light jacket®

Clinical Value Analysis

Pathy Medical®
brighter innovations

Clinical Value Analysis

Background

Surgical Lighting Basic Requirements

- Center on a surgeon's immediate field
- Illuminate a wide or narrow field with high-intensity light
- Light penetrates into a cavity or under a flap

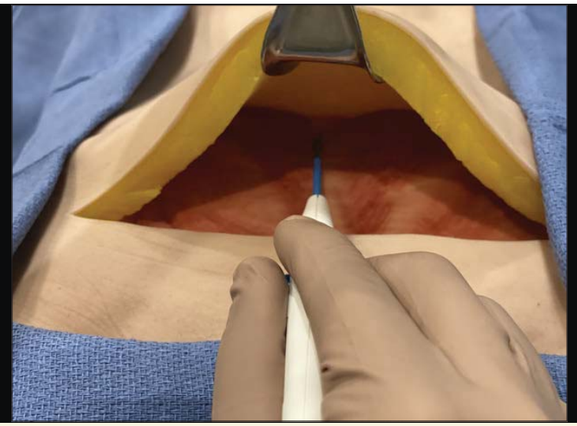
Currently Available Light Sources

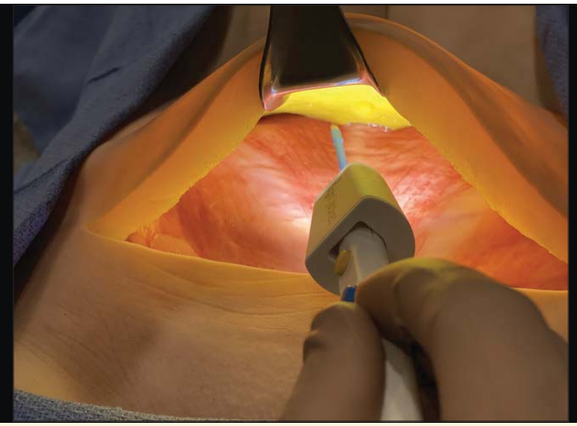
- Overhead surgical lighting systems
- Lighted retractors
- Headlights

light jacket®

Directs precise illumination at the electrocautery surgical site

WITHOUT LIGHT JACKET®





WITH LIGHT JACKET®

Problems

Distraction

- Overhead lights provide poor illumination of cavities and require frequent adjustments, on average once every 7.5 minutes[1]

- In a recent study, surgeons paused surgery for a lighting adjustment in 97% of cases[1]

Contamination

- Up to 50% of previously sterile overhead light handles become colonized with bacterial growth[2]

- 29.5% of reusable surgical devices have been reported to be bacteriologically positive[3]

- 66% reduction in surgical infections was seen at one site after introduction of disposable instruments during orthopedic surgery[4]

Patient Burns

- Fiberoptic cables used with lighted retractors can reach 437°F and light cable ends can reach 214°F, serving as sources of burns and surgical fires[5]

Surgeon Health Problems

- Nonergonomic lighting has been associated with surgeon fatigue and musculoskeletal disorders: 68% of high-frequency headlight users reported cervical pain versus 34% of low-frequency users, with 34% developing degenerative cervical disorders[6]

SOLUTION BY PATHY MEDICAL®[7]

Potential to Reduce Distractions

- Bright, cordless light source
- Slides onto existing electrocautery pencils in seconds
- Long life: 2 hours of light[8]

Potential to Reduce Contamination

- Sterile, disposable

Reduce Potential for Burns

- Low heat emission

Potential to Reduce Surgeon Fatigue and Physical Strain

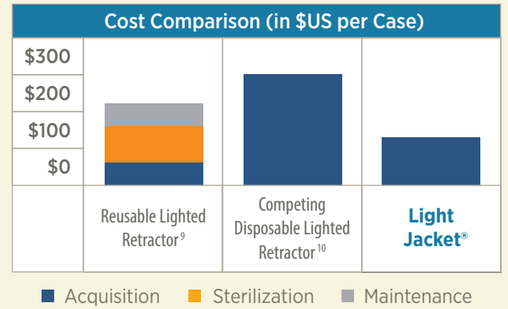
- Ergonomic and surgeon-directed light

Cost-Effective

- Less expensive per case than many other light sources when acquisition, maintenance, and resterilization are factored

Cost Analysis

- Inexpensive
- Reduce costs associated with resterilizing reusable light sources
- Substitute more expensive light sources
- Reduce or eliminate cost of maintaining and replacing reusable light sources such as lighted retractors, light cords and bulbs
- Small footprint in the operating room



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REFERENCES

1. Knulst AJ, Mooijweer R, Jansen FW, Stassen LPS, Dankelman J. Indicating shortcomings in surgical lighting systems. Minim Invasive Ther Allied Technol [Internet]. 2011S ep;20(5):267-75. Available from: http://dx.-doi.org/10.3109/13645706.2010.534169.

2. Obasi C, et al. Contamination of equipment in emergency settings: an exploratory study with a targeted automated intervention. - PubMed - NCBI [Internet]. Available from: https://www.ncbi.nlm.nih.gov/pubmed/19642994.

3. Srejic E. Reusables, Disposables Each Play a Role in Preventing Cross-Contamination [Internet]. Infection Control Today. 2016 [cited 2019 Feb 10]. Available from: https://www.infectioncontroltoday.com/person-al-protective-equipment/ reusables-disposables-each-play-role-prevent-ing-cross-contamination.

4. Litrico S, et al. Single-use instrumentation in posterior lumbar fusion could decrease incidence of surgical site infection: a prospective bi-centric study. PubMed - NCBI [Internet]. Available from: https://www.ncbi.nlm.nih.gov/pubmed/26325248.

5. Hensman C, et al. Total radiated power, infrared output, and heat generation by cold light sources at the distal end of endoscopes and fiber optic bundle of light ca ... PubMed - NCBI [Internet]. Available from: https://www.ncbi.nlm.nih.gov/pubmed/9543524.

6. Sahni D, James KB, Hipp J, Holloway S, Marco RAW. Is there an Increased Incidence of Cervical De-generative Disease in Surgeons who use Loupes and a Headlight? Journal of Spine [Internet]. 2015 Jan 1 [cited 2019 Mar 14];04(05). Available from: https://www.researchgate.net/pub-lication/ 283650933.

7. Scope of solutions limited to topics listed in the section labeled “Problems”.

8. Cumulative runtime; device intended for intermittent use; internal test data on file.

9. Assumes acquisition cost of lighted retractor, cord, and source amortized over 3-year usable life with 200 cases/per year.

10. Compared to Medtronic Radialux lighted retractor.