

## Evaluation

### Questionnaire Data:

#### Part A: Background Information

1. Year of birth:

1951	1
1964	1
1967	1
1973	1
1981	1

2. Current level of surgical training:

Intern (PGY 1)	1
PGY2-3	0
PGY4-5	0
PGY6+	1
Surgical Fellow/Registrar	1
Attending	1
Consultant	1

3. How many procedures of this type did you perform in the last year in which you:

	Less than 5	5-9	10-14	15-19	20 or more
Served as the lead surgeon	-	1	-	-	3
Assisted the lead surgeon	-	-	1	-	4
Observed and/or held cameras/retractors	-	-	-	-	1

4. Please list the 4 procedures in which you participated most frequently in the last year:

- 1) \_\_anterior resection; lap chole; lap chole; appendectomy; lap hernia
- 2) \_\_appendectomy; lap appendectomy; open hernia repair; hernia repair; lap chole
- 3) \_\_other hysteroscopy; lap diagnostic; thyroidectomy; thoracoscopic; lap band
- 4) \_\_lap bowel resection; breast surgery; vascular procedures; thyroidectomy

#### Part B: Please rate the quality of the technical components of the session:

**Technical Components** (Scale: 1=Not Usable; 2=Difficult to use; 3=Degraded but still usable; 4=Some interference but usable; 5=No interference)

	1	2	3	4	5
1. Quality of Stereo Video Images		1	2	1	1
2. Quality of Audio				2	3
3. Quality of Videoconferencing Images			1		4

Did you have any problems viewing the stereo video? (e.g. eye strain; headache) 0=No 5=Yes

If yes, please explain:

- Only perceived stereo image for very near objects; no stereo perception at normal working distance (or little); I suspect longer viewing may have resulted in headache.
- 3D images not smooth (jerky) caused me mild eye strain
- Due to flickering/jerking of image, I found it required a lot of concentration (more than usual) to watch and process image
- Due to jerkiness or image flicker related to delayed frame transmission, eye fatigue could be a problem with prolonged viewing.
- The “flicker” (“frame rate”) was a problem.

#### Part C: Please rate the usefulness of the information components of the session:

**Information Components** (Scale: 1=low; 3=medium; 5=high)

	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
1. Stereo Video Images			2	1	2
2. Commentary from Prof Heinrichs				3	2
3. Answers to questions from Dr Nezhat				3	2
4. Local commentary from Dr Cregan				3	2
5. Discussion within local audience			1	1	3

**Please rate the stereo display of the laparoscopic images compared to traditional monoscopic displays:**

	<b>Much less (1)</b>	<b>Less (2)</b>	<b>Similar (3)</b>	<b>Greater (4)</b>	<b>Much greater (5)</b>
Usefulness of stereo display compared to monoscopic display		1	2	2	

**Part D: Please give us your opinion of the relative value of these types of live surgery events.**

How useful do you find each of the following, as ways of achieving your professional learning goals?

<b>Ways of Learning Surgery</b>	<b>Least Useful (1)</b>	<b>Not Useful (2)</b>	<b>OK (3)</b>	<b>Useful (4)</b>	<b>Very Useful (5)</b>
1. Pre-packaged multi-media (DVD, CD, Videotape) including similar “live surgery” as well as other images and educational materials that support specific learning goals. (e.g. Primal Pictures CD of the Shoulder Joint)			2	2	1
2. A recording of remote live surgery with commentary by the surgeon, with little or no other supporting content, for viewing on my own (self-study).		1	3	1	
3. Stereo video of remote live surgery in real time (as in today’s session)—so I can ask questions of the surgeon after the procedure.			1	2	2
4. Stereo video of remote live surgery in real time (as in today’s session)—from surgeons in Australia.		1	1	1	2
5. Stereo video of remote live surgery in real time (as in today’s session)—from surgeons NOT in Australia		1	1	2	1

<b>Overall Rating</b>	<b>Definitely Would Not (1)</b>	<b>Not Likely (2)</b>	<b>Not Sure (3)</b>	<b>Very Likely (4)</b>	<b>Definitely Would (5)</b>
6. If a 45-60 minute session of this type (a remote live surgery event) were readily available to you at your hospital/medical school, (e.g. once a month) on a topic in your surgical area of interest, how likely would you be to watch it?			1	2	2

**Part E: Addition comments.**

Please write any additional comments you have: (Five subjects' comments are listed below.)

- Will get my eyes checked! Limitation seems to be “refresh rate” making video stereo view jerky while video of teleconference type was perfect.
- Further improvement in 3D image quality needed
- Technology and pictures great. Jerking of image, however, made the image very hard to watch and concentrate on. Due to this, watching the picture for any length of time would rapidly result in headache and fatigue.
- *No comments*
- *No comments*

## **Evaluation Summary, Analysis, and Results**

### Part A: Background Information

All five subjects were “active” general surgeons; had performed similar procedures as that shown in the live surgery event—appendectomy—during the last year. Four were experienced surgeons and one was an intern; three had been lead surgeon on 20 or more cases; one had been lead surgeon on 5-9 cases; the intern had assisted the lead surgeon on 10-14 cases.

### Part B: Technical Components

Quality of the stereo video “component” of the session was rated lowest; the other two components—audio and videoconferencing images—received high ratings on quality. All five subjects commented on the problem of “flicker” or “jerkiness” in the stereo video images.

### Part C: Usefulness of Information Components of the Session

The three components in which Prof Heinrichs, Dr. Nezhat and Dr. Cregan provided commentary received high (5) or medium high(4) ratings. The discussion within the local audience received the next highest ratings (within the 3-5 range).

The stereo video images received the lowest ratings (but still within the 3-5 range).

When asked about the usefulness of stereo compared to mono display, two said stereo has “greater” usefulness (4), two said the two were similar in usefulness (3); and one said the stereo display is less useful.

### Part D: Ways of Learning Surgery

When asked to rate the usefulness of several different ways of learning surgery, with 1=least useful and 5=very useful, the subjects rated “stereo video of remote live surgery in real time (as in today’s session)” as the most useful, and “pre-packaged multi-media (DVD, CD, Videotape)” as the next most useful. Only one of the five subjects gave ratings below “Ok” (3). This surgeon rated the following methods as “not useful” (2): “a recording of remote live surgery with commentary... for self study”; “stereo video of remote live surgery in real time” from surgeons in Australia”; and “stereo video of remote live surgery in real time” from surgeons NOT in Australia.

When asked to give an overall rating of the value of this type of surgical education session, two said they “definitely would” attend a similar session if it were readily available to them; two said they “very likely would” attend a similar session, and one indicated “not sure”.

## **Results**

- 1) The procedure was relevant for all surgeons present (abdominal surgeons). The short procedure was ideal for the short time frame of the session. The procedure showed a new method for conducting this type of surgery.

- 2) When stereo video images exhibit “flicker” due to the frame rate, the quality of the resulting educational session suffers greatly and may even cause eyestrain and headache.
- 3) Despite the poor quality of the stereo video images, the subjects’ overall rating of the value of this approach to teaching/learning surgery was generally high.