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Surgical training and
development during COVID-19

Background

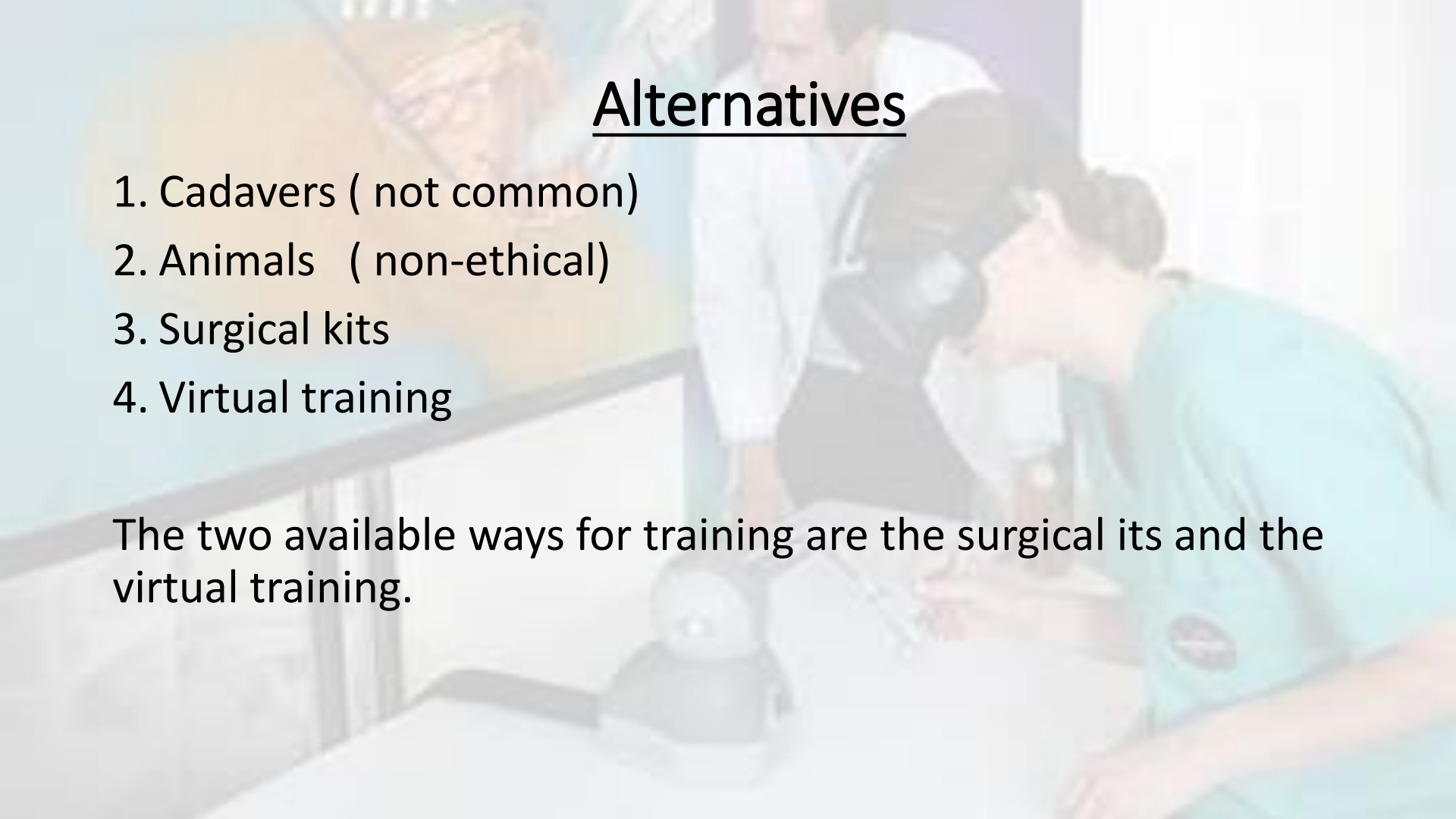
As our life is changing to be more digital, the COVID-19 has accelerated it. There was reduce in number of elective, trauma and minor procedures during the lockdown. This have detrimental effect on the training pathway. Surgery is a specialty that need hand-on training, and it is hard to gain the same level of training outcomes without operating. Another point is that the training pathway requires a certain number of operations to be achieved each year during the training pathway.

This ended to question of what alternative can trainees use.

Alternatives

1. Cadavers (not common)
2. Animals (non-ethical)
3. Surgical kits
4. Virtual training

The two available ways for training are the surgical kits and the virtual training.



Review and questionnaire

We send a questionnaire to 50 surgical trainees in different surgical specialties. The questionnaire contained number of points to assess what trainees prefer (virtual vs surgical kits).

All the trainees responds and answered all the questions .

All the responders should get training on both ways.

The question	Virtual training online sessions	Surgical kits (lap box)
The cost	100%	100%
Time consuming	47%	53%
Accessibility	45%	55%
Reality	73%	27%
More confidence in theatre	80%	20%
More confidence in dealing with intraoperative complications	81%	19%
Independent	75%	25%
Gaining surgical skills	90%	10%
Training on exact surgical steps with feedback	100%	0%
What they prefer	93%	7%

What is virtual training

Definition: is the use of computer technology to create a simulated environment, placing the user inside an experience. These platforms directly address the skills gap by providing immersive, hands-on training that closely simulates an operating room environment.

It gives a 3D training opportunities and better visual experience.

Virtual training use computer, screen, programs, and sensors in the form of surgical tools

Why virtual training

The main reason that why virtual training is suitable for this time is that it is the only way able to convey multi-dimensional sensations.

Other pros are

1. Better anatomy understanding
2. Develop the surgical skills
3. Independency
4. Give the exact operation steps
5. Can be used to learn complex procedures
6. Can be used for different specialties
7. Have a good follow up and gives feedback

Any possible disadvantages

The main con in virtual training is the delay in simulator response in relation to user movement.

Others

1. The cost
2. Need good internet signal (this is a huge problem in developing countries)
3. Still not all the surgical procedures are available
4. Some limitations in open surgical procedures

Similar studies and reviews

Recent clinical validation study at UCLA's David Geffen School of Medicine. The study was to evaluate the outcomes of a group of trainees who got virtual training in one surgical procedure and compare them to other group who trained by traditional training methods.

the main Results were:

1. VR-trained participants were 20% faster than the traditionally-trained group.
2. 38% more steps correctly in the procedure-specific checklist.

Effect of virtual reality training on laparoscopic surgery: randomized controlled trial

(BMJ 2009;338:b1802 doi:10.1136/bmj.b180)

To assess the effect of virtual reality training on an actual laparoscopic operation. It is Prospective randomized controlled and blinded trial.

Comparing two groups of trainees on Laparoscopic cholecystectomy.

The main results were

1. Dramatic reduction in the operative time in the virtually trained group
2. More efficiency and less intraoperative problems
3. More familiar with anatomy and independent performance

Conclusion

Virtual training websites and systems are becoming safe alternative for surgical training in different surgical specialties. Virtual training can teach vital skills to surgeons in training before they take patients under their knives.

Virtual surgical training will be the main method of surgical practicing the next years.

We need to review the surgical outcomes of our trainees in few years later to have better idea about efficiency of virtual training.



THANK YOU