

# Wearable Surgical Lighting System in Open Surgery

## Effectiveness of OPELAIII™ Vol.1



### Gastroenterological Surgery

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OPELAIII is a wearable surgical lighting system launched in Japan in October 2017 developed to realize high-quality light while minimizing shadows and providing ease of movement and comfort. These are interviews with leading doctors in various fields where they talk about the effectiveness of OPELAIII in open surgery. The first visit was to Dr. Itaru Endo of Yokohama City University. He talks about his experience with OPELAIII in surgery for bile duct cancer.

### Before OPELAIII, there was no light to illuminate the area between the dorsal surface of the liver and the inferior vena cava

I used OPELAIII in the case of hilar cholangiocarcinoma, where we resected the central two segments of inner and anterior segments of the liver and also the caudate lobe located deep in the organ.

Open surgery for hepatobiliary and pancreatic areas involves many procedures in areas that are dark and hard to see with ceiling-mounted shadowless light alone, areas such as behind/deep in the organs. We secured approximately 70cm (40cm+30cm) of surgical field through inverted L-shaped

incision, but with the ceiling-mounted shadowless light only, the field was not clearly visible because the light was not bright enough to reach the dorsal surface of the liver, and also the surgical field was shadowed with my head. That's when we turned on OPELAIII and then the area between the dorsal surface of the liver and the inferior vena cava were brightly illuminated and became clearly visible. This is the first moment when I realized the effectiveness of OPELAIII.

### Clear visibility makes it easy to cut small blood vessels with little bleeding

One of the advantages of the high-illuminant light from OPELAIII to the dorsal surface of the liver is that you can see the blood vessels being sutured to the intima adequately (Fig. 1). Another advantage is that the light is always focused to the surgical field where your eyes are focused, which assures you that the suturing is being performed at the best point.

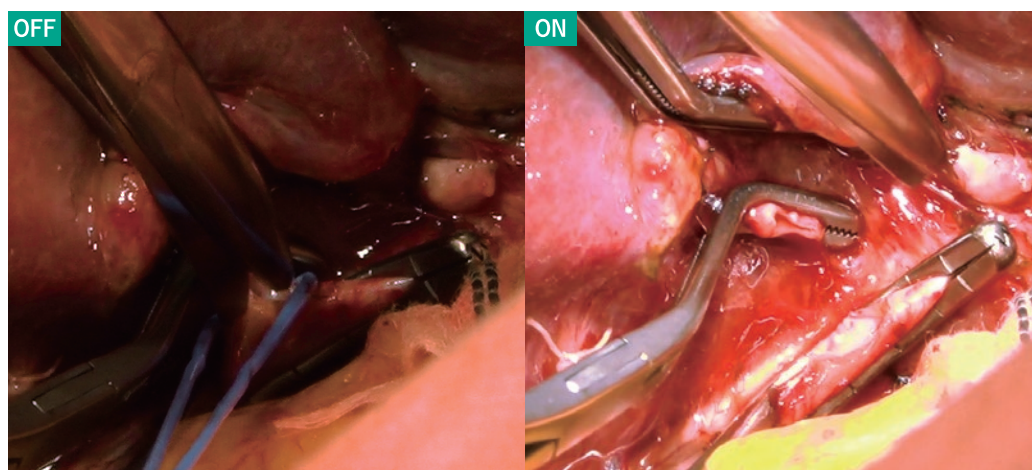


Fig. 1 | Displacement of caudate lobe & dissection of the short hepatic vein (visible to the intima of the blood vessel when OPELAIII is ON)

※ "ON" means when OPELAIII is lit.



Also, when dissecting the lymph node behind the portal vein, with OPELAIII, you can see small blood vessels and lymphatic vessels flowing into the lymph nodes (Fig. 2). When you can see the blood vessels clearly, you can do the dissection while cauterizing them. When bleeding occurs on the back of an organ, it takes a considerable amount of time to stop it. However it was not the case with OPELAIII and we were able to perform safe dissection with little bleeding.

Another strong point of OPELAIII is that the light does not cast shadows of organs or the surgeon's hands. During vascular anastomosis, the surgeon's arm could cast shadows on the surgical field, but I didn't have such an experience with OPELAIII.

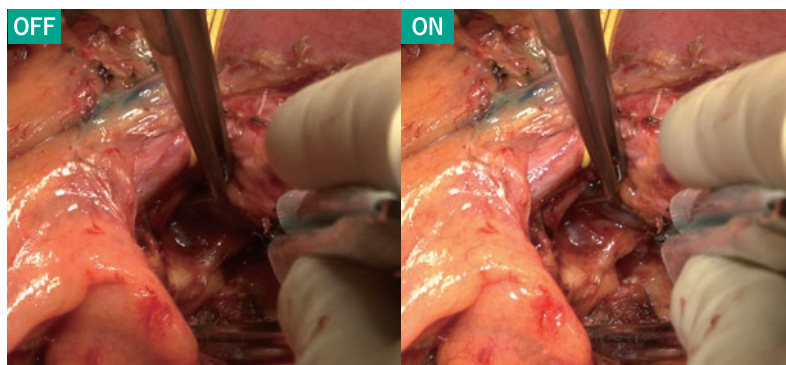
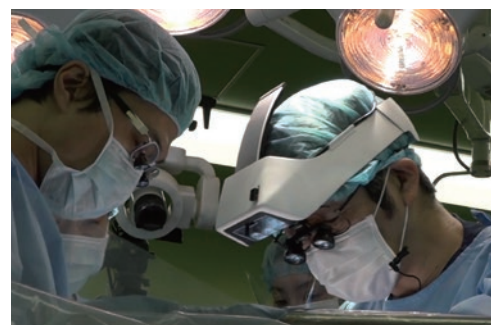


Fig. 2 | Dissection of the lymph node behind the portal vein  
※“ON” means when OPELAIII is lit.

### Free from having to adjust shadowless light, thanks to the light fixed to the field of view of magnifier

I find OPELAIII very compatible with the use of magnifier. As the illumination range of OPELAIII covers and is fixed to the field of view you can see through the lens, the surgical field is always bright wherever you direct your eyes. With ceiling-mounted shadowless light alone, the enlarged field of view through the lens could suddenly go black when the angle of light is adjusted wrongly outside the field of view. However with OPELAIII, once it is fixed at the right angle while wearing it, there is no need to adjust afterwards as you would need to do repeatedly during surgery with ceiling-mounted shadowless light.

Eliminating labor during surgery such as moving the light frequently or changing the angle of the surgical table to see more deeply results in stress reduction on the surgeon and shortening the time of surgery.



Wearing OPELAIII during surgery

### Effectiveness of OPELAIII in other surgical areas where the surgical field is shadowed by organs and surgeons

What I found great about OPELAIII is that it provides an environment in which surgeons can see what they want to see with light that reaches deep depths, and thereby reducing stress and fatigue on surgeons even under highly tense situations. I would say it also contributes to the improvement of safety in terms of reducing the risk of bleeding.

I believe OPELAIII is a powerful tool not only for the surgery of hilar cholangiocarcinoma like this time, but for other surgeries such as pancreatic cancer, which involves anastomosis of blood vessels shadowed by organs or surgeon's arms, also even for liver transplantation, which requires treatment of blood vessels running deep.

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[Manufacturer]

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