fig 4:Mastoid bandage

Table 4 and Fig 4 shows overall performance of students of both the groups A and B who performed Mastoid Bandage skill. In Group B students following Traditional demonstration of skill, 50% of students were found in poor grading while 50% of students were having satisfactory grading whereas in Group A students following Video demonstration, all 100% students were found in good grading. The statistical association between both the groups was found to be significant.($p<0.007$)

Traditional demonstration versus video demonstration

Table 5: Traditional demonstration versus video demonstration

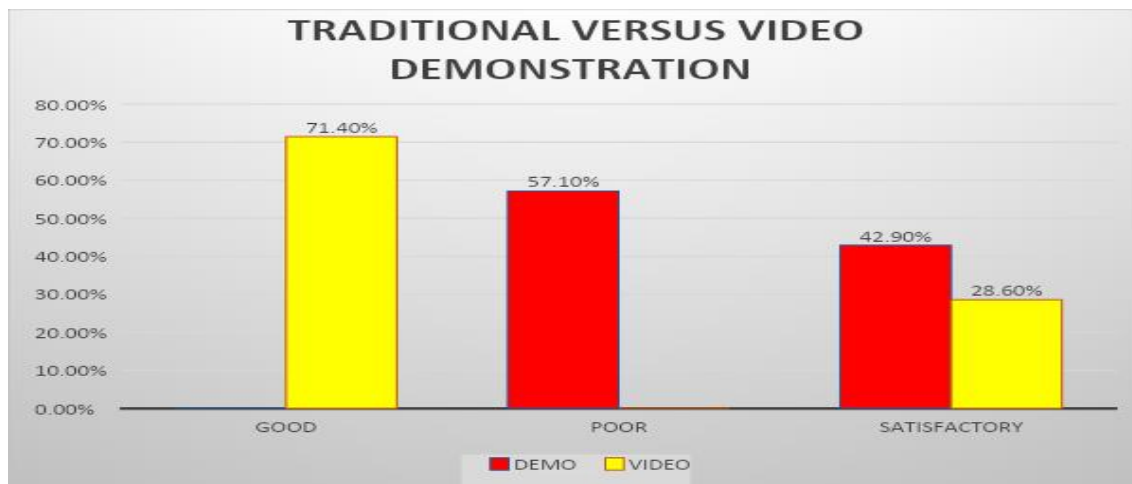|	Poor	Satisfactory	Good	Total	
Traditional Demonstration	8 57.1%	6 42.9%	0 0%	14 100%	T = 6.918 P<0.001
Video Demonstration	0 0%	4 28.6%	10 71.4%	14 100%	
Total	8 28.6%	10 35.7%	10 35.7%	28 100%	

Fig 5: Traditional demonstration versus video demonstration

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Table no. 5 and Fig 5 shows comparision of cumulative outcomes of Traditional and Video demonstration. Of the total 14 students who were exposed to traditional demonstration, 57.1% students were found in poor grading and 42.90% students were found to have satisfactory grading and not a single student in good grade. Out of the total 14 students who were exposed to video demonstration showed 28.6% students having satisfactory grade and 71.40% students having good grade and no student in poor grading.

Discussion

The acquisition of technical surgical skills by medical students involves didactic instruction, practice, and feedback which often consume considerable teaching time of faculty . As a result, there is increasing advocacy among medical educators for the use of novel teaching methods that utilize computer-based training and bench models[7]. Video Demonstration is a promising tool in medical education. The use of video demonstration has been shown to increase medical students preparedness for clinical examinations, improve surgical ability, and increase overall performance in intra-operative learning[8].The benefits of these technologies include decreased time demands on faculty and flexible opportunities for students to learn, practice, and acquire proficiency in new skills without clinical pressures[7].

Medical students and residents are frequently instructed by other, inexpert teachers because of shrinking teaching funds and greater demands for patient care delivery by faculty members. These factors have lead to an erosion in the effectiveness of traditional methods of teaching basic surgical skills[9]. As bench model training is increasingly incorporated into technical skills education, computer-assisted technology may offer a cost-effective alternative to traditional means of providing basic instruction[10]. This Interventional and Comparative study showed that postgraduate students are able to enhance basic and advanced technical skills through the use of interactive computer-based video instruction material to the same extent or more as those receiving tradiational demonstration provided at the end of each practice attempt.Our study showed improvement in students knowledge, clinical efficacy and professional attitude while performing all 4 otorhinolarynogological skills following video demonstration. Following video demonstration, students became more competent in technique of procedure and awareness improved regarding impending complications while performing skill. In our study we also found that students belonging to Video Demonstartion group were having remarkable improvement in there overall performance of all 4 otorhinolaryngological skills as compared to other group participants of Traditional Demonstration as indicated by scores of DOPS which complies with the outcome of Summers AN et al[9].The video demonstrations were reported to be more convenient, accessible, efficient, and useful for review than the traditional demonstration, which is in accordance with other studies i.e N Markku et al[7], AL Fingeret et al[11]. Video Demonstration also provide longitudinal enhancement of postgraduate students in refining their basic and advanced otolaryngological skills which complies with the results of

Summers AN et al[9]. Cumulative outcome of results of traditional with video demonstration shows 71.04% of students within good grade of skills when they are exposed to video demonstration which complies with the results of study of Abutarbush SM et al[2]. Such result is seen as video demonstration thoroughly covers every aspect of the procedure in a more detailed fashion. It may also be related to better audiovisual materials available through the video module. Video demonstration helped in reviewing the complex part of procedure easily which was lacking in the traditional method.Participants feedback suggested that more than 80% of the students thought that Video Demonstration of Otorhino-larynogological skill is very interesting and effective method of learning and to be incorporated in postgraduate curriculum and less than 15% participants indicated it as little stressful activity. They also thought that audiovisual materials were superior to a live demonstration.

Conclusion

Based on the above observations of study, we conclude that " Video Demonstration of Otorhinolaryngological Skills" is a effective method of teaching. In addition it improves attitude and professionalism in the students and enhances surgical acumen among them. It makes them more competent in performing procedures thus reducing chances of complications in their future medical life and helps them become a good, learned and versatile clinican.

Limitations of study
1. Sample size was small.
2. More procedural skills were required to better assessment.
3. Time constraint activity.

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