“I am quicker, more dynamic and precise in my biliary procedures. In addition, I am essentially non-reliant on my assistant for exposure or retraction.”

- David Sindram, MD, PhD
David Sindram, MD, PhD

Thompson Surgical Instruments believes in listening to our customers to improve our product offerings. Through collaboration with David Sindram, MD, PhD, Thompson now offers a radiolucent blade kit ideal for hepatobiliary procedures. Dr. Sindram is an expert in the hepatobiliary and pancreatic field and is certified by the American Board of Surgery as well as the Americas Hepato-Pancreato-Biliary Association (AHPBA.) He has been operating out of North Carolina since 2009, where he is now head of the Hepatobiliary and Pancreas program at Novant Health. He studied General Surgery at Duke University after receiving his MD from Leiden University in The Netherlands. Dr. Sindram is also a published author, interested in research related to transplantation, oncology, microwave ablation, and hepatology, among other topics.

"The ability to investigate the intra and extra hepatic biliary anatomy with fluoroscopic cholangiograms in difficult biliary cases without having to remove the retractor is extremely helpful. The Radiolucent Hepatobiliary Retractor Blade Kit helps avoid constant repositioning of retractors and adds to safety by improving the correspondence between fluoroscopic image and in-field anatomy."

- David Sindram, MD, PhD

Benefits of Radiolucent Blades
Radiolucent blades allow for cholangiography through smaller incisions, reduced operative time, and more dynamic integration of x-ray based techniques and surgery.

NEW Non-Slip Balfour Blades
Anatomically designed Radiolucent Non-Slip Balfour blades gently grip tissue to prevent blade slippage during costal margin retraction.

Multi-Dimensional Retraction
Allows for multiple planes of retraction and asymmetrical costal margin retraction, while also providing strong stability for large patients.

NOTE
See page 7 for ordering information.

NOTE
As we continually strive to provide the best products possible, some of the images in this user manual may appear slightly different from the product received.
Bilateral Frame Set Up
Below is the suggested set up for Radiolucent HPB exposure, as outlined by Dr. Sindram.

Step 1
Secure the Elite II Rail Clamps to the table rails over the sterile drape, one on each side of the patient.

⚠️ CAUTION
If the patient is obese, avoid compressing the ulnar nerve when placing rail clamps.

⚠️ TIP
When necessary, use a wider OR table or add 2 ¼” to the width of the table by using our Rail Extender (#41917).

Step 2
Position the Hinged Bilateral Crossbar at 30º angles in the rail clamp’s joints and adjust to be as high up as possible, keeping level with the patient’s chest. Lock the crossbar into the joints by flipping the cam handles.

⚠️ TIPS
Grasp the rail clamp for leverage when locking joints.

The crossbar may have to be angled up, creating a more acute angle in order to maximize the use of the Micro-Adjustable handles’ strength.

Step 3
Using the lower cam joint, attach one angled arm to each rail clamp. Position level and wide, creating an enclosure around the patient. Secure by flipping the cam handle.
Retractor Blade Placement

After set up of the frame, retractor handles and blades are placed in the incision.

**Step 1**

Attach a Non-Slip Balfour blade to a Micro-Adjustable handle by pushing the plunger on the handle and inserting the blade nipple into the handle. (A)

Position the blade under the fascia and rib cage on the appropriate side (indicated by L or R stenciling on each blade.) Attach the handle to the Hinged Bilateral Crossbar and secure by flipping joint on handle. (B)

Repeat with second Non-Slip Balfour blade and Micro-Adjustable handle on the opposite side.

**TIPS**

To retract a blade after a Micro-Adjustable handle has been locked, turn the knob to utilize microadjustable retraction. (C)

Using fingers or T-Handle, angle the blades in as much as possible, so as to hook the blades acutely under the ribs. (D)

**Step 2**

After preparation of the round ligament and division of the falciform ligament, place the Harrington (sweetheart) blade over the hepatoduodenal ligament. Attach to the Hinged Bilateral Crossbar with a Cam handle.

Angle in using the quick angle feature on the retractor handle.

**NOTE**

Utilizing the quick angle feature to angle the blade acutely eliminates the need to create a make-shift malleable blade as with most competitor systems.

**TIP**

When positioning blades, do not retract with full tension. Once blade is in place, use the quick angle feature on the retractor handles to get the exact retraction desired.
Retractor Blade Placement (continued)

Step 3
Choose an appropriate abdominal wall retractor blade (see below) and attach to a Cam handle. Insert and retract the abdominal wall, attaching the handle to an angled arm. Repeat with a second abdominal wall retractor blade and Cam handle on the opposite side.

**NOTE**
Asymmetrical retraction will allow you to work all the way to the right or all the way to the left, without the need for extension of the incision below the umbilicus in most cases.

**SMALL PATIENTS**
- Small Balfour Blades
  - SL46142EB / 46142EB

**NORMAL / LARGE PATIENTS**
- Kelly Blades
  - SO46129ET / 46129ET

Step 4
Using a cam handle, position the Malleable Finger Blade (using a lap-pad if desired) over stomach/omentum/transverse colon to help with downward retraction (E). Attach handle to angled arm.

**OPTIONAL:** Depending on the size of the patient and abdominal fat content, Malleable blades may be placed to keep the intestine in the right and left lower quadrants. (F)

**NOTE**
This blade is frequently moved and adjusted and frees up the hand of an assistant, making it possible to do complex Hepatobiliary and Pancreas procedures with a scrub tech.

Complete Set Up
Complete set up for Hepatobiliary procedure shown.
Imaging

Better Visualization During Cholangiograms

Cholangiograms can be done during any phase of the procedure. Optimal retraction can be achieved with the addition of various other blades (such as small Malleable blades to lift the hepatic plate), creating several options to angle and expose anything in the porta hepatis. Depending on the need, even dynamic studies and rendezvous procedures through the liver parenchyma can easily be achieved for placement of PTBD’s or determination of anatomical relationships.

Contrast dilution is not necessary for this procedure

In most cases, a full strength contrast cholangiogram provides the best picture. Contrast is injected into the bile ducts. Contrast should not enter the blood stream—if there is uncertainty about the nature of the structure, dilution may be indicated. Dilution may also help in select cases where subtle lesions or stones are sought with contrast.

X-Ray Settings

The best way to get an optimal cholangiogram is doing a subtraction run on the fluoroscope with the radiolucent blades. Since the x-rays and contrast can be seen perfectly through the instruments, and the shadows of the retraction instruments are subtracted for further enhancement, every detail in the cholangiogram can easily be assessed.

“The setup really shines in the repair of complex and high biliary injuries where small ducts are obliterated by energy devices.”

- David Sindram, MD, PhD

NOTE
Cholangiogram image above is shown with standard Radiolucent Balfour (in place of Non-Slip Balfour) blade.
## Radiolucent Liver / Oncology System Components

### RADIO. LIVER / ONCOLOGY SYSTEM **#SL82008**

<table>
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