

Intra-Op Helmet Cam

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2002-2012

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Introduction

- Surgical training
 - long hours in assisting senior surgeons in their practice.
 - experience of surgery step by step
 - long practice to secure surgical skills

**R.S. Chung How much time do surgical residents need to learn operative surgery.
The American Journal of Surgery . 190 (3) 2005 351-353**

Introduction

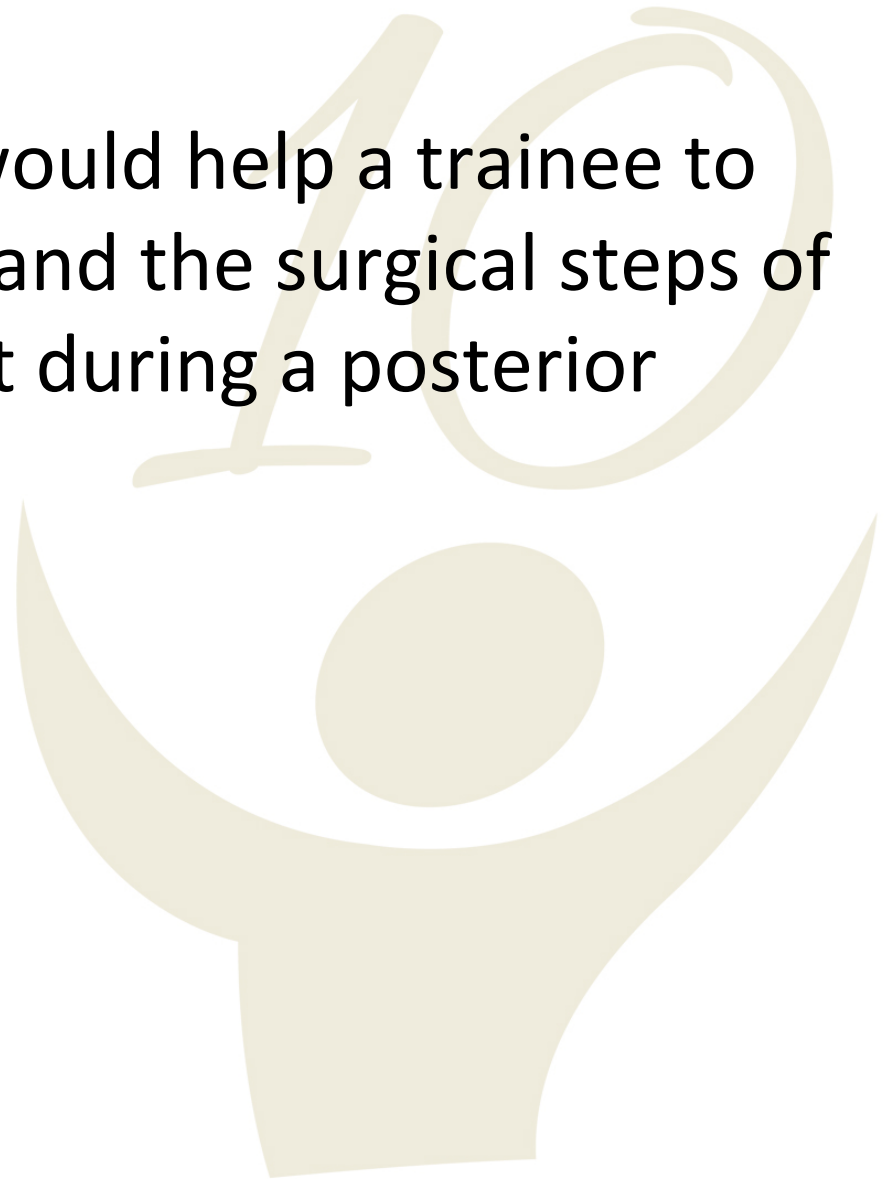
- Difficult to leave the more junior trainees to practice even step by step on patients
- Decreasing amount of time spent in theatre
- THR posterior approach and less invasive or minimally invasive approaches
- Time hanging onto the retractor without or rarely seeing the important anatomic steps of the procedure.

International Journal of Surgery 10 (2012) 399–403 The European Working Time Directive: A practical review for surgical trainees

Introduction

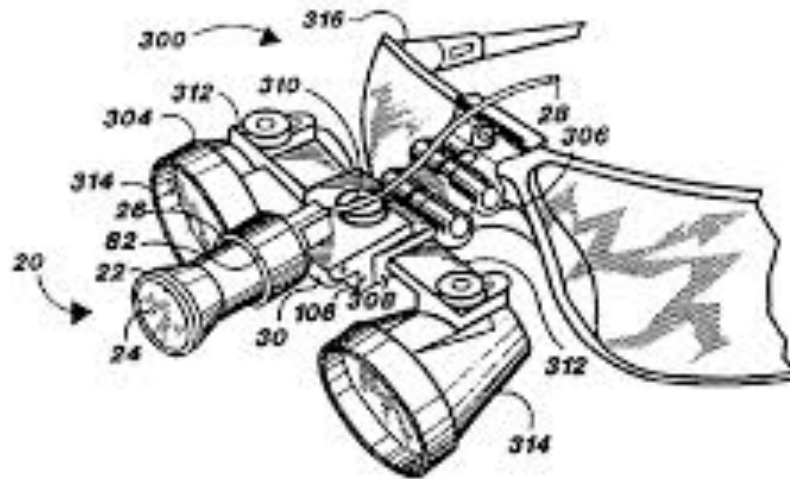


Develop a tool that would help a trainee to fully see and understand the surgical steps of total hip replacement during a posterior approach



Introduction

- Kloots J et al. Head mounted illumination and camera assembly . US Patent 4,797,736

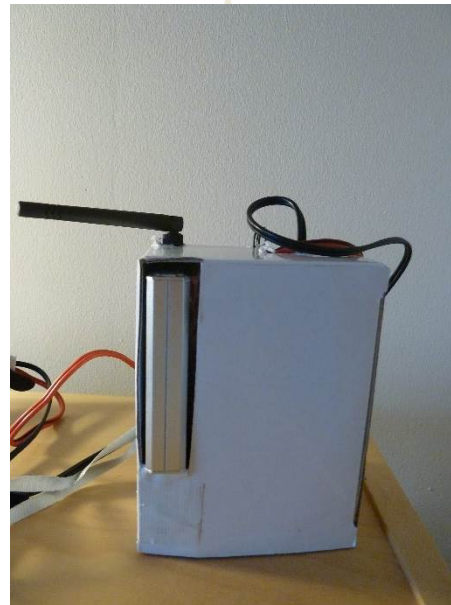


Methods

- To enable visualization of the operation from the senior surgeon's perspective
- Ergonomically adapted
- Device to film the surgery and output the video feed to a screen.



First prototype



Second prototype



- HD Replay XD1080 camera
- WDHI Xenta transmitting dongle (transmitting frequency – 5.8 GHz)
- Onboard 6600 mAh external Li-Mh battery providing 1A of current to the system
- The Replay camera operated from its own rechargeable battery

Results

The prototype has been trialled by two surgeons and was successful in allowing the direct surgeon's view of the procedure to be displayed on a screen in the theatre so that other staff involved in the operation could see it.



Limitations

- No zoom in
- Light interference from scialytic
- Improve the ergonomics : cables and battery
- Potential interferences (5.8 GHz transmitting unit)

Discussion

- The reduction in training time for trainees impacts many aspects of a training programme
- Effectiveness of learning?
- Senior surgeon to closely and accurately monitor a trainee's work throughout the operation

Discussion

→ Initial evaluation

→ However, we are now entering the phase of full assessment.



Nov. 8, 2013 — A University of Alabama at Birmingham surgical team has performed the first surgery using a virtual augmented reality technology called VIPAAR in conjunction with Google Glass

Conclusions

- Virtual training, presentations and video are essential to training
- Surgical training still relies greatly upon surgical assistance.
- Intra-operative video feedback device
Trainees ↔ Trainers
- Keep a record of the operations

Thank you

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